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CDC HEALTH ADVISORY

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**Guidelines for Evaluation of US Patients Suspected
of Having Ebola Virus Disease**

Summary

The Centers for Disease Control and Prevention (CDC) continues to work closely with the World Health Organization (WHO) and other partners to better understand and manage the public health risks posed by Ebola Virus Disease (EVD). To date, no cases have been reported in the United States. The purpose of this health update is 1) to provide updated guidance to healthcare providers and state and local health departments regarding who should be suspected of having EVD, 2) to clarify which specimens should be obtained and how to submit for diagnostic testing, and 3) to provide hospital infection control guidelines.

U.S. hospitals can safely manage a patient with EVD by following recommended isolation and infection control procedures. Please disseminate this information to infectious disease specialists, intensive care physicians, primary care physicians, hospital epidemiologists, infection control professionals, and hospital administration, as well as to emergency departments and microbiology laboratories.

Background

CDC is working with the World Health Organization (WHO), the ministries of health of Guinea, Liberia, and Sierra Leone, and other international organizations in response to an outbreak of EVD in West Africa, which was first reported in late March 2014. As of July 27, 2014, according to WHO, a total of 1,323 cases and 729 deaths (case fatality 55-60%) had been reported across the three affected countries. This is the largest outbreak of EVD ever documented and the first recorded in West Africa.

EVD is characterized by sudden onset of fever and malaise, accompanied by other nonspecific signs and symptoms, such as myalgia, headache, vomiting, and diarrhea. Patients with severe forms of the disease may develop hemorrhagic symptoms and multi-organ dysfunction, including hepatic damage, renal failure, and central nervous system involvement, leading to shock and death. The fatality rate can vary from 40-90%.

In outbreak settings, Ebola virus is typically first spread to humans after contact with infected wildlife and is then spread person-to-person through direct contact with bodily fluids such as, but not limited to, blood, urine, sweat, semen, and breast milk. The incubation period is usually 8–10 days (ranges from 2–21 days). Patients can transmit the virus while febrile and through later stages of disease, as well as postmortem, when persons touch the body during funeral preparations.

Patient Evaluation Recommendations to Healthcare Providers

Healthcare providers should be alert for and evaluate suspected patients for Ebola virus infection who have both consistent symptoms and risk factors as follows: 1) Clinical criteria, which includes fever of greater than 38.6 degrees Celsius or 101.5 degrees Fahrenheit, and additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage; AND 2) Epidemiologic risk factors within the past 3 weeks before the onset of symptoms, such as contact with blood or other body fluids of a patient known to have or suspected to have EVD; residence in—or travel to—an area where EVD transmission is active; or direct handling of bats, rodents, or primates from disease-endemic areas. Malaria diagnostics should also be a part of initial testing because it is a common cause of febrile illness in persons with a travel history to the affected countries.

Testing of patients with suspected EVD should be guided by the risk level of exposure, as described below:

CDC recommends testing for all persons with onset of fever within 21 days of having a high-risk exposure. A high-risk exposure includes any of the following:

- percutaneous or mucous membrane exposure or direct skin contact with body fluids of a person with a confirmed or suspected case of EVD without appropriate personal protective equipment (PPE),
- laboratory processing of body fluids of suspected or confirmed EVD cases without appropriate PPE or standard biosafety precautions, or
- participation in funeral rites or other direct exposure to human remains in the geographic area where the outbreak is occurring without appropriate PPE.

For persons with a high-risk exposure but without a fever, testing is recommended only if there are other compatible clinical symptoms present and blood work findings are abnormal (i.e., thrombocytopenia <150,000 cells/ μ L and/or elevated transaminases) or unknown.

Persons considered to have a low-risk exposure include persons who spent time in a healthcare facility where EVD patients are being treated (encompassing healthcare workers who used appropriate PPE, employees not involved in direct patient care, or other hospital patients who did not have EVD and their family caretakers), or household members of an EVD patient without high-risk exposures as defined above. Persons who had direct unprotected contact with bats or primates from EVD-affected countries would also be considered to have a low-risk exposure. Testing is recommended for persons with a low-risk exposure who develop fever with other symptoms and have unknown or abnormal blood work findings. Persons with a low-risk exposure and with fever and abnormal blood work findings in absence of other symptoms are also recommended for testing. Asymptomatic persons with high- or low-risk exposures should be monitored daily for fever and symptoms for 21 days from the last known exposure and evaluated medically at the first indication of illness.

Persons with no known exposures listed above but who have fever with other symptoms and abnormal bloodwork within 21 days of visiting EVD-affected countries should be considered for testing if no other diagnosis is found. Testing may be indicated in the same patients if fever is present with other symptoms and blood work is abnormal or unknown. Consultation with local and state health departments is recommended.

If testing is indicated, the local or state health department should be immediately notified. Healthcare providers should collect serum, plasma, or whole blood. A minimum sample volume of 4 mL should be shipped refrigerated or frozen on ice pack or dry ice (no glass tubes), in accordance with IATA guidelines as a Category B diagnostic specimen. Please refer to <http://www.cdc.gov/ncezid/dhcpp/vspb/specimens.html> for detailed instructions and a link to the specimen submission form for CDC laboratory testing.

Recommended infection control measures

U.S. hospitals can safely manage a patient with EVD by following recommended isolation and infection control procedures, including standard, contact, and droplet precautions. Early recognition and identification of patients with potential EVD is critical. Any U.S. hospital with suspected patients should follow CDC's *Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Hemorrhagic Fever in U.S. Hospitals* (<http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html>). These recommendations include the following:

- **Patient placement:** Patients should be placed in a single patient room (containing a private bathroom) with the door closed.
- **Healthcare provider protection:** Healthcare providers should wear: gloves, gown (fluid resistant or impermeable), shoe covers, eye protection (goggles or face shield), and a facemask. Additional PPE might be required in certain situations (e.g., copious amounts of blood, other body

fluids, vomit, or feces present in the environment), including but not limited to double gloving, disposable shoe covers, and leg coverings.

- **Aerosol-generating procedures:** Avoid aerosol-generating procedures. If performing these procedures, PPE should include respiratory protection (N95 filtering facepiece respirator or higher) and the procedure should be performed in an airborne isolation room.
- **Environmental infection control:** Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is paramount, as blood, sweat, emesis, feces and other body secretions represent potentially infectious materials. Appropriate disinfectants for Ebola virus and other filoviruses include 10% sodium hypochlorite (bleach) solution, or hospital-grade quaternary ammonium or phenolic products. Healthcare providers performing environmental cleaning and disinfection should wear recommended PPE (described above) and consider use of additional barriers (e.g., shoe and leg coverings) if needed. Face protection (face shield or facemask with goggles) should be worn when performing tasks such as liquid waste disposal that can generate splashes. Follow standard procedures, per hospital policy and manufacturers' instructions, for cleaning and/or disinfection of environmental surfaces, equipment, textiles, laundry, food utensils and dishware.

Recommendations to Public Health Officials

If public health officials have a patient that is suspected of having EVD or has potentially been exposed and intends to travel, please contact CDC's Emergency Operations Center 1 (770) 488-7100.

The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.

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