

Laboratory Testing

Timeline of Infection	Diagnostic tests available
Within a few days after symptoms begin	<ul style="list-style-type: none"> ▪ Antigen-capture enzyme-linked immunosorbent assay (ELISA) testing ▪ IgM ELISA ▪ Polymerase chain reaction (PCR) ▪ Virus isolation
Later in disease course or after recovery	<ul style="list-style-type: none"> ▪ IgM and IgG antibodies
Retrospectively in deceased patients	<ul style="list-style-type: none"> ▪ Immunohistochemistry testing ▪ PCR ▪ Virus isolation

Notification and consultation

Hospitals should contact KDHE (Epidemiology Hotline: 877-427-7317) for notification and consultation for Ebola testing requests before contacting the CDC. The CDC cannot accept any specimens without prior consultations with KDHE.

Specimen collection

Ebola is detected in the blood only after the onset of symptoms (may take up to three days). Specimens should be collected when a symptomatic patient reports to a health care facility and is suspected of having an Ebola virus exposure. If the onset of symptoms is less than three days, a subsequent specimen may be needed to rule out Ebola virus if the first specimen tests negative. A minimum volume of four milliliters of whole blood preserved with EDTA is preferred, but whole blood preserved with sodium polyanethol sulfonate (SPS), citrate, or clot activator can be submitted for Ebola testing. Specimens should be shipped at 2-8 degrees C on cold packs. Do not freeze specimens (differs from CDC guidance as we are concerned a specimen that is frozen but cycles from frozen to thawed may not render an accurate test result). Do not submit glass containers. Do not submit specimens preserved in heparin tubes.

Packing and shipping specimens for Ebola virus testing

Specimens collected for Ebola virus disease testing should be packaged and shipped without opening collection tubes or aliquot specimens. Specimens for shipment should be packaged following the basic triple packaging system, which consists of a primary container (a sealable specimen bag) wrapped with absorbent material, secondary container (watertight, leak-proof), and an outer shipping package. See Appendix 5 for packaging guidance. Persons responsible for packing and shipping any specimen for Ebola testing should be trained to ship Category A infectious substances. Contact the KDHE Epidemiology Hotline for required submission documents and additional shipping guidance.

Note: In most cases, KDHE anticipates advising submitting laboratories to send specimens directly to the CDC rather than to the Kansas Health and Environmental Laboratories (KHEL). This will be managed on a case-by-case basis.

Transporting specimens within the hospital / institution

In compliance with 29 CFR 1910.1030, specimens should be placed in a durable, leak-proof secondary container for transport within a facility. To reduce the risk of breakage or leaks, do not use any pneumatic tube system for transporting suspected Ebola virus disease specimens.

Centers for Disease Control and Prevention Guidelines

The CDC published its latest guidelines regarding managing and testing routine clinical specimens when there is a concern about EVD in March, 2015. This guidance stresses that the likelihood of EVD is very low among travelers returning from affected countries and consideration of EVD should not delay diagnostic assessments, laboratory testing, and appropriate care for other, more likely medical conditions. The CDC guidance also includes information regarding the appropriate selection of laboratory equipment, including considerations for point of care testing. Companion CDC guidance regarding collection, transport, and submission of specimens for Ebola virus testing was updated in January, 2015. These documents are available at <http://www.cdc.gov/vhf/ebola/healthcare-us/laboratories/index.html> and are also included as Appendix 6. KDHE is replacing its previous guidance from the American Society for Microbiology with the more recent CDC guidance.