

EBOLA VIRUS DISEASE (EVD)

REPORTING INFORMATION

- **Class A:** *Report immediately via telephone* the case or suspected case and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report immediately via telephone to the local public health department in which the reporting health care provider or laboratory is located. Local health departments should report immediately via telephone the case or suspected case and/or a positive laboratory result to the Ohio Department of Health (ODH).
- Reporting Form(s) and/or Mechanism:
 - *Immediately via telephone.*
 - For local health departments, cases should also be entered into the Ohio Disease Reporting System (ODRS) within 24 hours of the initial telephone report to the ODH.
 - The [CDC Ebola Virus Disease \(EVD\) Consultation Form](#) is available for use.
- Key fields for ODRS reporting include: import status (whether the infection was travel-associated or Ohio-acquired), date of illness onset, and all the fields in the Epidemiology module.

AGENT

Ebola virus disease (EVD) is a severe, often fatal disease in humans and nonhuman primates (monkeys, gorillas, and chimpanzees) that has appeared sporadically since its initial recognition in 1976. The disease is caused by infection with Ebola virus, named after a river in the Democratic Republic of the Congo (formerly Zaire) in Africa, where it was first recognized. The virus is one of two members of a family of RNA viruses called the Filoviridae. A major outbreak of > 20,000 cases occurred in West Africa in 2014. Five countries were involved: Guinea, Liberia, Mali, Sierra Leone and Nigeria.

CASE DEFINITION

The Centers for Disease Control and Prevention (CDC) Case Definition for EVD was updated on November 16, 2014. Ebola is a rare and deadly viral illness which is reportable to the National Notifiable Disease Surveillance System ([NNDSS](#)) in all U.S. states and territories. Early recognition of Ebola is critical for infection control. Health-care providers should be alert for and evaluate any patients suspected of having Ebola.

Person Under Investigation (PUI)

A person who has both consistent signs or symptoms and risk factors as follows:

1. Elevated body temperature or subjective fever or symptoms, including severe headache, fatigue, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage;
AND
2. An epidemiologic risk factor within the 21 days before the onset of symptoms.
<http://www.cdc.gov/vhf/ebola/exposure/risk-factors-when-evaluating-person-for-exposure.html>

Confirmed Case

Laboratory-confirmed diagnostic evidence of Ebola virus infection.

Early recognition is critical to controlling the spread of Ebola virus. Healthcare providers should evaluate the patient's epidemiologic risk factor

<http://www.cdc.gov/vhf/ebola/exposure/risk-factors-when-evaluating-person-for-exposure.html>, including a history of travel to a [country with widespread Ebola virus transmission or cases in urban settings with uncertain control](#)

[measures\(http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html\)](http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html) or contact within the preceding 21 days with a person with Ebola while the person was symptomatic. Click here for an evaluation algorithm to determine if testing for Ebola is indicated <http://www.cdc.gov/vhf/ebola/pdf/ed-algorithm-management-patients-possible-ebola.pdf>.

If a diagnosis of Ebola is being considered, the patient should be isolated in a single room (with a private bathroom), and healthcare personnel should follow [standard, contact, and droplet precautions\(http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html\)](http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html), including the use of appropriate [personal protective equipment \(PPE\)\(http://www.cdc.gov/vhf/ebola/hcp/ed-management-patients-possible-ebola.html\)](http://www.cdc.gov/vhf/ebola/hcp/ed-management-patients-possible-ebola.html). Infection control personnel should be contacted immediately.

If Ebola is suspected, the local or state health department should be immediately contacted for consultation to assess whether or not testing is indicated and the need for initiating identification of contacts.

SIGNS AND SYMPTOMS

Ebola hemorrhagic fever symptoms include abrupt onset of fever, severe headache, muscle pain, fatigue and weakness, followed by diarrhea, vomiting, and stomach pain. A rash, red eyes, hiccups and internal and external bleeding may be seen in some patients. Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, but the average is 8 to 10 days.

Recovery from Ebola depends on good supportive clinical care and the patient's immune response. People who recover from Ebola infection develop antibodies that last for at least 10 years.

DIAGNOSIS

Ebola virus disease is diagnosed through virus isolation, antigen-capture enzyme-linked immunosorbent assay (ELISA) testing, IgM ELISA and polymerase chain reaction (PCR). Virus isolation can be used to diagnose a case of EVD within a few days of the onset of symptoms. Persons tested later in the course of the disease or after recovery can be tested for IgM and IgG antibodies. The disease can also be diagnosed retrospectively in deceased patients by using immunohistochemistry testing, virus isolation, or PCR.

Local hospitals and laboratories should not attempt to culture any specimens. These viruses are highly pathogenic and require handling in special laboratory facilities designed to contain them. The hospital should hold on to any blood, serum, CSF, respiratory secretions and other tissue collected. The local health department and ODH will coordinate the shipment of all laboratory specimens for testing. ODH Outbreak Response and Bioterrorism Investigation Team (614) 995-5599 will follow up on the laboratory specimens.

EPIDEMIOLOGY

Occurrence

Ebola virus disease was first identified in 1976 near the Ebola River in Zaire, now known as the Democratic Republic of the Congo. Since then, isolated human outbreaks have occurred in central African countries such as Côte d'Ivoire (Ivory Coast), the Democratic Republic of the Congo, Gabon, the Republic of the Congo, Sudan and Uganda. In March 2014, the largest outbreak of Ebola virus disease in history began in West Africa, with widespread transmission occurring in Guinea, Liberia and Sierra Leone. Infected travelers contributed to limited transmission in several other countries as well: Nigeria, Mali, Senegal, Spain and the United States.

Mode of Transmission and Source

People can be exposed to Ebola virus from direct contact with the blood and/or secretions, organs or semen of an infected person. Thus, the virus is often spread through families and friends because they come in close contact with such secretions when caring for infected persons. People can also be exposed to Ebola virus through contact with objects, such as needles, that have been contaminated with infected secretions. Ebola can also be acquired while handling infected dead mammals in Africa, or through contact with the blood or organs of infected cynomolgus monkeys. Nosocomial transmission is common in African healthcare facilities through the previously stated contact means.

Incubation Period

Ebola virus disease: 2-21 days (average 8-10 days)

PUBLIC HEALTH MANAGEMENT

Case

Investigation

The patient should be kept in strict isolation. Obtain information about the patient's occupation, history of travel outside the United States, contact with wild animals or lab animals, contact with a suspected or confirmed case of EVD, or close contact with an ill individual who traveled to an EVD-endemic area.

Treatment

There is no standard treatment for Ebola virus disease. Patients receive supportive therapy. This consists of balancing the patient's fluids and electrolytes, maintaining oxygen status and blood pressure, and treating for any complicating infections.

Isolation

Ohio Administrative Code (OAC) 3701-3-13 (DD) states:

"Viral hemorrhagic fever (VHF): a person with confirmed or suspected viral hemorrhagic fever shall be placed in airborne isolation until no longer considered infectious."

Clinicians evaluating suspect cases should use standard (e.g. hand hygiene), airborne droplet (e.g. N-95 respirator) and contact (e.g. gowns and gloves) precautions.

Standard, contact, and droplet precautions are recommended for management of hospitalized patients with known or suspected Ebola virus disease (EVD).

Contacts

Investigation

Currently there is no post-exposure prophylaxis available for individuals exposed to these agents. Investigation of contacts and source of infection: Identify all close contacts in the three weeks after the onset of illness. Initiate quarantine and active surveillance of contacts by having contacts take and maintain record of body temperature twice a day for 3 weeks after last exposure. If temperature is greater than 100.4°F (38°C), hospitalize patient immediately and initiate appropriate isolation precautions.

When a suspect case is reported, the local health department needs to start identifying close contacts. Often this starts with the family. The emergency room chart or the medical record may provide names of emergency contacts or family members.

The local health department needs to identify all persons who had “close contact” with the patient for the 21 days prior to the onset of the patient’s illness, and thereafter until the patient is released from isolation.

Consult the CDC website for the latest information about Ebola virus disease:

<http://www.cdc.gov/ebola>

The 2014 Ebola outbreak is the largest Ebola outbreak in history and the first in West Africa. By January 2015, the outbreak was still affecting three countries in West Africa: Guinea, Liberia and Sierra Leone.

The Centers for Disease Control and Prevention (CDC) worked with other U.S. government agencies, the World Health Organization, and other domestic and international partners and activated its Emergency Operations Center to help coordinate technical assistance and control activities with partners. CDC also deployed teams of public health experts to West Africa.

What is Ebola?

Ebola, also known as Ebola virus disease, is a rare and deadly disease caused by infection with one of the Ebola virus strains (Zaire, Sudan, Bundibugyo, or Tai Forest virus). Ebola viruses are found in several African countries. Ebola was discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo. Since then, outbreaks have appeared sporadically in several African countries.

What are the signs and symptoms of Ebola?

Signs and symptoms of Ebola include fever (greater than 100.4°F or 38°C) and severe headache, muscle pain, vomiting, diarrhea, stomach pain, or unexplained bleeding or bruising. Signs and symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, although 8 to 10 days is most common.

How is Ebola spread?

The virus is spread through **direct contact** (through broken skin or mucous membranes) with blood and body fluids (urine, feces, saliva, vomit or semen) of a person who is sick with Ebola, or with objects (like needles) that have been contaminated with the virus. Ebola is not spread through the air or by water or, in general, by food; however, in Africa, Ebola may be spread as a result of handling bushmeat (wild animals hunted for food), and contact with infected bats.

Who is most at risk of getting Ebola?

Healthcare providers caring for Ebola patients and family and friends in close contact with Ebola patients are at the highest risk of getting sick because they may come in direct contact with the blood or body fluids of sick patients.

In some places affected by an outbreak, care may be provided in clinics with limited resources (for example, no running water, no climate control, no floors, inadequate medical supplies), and workers could be in those areas for several hours with a number of Ebola infected patients. Additionally, certain job responsibilities and tasks, such as attending to dead bodies, may also require different personal protective equipment (PPE) than what is used when providing care for infected patients in a hospital.

Can I get Ebola from a person who is infected but doesn't have fever or any symptoms?

No. A person infected with Ebola is not contagious until symptoms appear.

If someone survives Ebola, can he or she still spread the virus?

Once someone recovers from Ebola, they can no longer spread the virus. However, Ebola virus has been found in semen for up to 3 months. People who recover from Ebola are advised to abstain from sex or use condoms for 3 months.

If someone survives Ebola, do they become immune?

People who recover from Ebola infection develop antibodies that last for at least 10 years, possible longer. It is not known if people who recover are immune for life or if they can become infected with a different species of Ebola.

Can Ebola be spread through mosquitos?

There is no evidence that mosquitos or other insects can transmit Ebola virus. Only mammals (for example, humans, bats, monkeys and apes) have shown the ability to spread and become infected with Ebola virus.

Could Ebola be brought to the U.S. through imported animals?

Because of the tough restrictions the U.S. government has in place for importing animals from Africa, it is highly unlikely for Ebola to be brought into the U.S. through imported animals.

The animals most commonly associated with Ebola are nonhuman primates (for example, apes and monkeys) and bats. Both the CDC and the U.S. Fish and Wildlife Service regulate importation of nonhuman primates and bats. These animals, products made from these animals, and research samples from these animals may only be imported into the United States with a permit. The permit specifies that the animals, animal products, or research samples are arriving ONLY for scientific, educational, or exhibition purposes. It is illegal to import these animals into the United States as pets or bushmeat.

How is Ebola treated?

No specific vaccine or medicine has been proven to cure Ebola. Signs and symptoms of Ebola are treated as they appear. The following basic interventions, when used early, can increase the chances of survival.

- Providing fluids and electrolytes
- Maintaining oxygen status and blood pressure
- Treating other infections if they occur

Early recognition of Ebola is important for providing appropriate patient care and preventing the spread of infection. Healthcare providers should be alert for and evaluate any patients suspected of having Ebola.

How do I protect myself against Ebola?

If you are in or traveling to an area affected by the Ebola outbreak, protect yourself by doing the following:

- Wash hands frequently.
- Avoid contact with blood and body fluids of any person, particularly someone who is sick.
- Do not handle items that may have come in contact with an infected person's blood or body fluids.
- Do not touch the body of someone who has died from Ebola.
- Do not touch bats and nonhuman primates or their blood and fluids and do not touch or eat raw meat prepared from these animals.
- Avoid hospitals where Ebola patients are being treated. The U.S. Embassy or consulate is often able to provide advice on medical facilities.
- Seek medical care immediately if you develop fever (temperature of 100.4°F/ 38°C) and any of the other following symptoms: headache, muscle pain, diarrhea, vomiting, stomach pain, or unexplained bruising or bleeding.
- Limit your contact with other people until and when you go to the doctor. Do not travel anywhere else besides a healthcare facility.

What do I do if I'm returning to the U.S. from the area where the outbreak is occurring?

After you return, pay attention to your health.

- Monitor your health for 21 days if you were in an area with an Ebola outbreak, especially if you were in contact with blood or body fluids, items that have come in contact with blood or body fluids, animals or raw meat, or hospitals where Ebola patients are being treated or participated in burial rituals.
- Seek medical care immediately if you develop fever (temperature of 100.4°F/ 38°C) and any of the following symptoms: headache, muscle pain, diarrhea, vomiting, stomach pain, or unexplained bruising or bleeding.
- Tell your doctor about your recent travel and your symptoms before you go to the office or emergency room. Advance notice will help your doctor care for you and protect other people who may be in the office.

What does CDC's Travel Alert Level 3 mean to U.S. travelers?

Travel notices are designed to inform travelers and clinicians about current health issues related to specific destinations. These issues may arise from disease outbreaks, special events or gatherings, natural disasters, or other conditions that may affect travelers' health. A level 3 alert means that there is a high risk to travelers and that CDC advises that travelers avoid nonessential travel.

CDC recommends that U.S. residents avoid nonessential travel to Guinea, Liberia, and Sierra Leone. If you must travel (for example, to do for humanitarian aid work in response to the outbreak) protect yourself by following [CDC's advice](#) for avoiding contact with the blood and body fluids of people who are ill with Ebola. For more information about the travel alerts, see [Travelers' Health Ebola](#) web page.