



## Technical Bulletin



**Date:** March 15, 2021

**Topic:** **Ebola Virus Disease**

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**To:** Health Care Providers

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### **Background**

Outbreaks of Ebola virus disease (EVD) have been identified in Guinea and the Democratic Republic of the Congo (DRC). At this time, the risk of case importation via international air travel is generally thought to be low, however, the potential consequences of even one importation in the context of the ongoing COVID-19 pandemic could further stress already strained health care systems and erode public confidence, creating an outsized impact on public health efforts.

### **Signs and Symptoms**

Symptoms may appear anywhere from 2 to 21 days after contact with the virus, with an average of 8 to 10 days. The course of the illness typically progresses from “dry” symptoms initially (such as fever, aches and pains, and fatigue), and then progresses to “wet” symptoms (such as diarrhea and vomiting) as the person becomes sicker.

Primary signs and symptoms of Ebola often include some or several of the following:

- Fever
- Aches and pains, such as severe headache, muscle and joint pain, and abdominal (stomach) pain
- Weakness and fatigue
- Gastrointestinal symptoms including diarrhea and vomiting
- Unexplained hemorrhaging, bleeding or bruising

Other symptoms may include red eyes, skin rash, and hiccups (late stage). Many common illnesses can have the same symptoms as EVD, including influenza (flu), malaria, or typhoid fever.

A complete summary of clinical presentation and course can be found here:

<https://www.cdc.gov/vhf/ebola/clinicians/evd/clinicians.html>

### **Transmission:**

People are initially infected with Ebola virus through contact with an infected animal, such as a fruit bat or nonhuman primate. This is called a spillover event. After that, the virus spreads from person to person, potentially affecting a large number of people.

The virus spreads through direct contact (such as through broken skin or mucous membranes in the eyes, nose, or mouth) with:

- Blood or body fluids (urine, saliva, sweat, feces, vomit, breast milk, amniotic fluid, and semen) of a person who is sick with or has died from Ebola virus disease (EVD).
- Objects (such as clothes, bedding, needles, and medical equipment) contaminated with body fluids from a person who is sick with or has died from EVD.
- Infected fruit bats or nonhuman primates (such as apes and monkeys).

- Semen from a man who recovered from EVD (through oral, vaginal, or anal sex). The virus can remain in certain body fluids (including semen) of a patient who has recovered from EVD, even if they no longer have symptoms of severe illness. There is no evidence that Ebola can be spread through sex or other contact with vaginal fluids from a woman who has recovered from EVD.

**A person can only spread Ebola to other people after they develop signs and symptoms of Ebola.**

Additionally, Ebola virus is not known to be transmitted through food. However, in certain parts of the world, Ebola virus may spread through the handling and consumption of wild animal meat or hunted wild animals infected with Ebola. There is no evidence that mosquitoes or other insects can transmit Ebola virus.

**Diagnosis and Laboratory Confirmation:**

Diagnosing Ebola virus disease (EVD) shortly after infection can be difficult. Early symptoms of EVD such as fever, headache, and weakness are not specific to Ebola virus infection and often are seen in patients with other more common diseases, like malaria and typhoid fever.

To determine whether EVD is a possible diagnosis, there must be a combination of symptoms suggestive of EVD **AND** a possible exposure to EVD within 21 days before the onset of symptoms. If there is a clinical suspicion of Ebola, a determination whether a patient is, or is not a Person Under Investigation (PUI) should be made in consultation with public health officials as quickly as possible in order to ensure that patient care is not compromised

If a person presents with signs of EVD and has had a possible exposure, he or she must be isolated immediately, and public health authorities must also be immediately notified.

Polymerase chain reaction (PCR) is one of the most commonly used diagnostic methods because of its ability to detect low levels of Ebola virus. PCR methods can detect the presence of a few virus particles in small amounts of blood, but the ability to detect the virus increases as the amount of virus increases during an active infection. When the virus is no longer present in great enough numbers in a patient's blood, PCR methods will no longer be effective. Other methods, based on the detection of antibodies an EVD case produces to an infection, can then be used to confirm a patient's exposure and infection by Ebola virus.

A positive laboratory test means that Ebola infection is confirmed. Public health authorities will conduct a public health investigation, including identifying and monitoring all possibly exposed contacts.

Comprehensive laboratory guidance including specimen collection, personal protective equipment (PPE), laboratory equipment, specimen storage and shipment, decontamination, and waste management is located here:

<https://www.cdc.gov/vhf/ebola/laboratory-personnel/safe-specimen-management.html>

<https://www.cdc.gov/vhf/ebola/laboratory-personnel/shipping-specimens.html>

<https://www.cdc.gov/vhf/ebola/laboratory-personnel/specimens.html>

**Identify, Isolate, and Inform:**

**Identify:** All frontline health care facilities should ensure that facility-specific protocols and procedures are in place to rapidly identify and isolate persons with a travel or exposure history and signs and symptoms of Ebola. They should follow recommendations in CDC's guidance for Emergency Department Evaluation and Management

of Patients Under Investigation (PUIs) for Ebola Virus Disease (EVD) found here:

<https://www.cdc.gov/vhf/ebola/clinicians/emergency-services/emergency-departments.html>

**Isolate:** A PUI should immediately be placed in a private room with an in-room bathroom or covered bedside commode. For clinically stable patients without vomiting, copious diarrhea, or obvious bleeding, health care workers should, at a minimum, use PPE in accordance with CDC's guidance for clinically stable PUIs (<https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance-clinically-stable-puis.html>). If the patient is exhibiting obvious vomiting, copious diarrhea, or obvious bleeding, or presents with a clinical condition that warrants invasive or aerosol-generating procedures, hospitals should use PPE recommended for care of hospitalized patients with EVD (<https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html>). Frontline health care facilities should discuss with public health authorities the possibility of immediate transfer of these patients to an Ebola assessment hospital or to an Ebola treatment center, considering the patient's condition, facility's capacity, and risks to the health of the patient and staff (for example, if untrained in proper PPE use and infection control procedures) to manage the patient on site.

**Inform:** After isolating the patient, the hospital/facility infection control staff and state/local health department should be notified immediately according to state protocols. Frontline health care facilities should consult with the state/local health department to determine the need for EVD testing, and, if testing is indicated, determine where the patient should be cared for while EVD testing is being performed. Frontline health care facilities should consider, in coordination with state and local health authorities and according to the state's plan, transferring the patient to an Ebola assessment hospital that can provide Ebola testing and care until an Ebola diagnosis is either confirmed or ruled out. In some circumstances, patients who have a low likelihood of EVD based on clinical and epidemiologic factors and who present with mild symptoms but who nonetheless require EVD testing, may remain at the frontline health care facility while initial testing is being performed. For patients who have a high probability of EVD or who are more severely ill, direct referral to an Ebola treatment center could be considered. All frontline health care facilities should be aware of the closest Ebola assessment hospitals and Ebola treatment centers and have an established plan for patient transport in the unlikely event that this becomes necessary. There are currently five Ebola Assessment Hospitals in Nevada:

- University Medical Center; Las Vegas
- Valley Hospital Medical Center; Las Vegas
- St. Rose Dominican Hospital, San Martin Campus; Las Vegas
- Renown Regional Medical Center; Reno
- St. Mary's Regional Medical Center; Reno

Nevada's regional Ebola Treatment Center is Cedars-Sinai Medical Center located in Los Angeles, California.

When the decision has been made to transport a patient, preparations should ensure that transport providers are aware of the patient's status and have appropriate training and PPE to safely transport the patient. See CDC's additional guidance on patient transportation found here: <https://www.cdc.gov/vhf/ebola/clinicians/emergency-services/ems-systems.html>

The complete CDC guidance for hospital preparedness, PPE, and cleaning and decontamination can be found here: <https://www.cdc.gov/vhf/ebola/public-health-planners/index.html>.

#### **Reporting:**

Health care providers should immediately notify both infection control personnel at their health care facility and their local/state health department in the event of a person under investigation (PUI) for EVD is identified.

- **Nevada Division of Public and Behavioral Health (DPBH):** (775)-684-5911 (M-F 8:00 AM to 5:00 PM); (775)-400-0333 (after hours)
- **Southern Nevada Health District (SNHD):** (702)-759-1300 (24 hours)
- **Washoe County Health District (WCHD):** (775)-328-2447 (24 hours)

- **Carson City Health and Human Services (CCHHS):** (775)-887-2190 (M-F 8:00 AM to 5:00 PM); (775)-887-2190 (after hours)

**For More Information:** Please contact DPBH M-F 8:00 AM to 5:00 PM at (775)-684-5911. The after-hours line can be contacted at (775)-400-0333. Questions can be sent to [dpbhepi@health.nv.gov](mailto:dpbhepi@health.nv.gov).



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