Kansas
Department of Health and Environment

Ebola Virus Preparedness and Response Plan

Joint Committee on Kansas Security
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Attachment 8

Version History			
Version	Date	Description	Principal Author
1.0	18 August 2014	Initial version	D. Charles Hunt
1.1	02 October 2014	Minor edits with updated guidance and references	D. Charles Hunt
2.0	21 October 2014	Updated Background and Situation Update Updated exposure category criteria Updated monitoring and health care / public health actions to be taken for persons exposed to Ebola virus Added more detailed information regarding infection prevention, environmental infection control, laboratory testing, and public health management of suspected EVD cases and contacts Added detailed packaging and shipping guidance for laboratory testing Added animal management section Formatting and structural changes	D. Charles Hunt
2.1	27 October 2014	Updated PPE guidance and simplified format Added waste management flowchart	D. Charles Hunt
3.0	31 October 2014	Changed terminology of KDHE PPE guidance from "optimal" and "minimal" to "Tier 1" and "Tier 2" Updated guidance on handling of human remains of EVD patients	D. Charles Hunt

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Background and Situation Update

There are currently two separate outbreaks of Ebola virus disease (EVD) in Africa. The first outbreak was first reported in March, 2014 in the West African nations of Guinea, Liberia, Nigeria, and Sierra Leone. This is the largest EVD outbreak ever recorded and the first in West Africa. The second outbreak began in the Democratic Republic of the Congo in August, 2014. Updated case counts from the outbreaks in West Africa and the Democratic Republic of the Congo are available from the U.S. Centers for Disease Control and Prevention website at http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html and http://www.cdc.gov/vhf/ebola/outbreaks/drc/2014-august.html, respectively. Counts are frequently updated.

On 08 August 2014, the World Health Organization (WHO) declared the current Ebola outbreak in West Africa as a Public Health Emergency of International Concern (PHEIC).

The Centers for Disease Control and Prevention (CDC) has issued Level 3 Travel Advisories (avoid nonessential travel) for Liberia, Guinea, and Sierra Leone. A map of Africa is provided in Figure 1. A Level 2 Travel Advisory had been issued for Nigeria, but was reduced to Level 1 (watch) on 07 October 2014 because of the reduced risk of Ebola virus disease in Nigeria. All persons in Nigeria who were sick with Ebola virus disease have now either died or recovered. Contacts of these patients have completed their 21-day monitoring period and are no longer at risk for getting sick with Ebola. Persons who entered Nigeria on or after 30 September 2014 are not at risk for exposure to Ebola. A Level 2 Travel Advisory (practice enhanced precautions) for the Democratic Republic of the Congo remains in effect (Figure 2). Humanitarian assistance is considered ***essential*** travel.

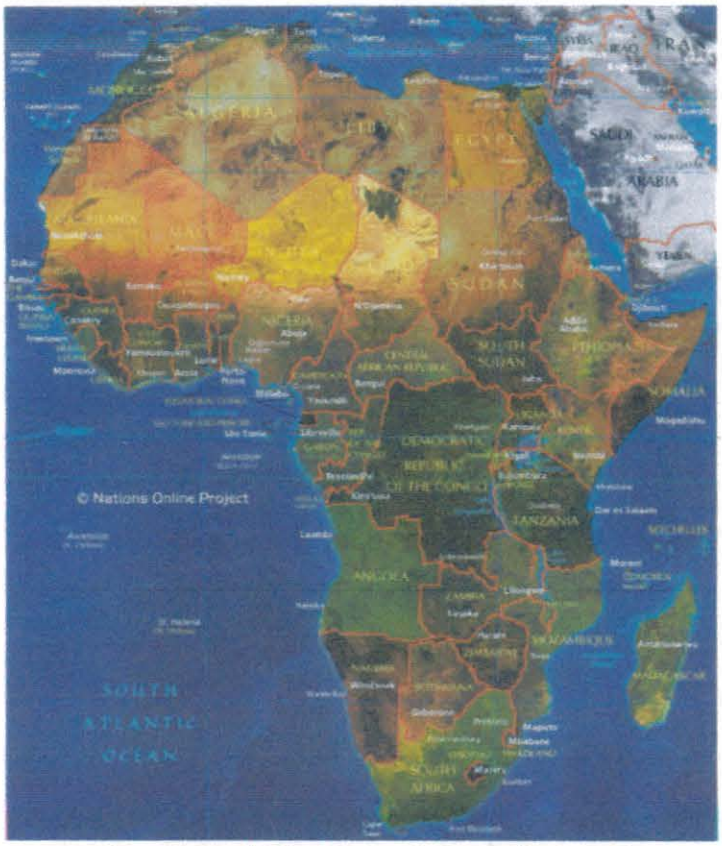


Figure 1: Map of Africa (Courtesy Nations Online Project)

On 30 September 2014, the CDC confirmed the first imported case of EVD in the United States in a person in Dallas, Texas who had traveled from Liberia. This patient was hospitalized at Texas Presbyterian Hospital, and died on Wednesday, 08 October 2014. On 12 October 2014, a health care worker at Texas Presbyterian Hospital who provided care for the index patient tested positive for Ebola virus infection. On 15 October 2014, a second health care provider who had provided care for the index patient tested positive for Ebola virus infection.

Although Ebola virus transmission from an infected patient to two health care providers has now been documented in the Texas case, sustained transmission of EVD in Kansas or the United States is highly unlikely. However, so long as the outbreaks in West Africa and the Democratic Republic of the Congo continue, additional travel-associated cases among persons with recent travel to EVD-affected countries could be anticipated.

Health care workers are advised when evaluating any patients with signs and symptoms compatible with EVD to collect a thorough travel and exposure history, and ensure that such history is communicated to the entire care team to assist with clinical decision-making. If a patient meets the case definition, has signs and symptoms compatible with EVD, and traveled within one of the affected countries in the preceding 21 days, they should be immediately isolated with appropriate protections put in place to protect public and personal health.

About Ebola Virus

Most notably, Ebola virus causes Ebola hemorrhagic fever (Ebola HF), which is one of numerous viral hemorrhagic fevers. It is a severe, often fatal disease in humans and nonhuman primates (such as monkeys, gorillas, and chimpanzees).

Ebola HF is caused by infection with a virus of the family *Filoviridae*, genus *Ebolavirus*. When infection occurs, symptoms typically begin within eight to 10 days. The first *Ebolavirus* species was discovered in 1976 in what is now the Democratic Republic of the Congo near the Ebola River. Since then, outbreaks have appeared sporadically.

There are five identified subspecies of *Ebolavirus*. Four of the five have caused disease in humans: Ebola virus (*Zaire ebolavirus*); Sudan virus (*Sudan ebolavirus*); Taï Forest virus (*Taï Forest ebolavirus*, formerly *Côte d'Ivoire ebolavirus*); and Bundibugyo virus (*Bundibugyo ebolavirus*). The fifth, Reston virus (*Reston ebolavirus*), has caused disease in nonhuman primates, but not in humans.

The natural reservoir host of Ebola virus remains unknown. However, on the basis of available evidence and the nature of similar viruses, researchers believe that the virus is zoonotic (animal-borne) with bats being the most likely reservoir. Four of the five subtypes occur in an animal host native to Africa.

A host of similar species is probably associated with Reston virus, which was isolated from infected cynomolgous monkeys imported to the United States and Italy from the Philippines. Several workers in the Philippines and in U.S. holding facility outbreaks became infected with the virus, but did not become ill.

Since first being discovered in 1976, there have been more than 30 events of cases and outbreaks of Ebola virus disease (range: 1 human case to 425 human cases prior to the current outbreaks).

Signs and Symptoms

Symptoms of Ebola HF typically include fever, headache, joint and muscle aches, weakness, diarrhea, vomiting, stomach pain, and loss of appetite. Some patients may also experience a rash, red eyes, hiccups, cough, sore throat, chest pain, difficulty breathing, difficulty swallowing, and bleeding inside and outside of the body.

The typical incubation period (time between exposure and onset of symptoms) is eight to 10 days, though the range is two days to 21 days.

Transmission of Ebola Virus

The natural reservoir (i.e., host species) of Ebola virus and the manner by which the first human infection(s) occur at the beginning of an outbreak have not been definitively determined. The

prevailing hypothesis is that human infections first occur through contact with an infected animal.

Ebola virus can be transmitted from person to person by:

- Direct contact with the blood or secretions of an infected person
- Exposure to objects (such as needles) that have been contaminated with infected secretions

Ebola virus is not transmitted from person to person through the air, water, or food.

Diagnosis

Diagnosis of EVD during the early course of illness may be difficult because the symptoms are not specific to EVD. If EVD is suspected, several laboratory tests are available to confirm the diagnosis. Additional details regarding laboratory testing are presented in the "Evaluation and Management of Suspected EVD Cases: Information for Health Care Providers, Emergency Medical Services Personnel, and Public Health Officials" section below.

Treatment

Standard treatment for EVD is still limited to supportive therapy. This consists of:

- Balancing the patient's fluids and electrolytes
- Maintaining their oxygen status and blood pressure
- Treating them for any complicating infections

Management of Persons Potentially Exposed to Ebola Virus and Suspected EVD Cases

The Guinean Ministry of Health, the Ministry of Health and Sanitation of Sierra Leone, the Ministry of Health and Social Welfare of Liberia, and the Nigerian Ministry of Health are working with national and international partners to investigate and respond to the outbreak. The CDC is assisting with active screening and education efforts on the ground in the affected countries to prevent sick travelers from getting on planes. In addition, airports in the affected countries are screening all outbound passengers for Ebola symptoms, including fever, and passengers are required to respond to a health care questionnaire.

On 08 October 2014, the CDC announced plans to begin entry screening of passengers arriving from the Ebola-affected countries of Guinea, Liberia, and Sierra Leone at five U.S. airports – New York's JFK International Airport, Washington-Dulles, Newark, Chicago-O'Hare, and Atlanta. Together, more than 94 percent of all travelers to the Ebola-affected countries arrive through these five airports. This screening process was initiated on Saturday, 11 October at JFK International Airport, with the process being implemented at the remaining four airports the week of 12 October. The screening consists of observing entering travelers for general overt signs of illness, asking a series of health and exposure questions, providing information about

Ebola virus disease and self-monitoring for symptoms, and temperature measurement by trained medical staff.

Nonetheless, there is the potential for additional persons to have been exposed to Ebola virus in the affected countries to arrive in the United States, including Kansas.

The Kansas Department of Health and Environment's Bureau of Epidemiology and Public Health Informatics (KDHE-BEPHI) has developed a Disease Investigation Guideline for viral hemorrhagic fever (www.kdheks.gov/epi/Investigation_Guidelines/VHF_Disease_Investigation_Guideline.pdf), which has been updated. This Ebola Virus Preparedness and Response Plan is not intended to replace the KDHE Disease Investigation Guideline, but rather provides specific information relevant to the current outbreaks in West Africa and the Democratic Republic of the Congo.

Risk Assessment

As noted above, the CDC and Customs and Border Protection (CBP) are conducting entry screening of travelers who have traveled from or through Guinea, Liberia, or Sierra Leone. The CDC will distribute contact information for screened passengers to the state health department based on the passenger's residence. For persons arriving in Kansas with known travel to or residence in one of the affected countries within the previous 21 days, KDHE, the local health department, health care provider, or other organization in consultation with KDHE or the local health department will conduct a risk assessment (Appendix 1). This risk assessment is based on exposure guidelines recommended by the CDC. The health care facility and public health actions to be taken are based on three defined levels of exposure risk and whether or not persons are experiencing any potential signs or symptoms of EVD. There are special considerations for health care and laboratory workers.

The risk assessment will focus on contact with persons known or suspected to have EVD, including visiting or working in health care facilities, household contact with or providing in-home care to persons with potential EVD, or other activities that could pose a risk of transmission.

As in most previous outbreaks, those at highest risk of EVD are health care workers and family and other close contacts of patients with EVD. The risk assessment includes details for health care workers regarding contact with patients known or suspected to have EVD and infection prevention practices, including use of personal protective equipment and potential breaches in infection prevention practices.

Persons undergoing a risk assessment will be classified into one of three exposure categories: 1) high risk, 2) some risk of exposure, and 3) no known exposure. Health care facility / provider and public health actions to be taken will be based on the exposure category and clinical criteria (Appendix 2).

Monitoring and Restricted Movement

For persons with potential exposure to EVD, monitoring for EVD symptoms and restricted movement may be indicated as detailed in Appendix 2. Persons undergoing public health or self-monitoring shall be given information about EVD and an instruction sheet for self-monitoring (Appendix 3).

Asymptomatic persons classified as having either a high-risk exposure or at some risk of exposure within the preceding 21 days will undergo active monitoring and must remain at their residence or other living location as determined by KDHE or the local health officer (restricted movement) for a period of 21 days following their last potential exposure; any movement outside the residence or other living location must be approved in advance by KDHE or the local health officer on a case-by-case basis. During this 21-day period of restricted movement, there shall be no visitors to the residence or living location except those approved by KDHE or the local health officer in advance. Active monitoring will entail self-monitoring for fever and other potential symptoms of Ebola virus infection twice per day until 21 days since last potential exposure, with the added requirement of public health follow-up. This information shall be recorded on a log sheet (Appendix 3). KDHE or the local health department will conduct ***daily*** follow-up with persons under active monitoring to ensure compliance with self-monitoring, assess symptoms, and discuss any potential concerns. This follow-up should be done via telephone or videoconference rather than in person to avoid any potential additional exposure to Ebola virus should symptoms develop.

Failure to comply with the provisions of active monitoring or restricted movement may result in the issuance of more restrictive quarantine orders pursuant to K.S.A. 65-119, K.S.A. 65-128 and K.A.R. 28-1-5.

Persons with no known exposure shall also be subjected to active monitoring, but the only movement restrictions will be a prohibition on travel by commercial conveyances (e.g., airplane, train, bus, taxi, boat or cruise vessel, etc.).

Any person undergoing either active monitoring or self-monitoring who develops a fever (≥ 38.0°C / 100.4°F **OR** subjective history of fever) ***or other symptoms of EVD*** shall immediately contact the **KDHE Epidemiology Hotline at 877-427-7317**. If such persons contact a health care provider or local health department worker first, then the health care provider or local health department worker shall have the responsibility for contacting KDHE. A KDHE Epidemiologist is on call 24 hours per day. The on-call Epidemiologist shall assess self-reported symptoms to determine appropriate public health actions.

Local health departments and other agencies should develop local plans to ensure basic needs of those persons whose movement is restricted are met. Such needs likely include food and other household necessities, etc.

Special Considerations for Health Care Workers and Other Potential Occupational Exposure to Ebola Virus

Health care workers, broadly defined as any person working in a health care setting (including laboratory workers and emergency responders), and other workers who are potentially exposed to Ebola virus while caring for a patient with EVD or during environmental cleanup activities will be subject to the same requirements for active monitoring and restricted movement as any other person, with the following exceptions.

Workers who utilize the Tier 1 level of personal protective equipment (PPE) as detailed in Appendix 4 will be exempt from the 21-day restricted movement period that begins after their last contact with the patient or potentially infectious materials. Active monitoring and a prohibition on travel by commercial conveyances will still apply for these individuals. However, if the employee reports or is observed by a PPE trained observer to have experienced a needle stick or breach in PPE protocol, the full 21-day restricted movement period will apply.

Health care workers potentially exposed to Ebola virus who utilize a lower than optimal level of PPE during patient care will be subjected to active monitoring and restricted movement, except such workers may continue to work as part of a dedicated Ebola virus disease patient care team, and may not provide care or services to any other patient, until 21 days after the last known potential exposure.

Evaluation and Management of Suspected EVD Cases: Information for Health Care Providers, Emergency Medical Services Personnel, and Public Health Officials

Patients with recent travel (i.e., within the previous 21 days) from countries with current outbreaks or local transmission of EVD who present with fever could have other potentially fatal infectious diseases that should be considered in the differential diagnosis, including but not limited to malaria, typhoid fever, and bacterial infections such as pneumonia.

Evaluate all patients with symptoms consistent with EVD for travel to Guinea, Liberia, Sierra Leone, or the Democratic Republic of the Congo within 21 days (three weeks) of symptom onset. Persons who entered Nigeria on or after 30 September 2014 are not at risk for exposure to Ebola.

Report all suspect EVD cases within four (4) hours to the KDHE Epidemiology Hotline:

877-427-7317

Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease in U.S. Hospitals

Though these recommendations focus on the hospital setting, the recommendations for PPE and environmental infection control measures are applicable to any health care setting. In this guidance health care personnel (HCP) refers all persons, paid and unpaid, working in health care settings who have the potential for exposure to patients or to infectious materials, including body

substances, contaminated medical supplies and equipment, contaminated environmental surfaces, or aerosols generated during certain medical procedures. HCP include, but are not limited to, first responders, physicians, nurses, nursing assistants, therapists, technicians, emergency medical service personnel, morticians, dental personnel, pharmacists, laboratory personnel, autopsy personnel, students and trainees, contractual personnel, home health care personnel, and persons not directly involved in patient care (e.g., clerical, dietary, house-keeping, laundry, security, maintenance, billing, chaplains, and volunteers) but potentially exposed to infectious agents that can be transmitted to and from HCP and patients. This guidance is not intended to apply to persons outside of health care settings.

All persons entering the hospital room of a patient with suspected or confirmed Ebola should adhere to the KDHE PPE guidance as detailed in Appendix 4. It is important to note that individuals who utilize the Tier 1 level of personal protective equipment (PPE) as detailed in Appendix 4 will be exempt from the 21-day restricted movement period that begins after their last contact with the patient or potentially infectious materials. Active monitoring and a prohibition on travel by commercial conveyances will still apply for these individuals. However, if the employee reports or is observed by a PPE trained observer to have experienced a needle stick or breach in PPE protocol, the full 21-day restricted movement period will apply. However, if the employee reports or is observed by a PPE monitor to have experienced a needle stick or breech in contact/droplet protocol, the full 21-day restricted movement period will apply. Health care workers potentially exposed to Ebola virus who utilize a lower than Tier 1 level of PPE during patient care will be subjected to active monitoring and restricted movement, except such workers may continue to work as part of a dedicated Ebola virus disease patient care team, and may not provide care or services to any other patient, until 21 days after the last known potential exposure.

At a minimum, enhanced standard, contact, and droplet precautions, as outlined below, are recommended for management of patients with known or suspected EVD. Note that this guidance outlines only those measures that are specific for EVD; additional infection control measures might be warranted if an EVD patient has other conditions or illnesses for which other measures are indicated (e.g., tuberculosis, multi-drug resistant organisms, etc.).

As new information becomes available, these recommendations will be re-evaluated and updated as needed. These recommendations are based upon the most current information available and the following considerations:

- High rate of morbidity and mortality among infected patients
- Risk of human-to-human transmission
- Lack of FDA-approved vaccine and therapeutics

If a patient in a Kansas health care facility is suspected or known to have EVD, health care facilities should:

- Isolate the patient: Patients should be isolated in a single patient room (containing a private bathroom whenever possible) with the door closed.
- Wear appropriate PPE as recommended in Appendix 4, including the use of a trained observer.

- Restrict visitors: Avoid entry of visitors into the patient's room. Exceptions may be considered on a case-by-case basis for those who are essential for the patient's wellbeing. Ensure that visitors wear appropriate PPE. A logbook should be kept to document all persons entering the patient's room. See CDC's infection control guidance on procedures for monitoring, managing, and training of visitors.
- Avoid aerosol-generating procedures: If performing these procedures is necessary, they should be performed in an airborne infection isolation room.
- Implement environmental infection control measures: Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials are of paramount importance, as blood, sweat, vomit, feces, urine, and other body secretions represent potentially infectious materials and should be handled following hospital protocols.

Additional guidance and information can be found in Appendix 4, including a one-page guide for PPE.

Special Considerations for Outpatient Settings

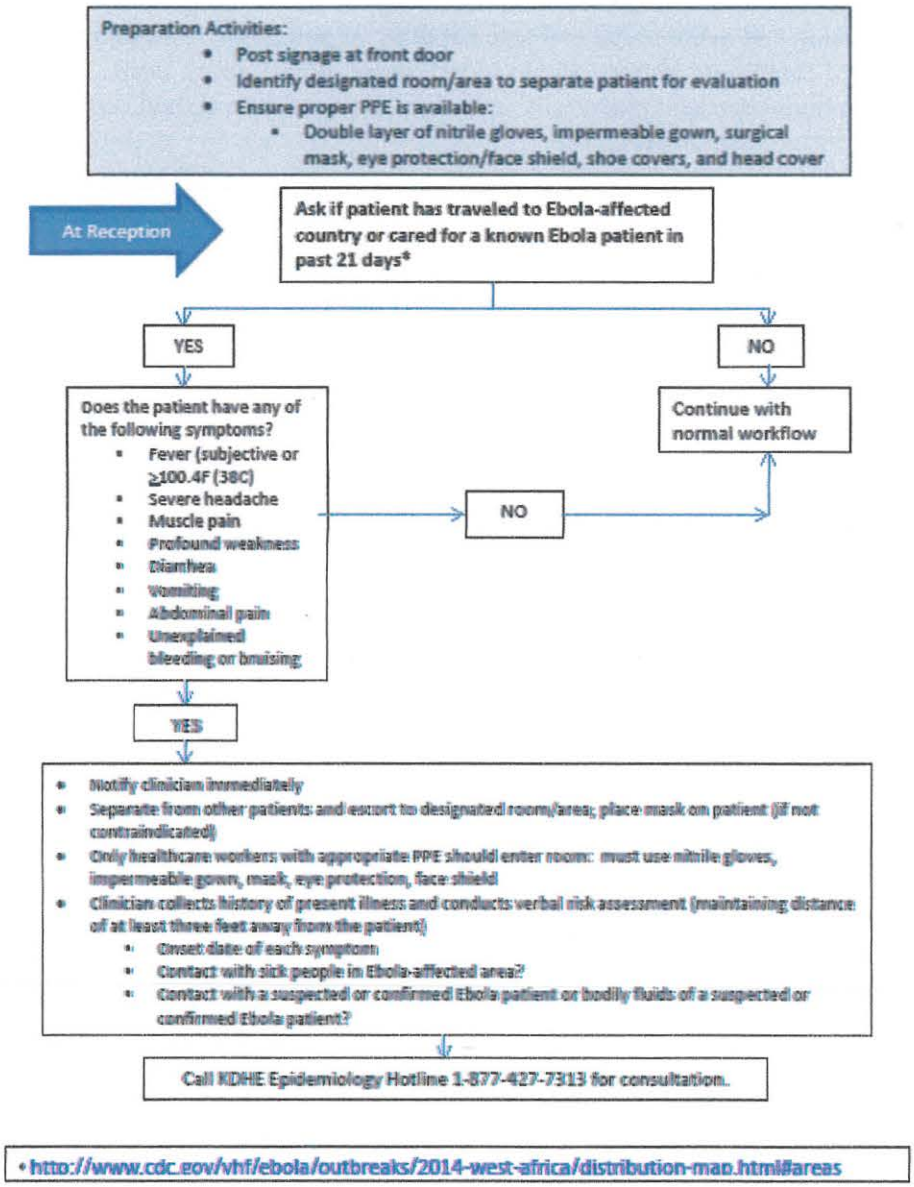
Patients with suspected Ebola virus disease (i.e., those with pertinent travel history and symptoms consistent with EVD) should be immediately given a surgical mask to don (if tolerated and not medically contraindicated), placed in an isolation gown and isolated in a private patient room. If feasible, facilities should consider utilizing a bathroom for this purpose to facilitate environmental cleaning and decontamination. A chair or two can be placed in the bathroom for the patient to sit; however, if they are ill and require lying down, the facility should identify the best room to do this and prevent other staff/visitors from entering until the final disposition of the patient is determined.

Health care workers in outpatient settings should minimize potential exposure to a patient with suspected EVD by maintaining a distance of at least three feet from patient and avoiding provision of direct, hands-on patient care. If direct patient care is required until the patient is transferred and the patient is ill, complete skin coverage is the PPE goal. In the outpatient setting this could be accomplished as quickly as possible by donning appropriate personal protective equipment. This should include double gloves, impermeable gown, surgical mask, full face shield (alone or in combination with indirectly vented, anti-fog coated goggles that can be worn under the face shield without compromising the integrity of full face protection), shoe covers, and head cover. Ideally, the goal is that no skin is exposed.

Suspected EVD patients should be transported to an appropriate referral hospital in the private vehicle they arrived in with law enforcement escort, if feasible. The outpatient clinic should first notify the referral hospital prior to transporting the patient and make arrangements to be called to confirm the patient arrived. A flowchart for evaluating suspected Ebola virus disease patients is presented in Figure 2.

Figure 2

KDHE Interim Guidelines for Evaluation of Suspected EVD Patients at Outpatient Clinic and Physician's Offices



* http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html#areas

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Laboratory Testing

Timeline of Infection	Diagnostic tests available
Within a few days after symptoms begin	▪ Antigen-capture enzyme-linked immunosorbent assay (ELISA) testing ▪ IgM ELISA ▪ Polymerase chain reaction (PCR) ▪ Virus isolation
Later in disease course or after recovery	▪ IgM and IgG antibodies
Retrospectively in deceased patients	▪ 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.

American Society for Microbiology Guidelines

KDHE strongly recommends limited laboratory testing for patients with suspected or confirmed EVD. Point of care testing should be conducted whenever feasible. The American Society for Microbiology (ASM) published its second version of "Interim Laboratory Guidelines for Handling / Testing Specimens from Cases or Suspected Cases of Hemorrhagic Fever Virus" on 10 September 2014. KDHE recommends laboratories consider adopting these guidelines as enhanced precautions. These guidelines are available at https://www.asm.org/images/PSAB/Ebola9-10-14.pdf), and a copy is attached as Appendix 6.

Public Health Management of Suspected EVD Cases

Pursuant to K.S.A. 65-118 and K.A.R. 28-1-2, Ebola virus is considered a "…disease unusual in incidence or behavior…" [as delineated in K.A.R. 28-1-2(a)(52)] and suspected cases of Ebola virus disease must be reported to KDHE by telephone within four (4) hours (Epidemiology Hotline: 877-427-7317). The KDHE-BEPHI will work with the local health department to immediately initiate case and contact investigations so public health measures to prevent potential transmission of Ebola virus can be implemented.

As noted above, KDHE-BEPHI has a detailed Disease Investigation Guideline (DIG) for viral hemorrhagic fever that should be utilized by KDHE and local health department staff (www.kdheks.gov/epi/Investigation_Guidelines/VHF_Disease_Investigation_Guideline.pdf).

Persons with suspected EVD shall be managed as described in the "Management of Persons Potentially Exposed to Ebola Virus and Suspected EVD Cases" section of this document. There are no specific Kansas regulations related to isolation of persons with EVD or quarantine of persons exposed to Ebola virus. Therefore, the provisions of K.A.R. 28-1-5, which specifies that the secretary of Kansas Department of Health and Environment or the local health officer shall order and enforce isolation and quarantine based on current medical knowledge of the particular infectious agent, apply. Statutory authority is provided in K.S.A. 65-101, 65-119, 65-128, and 65-202.

Persons in Kansas who have potential exposures to Ebola virus from a patient with EVD in Kansas or elsewhere in the United States shall be managed in a similar manner as those persons potentially exposed to Ebola virus in other countries; however, contact investigations and associated risk assessments shall be the responsibility of KDHE or the local health department.

Environmental Infection Control

Although risk factors for environmental transmission of Ebola virus are not well understood, there is limited evidence from laboratory studies that Ebola virus can remain viable on solid surfaces under certain environmental conditions for several days. According to the CDC, there is no epidemiologic evidence of environmental Ebola virus transmission via fomites (e.g., bed rails, door knobs, laundry, etc.). However, environmental infection control measures are prudent given the low infectious dose, the potential of high virus titers in blood (and other bodily fluids like vomitus and stool) of ill patients, and the severity of EVD.

There is likely to be considerable amounts of medical waste generated during the course of providing care for a patient with EVD and other waste generated during environmental cleaning and disinfection in health care settings and in community settings.

The U.S. Department of Transportation (DOT) has classified Ebola virus as a Category A infectious substance per its Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180). Any item transported offsite for disposal that is contaminated or suspected of being contaminated with a Category A infectious substance must be packaged and transported in accordance with the HMR. This includes medical equipment, sharps, linens, and used health care products (such as soiled absorbent pads or dressings, kidney-shaped emesis pans, portable toilets, used personal protection equipment (gowns, masks, gloves, goggles, face shields, respirators, booties, etc.) or byproducts of cleaning) contaminated or suspected of being contaminated with a Category A infectious substance.

On 06 October 2014, KDHE issued a written policy pursuant to K.S.A. 65-3430(e)(1)(B) and K.S.A. 65-101(a)(2) and (5) that defines Ebola virus and other hemorrhagic fever viruses as hazardous waste.

KDHE is basing this guidance regarding the treatment, storage, and disposal of Ebola waste based upon guidance and requirements established by KDHE and the World Health Organization, the CDC, and the DOT.

For the purposes of this document, Ebola waste means any untreated medical waste generated in the care of patients with known or suspected Ebola virus disease (EVD) including, but not limited to, medical equipment, sharps, linens, and used health care products, used PPE, and all absorbent or uncleanable items contaminated or potentially contaminated by a suspected EVD patient. Ebola waste is a Category A infectious substance and a Resource Conservation and Recovery Act (RCRA) hazardous waste in the State of Kansas. A RCRA hazardous waste must be transported by a registered hazardous waste transporter and disposed of at a permitted hazardous waste facility (an incinerator).

Ebola waste that has been treated (sterilized) by the generator using effective (autoclaving) procedures may be managed as other Category B Regulated Medical Waste (RMW) in accordance with state and federal transportation and disposal requirements. Such waste may be treated in permitted medical waste disposal facilities. Chemical treatment alone does not remove

the Ebola waste (Category A) designation, nor does it eliminate the hazardous waste classification.

Hospitals and Other Medical Facilities

Hospitals or other medical facilities that have the capability to sterilize Ebola waste in an on-site autoclave should do so as waste is generated to avoid the accumulation of large volumes of untreated Ebola waste on-site. Prior to sterilization in an autoclave, any confirmed or suspect Ebola waste must be properly packaged and labeled while held in temporary storage (see storage requirements below).

Hospitals or other medical facilities without autoclaving capabilities should package the waste following DOT requirements (Title 49, Part 173.196, and other associated DOT guidance). The packaged waste should be properly labeled and placed into secure storage. As soon as such waste handling processes are initiated, the facility should contact KDHE to obtain assistance in identifying and selecting a waste transporter and disposal facility.

Human body fluids from a patient in isolation should be collected for disposal as Ebola waste or collected and treated with 1 part of household bleach to 9 parts water for at least 10 minutes or longer prior to discharge to the sanitary sewer. Facilities should discuss preferred concentrations and treatment time for bodily fluid wastes utilizing this method with their Public Waste Water Treatment facility director and local emergency manager.

Toilet bowls should be primed with a 9:1 (water:bleach) solution prior to introduction of any wastes (i.e., prior to patient use) to ensure wastes voided during toilet equilibrium actions are appropriately treated. Body fluids expelled directly from the patient into a toilet must be treated again with 1 part of household bleach to 9 parts water for at least 10 minutes prior to discharge to the sanitary sewer; this will require consideration of the toilet bowl water volume to ensure a 9:1 (water:bleach) solution is achieved during treatment.

Onsite Storage of Ebola Waste - The DOT shipping packaging adequately satisfies the hazardous waste packaging requirement for untreated Ebola waste. It is recommended that the outer packaging be rigid plastic 55-gallon drums or larger over-pack plastic drums. These containers are capable of being incinerated with the contained waste. All DOT labeling requirements can be included on the "Hazardous Waste" label which must also include the date that the container was placed into storage (there is a 90-day storage time limit). The DOT "Infectious Substance" label should also be adhered to the outer package. The labeling information includes the following: DOT shipping name - "Infectious substances, affecting humans (Ebola Hazardous Waste)", hazardous class/division 6.2 (DOT), DOT ID # UN2814. The hazardous waste code is "EBOLA" to be put into the waste code section of the uniform hazardous waste manifest.

Autoclave Guidelines for Sterilization of Ebola Waste – If the facility uses an autoclave to sterilize the Ebola waste; they should include the following in their procedure to ensure effectiveness:

- All waste should be in biohazard autoclave bags and should be no more than three-fourths full.

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- Bags should be tied loosely and about 50 mL of water added to each bag.
- Tape a biological indicator ampoule to the outside of the bag and place bag in a metal autoclave pan or tray. (Note that effectiveness is increased with metal trays.)
- A chemical indicator strip may also be used near the mouth of the bag.
- Autoclave contents for a minimum of 60 min, at 121°C, and 15psi, with slow exhaust.
- The Autoclave log should document the contents, duration, time, pressure, and temperature for the autoclave cycle.
- Document that the chemical indicator strip indicates a successful run. If the chemical indicator fails, then the sterilization should be repeated with fresh indicator. (The chemical indicator provides an initial evaluation of run success. The biological indicator provides confirmation and should be included in every run of the autoclave.)
- Label the bag with the date and time of run or other tracking system that corresponds with the biological indicator ampoule, autoclave log and chemical indicator for that run.
- Hold labeled autoclaved waste until the biological ampoule indicates successful sterilization. (NOTE: The biological indicator must be incubated according to manufacturer's directions for 48 hours to confirm effectiveness of the autoclave to inactivate organisms.)
- Once successful sterilization has been confirmed with the biological indicator, document that bags associated with that run are ready for storage and disposal as Category B Regulated Medical Waste.

NOTES:

Sterilization indicator tape is not equivalent to the biological indicator and chemical strip indicator described above.

The chemical indicators and biological indicators should be used with every autoclave run and their location within the autoclave varied to ensure uniform sterilization throughout the autoclave.

Do not overfill the bags, the secondary containers, or the autoclave itself. Steam must be able to penetrate all areas of the waste material to ensure effectiveness of the sterilization.

Disposal of Ebola Waste – If the facility does not already have a hazardous waste generator ID, KDHE can provide a special ID to allow the waste to be shipped off-site using a uniform hazardous waste manifest. This manifest satisfies both the hazardous waste and DOT shipping paper requirements. KDHE will work with the facility to identify a waste transporter and permitted incineration facility.

Other Generators of Ebola Waste

All other generators of Ebola waste should follow the same packaging and labeling procedures as hospitals that do not have treatment (sterilization) capabilities. Clean-up contractors should coordinate storage and disposal procedures with KDHE. Movement to a temporary secure storage area may be approved by KDHE, if necessary, pending the selection of a permitted disposal facility. Direct loading and transfer to a disposal facility is preferred if this can be pre-arranged.

Handling of Bulky Contaminated Items

Some contaminated or potentially contaminated items that cannot be appropriately cleaned and disinfected may be large and unable to be treated in an autoclave or packed into the approved DOT shipping containers without size reduction. Items may include things such as bedding, chairs, mattresses, etc. It will be necessary to reduce the size of such items using mechanical procedures. The surfaces of these items must first be treated with a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim for a non-enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) or a 9:1 (water:bleach) solution). Note: 9:1 (water:bleach) solution is caustic. Avoid direct contact with skin and eyes. Prepare the bleach solutions in a well-ventilated area. Care must be taken to avoid exposures and the additional spread of contamination during these steps.

All items being prepared for delayed on-site treatment or off-site shipments must be placed in rigid containers that are no larger than 55-gallon drums or larger over-pack containers.

Special DOT Permits

If a disposal facility requires outer packaging that differs from the DOT requirements in Part 173.196, a Special Permit may be requested.

Community Environmental / Decontamination Issues

Local health departments and other local agencies are advised to discuss and plan for how local resources will be identified and utilized to address any potential needs for environmental decontamination of a confirmed case-patient's residence or other structures. Such resources might include local or regional hazardous materials response teams or private contractors. These units are primarily present to isolate a threat and monitor the environmental decontamination and not for clean-up. KDHE is working to develop a resource guide to environmental clean-up organizations familiar with proper PPE and handling of potentially infected blood and fluids. Refer to Environmental Infection Control section above for information on management of waste generated from cleanup activities.

A one-page waste management guide is available in Appendix 7.

Handling of Human Remains of Ebola Virus Disease Patients

The CDC has issued "Guidance for Safe Handling of Human Remains of Ebola Patients in U. S. Hospitals and Mortuaries" (available at http://www.cdc.gov/vhf/ebola/hcp/guidance-safe-handling-human-remains-ebola-patients-us-hospitals-mortuaries.html). KDHE has reviewed the CDC guidance and is adopting it by reference. However, KDHE guidelines for personal protective equipment (PPE) will apply to any person handling infected human remains, and KDHE guidance applies to any issue for which there are conflicts between KDHE guidance and CDC guidance. For the reader's convenience, the CDC guidance is included here, with appropriate edits to remove clear conflicts with KDHE guidance:

Guidance for Safe Handling of Human Remains of Ebola Patients in U. S. Hospitals and Mortuaries

These recommendations give guidance on the safe handling of human remains that may contain Ebola virus and are for use by personnel who perform postmortem care in U.S. hospitals and mortuaries. In patients who die of Ebola virus infection, virus can be detected throughout the body. Ebola virus can be transmitted in postmortem care settings by laceration and puncture with contaminated instruments used during postmortem care, through direct handling of human remains without appropriate personal protective equipment, and through splashes of blood or other body fluids (e.g. urine, saliva, feces) to unprotected mucosa (e.g., eyes, nose, or mouth) which occur during postmortem care.

- Only personnel trained in handling infected human remains, and wearing PPE, should touch, or move, any Ebola-infected remains.
- Handling of human remains should be kept to a minimum.
- Autopsies on patients who die of Ebola should be avoided. If an autopsy is necessary, the state health department and CDC should be consulted regarding additional precautions.

Definitions for Terms Used in this Guidance

- Cremation: The act of reducing human remains to ash by intense heat.
- Hermetically sealed casket: A casket that is airtight and secured against the escape of microorganisms. A casket will be considered hermetically sealed if accompanied by valid documentation that it has been hermetically sealed AND, on visual inspection, the seal appears not to have been broken.
- Leakproof bag: A body bag that is puncture-resistant and sealed in a manner so as to contain all contents and prevent leakage of fluids during handling, transport, or shipping.

Personal protective equipment for postmortem care personnel

- Personal protective equipment (PPE): Prior to contact with body, postmortem care personnel must wear PPE.
- Putting on, wearing, removing, and disposing of protective equipment: PPE should be in place BEFORE contact with the body, worn during the process of collection and placement in body bags, and should be removed immediately after and discarded appropriately. Use caution when removing PPE as to avoid contaminating the wearer. Hand hygiene (washing your hands thoroughly with soap and water or an alcohol based hand rub) should be performed immediately following the removal of PPE. If hands are visibly soiled, use soap and water. (Note: KDHE does not recommend using alcohol based hand rub alone.)

Postmortem preparation

- Preparation of the body: At the site of death, the body should be wrapped in a plastic shroud. Wrapping of the body should be done in a way that prevents contamination of the outside of the shroud. Change your gown or gloves if they become heavily contaminated with blood or body fluids. Leave any intravenous lines or endotracheal tubes that may be present in place. Avoid washing or cleaning the body. After wrapping, the body should be immediately placed in a leak-proof plastic bag not less than 150 μm thick and zippered closed. The bagged body should then be placed in another leak-proof plastic bag not less than 150 μm thick and zippered closed before being transported to the morgue.

- Surface decontamination: Prior to transport to the morgue, perform surface decontamination of the corpse-containing body bags by removing visible soil on outer bag surfaces with EPA-registered disinfectants which can kill a wide range of viruses. Follow the product's label instructions. After the visible soil has been removed, reapply the disinfectant to the entire bag surface and allow to air dry. Following the removal of the body, the patient room should be cleaned and disinfected. Reusable equipment should be cleaned and disinfected according to standard procedures.

- Individuals driving or riding in a vehicle carrying human remains: PPE is not required for individuals driving or riding in a vehicle carrying human remains, provided that drivers or riders will not be handling the remains of a suspected or confirmed case of Ebola, and the remains are safely contained and the body bag is disinfected as described above.

Mortuary Care

- Do not perform embalming. The risks of occupational exposure to Ebola virus while embalming outweighs its advantages; therefore, bodies infected with Ebola virus should not be embalmed.

- Do not open the body bags.

- Do not remove remains from the body bags. Bagged bodies should be placed directly into a hermetically sealed casket.

- Mortuary care personnel should wear KDHE-recommended PPE when handling the bagged remains.

- In the event of leakage of fluids from the body bag, thoroughly clean and decontaminate areas of the environment with EPA-registered disinfectants which can kill a broad range of viruses in accordance with label instructions. Reusable equipment should be cleaned and disinfected according to standard procedures. For more information on environmental infection control, please refer to the "Environmental Infection Control" section.

Disposition of Remains

- Remains should be cremated or buried promptly in a hermetically sealed casket.
- Once the bagged body is placed in the sealed casket, no additional cleaning is needed unless leakage has occurred.
- No PPE is needed when handling the cremated remains or the hermetically sealed closed casket.

Transportation of human remains

- Transportation of remains that contain Ebola virus should be minimized to the extent possible.
- All transportation, including local transport, for example, for mortuary care or burial, should be coordinated with relevant local and state authorities in advance.
- Interstate transport should be coordinated with CDC by calling the Emergency Operations Center at 770-488-7100. The mode of transportation (i.e., airline or ground transport), must be considered carefully, taking into account distance and the most expeditious route.
- Although Ebola virus is a Category A infectious substance regulated by the U.S. Department of Transportation's Hazardous Materials Regulations (HMR, 49 Code of Federal Regulations Parts 171-180), DOT has issued guidance that human remains contaminated with a category A infectious substance are excepted from the HMR.
- Transportation of remains that contain Ebola virus outside the United States would need to comply with the regulations of the country of destination, and should be coordinated in advance with relevant authorities.

References

CDC. Medical Examiners, Coroners, and Biologic Terrorism A Guidebook for Surveillance and Case Management. MMWR 2004;53(RR08);1-27.
(http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5308a1.htm)

Management of Animals Exposed to Ebola Virus

The ongoing epidemic of Ebola in West Africa has raised several questions about how the disease affects the animal population, and in particular, the risk to household pets[1]. While the information available suggests that the virus may be found in several kinds of animals, the CDC, the US Department of Agriculture (USDA), and the American Veterinary Medical Association (AVMA) do not believe that pets are at significant risk for Ebola in the United States[1].

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The following guidance is provided to manage animals exposed to the Ebola virus. This guidance will be updated as new information is made available by the CDC, USDA, and AVMA.

Exposure Defined As:
An animal will be considered exposed if it has been in direct contact with a person with confirmed Ebola virus infection from the onset of symptoms of the disease in the person.

Quarantine and Handling Procedures:
The animal will be quarantined for a minimum of 21 days. The following management procedures will be observed:

1. The animal will be quarantined in the residence of the patient with confirmed Ebola virus disease. The animal should be confined to the home and only allowed outside to urinate or defecate. When outside, the animal will be kept on a leash. Solid waste should be removed and disposed of in a waste receptacle. The waste can be disposed of through regular trash removal.
2. Humans who are household contacts of the confirmed Ebola patient, and who live in the residence of the patient, should care for the animal contact(s). Exposure to the animal should be minimized. If the patient does not have another caregiver for the animal, it will be quarantined at an alternate location determined by KDHE or the local health officer.
3. Monitor the animal daily for changes in behavior or health for 21 days following the last potential exposure.
    a. Potential signs of illness include decreased appetite, lethargy, vomiting, and diarrhea.
    b. Report any change in behavior or health immediately to KDHE at 1-877-427-7317.
    c. The animal will be evaluated by a veterinarian to determine the cause of illness. If the veterinarian cannot rule out Ebola virus infection, KDHE will then consult with the CDC for diagnostic recommendations.

Release of Animal from Quarantine:
The animal will be released from quarantine after 21 days, or more, as long as the animal appears clinically normal. There are currently no approved diagnostic tests for pets for Ebola virus infection; therefore, testing is not recommended at this time. Final disposition of the animal will be determined by the Kansas Animal Health Commissioner and the Secretary of KDHE.

References

1. Centers for Disease Control and Prevention. *Questions and Answers about Ebola and Pets.* Accessed on October 15, 2014 at; http://www.cdc.gov/vhf/ebola/transmission/qas-pets.html.
2. Allela, L., Bourry, O., Pouillot, R., et al. *Ebola Virus Antibody Prevalence in Dogs and Human Risk.* Emerging Infectious Diseases. 2005: 11(3); 385-390.

Additional Information

For additional information, refer to the CDC Ebola web page (available from www.cdc.gov) or contact the KDHE Epidemiology Hotline at 877-427-7317.

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Appendix 1

Risk Assessment for Individuals Returning from Ebola Affected Areas

Ongoing outbreaks of Ebola in West Africa and the Democratic Republic of the Congo have prompted the need for careful evaluation and management of individuals returning from outbreak affected areas (map available at http://www.who.int/csr/disease/ebola/evd-outbreak.jpg). Local health departments may become aware of these individuals through various channels, such as universities, refugee services, missionary groups, or direct calls from the public. The guidance below outlines the steps the state and local health department should take to evaluate and manage returning travelers. Risk Assessments should be performed for all individuals identified who have been in the affected areas in the past 21 days.

Demographics

Name (last, first): _____

Address (mailing): _____

Address (physical):_____

City/State/Zip: _____

Phone (home): _____ **Phone** (work/cell): _____

Alternate contact: □*Parent/Guardian* □*Spouse* □*Other*

Name: _____Phone: _____

Birth date: __ / __ / ____ **Age**: _____ **Sex**: ☐Male ☐Female ☐Unknown

Travel History

1. Were you in Guinea, Liberia, Sierra Leone or the Democratic Republic of the Congo (DRC) in the last 21 days? ☐Yes ☐No
   If yes please continue the assessment, if no then the person was not considered exposed. (Note: Persons who entered Nigeria on or after 30 September 2014 are not at risk for exposure to Ebola.)

List the cities, countries, travel dates and reason for travel while the person was in West Africa or the DRC.

City	Country	Arrival Date	Departure Date	Reason for Travel

2. What date did you arrive in the United States? _____
3. List the airport where you arrived and any airport where you had a layover: _____

_____

Exposures

4. Did you have any contact with blood or body fluids of anyone who was ill with fever, severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained bleeding or who was diagnosed with or suspected to have Ebola infection? ☐Yes ☐No
   a. Date of last contact: __ / __ / ____
   b. Were you wearing personal protective equipment (gown, gloves, eye protection, etc.) during the contact? ☐Yes ☐No
   c. Exposure type: ☐ Blood ☐ Semen ☐ Respiratory secretions
      ☐ Other: _____

5. Did you have any contact with body fluids of a confirmed convalescent case of Ebola infection? ☐Yes ☐No
   a. Date of last contact: __ / __ / ____
   b. Exposure type: ☐ Blood ☐ Semen ☐ Respiratory secretions
      ☐ Other: _____

6. Did you have direct contact with body fluids such as blood, saliva, sweat, urine, tears, stool, or sustain any needle stick injuries related to caring for a person diagnosed with or suspected to have Ebola infection? ☐Yes ☐No
   a. Date of last contact:__ / __ / ____
   b. Were you wearing personal protective equipment (gown, gloves, eye protection, etc.) during the contact? ☐Yes ☐No
   c. Exposure type: ☐ Blood ☐ Respiratory secretions
      ☐ Needle stick injury ☐ Other: _____

7. Are you or were you a laboratory worker in a facility that handles Ebola specimens? ☐Yes ☐No
   a. Date of Exposure: __ / __ / ____
   b. Were you wearing personal protective equipment (gown, gloves, eye protection, etc.) and following standard biosafety precautions? ☐Yes ☐No

8. Did you participate in any funeral preparations or burial services? ☐Yes ☐No

9. Were you a household member of or have other casual contact with anyone who was diagnosed with or suspected to have Ebola infection? ☐Yes ☐No

Illness Information

10. Were you ill within the past month during your time in West Africa or the DRC? ☐Yes ☐No

a. If so, were you seen by a physician or did you visit a health care facility in West Africa or the DRC? ☐Yes ☐No
b. Name of facility: _____ Location of facility: _____
c. What date did your symptoms begin? __/___/____
d. What was your diagnosis? _____
e. Did you have any of the following symptoms?

Fever	☐Yes ☐No
Significant headaches	☐Yes ☐No
Joint or muscle aches	☐Yes ☐No
Nausea or vomiting	☐Yes ☐No
Diarrhea	☐Yes ☐No
Abdominal pains	☐Yes ☐No
Unexplained hemorrhage or bleeding	☐Yes ☐No

11. Have you been ill since your arrival in the United States? ☐Yes ☐No
    a. Is yes what date did your symptoms begin? __/___/____
    b. Did you have any of the following symptoms?

Fever	☐Yes ☐No
What date did your fever develop?	__/__/_____
What was the highest recorded temperature?	_____
Significant headaches	☐Yes ☐No
Joint or muscle aches	☐Yes ☐No
Nausea or vomiting	☐Yes ☐No
Diarrhea	☐Yes ☐No
Abdominal pains	☐Yes ☐No
Unexplained hemorrhage or bleeding	☐Yes ☐No

12. Have you consulted your personal physician? ☐Yes ☐No
    a. If yes, did he or she order any lab tests? ☐Yes ☐No
    b. May we have his/her name and phone number? _____

_____

13. Have your symptoms resolved? ☐Yes ☐No
14. What date did your symptoms resolve? __/___/____

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Appendix 2

Interim Guidance for Evaluation and Management of Persons with Potential Ebola Virus Disease Exposure

Exposure Level	Clinical Criteria	Health Care Facility and Public Health Actions
High Risk • Percutaneous (e.g., needle stick) or mucous membrane exposure to body fluids of Ebola patient • Direct skin contact with, or exposure to blood or body fluids of, an EVD patient without appropriate personal protective equipment (PPE) • Processing blood or body fluids of a confirmed EVD patient without appropriate PPE or standard biosafety precautions • Direct contact with a dead body without appropriate PPE in a country where an EVD outbreak is occurring	Fever (subjective or measured as ≥100.4 degrees F or 38.0 degrees C) OR other symptoms consistent with EVD	• Consideration as a probable case (http://www.cdc.gov/vhf/ebola/hcp/case-definition.html#probable) • Medical evaluation using infection control precautions (Appendix 4) for suspected Ebola, consultation with KDHE (Epidemiology Hotline: 877-427-7317), and testing if indicated • If air transport is clinically appropriate and indicated, only air medical transport (http://www.cdc.gov/vhf/ebola/hcp/guidance-air-medical-transport-patients.html) (no travel on commercial conveyances permitted) • If infection control precautions are determined not to be indicated: active monitoring and restricted movement until 21 days after last known potential exposure
	Asymptomatic	• Active monitoring and restricted movement until 21 days after last known potential exposure
Some Risk of Exposure • Household contact with an EVD patient • Other close contact with an EVD patient in health care facilities or community settings	Fever (subjective or measured as ≥100.4 degrees F or 38.0 degrees C) OR other symptoms consistent with EVD	• Consideration as a probable case (http://www.cdc.gov/vhf/ebola/hcp/case-definition.html#probable) • Medical evaluation using infection control precautions (Appendix 4) for suspected Ebola, consultation with KDHE (Epidemiology Hotline: 877-427-7317), and testing if indicated • If air transport is clinically appropriate and indicated, only air medical transport (http://www.cdc.gov/vhf/ebola/hcp/guidance-air-medical-transport-patients.html) (no travel on commercial conveyances permitted) • If infection control precautions are determined not to be indicated: active monitoring and restricted movement until 21 days after last known potential exposure
	Asymptomatic	• Active monitoring and restricted movement until 21 days after last known potential exposure
No Known Exposure • Having been in a country in which an EVD outbreak occurred within the past 21 days and having had no exposures	Fever (subjective or measured as ≥100.4 degrees F or 38.0 degrees C) OR other symptoms consistent with EVD	• Consideration as a probable case (http://www.cdc.gov/vhf/ebola/hcp/case-definition.html#probable) • Medical evaluation using infection control precautions (Appendix 4) for suspected Ebola, consultation with KDHE (Epidemiology Hotline: 877-427-7317), and testing if indicated • If air transport is clinically appropriate and indicated, only air medical transport (http://www.cdc.gov/vhf/ebola/hcp/guidance-air-medical-transport-patients.html) (no travel on commercial conveyances permitted) • If infection control precautions are determined not to be indicated: active monitoring and restricted movement until 21 days after last known potential exposure
	Asymptomatic	• Active monitoring until 21 days after leaving country • No movement restrictions except NO travel by commercial conveyances

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Definitions

Close contact – Defined as a) being within approximately 3 feet (1 meter) of an EVD patient or within the patient's room or care area for a prolonged period of time (e.g., health care personnel, household members); or b) having direct brief contact (e.g., shaking hands) with an EVD patient while not wearing recommended personal protective equipment.

Active Monitoring – Individuals identified as having had high-risk or some risk of exposure to Ebola or who have travelled to Ebola-affected countries in the preceding 21 days must undergo active monitoring for 21 days following the last exposure. If the last date of exposure is unknown, active monitoring should continue for 21 days after the last day in the affected country. Active monitoring requires asymptomatic contacts to 1) measure body temperature and complete a fever log twice a day, 2) share this information with local health department staff verbally daily, 3) immediately contact KDHE if fever or other symptoms consistent with EVD develop, and 4) Contact their health care facility/provider in advance and arrange to seek health care so that appropriate precautions can be taken.

Restricted movement – Persons must remain at their residence or other living location as determined by KDHE or the local health officer for a period of 21 days following their last potential exposure; any movement outside the residence or other living location must be approved in advance by KDHE or the local health officer on a case-by-case basis. During this 21-day period of restricted movement, there shall be no visitors to the residence or living location except those approved by KDHE or the local health officer in advance.

Special Considerations for Health Care Workers – Health care workers, broadly defined as any person working in a health care setting (including laboratory workers), and other workers who are potentially exposed to Ebola virus while caring for a patient with EVD or during environmental cleanup activities will be subject to the same requirements for active monitoring and restricted movement as any other person, with the following exceptions.

Workers who utilize the Tier 1 level of personal protective equipment (PPE) as detailed in Appendix 4 will be exempt from the 21-day restricted movement period that begins after their last contact with the patient or potentially infectious materials. Active monitoring and a prohibition on travel by commercial conveyances will still apply for these individuals. However, if the employee reports or is observed by a PPE trained observer to have experienced a needle stick or breach in PPE protocol, the full 21-day restricted movement period will apply.

Health care workers potentially exposed to Ebola virus who utilize a lower than Tier 1 level of PPE during patient care will be subjected to active monitoring and restricted movement, except such workers may continue to work as part of a dedicated Ebola virus disease patient care team, and may not provide care or services to any other patient, until 21 days after the last known potential exposure.

Appendix 3

Guidance for Persons Traveling from the West African nations of Guinea, Liberia, Sierra Leone, or the Democratic Republic of the Congo to Kansas

This is guidance for persons who have traveled to Guinea, Liberia, Sierra Leone, or the Democratic Republic of the Congo within the past 21 days and are now returning to Kansas. (Note: Persons entering Nigeria on or after 30 September 2014 are not considered at risk for Ebola virus disease.)

There are currently two separate outbreaks of Ebola virus disease (EVD) in Africa. The first outbreak began in March 2014 in the West African nations of Guinea, Liberia, Nigeria, and Sierra Leone. This is the largest EVD outbreak ever recorded and the first in West Africa. Persons who entered Nigeria on or after 30 September 2014 are not at risk for exposure to Ebola. The second outbreak began in the Democratic Republic of the Congo in August, 2014.

Symptoms of EVD typically include an abrupt onset of fever, headache, joint and muscle aches, weakness, diarrhea, vomiting, stomach pain, and loss of appetite. Some patients may also experience a rash, red eyes, hiccups, cough, sore throat, chest pain, difficulty breathing, difficulty swallowing, and bleeding inside and outside of the body. The typical incubation period (time between exposure and onset of symptoms) is eight to 10 days, though the range is two to 21 days.

Ebola virus can be transmitted from person-to-person by:

- Direct contact with the blood or body fluids of an infected person
- Exposure to objects (such as needles) that have been contaminated with blood or other body fluids from an infected person

Ebola virus is **not** transmitted from person-to-person through the air, water, or food.

If you have recently returned from Guinea, Liberia, Sierra Leone, or Democratic Republic of the Congo; have had any of the following high or low risk exposures; have a fever (subjective or measured as ≥100.4°F or 38.0°C) and additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage, call the Kansas Department of Health and Environment (KDHE) at 877-427-7317 and your local hospital's emergency department if needed prior to seeking care.

- High-risk exposures
  - Percutaneous (e.g., needle stick) or mucous membrane exposure to body fluids of Ebola patient
  - Direct skin contact with, or exposure to blood or body fluids of, an EVD patient without appropriate personal protective equipment (PPE)
  - Processing blood or body fluids of a confirmed EVD patient without appropriate PPE or standard biosafety precautions
  - Direct contact with a dead body without appropriate PPE in a country where an EVD outbreak is occurring
- Some risk of exposure
  - Household contact with an EVD patient
  - Other close contact with an EVD patient in health care facilities or community settings
- No Known Exposure
  - Having been in a country in which an EVD outbreak occurred within the past 21 days and having had no exposures

Check your temperature twice daily and monitor for other signs and symptoms of EVD for 21 days after your exposure. Use the medical monitoring log on the next page. If you develop fever and other symptoms of EVD within 21 days of your exposure, call the KDHE Epidemiology Hotline at 877-427-7317. KDHE or the local health department will make ***daily*** contact with you to discuss and document temperature, symptoms, and to discuss any concerns.

DAILY MEDICAL MONITORING LOG:

Monitor yourself for fever twice daily for 21 days after returning from an Ebola-affected country. Mark the date, time you took your temperature (mark whether it was AM or PM), and temperature. If you develop a fever (either feeling feverish or measured as ≥100.4°F or 38.0°C) note the other symptoms you are experiencing and immediately call the Kansas Department of Health and Environment's Epidemiology Hotline at 877-427-7317.

Day	Date	Time Taken	Temperature
1		____□AM□PM	°F
		____□AM□PM	°F
2		____□AM□PM	°F
		____□AM□PM	°F
3		____□AM□PM	°F
		____□AM□PM	°F
4		____□AM□PM	°F
		____□AM□PM	°F
5		____□AM□PM	°F
		____□AM□PM	°F
6		____□AM□PM	°F
		____□AM□PM	°F
7		____□AM□PM	°F
		____□AM□PM	°F
8		____□AM□PM	°F
		____□AM□PM	°F
9		____□AM□PM	°F
		____□AM□PM	°F
10		____□AM□PM	°F
		____□AM□PM	°F
11		____□AM□PM	°F
		____□AM□PM	°F

Day	Date	Time Taken	Temperature
12		____□AM□PM	°F
		____□AM□PM	°F
13		____□AM□PM	°F
		____□AM□PM	°F
14		____□AM□PM	°F
		____□AM□PM	°F
15		____□AM□PM	°F
		____□AM□PM	°F
16		____□AM□PM	°F
		____□AM□PM	°F
17		____□AM□PM	°F
		____□AM□PM	°F
18		____□AM□PM	°F
		____□AM□PM	°F
19		____□AM□PM	°F
		____□AM□PM	°F
20		____□AM□PM	°F
		____□AM□PM	°F
21		____□AM□PM	°F
		____□AM□PM	°F

If you have developed a fever please check the boxes of any symptoms you are experiencing.

□ Headache □Joint or Muscle Aches □Weakness □Vomiting □Diarrhea □ Stomach or Abdominal Pain □ Lack of Appetite
□Cough □ Sore throat □Rash □Shortness of Breath □Chest Pain

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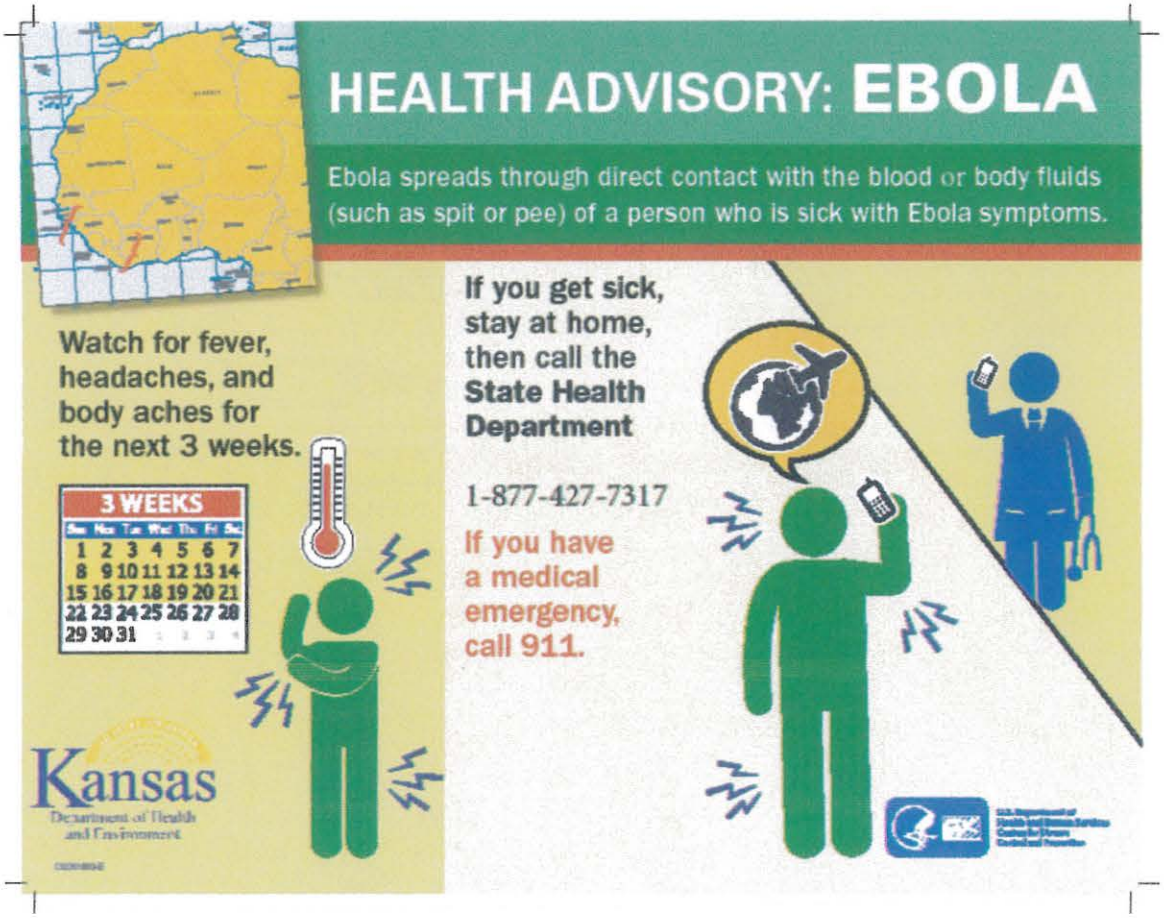
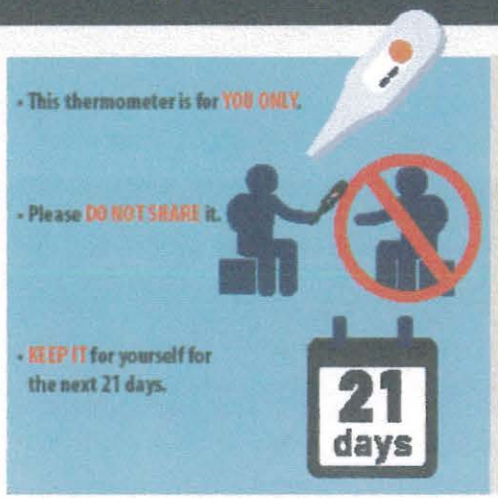

HEALTH ADVISORY: EBOLA
Ebola spreads through direct contact with the blood or body fluids (such as spit or pee) of a person who is sick with Ebola symptoms.
Watch for fever, headaches, and body aches for the next 3 weeks.
3 WEEKS
If you get sick, stay at home, then call the State Health Department
1-877-427-7317
If you have a medical emergency, call 911.
Kansas
Department of Health and Environment

Take your temperature two times a day, morning and night.



1. Turn the thermometer on. It will show an "L" in the screen when it is ready.

2. Hold the tip under your tongue for 60 seconds until it beeps

3. Read the temperature

4. Write your temperature on the chart you got at the airport, or from the local health department.

If your temperature is 100.4°F / 38°C or higher or you are sick, call the State Health Department 1-877-427-7317.
If you have a medical emergency, call 911.

5. You can clean your thermometer with soap and water.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Kansas
Department of Health and Environment

Appendix 4: Key Components of Infection Prevention Recommendations for Prevention of EVD Transmission

All persons entering the hospital room of a patient with suspected or confirmed Ebola should adhere to the following guidelines and employ the buddy system when donning and doffing their PPE. It is important to note that individuals who wear the highest level of personal protective equipment approximating OSHA/HAZWOPR level A, B, or C (with Powered Air Purifying Respirator with HEPA filters attached) are exempt from the 21-day restricted movement period that begins after their last contact with the patient or potentially infectious materials, because individuals becoming contaminated using this level of PPE is less likely as it can be washed and disinfected thoroughly prior to doffing. Active monitoring and a prohibition on travel by commercial conveyances will still apply for these individuals. However, if the employee reports or is observed by a PPE monitor to have experienced a needle stick or breech in contact/droplet protocol, the full 21-day restricted movement period will apply. Those who wear Tier 2 PPE as outlined in the table below, while adequately protected, must adhere to the 21-day restricted movement period that begins after their last contact with the patient or potentially infectious materials. Individuals required to adhere to the 21-day restricted movement period should remain in their homes, be actively monitored for signs and symptoms of Ebola, and avoid contact with others.

Component	Recommendation	Comments
Patient Placement	• Single patient room (containing a private bathroom whenever possible) with the door closed • Facilities should maintain a log of all persons entering the patient's room	• Consider posting personnel at the patient's door to ensure appropriate and consistent use of PPE by all persons entering the patient room
Personal Protective Equipment (PPE)	***TIER 1:*** • Suit: Impermeable (waterproof), single-use (disposable) coverall. Coverall without integrated hood may be acceptable so long as head and neck are fully covered with a single-use disposable hood used in conjunction with PAPR (see below). Coveralls with or without integrated socks are acceptable, but must be compatible with selected footwear and boot covers. Consideration should be given to selecting coveralls with thumb hooks to secure	• Use a trained observer: Donning and doffing of PPE should be conducted with a trained observer to ensure correct procedures are followed and documented • Recommended PPE should be worn by health care provider (HCP) upon entry into patient rooms or care areas. Upon exit from the patient room or care area, PPE should be disinfected as indicated following facility procedures. • PPE must be carefully removed without contaminating one's eyes, mucous membranes, or clothing with potentially infectious materials,

Component	Recommendation	Comments
	sleeves over inner gloves. • Gloves: 2 layers of nitrile gloves. The inner gloves (closest to the skin) should be tucked under the sleeve of the coverall. The outer pair of gloves should have extended cuffs; ensure the extended cuffs are pulled over the sleeves of the gown or coverall. Outer pair may be taped to coverall if copious amount of bodily fluids are present or if using coveralls without thumb hooks in the sleeves, and use of tape does not hinder the doffing process. • Respirator/Face protection: A Powered Air Purifying Respirator (PAPR) with a full face shield, helmet, or headpiece, with attached HEPA filter. Any reusable helmet or headpiece must be covered with a single-use (disposable) hood that extends to the shoulders and fully covers the neck and is compatible with the selected PAPR. The facility should follow manufacturer's instructions for decontamination of all reusable components and, based upon those instructions, develop facility protocols that include the designation of responsible personnel who assure that the equipment is appropriately reprocessed and that batteries are fully charged before reuse. ○ A PAPR with a self-contained filter and blower unit integrated inside the helmet is preferred. ○ A PAPR with external belt-	and either: ○ Discarded, or ○ For re-useable PPE, cleaned and disinfected according to the manufacturer's reprocessing instructions and hospital policies. • Instructions for donning and removing PPE have been published • Hand hygiene should be performed immediately after removal of PPE

Component	Recommendation	Comments
	mounted blower unit requires adjustment of the sequence for donning and doffing. • Shoe coverings: Latex or rubber boot or single-use (disposable) impermeable boot covers that extend to at least mid-calf. Boot covers should allow for ease of movement and not present a slip hazard to the worker. • Disinfection: Disinfect gloves, coverall, boots or boot covers, and external surfaces of PAPR using an EPA-registered disinfectant wipe (which has a label claim of potency at least equivalent to that for a non-enveloped virus) or a solution of one part bleach (with minimum 5% chlorine concentration) to nine parts water following facility procedures. Place all reusable PAPR components in an area or container designated for the collection of PAPR components for disinfection; follow manufacturer's instructions. ***TIER 2:*** • Body and head covering: Single-use (disposable) impermeable gown that extends to at least mid-calf AND a single-use (disposable) surgical hood that covers the head and neck. The surgical hood must cover all of the hair and ears and extend past the neck to the shoulders. • Single-use (disposable), impermeable apron that covers the torso to the level of the mid-	

Component	Recommendation	Comments
	calf should be used if Ebola patients have vomiting or diarrhea, or if copious amounts of any body fluid are present. An apron provides addition protection against exposure of the front of the body to body fluids or excrement. • Gloves: 2 layers of nitrile gloves. The inner gloves (closest to the skin) should be tucked under the sleeve of the coverall. The outer pair of gloves should have extended cuffs; ensure the extended cuffs are pulled over the sleeves of the gown or coverall. Outer pair may be taped to coverall if copious amount of bodily fluids are present or if using coveralls without thumb hooks in the sleeves, and use of tape does not hinder the doffing process. • Face protection: Single-use (disposable) full face shield either alone or in combination with indirectly vented, anti-fog coated goggles that can be worn under the face shield without compromising the integrity of full face protection. • Single-use (disposable) N95 respirator. If a NIOSH-certified fit-tested disposable N95 respirator is used in facility protocols, ensure compliance with all elements of the OSHA Respiratory Protection Standard, 29-CFR 1910.134, including fit testing, medical evaluation and training of the healthcare worker. Healthcare workers must perform a user seal check each time the N95	

Component	Recommendation	Comments
	respirator is donned. N95 respirators are only to be used in combination with surgical hood, full face shield (see above), and goggles (if used). • Single-use (disposable) impermeable boot covers that extend to at least mid-calf. Boot covers should allow for ease of movement and not present a slip hazard to the worker.	
Patient Care Equipment	• Dedicated medical equipment (preferably disposable, when possible) should be used for the provision of patient care • All non-dedicated, non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer's instructions and hospital policies	
Patient Care Considerations	• Limit the use of needles and other sharps as much as possible • Phlebotomy, procedures, and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care • KDHE strongly recommends limited laboratory testing for patients with suspected or confirmed EVD. Point of care testing should be conducted whenever feasible. • All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers	
Aerosol- generating Procedures (AGPs)	• Avoid AGPs for patients with EVD. • If performing AGPs, use a combination of measures to reduce exposures from	• Although there are limited data available to definitively define a list of AGPs, procedures that are usually included are Bilevel Positive Airway

Component	Recommendation	Comments
	aerosol-generating procedures when performed on Ebola HF patients • Visitors should not be present during aerosol-generating procedures • Limiting the number of HCP present during the procedure to only those essential for patient care and support • Conduct the procedures in a private room and ideally in an Airborne Infection Isolation Room (AIIR) when feasible. Room doors should be kept closed during the procedure except when entering or leaving the room, and entry and exit should be minimized during and shortly after the procedure • HCP should wear Tier 1 PPE as noted above during aerosol- generating procedures • Conduct environmental surface cleaning following procedures (see section below on environmental infection control) • If re-usable equipment or PPE (e.g. powered air purifying respirator, elastomeric respirator, etc.) are used, they should be cleaned and disinfected according to manufacturer instructions and hospital policies • Collection and handling of soiled re-usable respirators must be done by trained individuals using PPE as described above for routine patient care	Pressure (BiPAP), bronchoscopy, sputum induction, intubation and extubation, and open suctioning of airways. • Because of the potential risk to individuals reprocessing reusable respirators, disposable filtering facepiece respirators are preferred.
Hand Hygiene	• HCP should perform hand hygiene frequently, including before and after all	• Hand hygiene in health care settings can be performed by washing with soap and water.

Component	Recommendation	Comments
	patient contact, contact with potentially infectious material, and before putting on and upon removal of PPE, including gloves • Health care facilities should ensure that supplies for performing hand hygiene are available	KDHE does not recommend use of alcohol-based hand rubs alone.
Environmental Infection Control	• Refer to main KDHE Ebola Virus Preparedness and Response Plan document	
Safe Injection practices	• Facilities should follow safe injection practices as specified under Standard Precautions	• Any injection equipment or parenteral medication container that enters the patient treatment area should be dedicated to that patient and disposed of at the point of use.
Duration of Infection Control Precautions	• Duration of precautions should be determined on a case-by-case basis, in conjunction with local health department, KDHE, and federal health authorities.	• Factors that should be considered include, but are not limited to: presence of symptoms related to EVD, date symptoms resolved, other conditions that would require specific precautions (e.g., tuberculosis, *Clostridium difficile*) and available laboratory information
Monitoring and Management of Potentially Exposed Personnel	• Facilities should develop policies for monitoring and management of potentially exposed HCP • Facilities should develop sick leave policies for HCP that are non-punitive, flexible and consistent with public health guidance ○ Ensure that all HCP, including staff who are not directly employed by the health care facility but provide essential daily services, are aware of the sick leave policies. • Persons with percutaneous or	

Component	Recommendation	Comments
	mucocutaneous exposures to blood, body fluids, secretions, or excretions from a patient with suspected EVD should ○ Stop working and immediately wash the affected skin surfaces with soap and water. Mucous membranes (e.g., conjunctiva) should be irrigated with copious amounts of water or eyewash solution ○ Immediately contact occupational health/supervisor for assessment and access to postexposure management services for all appropriate pathogens (e.g., Human Immunodeficiency Virus, Hepatitis C, etc.) • HCP who develop sudden onset of fever, intense weakness or muscle pains, vomiting, diarrhea, or any signs of hemorrhage after caring for patient with suspected or confirmed EVD should ○ Not report to work or should immediately stop working ○ Notify their supervisor ○ Seek prompt medical evaluation and testing ○ Notify KDHE ○ Comply with work exclusion until they are deemed no longer infectious to others	
Monitoring, Management, and Training of Visitors	• Avoid entry of visitors into the patient's room ○ Exceptions may be considered on a case by case basis for those who are	

Component	Recommendation	Comments
	essential for the patient's wellbeing. • Establish procedures for monitoring managing and training visitors. • Visits should be scheduled and controlled to allow for: ○ Screening for EVD (e.g., fever and other symptoms) before entering or upon arrival to the hospital ○ Evaluating risk to the health of the visitor and ability to comply with precautions ○ Providing instruction, before entry into the patient care area on hand hygiene, limiting surfaces touched, and use of PPE according to the current facility policy while in the patient's room ○ Visitor movement within the facility should be restricted to the patient care area and an immediately adjacent waiting area.	

Use of a Trained Observer

Because the sequence and actions involved in each donning and doffing step are critical to avoiding exposure, a trained observer will read aloud to the healthcare worker each step in the procedure checklist and visually confirm and document that the step has been completed correctly. The trained observer is a dedicated individual with the sole responsibility of ensuring adherence to the entire donning and doffing process. The trained observer will be knowledgeable about all PPE recommended in the facility's protocol and the correct donning and doffing procedures, including disposal of used PPE, and will be qualified to provide guidance and technique recommendations to the healthcare worker. The trained observer will monitor and document successful donning and doffing procedures, providing immediate corrective instruction if the healthcare worker is not following the recommended steps. The trained observer should know the exposure management plan in the event of an unintentional break in procedure.

Recommended PPE for Trained Observer during Observations of PPE Doffing

The trained observer should not enter the room of a patient with Ebola, but will be in the PPE removal area to observe and assist with removal of specific components of PPE. The observer should not participate in any Ebola patient care activities while conducting observations. The following PPE are recommended for trained observers:

- Single-use (disposable) impermeable gown that extends to at least mid-calf or coverall without integrated hood.
- Single-use (disposable) full face shield.
- 2 layers of nitrile gloves. The inner gloves (closest to the skin) should be tucked under the sleeve of the coverall. The outer pair of gloves should have extended cuffs; ensure the extended cuffs are pulled over the sleeves of the gown or coverall
- Single-use (disposable) fluid-resistant or impermeable shoe covers. Shoe covers should allow for ease of movement and not present a slip hazard to the worker.

Trained observers should don and doff selected PPE according to same procedures as healthcare workers caring for the patient. If the trained observer assists with PPE doffing, then the trained observer should disinfect outer-gloved hands with an *EPA-registered disinfectant wipe (with a label claim of potency at least equivalent to that for a non-enveloped virus) or ABHR immediately after contact with healthcare worker's PPE.

Kansas
Department of Health and Environment

Personal Protective Equipment (PPE) Guidelines for Ebola Response Risk Assessment & Patient Care

REVISED 29 October 2014

All persons entering the hospital room of a patient with suspected or confirmed Ebola should adhere to the KDHE PPE guidance as detailed in Appendix 4. It is important to note that individuals who utilize the Tier 1 level of personal protective equipment (PPE) as detailed in Appendix 4 will be exempt from the 21-day restricted movement period that begins after their last contact with the patient or potentially infectious materials. Active monitoring and a prohibition on travel by commercial conveyances will still apply for these individuals. However, if the employee reports or is observed by a PPE trained observer to have experienced a needle stick or breach in PPE protocol, the full 21-day restricted movement period will apply. Health care workers potentially exposed to Ebola virus who utilize a lower than Tier 1 level of PPE during patient care will be subjected to active monitoring and restricted movement, except such workers may continue to work as part of a dedicated Ebola virus disease patient care team, and may not provide care or services to any other patient, until 21 days after the last known potential exposure. Daily symptom and temperature monitoring should commence as soon as there is any exposure to Ebola.

Tier 1 Level of PPE Recommended	
PPE Item	**General Guidelines**
Suit	Impermeable (waterproof), single-use (disposable) coverall. Coverall without integrated hood may be acceptable so long as head and neck are fully covered with a single-use disposable hood used in conjunction with PAPR (see below). Coveralls with or without integrated socks are acceptable, but must be compatible with selected footwear and boot covers. Consideration should be given to selecting coveralls with thumb hooks to secure sleeves over inner gloves.
Gloves	2 layers of nitrile gloves. The inner gloves (closest to the skin) should be tucked under the sleeve of the coverall. The outer pair of gloves should have extended cuffs; ensure the extended cuffs are pulled over the sleeves of the gown or coverall. Outer pair may be taped to coverall if copious amount of bodily fluids are present or if using coveralls without thumb hooks in the sleeves, and use of tape does not hinder the doffing process.
Respirator/Face protection	A Powered Air Purifying Respirator (PAPR) with a full face shield, helmet, or headpiece, with attached HEPA filter. Any reusable helmet or headpiece must be covered with a single-use (disposable) hood that extends to the shoulders and fully covers the neck and is compatible with the selected PAPR. The facility should follow manufacturer's instructions for decontamination of all reusable components and, based upon those instructions, develop facility protocols that include the designation of responsible personnel who assure that the equipment is appropriately reprocessed and that batteries are fully charged before reuse. • A PAPR with a self-contained filter and blower unit integrated inside the helmet is preferred. • A PAPR with external belt-mounted blower unit requires adjustment of the sequence for donning and doffing.
Footwear	Latex or rubber boot or single-use (disposable), impermeable, boot covers that extend to at least mid-calf. Boot covers should allow for ease of movement and not present a slip hazard to the worker.
Disinfection	Disinfect gloves, coverall, boots or boot covers, and external surfaces of PAPR using an EPA-registered disinfectant wipe (which has a label claim of potency at least equivalent to that for a non-enveloped virus) or a solution of one part bleach (with minimum 5% chlorine concentration) to nine parts water following facility procedures. Place all reusable PAPR components in an area or container designated for the collection of PAPR components for disinfection; follow manufacturer's instructions.
Tier 2 Level of PPE Recommended (See next page)	

Tier 1 Level of PPE Recommended on Previous Page	
Tier 2 Level of PPE Recommended	
PPE Item	***General Guidelines***
Body and head covering	Single-use (disposable) impermeable gown that extends to at least mid-calf AND a single-use (disposable) surgical hood that covers the head and neck. The surgical hood must cover all of the hair and ears and extend past the neck to the shoulders. Single-use (disposable), impermeable apron that covers the torso to the level of the mid-calf should be used if Ebola patients have vomiting or diarrhea, or if copious amounts of any body fluid are present. An apron provides addition protection against exposure of the front of the body to body fluids or excrement.
Gloves	2 layers of nitrile gloves. The inner gloves (closest to the skin) should be tucked under the sleeve of the coverall. The outer pair of gloves should have extended cuffs; ensure the extended cuffs are pulled over the sleeves of the gown or coverall. Outer pair may be taped to coverall if copious amount of bodily fluids are present or if using coveralls without thumb hooks in the sleeves, and use of tape does not hinder the doffing process.
Eye protection and face shield	Single-use (disposable) full face shield either alone or in combination with indirectly vented, anti-fog coated goggles that can be worn under the face shield without compromising the integrity of full face protection.
Respirators	Single-use (disposable) N95 respirator. If a NIOSH-certified fit-tested disposable N95 respirator is used in facility protocols, ensure compliance with all elements of the OSHA Respiratory Protection Standard, 29-CFR 1910.134, including fit testing, medical evaluation and training of the healthcare worker. Healthcare workers must perform a user seal check each time the N95 respirator is donned. N95 respirators are only to be used in combination with surgical hood, full face shield (see above), and goggles (if used).
Footwear	Single-use (disposable) impermeable boot covers that extend to at least mid-calf. Boot covers should allow for ease of movement and not present a slip hazard to the worker.
PPE Recommended for Trained Observer	
	General Guidelines
The trained observer should not enter the room of a patient with Ebola, but will be in the PPE removal area to observe and assist with removal of specific components of PPE. The observer should not participate in any Ebola patient care activities while conducting observations.	• Single-use (disposable) impermeable gown that extends to at least mid-calf or coverall without integrated hood. • Single-use (disposable) full face shield. • 2 layers of nitrile gloves. The inner gloves (closest to the skin) should be tucked under the sleeve of the coverall. The outer pair of gloves should have extended cuffs; ensure the extended cuffs are pulled over the sleeves of the gown or coverall • Single-use (disposable) fluid-resistant or impermeable shoe covers. Shoe covers should allow for ease of movement and not present a slip hazard to the worker. • Head cover to ensure complete skin coverage should be utilized if there is any risk of splatter/spray during the doffing procedure and the observer is nearby.

Additional PPE Resources:

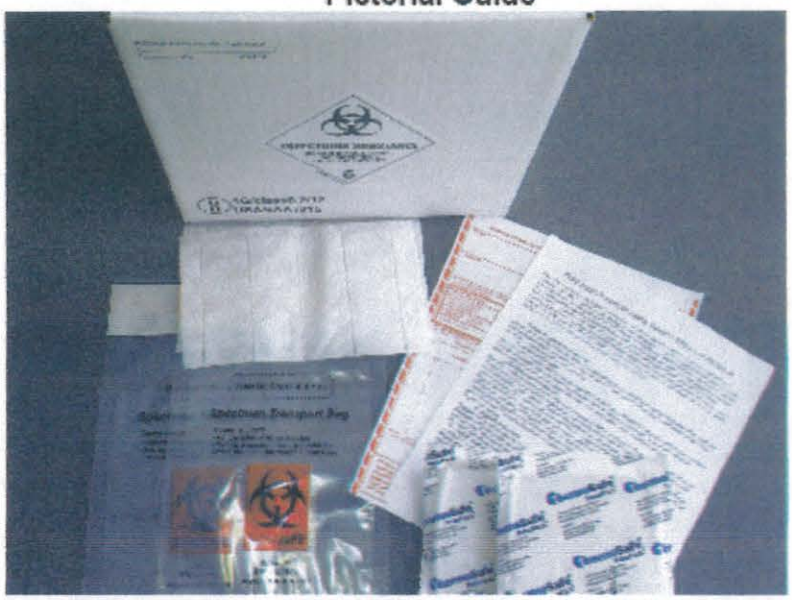
- Personal Protective Equipment, General Requirements: 1910.132
  https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9777&p_table=STANDARDS
- Fit Testing Procedures: 1910.134 App A
  https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=9780

Kansas Department of Health & Environment
REVISED: 29 October 2014

Appendix 5

Kansas Department of Health and Environment

Kansas Health and Environmental Laboratories – Suspected Ebola Specimen Packaging and Shipping System Pictorial Guide



Note: Category A: An infectious substance in a form capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy humans or animals when exposure to it occurs. An exposure occurs when an infectious substance is released outside of its protective packaging, resulting in physical contact with humans or animals. A list of Category A, Infectious Substances can be found in 49 CFR Parts 171-175 Hazardous Materials. Examples: Ebola Virus, Bacillus anthracis cultures, Brucella cultures, HIV cultures

Kansas
Department of Health and Environment

Kansas Health and Environmental Laboratories – Suspected Ebola Specimen Packaging and Shipping System Guide

1) Fiberboard and Styrofoam Infectious Shipping System with cold packs; Secondary Containers (95 kPa bags); Absorbent sleeves; Instruction Sheet; Shipper's Declaration.

2) Carefully read the Instruction Sheet provided in the Infectious Shipper.

3) Lavender (EDTA) Vacutainer with patient information.

NOTE: Do Not use Glass Tubes. Container must be secured with ParaFilm to prevent leaks.

4) Place primary container into absorbent sleeves. No more than 50mLs are allowed per shipping system.

5) Wrap and insert specimen into 95 kPa biohazard bag (secondary container). DO NOT put any paperwork inside secondary container.

6) Place bagged specimen on frozen cold pack inside Styrofoam Shipper.

7) Place second cold pack on top of specimen bag then replace Styrofoam container top.

8) Additional information can be placed on top of Styrofoam lid. Paperwork should be placed in a bundle and placed on the cooler lid.

9) Secure the flaps on the outer package of the system with tape and complete the mailing labels. 24-hr emergency telephone number is mandatory.

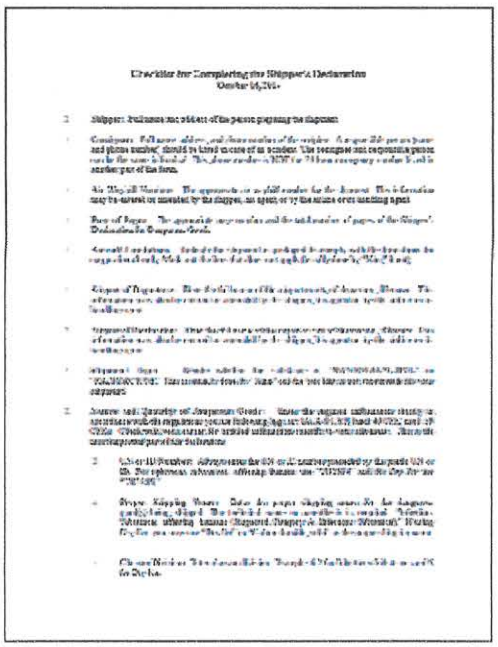
10) Proper Shipping Name is: "Infectious Substance, Affecting Humans". In parentheses: "Suspect Category A Infectious Substance".

11) Complete the Shipper's Declaration (see attached Checklist) and place in plastic pouch located on back of Infectious Shipper; seal the pouch.

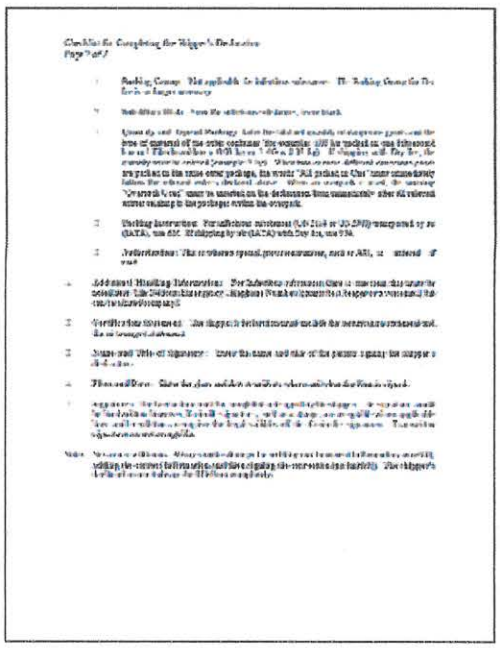
12) Outer labeling includes: UN2814, orientation labels, class 6.2 infectious substance.

Kansas Health and Environmental Laboratories – Suspected Ebola Specimen Packaging and Shipping System Pictorial Guide

- Checklist



Checklist for Completing the Shipper's Declaration
October 16, 2014



Checklist for Completing the Shipper's Declaration
Page 2 of 2

Checklist may also be found at the KDHE's website: http://www.kdheks.gov/labs/packaging_and_shipping.html

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Appendix 6

AMERICAN SOCIETY FOR MICROBIOLOGY

September 10, 2014 (2nd version*)

Interim Laboratory Guidelines for Handling/Testing Specimens from Cases or Suspected Cases of Hemorrhagic Fever Virus (HFV)
(*This revision has been made by a CLP subcommittee after consultation with CDC personnel.)

On August 5, 2014, the Centers for Disease Control and Prevention (CDC) issued an Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease which can be seen here http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html. The Committee on Laboratory Practice (CLP) of the ASM acknowledges that specimens from suspect HFV patients may arrive at the routine testing laboratory without the knowledge of the laboratory and agrees with the CDC that all laboratory testing must follow standard precautions. In addition, the CLP has drafted this document outlining enhanced precautions which some institutions may choose to adopt in an abundance of caution in order to assure the safety of their testing personnel and to provide appropriate medically necessary laboratory testing to suspect HFV patients. This document is presented as one possible approach to testing of patients with suspected HFV. Guidelines for testing should be thoroughly discussed with the appropriate medical personnel prior to implementation and may include significant modifications of protocols recommended in this document. Contact your State Health Laboratory for any questions regarding VHF Testing and submission of specimens to the CDC (SEE NOTE BELOW).

General Considerations:

A. Initial testing of patients upon presentation may be limited to CDC required tests for confirmation of Ebola or other HFV diagnosis. Additional testing may be determined upon consultation with Infectious Diseases (ID) and Microbiology. Any referral testing from suspect patients should be discussed with the referral laboratory prior to submitting specimens.
B. All specimens taken from the patient may be labelled as "SUSPECTED HFV".
C. See Table 1 below for detailed description of testing that may be considered after consultation.
D. Testing that requires specimen removal from patient's room and transport of samples to laboratory should be kept to a minimum (do not use a pneumatic tube system).
E. Specimen processing may be performed in the patient's room, nearby in a contained testing area, inside a biological safety cabinet [BSC] located in a negative pressure room (e.g., an AFB suite) or inside a BSC located in an isolated area of the laboratory. Specimen processing should be performed while wearing appropriate PPE (impermeable gown, double gloves, eye protection, N-95 mask, shoe covers). PPE should not be re-used or leave the testing area. Place all PPE into a double-bag which contains absorbent pads soaked with bleach, then placed in a rigid plastic, impervious container for disposal (see disposal instructions at the end of this document).

Table 1 - Testing and Laboratory Procedures for Consideration:

Test	Recommendation
	Wipe specimen containers with a laboratory bleach solution, place into a double-bag that contains absorbent pads soaked with bleach then place in a biohazard rigid transport container. All transport containers should be wiped down with laboratory bleach prior to leaving the patient's room. Laboratory processing of specimens may take place in the patient's room or as described above in General Considerations: E. AS AN OPTION: Document hand-off, receipt, referral and disposal of all specimens.
Chemistry, Coagulation,	Testing may be limited to iSTAT or equivalent POC testing systems and performed in the patient's

Hematology	room, particularly for high risk or known positive patients.
Urinalysis	Urinalysis available as a urine dipstick may be performed in the patient's room.
Malaria Testing: (Rapid Malaria antigen testing may be performed in the patient's room by qualified laboratory personnel; it should be noted that this assay is not as sensitive for diagnosis as malaria smears).	1. Collect in a lavender top (EDTA) blood tube. 2. Preparation of thin blood smears may be done inside or outside of the patient's room. Wipe the outside of the lavender (EDTA) blood tube with bleach prior to removing from the patient's room (be careful not to remove patient identifying information). The processing steps 3 & 4 below should be done as described above in General Considerations: E. 3. Remove stopper of lavender (EDTA) blood tube with a gauze wipe soaked in bleach to prevent aerosol formation. 4. Prepare a thin blood film, fix in methanol for 30 minutes then place in dry heat at 95°C for 1 hr. to inactivate the specimen. 5. The smears can then be stained with Giemsa and read as usual. 6. WBC and platelet count can be estimated from the stained blood film. NOTE: Thick smears for malaria diagnosis may be done at the discretion of the laboratory director.
Blood Cultures: Perform only if required and minimize blood draws for blood cultures. Use plastic bottles if available.	Once received in the laboratory, all specimens should be opened as described above in General Considerations: E. Wipe the outside of the bottles with bleach and inspect for any signs of breakage and positivity before loading onto the blood culture instrument or placing into an incubator for manual incubation. If the blood culture bottles are flagged as positive, or if they show any sign of positivity upon visual inspection, unload the bottles from the instrument or remove from the incubator, place the bottle(s) into a double-bag that contains absorbent pads soaked with bleach, place in a biohazard rigid plastic impervious container and process as described above in General Considerations: E. 1. Prepare slides for Gram stain examination and allow them to dry. 2. Fix the blood smear in methanol for 30 minutes, followed by dry heat at 95°C for 1 hour to inactivate the specimen. Perform testing of the gram stain QC smear in this same manner. 3. The smears can then be stained and read as usual. Do not perform any direct testing on positive blood cultures. Inoculate plates as per protocol based on Gram stain result. 1. Use shrink seal (Parafilm® or other suitable plate wrap) on all sub-cultured plates, place plates in a biohazard baggie and incubate in the AFB suite (if available) in the 35°C CO_2 incubator. 2. Examine plates for growth twice per day. 3. Perform all spot testing and inoculations of appropriate ID/AST systems from isolated colonies. AS AN OPTION: If any growth occurs, subculture the organism (as described above in General Considerations: E.) onto fresh plates and incubate overnight. Work only from the sub-cultured plates to minimize risk of contact with blood from the patient.
Other specimens for bacterial culture: Unless critically needed, do not perform.	Prepare (and transport) all specimens leaving the patient's room as previously described using laboratory bleach. All specimens should be processed as described above in General Considerations: E. If centrifugation is necessary, use covered carriers as for AFB processing. If specimens show signs of breakage or leakage – do not open. Consult with the Laboratory Director. Gram stains may be prepared as directed in the Blood culture section above. Seal culture plates. Perform all spot testing and inoculations of appropriate ID/AST systems from isolated colonies. AS AN OPTION: If any growth occurs, subculture the organism (as described above in General Considerations: E.) onto fresh plates and incubate overnight. Work only from the sub-cultured plates to minimize risk of contact with blood from the patient.

Specimen storage:	All specimen containers should be wiped with bleach, placed into double-bags that contains absorbent pads soaked with bleach, then placed in a rigid plastic, impervious container and isolated until they can be disposed of in an appropriate manner (see specimen decontamination and disposal section below). Long-term storage of specimens is not permitted for any known suspect HFV patient.
Specimen decontamination and disposal	All specimens should be autoclaved prior to disposal. If no autoclave is available on site, contact the laboratory director for procedures for discarding of specimens and other laboratory waste.

NOTE: Contact information for state health laboratories can be found here: http://www.aphl.org/aphlprograms/preparedness-and-response/Pages/Emergency-Lab-Contacts.aspx
Additional information regarding procedures for the collection, handling, and testing of specimens for EVD (Ebola) and sending specimens to the CDC for EVD testing have been issued by the CDC and are posted at the following site: http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html and http://www.cdc.gov/ncezid/dhcpp/vsnb/specimens.html

The American Society for Microbiology is the world's largest scientific Society comprised of individuals in the microbiological sciences. The mission of the ASM is to advance the microbiological sciences as a vehicle for understanding life processes and to apply and communicate this knowledge for the improvement of health and environmental and economic well-being worldwide. The Interim Guidance published here represents recommended practices as identified by subject matter experts that are members of ASM. This Interim Guidance is advisory only and should be regarded as a guide that the user may or may not choose to adopt, modify, or reject. The acceptance or use of this Interim Guidance is completely voluntary, and is not intended to be used in place of any federal, state, or other territorial governmental standards or regulations that may apply to this topic or subject matter. Guidelines for testing should be thoroughly discussed with the appropriate medical personnel prior to implementation.

Appendix 7

Waste Management Guidelines for Ebola Response

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Ebola waste is defined as any untreated medical waste generated in the care of patients with known or suspected Ebola virus disease (EVD) including, but not limited to, medical equipment, sharps, linens, used health care products, used Personal Protective Equipment, and all absorbent or un-cleanable items contaminated or potentially contaminated by a suspected EVD patient. Ebola waste is a Category A infectious substance and a Resource Conservation and Recovery Act (RCRA) hazardous waste in the State of Kansas. A RCRA hazardous waste must be transported by a registered hazardous waste transporter and disposed of at a permitted hazardous waste facility (an incinerator). Facilities need to identify such transporters and discuss their requirements prior to an incident, particularly if the facility is unable to manage Ebola waste according to WHO/UN guidelines which recommend sterilization. Ebola waste that has been treated (sterilized) by the generator using effective (autoclaving) procedures may be managed as other Category B Regulated Medical Waste (RMW) in accordance with state and federal transportation and disposal requirements.

Medical Facility WITH Autoclaving Capability	*Medical Facility WITHOUT Autoclaving Capability*
Sterilize Ebola waste in an on-site autoclave as waste is generated to avoid the accumulation of large volumes of untreated Ebola waste on-site. • Waste should be in biohazard autoclave bags and should be no more than three-fourths full. Biological and Chemical Indicators should be utilized with every autoclave cycle. • Tie bags loosely and add about 50 mL of water to each bag. • Tape a biological indicator ampoule to the outside of the bag and place bag in a metal autoclave pan or tray. (Note that effectiveness is increased with metal trays.) • Place a chemical indicator (not sterile indicator tape) near the mouth of the bag. • Autoclave contents for a minimum of 60 min. at 121°C, and 15psi, with slow exhaust. • The Autoclave log should document the contents, duration, time, pressure, and temperature for the autoclave cycle. • Document that the chemical indicator strip provides initial indication of a successful run. If the chemical indicator fails, then the sterilization should be repeated with fresh indicator. • Label the bag with the date and time of the run that corresponds with the biological indicator ampoule, autoclave log, and chemical indicator for that run. • Hold labelled autoclaved waste until the biological ampoule indicates successful sterilization. (NOTE: The biological indicator must be incubated according to manufacturer's directions for 48 hours to confirm effectiveness of the autoclave to inactivate organisms.) • AFTER biological indicator confirmation, document that bags associated with that run are ready for storage and disposal as Category B Regulated Medical Waste.	Package the waste following Department of Transportation (DOT) requirements (Title 49, Part 173.196, and other associated DOT guidance). • Properly label the packaged waste and place into secure storage. • As soon as such waste handling processes are initiated, contact KDHE's Bureau of Waste Management to obtain assistance in identifying and selecting a waste transporter and disposal facility.

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Collection and Treatment of Human Body Fluids from Isolated Patient

Human body fluids from a patient in isolation should be collected for disposal as Ebola waste or collected and treated with 1 part of household bleach to 9 parts water for at least 10 minutes or longer prior to discharge to the sanitary sewer. Facilities should discuss preferred concentrations and treatment time for bodily fluid wastes utilizing this method with their Public Waste Water Treatment facility director and local emergency manager.

Toilet bowls should be primed with 1 part of household bleach to 9 parts water based on volume in the toilet bowl prior to introduction of any wastes (i.e., prior to patient use) to ensure wastes voided during toilet equilibrium actions are appropriately treated. Body fluids expelled directly from the patient into a toilet must be treated again with 1 part of household bleach to 9 parts water for *at least 10 minutes* prior to discharge to the sanitary sewer; this will require consideration of the toilet bowl water volume to ensure a 1 part bleach to 9 parts of water solution is achieved during treatment.

Onsite Storage of Ebola Waste

The DOT shipping packaging satisfies the hazardous waste packaging requirement for untreated Ebola waste. Facilities unable to sterilize waste as it accumulates should have this packaging readily available.

- The outer packaging should be rigid plastic 55-gallon drums or larger over-pack plastic drums. These containers are capable of being incinerated with the contained waste.
- All DOT labeling requirements can be included on the "Hazardous Waste" label, which must also include the date the container was placed into storage (*there is a 90-day storage time limit*).
- Affix the DOT "Infectious Substance" label to the outer package.

Labeling information includes the following:

- DOT shipping name - "Infectious substances, affecting humans (Ebola Hazardous Waste)," hazardous class/division 6.2 (DOT), DOT ID # UN2814. The hazardous waste code "EBOLA" is to be put into the waste code section of the uniform hazardous waste manifest.

Additional Waste Management Resources:

- US Department of Transportation (DOT) – Hazardous Materials Regulations (HMR, 49 C.F.R., Parts 171-180)

Additional Information on Kansas Ebola Virus Preparedness and Response Plan:

- www.kdheks.gov

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Ebola Waste Management in Kansas