

Background and Situation Update

The ongoing epidemic of Ebola virus disease (EVD) in West Africa is the largest in history. It was first reported in March, 2014 in the West African nations of Guinea, Liberia, and Sierra Leone. Travel-associated cases have subsequently appeared in Nigeria, Senegal, Spain, the United States, Mali, the United Kingdom, and Italy. Limited local secondary transmission was reported in some of these countries. As of 13 September 2015, more than 28,000 total cases and 12,000 deaths had been reported in the three primary countries of Guinea, Liberia, and Sierra Leone. Updated case counts from the epidemic are available from the U.S. Centers for Disease Control and Prevention (CDC) website at <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html>. Counts are frequently updated.

Although the incidence of EVD in the most affected countries has decreased substantially since peaking in late 2014 and early 2015, the epidemic continues in Guinea and Sierra Leone. On 09 May 2015, the World Health Organization (WHO) had declared the end of the epidemic in Liberia, and the U.S. CDC classified Liberia as a country “with former widespread transmission and current, established control measures”. However, on 29 June 2015, a new confirmed case was reported – the first since 20 March 2015. Five additional cases were subsequently reported. The last two reported cases tested negative for a second time on 23 July, and all contacts have completed their 21-day follow-up period.

A map of Africa is provided in Figure 1. The CDC has maintained Level 3 Travel Advisories (Avoid Nonessential Travel) for Guinea and Sierra Leone. Effective 03 September 2015 the CDC Travel Advisory for Liberia was downgraded to Level 1 (Practice Usual Precautions). Additional details can be found at <http://wwwnc.cdc.gov/travel/diseases/ebola>. 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 outbreak in West Africa continues, additional 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.

Kansas Preparedness and Response Planning Activities

Preparedness and Response Plan Development

In response to the outbreaks in Africa and the potential for travel-associated cases occurring in Kansas, the Kansas Department of Health and Environment (KDHE) has developed this preparedness and response plan. The first version was published 18 August 2014. The document has been periodically updated as needed.

The KDHE Ebola Virus Preparedness and Response Plan is an adjunct planning document to the Kansas Response Plan (state all hazards preparedness plan) and its companion Biological Incident Annex. In addition, the KDHE Bureau of Epidemiology and Public Health Informatics has updated its Viral Hemorrhagic Fever Disease Investigation Guideline.

Stakeholder Engagement

On 10 October 2014 KDHE held its first update meeting for stakeholders. The purpose of the meeting was to present the KDHE Ebola Preparedness and Response Plan. The meeting was well attended, with participants joining in person and via telephone / webinar.

Beginning 16 October 2014 KDHE initiated weekly teleconferences with population health partners (including local health departments, hospitals, and others) focusing exclusively on Ebola virus. During these teleconferences, KDHE provided situational updates, revisions to the KDHE Ebola Virus Preparedness and Response Plan, documents and other resources, and responded to participant questions. These teleconferences continued through 20 November 2014. Participation in these teleconferences ranged from 140 lines on 20 November to 750 lines on 16 October. Beginning November 25, 2014, KDHE resumed its regular schedule for population health teleconferences, with an update on Ebola virus being included as part of the agenda.

Also on 16 October 2014, KDHE established a dedicated email address (Response2014@kdheks.gov) for interested parties to utilize to submit questions, comments, or concerns.

Senior KDHE staff involved in developing and managing the Ebola Preparedness and Response Plan and attended the first in a series of meetings with each of the seven Regional Health Care Coalitions throughout the state on 17 November 2014. These meetings have been well attended, ranging from 74 participants to 118 participants to date.

Planning Seminar and Tabletop Exercises

On 28 October 2014, KDHE, in conjunction with the Kansas Division of Emergency Management (KDEM), conducted an executive state-level Ebola virus disease planning seminar. This seminar included senior staff representatives from 20 state agencies and focused primarily on state response activities.

A state-level tabletop exercise, planned by KDHE and KDEM staff, was conducted on 20 November 2014. This exercise also focused on state-level response activities should a case of Ebola virus disease be reported in Kansas. On 16 December 2014, all state agency public information officers that would likely be involved the Kansas Joint Information Center participated in a tabletop exercise. Finally, a second state-level tabletop exercise was held on 09 January 2015, which focused on additional preparedness and response capabilities.

Regional Medical Bio-Response Teams and KDHE Bio- Strike Team

KDHE has utilized the Kansas System for the Early Registration of Volunteers (K-SERV) to recruit health care workers and other staff who would be willing to volunteer their services to respond in the event a case of Ebola virus disease occurs in Kansas. Teams would deploy to assist local facilities that receive a patient with Ebola when requested by those facilities and their duties would depend on their skills, credentials and training. KDHE additionally has identified a Bio-Strike Team comprised of KDHE staff that would be able to provide technical assistance to and help identify resources for a facility with an Ebola patient.

Federal Cooperative Agreement Funding

KDHE has been awarded a total of \$3,546,642 in federal cooperative agreements to enhance preparedness and capacity for response to EVD and other high-consequence infectious pathogens throughout the public health and healthcare systems. A brief summary of each of these programs is provided here.

Epidemiology and Laboratory Capacity for Infectious Diseases (ELC): \$788,118 (supplement)

The Epidemiology and Laboratory Capacity for Infectious Diseases (ELC) cooperative agreement is an ongoing program in the Bureau of Epidemiology and Public Health Informatics. It provides funding to support crosscutting infectious disease epidemiology, laboratory, and health information systems as well as specific funding for foodborne illness, healthcare-associated infections, West Nile virus and other arboviral diseases, influenza surveillance, vaccine-preventable diseases, rabies, and others.

The Ebola virus supplemental funding will be utilized to enhance infection prevention capacity in hospitals and biosafety and biosecurity in clinical laboratories. Specific components include working with hospitals to conduct comprehensive assessments of infectious disease preparedness and infection prevention capabilities, improving outbreak detection and reporting, developing and implementing a validation plan for healthcare-associated infections, and conducting risk

assessments at the Kansas Health and Environmental Laboratories and sentinel laboratories throughout the state and developing action plans to mitigate identified gaps.

Public Health Emergency Preparedness (PHEP): \$1,678,016 (supplements)

Two supplemental cooperative agreement awards were provided by the PHEP program. Funding from these awards provided additional support for further development and implementation of Ebola virus and other infectious disease preparedness and planning activities, as well as support for public health monitoring of travelers from Ebola virus-affected countries and other preventive measures, purchase of personal protective equipment, laboratory equipment and supplies, securing a safe transport mechanism for suspected or confirmed patients with EVD, provision of technical assistance and training, and enhancing community-level preparedness. Local health departments received a total of \$1,099,914 in contractual awards.

Hospital Preparedness Program: \$1,080,508 (stand-alone award)

The primary objectives of the Hospital Preparedness Program Ebola virus cooperative agreement include: 1) Expansion of the current Ebola Preparedness and Response Plan to include the tiered approach for response, Just in Time training, transport of patients, and Ebola virus disease patient care; 2) Development of MOU(s) with the regions' Ebola Treatment Center(s) to be shared with assessment hospitals and healthcare coalitions; 3) Further development of Ebola/highly infectious disease exercise materials to include a secret shopper scenario and patient care simulation; 4) PPE purchase and sustainment PPE trainings; 5) Purchase a cache of corrugated drums to have on hand for hospitals when needed; and 5) Development of a Standard Operating Procedure template to assist EMS providers and local hospitals to develop an Ebola waste disposal plan.

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