Ebola
Frequently Asked Questions for Healthcare Workers

What is Ebola Virus Disease?
Ebola Virus Disease (EVD) is also called Ebola Hemorrhagic Fever (EHF). Ebola is caused by infection with a virus of the genus *Ebolavirus*. It is a severe, often fatal, disease in humans and non-human primates (such as monkeys, gorillas, and chimpanzees). Ebola was first discovered in 1976 near the Ebola River for which the disease is named. Since then, outbreaks have appeared sporadically in African countries.

What countries/areas have been affected by the Ebola outbreak in West Africa?
Since early 2014, an outbreak of Ebola has been ongoing in the West African countries of Guinea, Liberia, and Sierra Leone. Recently, the country of Mali added to the list of West Africa countries for U.S. traveler entry screening. Check the CDC website for an up-to-date list of Ebola-affected countries and areas: http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html#areas

Where has Ebola occurred outside of the countries experiencing the outbreak in West Africa?
A few cases related to the current outbreak have occurred in other countries, which include Mali, Nigeria, Spain, Senegal and the United States. These cases were in persons who were exposed to Ebola in the countries where the outbreak is occurring, or to persons who were infected in one of those countries. A person from Nigeria returned from one of these countries and infected others in Nigeria, but transmission was limited, and Nigeria has now been declared Ebola-free. In the United States, two healthcare workers were infected after treating a person with Ebola who had traveled to Dallas, TX before his diagnosis. In Spain, one healthcare worker was infected after treating a person with Ebola who was transported to Spain for care.

Is Ebola a notifiable disease in Oklahoma?
Yes. Ebola is one of many Viral Hemorrhagic Fevers, which are reportable diseases in Oklahoma. Healthcare providers and laboratory personnel must report suspected Ebola cases **immediately** upon suspicion to the Oklahoma State Department of Health (OSDH) Acute Disease Service (ADS) by calling the Epidemiologist-on-Call at (405) 271-4060 (24/7/365 availability).

Who can healthcare providers and laboratory personnel contact for questions related to Ebola reporting, exposure risk assessment, laboratory protocols, and questions related to published guidelines?
For questions related to disease reporting, exposure risk assessment of patients with suspected Ebola, specimen collection for Ebola testing of patients that meet the Ebola case definition, and published state and federal guidelines, please contact the OSDH ADS Epidemiologist-on-Call at (405) 271-4060 (24/7/365 availability).

For questions related to specimen shipment supplies, packaging standards, and transport of specimens for Ebola testing, please contact the OSDH Public Health Laboratory (PHL) at (405) 271-5070.

Should healthcare facilities screen patients for Ebola?
Yes. Oklahoma healthcare facilities are recommended to routinely screen incoming patients for risk factors of Ebola. Screening questions for Ebola should include:
(a) Does this person have a travel history of visiting one of the West Africa countries where ongoing transmission of Ebola is occurring (Guinea, Liberia or Sierra Leone) within the previous 21 days; AND
(b) Does this person have a fever or other symptoms of illness consistent with Ebola?
If these two criteria are met, the patient should be placed into isolation and the healthcare provider should immediately call the ADS Epi-on-Call for consultation regarding further investigation.

The ADS has developed several resources for health providers, including signs advising patients to immediately notify a healthcare provider of a recent travel history to West Africa; Ebola screening questions healthcare providers should ask patients; and an evaluation algorithm for suspected Ebola cases. These resources are listed at the end of this document and/or can be accessed on the OSDH Ebola website at http://ebola.health.ok.gov.

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If a patient meets the clinical and travel criteria for Ebola, what actions will the OSDH take to prevent the spread of Ebola?

If a case of Ebola is identified in Oklahoma, the OSDH will collaborate with Oklahoma City County Health Department (OCCHD) and Tulsa Health Department (THD) as needed to take the following steps:

- Make recommendations regarding appropriate isolation precautions. If the patient does not comply with isolation, the OSDH will take steps to legally enforce compliance.
- Coordinate with healthcare providers to collect information about the patient, including travel and exposure history, illness symptoms, and dates and types of interactions the patient has had with other people since becoming symptomatic.
- Work with the healthcare facility to collect clinical specimens for laboratory testing to confirm the etiologic agent, Ebola or otherwise. Other illnesses to include in the patient's differential diagnoses are malaria, typhoid fever, dengue, meningococcal disease, Lassa fever, other viral hemorrhagic fevers such as Marburg, and other bacterial or viral enteric infections.
- Coordinate with the Centers for Disease Control and Prevention (CDC) for testing and support as necessary.
- If the patient is confirmed to have Ebola, the health department will identify and monitor close contacts of the ill individual. This includes, but is not limited to: household or other close contacts, healthcare providers, emergency medical services providers, and laboratory workers. Contacts will be monitored for 21 days from their last date of exposure to the case, and will be provided with instructions on limitations of activity and other measures to protect others and prevent the spread of disease. If contacts are required to be quarantined but do not comply, the OSDH will take steps to legally enforce compliance.
- Distribute advisories and recommendations to Oklahoma healthcare facilities regarding the occurrence of a case of Ebola.
- Notify the public and provide current educational resources regarding Ebola.

What are the symptoms of Ebola?

The first symptoms of Ebola include the sudden onset of fever, fatigue, muscle pain, and headache. This is followed by vomiting, diarrhea, rash, symptoms of impaired kidney and liver function, and in some cases, both 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.

How soon after exposure do symptoms usually occur?

Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, but the average is 8 to 10 days.

How is Ebola spread?

Ebola is spread from person to person through **direct contact** (through broken skin or mucous membranes) with blood or body fluids (such as urine, feces, saliva, vomit, sweat, breast milk, or semen) of a person who is sick with Ebola, or from someone who has died from Ebola. Blood, vomit, and feces are the most infectious body fluids. Ebola may also be spread through **indirect contact** with surfaces or objects (such as needles) that have been contaminated with the blood or body fluids of an Ebola patient.

Is Ebola an airborne virus?

Ebola virus is not an airborne virus. For a virus to be spread by the airborne route, it must be able to be suspended in the air for an undetermined amount of time. This has not been seen during extensive studies of the Ebola virus over several decades. On the contrary, consistent evidence from previous Ebola outbreaks shows that people became infected by direct, close contact with ill patients. Data from the current and previous Ebola outbreaks is inconsistent with the pattern of spread that is seen with airborne infections (e.g., measles, chickenpox, and TB). Airborne transmission may happen only when certain medical procedures are being performed, and body fluids can become briefly aerosolized. Healthcare workers should wear N95 respirators or PAPRs (powered air purifying respirators) when caring for an Ebola suspect or laboratory-confirmed Ebola patient to prevent the possibility of exposure during high-risk procedures and situations.

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When is a person with Ebola able to transmit the virus to other persons?
The Ebola virus can only be transmitted by a person who is experiencing symptoms of illness due to Ebola disease. The amount of virus in an Ebola patient's blood and body fluids increases as the person becomes more ill. In the later stages of illness, a person with Ebola becomes much more contagious. A person with Ebola is most contagious when having vomiting and diarrhea. Ebola virus has been found in semen for up to 3 months after illness. Abstinence from sex (including oral sex) is advised for at least 3 months after recovering from Ebola. If abstinence is not chosen, condoms may help prevent the spread of disease. A summary of the peer-reviewed literature regarding the human-to-human transmission of Ebola virus can be accessed on the CDC website: http://www.cdc.gov/vhf/ebola/transmission/human-transmission.html.

How long is someone who has Ebola considered contagious?
A person with Ebola is considered contagious as long as the virus can be detected in their blood. Blood samples collected from an Ebola patient are tested by polymerase chain reaction (PCR) and must be negative on two consecutive days for someone to be considered non-contagious. An Ebola survivor will be considered non-contagious and ready for discharge when this laboratory testing criteria is met.

How long can Ebola live outside the body?
The length of time Ebola can live on surfaces or objects depends on several factors including temperature, humidity, and presence of body fluids. Ebola virus can live for up to several hours on dry surfaces such as doorknobs or countertops, under optimal conditions; however, virus in blood or other body fluids can live up to several days at room temperature.

Ebola virus can be destroyed with hospital-grade disinfectants that indicate activity against non-enveloped viruses such as norovirus, rotavirus, adenovirus, and poliovirus. Interim guidance for environmental infection control in hospitals for Ebola can be accessed on the CDC website: http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html.

If a person experiences illness due to Ebola and survives, what is the duration of immunity from future exposure?
Studies show that people who recover from Ebola develop antibodies that last for at least 10 years, and possibly longer. It isn't known if people who recover are immune or if they can become infected with a different species of *Ebolavirus*. Most experts agree that survivors are protected from becoming ill from the same strain of Ebola for an undefined period of time.

Should healthcare providers notify the OSDH of a patient that has traveled in the last 21 days to one of the Ebola-affected areas?
Yes. Healthcare providers should notify the OSDH ADS Epi-on-Call at (405) 271-4060 (24/7/365 availability) immediately to report any patient that traveled to one of the affected areas in West Africa and thinks they may have been exposed to Ebola. An ADS epidemiologist will work with the healthcare provider to conduct an exposure assessment to determine how the individual should be monitored by the health department for development of symptoms during the 21 days since their last date of exposure. Compliance with the monitoring procedures will be legally enforced by OSDH.

Are there resources to help healthcare facilities prepare for managing patients with Ebola?
Yes. Every hospital should ensure that their staff can detect a patient suspected to have Ebola, protect healthcare workers so they can safely care for the patient, and respond in a coordinated fashion. At the end of this document are several websites that have information for healthcare facilities to provide safe care for patients who may have Ebola. The ADS Epi-on-call is also available 24/7/365 for consultation by calling (405) 271-4060.

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What are the key points for healthcare workers regarding use of personal protective equipment (PPE) while caring for a person ill with Ebola?

On October 20, 2014, the CDC released new PPE guidance which emphasizes the importance of **training, practice, competence, and observation** of healthcare workers in correctly donning and doffing of PPE selected by the facility. This guidance contains the following key principles:

- Prior to working with Ebola patients, all healthcare workers involved in the care of Ebola patients must have received repeated training, and have demonstrated competency in performing all Ebola-related infection control practices and procedures, specifically in donning/doffing proper PPE.
- While working in PPE, healthcare workers caring for Ebola patients should have no skin exposed.
- The overall safe care of Ebola patients in a facility must be overseen by an onsite manager at all times, and each step of every PPE donning/doffing procedure must be supervised by a trained observer to ensure the safe completion of established PPE protocols.

Key safe work practices in the revised infection control guidance include the following:

- Identify and isolate the Ebola patient in a single patient room with a closed door and a private bathroom as soon as possible.
- Limit the number of healthcare workers who come into contact with the Ebola patient and restrict non-essential personnel and visitors from the patient care area.
- Monitor the patient care area at all times, and log at a minimum the times of entry and exit of all healthcare workers who enter the room of an Ebola patient.
- Ensure that a trained observer watches closely each donning and each doffing procedure, and provides supervisory assurance that donning and doffing protocols are followed.
- Healthcare workers need sufficient time to don and doff PPE correctly without distractions or disturbances.
- Practical precautions must be taken during patient care, such as keeping hands away from the face, limiting touch of surfaces and body fluids, preventing needlestick and sharps injuries, and performing frequent disinfection of gloved hands using an alcohol-based hand rub, particularly after handling body fluids.
- Disinfect immediately any visibly contaminated PPE surfaces, equipment, or patient care area surfaces using an EPA-registered disinfectant wipe.
- Perform regular cleaning and disinfection of patient care area surfaces, even if visible contamination is not present. This should be performed only by nurses or physicians who are caring for the patient, to limit the number of additional healthcare workers who enter the room.
- Implement observation of healthcare workers in the patient room, if possible (e.g., glass-walled intensive care unit [ICU] room, video link) to detect and address any possible exposures or breaches.
- Establish a facility exposure management plan that addresses decontamination and follow-up of an affected healthcare worker in case of any unprotected or other exposure. Training on this plan and follow-up should be part of the healthcare worker training.
- PPE donning and doffing training is available online on the CDC website http://www.cdc.gov/vhf/ebola/hcp/ppe-training/index.html?s_cid=cs_021. Some trainings are being held across the state. For more information, contact the Epi-on-call at (405) 271-4060.

The complete infection control guidance can be accessed on the CDC website: http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html.

What do hospitals need to know when planning for environmental infection control?

As part of the care of patients who are persons under investigation, or with probable or confirmed Ebola virus infections, hospitals are recommended to:

- Be sure environmental services staff wear recommended PPE to protect against direct skin and mucous membrane exposure of cleaning chemicals, contamination, and splashes or spatters during any environmental cleaning and disinfection activities.
- Use a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim for activity against non-enveloped viruses (e.g., norovirus, rotavirus, adenovirus, poliovirus) to disinfect environmental surfaces in rooms of patients with suspected or confirmed Ebola virus infection.
- Avoid contamination of reusable porous surfaces that cannot be made single use items.

The complete environmental infection control guidance, including frequently asked questions, can be accessed on the CDC website: http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html.

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How can healthcare facilities determine whether a particular EPA-registered hospital disinfectant is appropriate for use in the room of a patient with suspected or confirmed Ebola virus infection?
Look at the product label or product insert or, if these are not available, search the EPA website at www.epa.gov/ for this information. Users should be aware that an 'enveloped' or 'non-enveloped virus' designation may not be included on the container label. Instead check the disinfectant's label for at least one of the common non-enveloped viruses (e.g., norovirus, rotavirus, adenovirus, poliovirus, etc.).

Has a hospital in Oklahoma volunteered to receive patients with Ebola?
Yes. A designated Ebola treatment center has been constructed in a decommissioned hospital facility on the University of Oklahoma Health Sciences Center campus that will be managed by the OU Medical Center. According to state-level hospital preparedness plans, an Oklahoma patient confirmed with Ebola virus disease will be transported to this facility for continued management and care. The facility may determine on a case by case basis if an individual will be transported prior to confirmation based on exposure information and severity of illness.

Is Ebola testing available in Oklahoma?
Yes, the OSDH PHL has developed the capacity for Ebola virus testing by PCR. Any specimen that tests negative at the PHL, is a confirmed negative. Specimens that test positive may need to be forwarded to the CDC Special Viral Pathogens Laboratory for confirmatory testing and viral load evaluation. Epidemiologic consultation with an OSDH epidemiologist will be required BEFORE a specimen can be received by the PHL for Ebola testing.

Online healthcare information and resources:

- OSDH Ebola website: http://ebola.health.ok.gov
- CDC's Ebola website: http://www.cdc.gov/vhf/ebola/index.html
- Detailed hospital preparedness checklist: http://www.cdc.gov/vhf/ebola/pdf/hospital-checklist-ebola-preparedness.pdf
- Checklist for patients being evaluated for Ebola virus disease: http://www.cdc.gov/vhf/ebola/pdf/checklist-patients-evaluated-us-evd.pdf
- Guidance for personal protective equipment: http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html
- PPE donning and doffing website training modules: http://www.cdc.gov/vhf/ebola/hcp/ppe-training/index.html?s_cid=cs_021.
- Guidance for environmental infection control: http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html
- Guidance for specimen collection, testing, and transport: http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html
- Guidance for safe specimen management: http://www.cdc.gov/vhf/ebola/hcp/safe-specimen-management.html.
- Guidance for medical waste management: http://www.cdc.gov/vhf/ebola/hcp/medical-waste-management.html;
- Guidance for emergency responders: http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-emergency-medical-services-systems-911-public-safety-answering-points-management-patients-known-suspected-united-states.html