

Ebola: What We Know Today and How We Can Prepare

**Satellite Conference and Live Webcast
Wednesday, October 1, 2014
11:00 a.m. – 12:00 p.m. Central Time**

**Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division**

Faculty

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Ebola Virus

- **Ebola is also known as Ebola Virus Disease (EVD) or Ebola Hemorrhagic Fever (EHF)**
- **First identified in 1976 near the Ebola River**

Ebola Virus

- **Ebola is caused by infection with a virus of the family *Filoviridae*, genus *Ebolavirus***
- **Five Ebola subspecies**
 - **Four of which are known to cause disease**

West Africa Outbreak

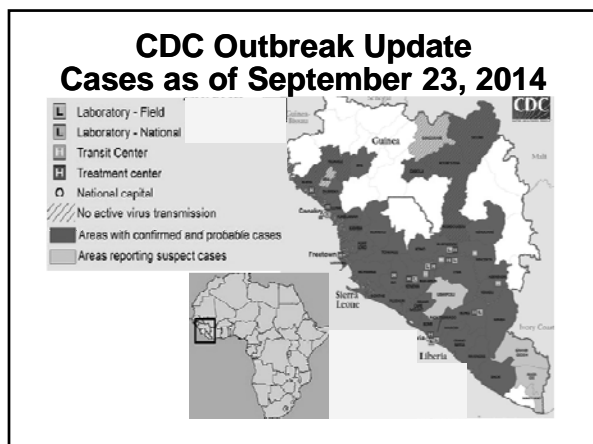
- **Largest Ebola outbreak in history**
- **First Ebola outbreak in West Africa**
- **Declared a Public Health Emergency of International Concern by the World Health Organization on August 8, 2014**

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

West Africa Outbreak

- **Currently affecting multiple countries**
 - **Guinea, Liberia, Sierra Leone, Nigeria and Senegal**
- **Case fatality rate estimated to be 70.8%¹**

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014



CDC Outbreak Update Cases as of September 23, 2014

- **Total Cases**
 - **Total Case Count: 6,574**
 - **Total Deaths: 3,091**

<http://www.cdc.gov/vhf/ebola/resources/distribution-map-guinea-outbreak.html>, Accessed 09/24/2014
<http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html>, Accessed 09/25/2014

CDC Outbreak Update Cases as of September 23, 2014

- **Guinea**
 - **Total Case Count: 1,074**
 - **Total Deaths: 648**
- **Liberia**
 - **Total Case Count: 3,458**
 - **Total Deaths: 1,830**

<http://www.cdc.gov/vhf/ebola/resources/distribution-map-guinea-outbreak.html>, Accessed 09/24/2014
<http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html>, Accessed 09/25/2014

CDC Outbreak Update Cases as of September 23, 2014

- **Nigeria**
 - **Total Case Count: 20**
 - **Total Deaths: 8**
- **Sierra Leone**
 - **Total Case Count: 2,021**
 - **Total Deaths: 605**

<http://www.cdc.gov/vhf/ebola/resources/distribution-map-guinea-outbreak.html>, Accessed 09/24/2014
<http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html>, Accessed 09/25/2014

CDC Outbreak Update Cases as of September 21, 2014

- **Senegal**
 - **Total Case Count: 1**
 - **Total Deaths: 0**

<http://www.cdc.gov/vhf/ebola/resources/distribution-map-guinea-outbreak.html>, Accessed 09/24/2014
<http://www.cdc.gov/vhf/ebola/outbreaks/guinea/index.html>, Accessed 09/25/2014

Difficulty in Controlling Disease in West Africa

- **Poor health care infrastructure**
- **Mistrust of the system**
- **Increased disease and death in HCWs**
- **Hear message of no cure and avoid Treatment Centers**
- **Contact tracing is a nightmare**

Difficulty in Controlling Disease in West Africa

- Inadequate education in use of PPE and IC practices
- Cultural habits regarding the dead and burial practices
- Handling of potentially infected animals

Healthcare Workers Serving in West Africa Have Died from Ebola



Dr. Mutooro Samuel



Dr. Sheik Umar Khan



Dr. Ameyo Stella Adadevoh



Dr. Abraham Borbor



Fr. Miguel Pajares



Dr. Samuel Brisbane

Healthcare Workers Serving in West Africa Have Survived Ebola



Dr. Kent Brantley



Nancy Writebol

Healthcare Workers Serving in West Africa Have Survived Ebola

- Two additional patients were admitted in September

Signs and Symptoms in Confirmed and Probable Ebola Patients, Guinea, Liberia, Nigeria and Sierra Leone¹

- Fever 87.1 %
- Fatigue 76.4 %
- Loss of Appetite 64.5 %
- Vomiting 67.6 %
- Diarrhea 65.6 %

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

Signs and Symptoms in Confirmed and Probable Ebola Patients, Guinea, Liberia, Nigeria and Sierra Leone¹

- Headache 53.4 %
- Abdominal Pain 44.3 %
- Muscle Pain 38.9 %
- Joint Pain 39.4 %
- Chest Pain 37.0 %

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

Signs and Symptoms in Confirmed and Probable Ebola Patients, Guinea, Liberia, Nigeria and Sierra Leone¹

- Cough 29.6 %
- Difficulty Breathing 23.3 %
- Difficulty Swallowing 32.9%
- Conjunctivitis 20.8 %
- Sore Throat 21.8 %

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

Signs and Symptoms in Confirmed and Probable Ebola Patients, Guinea, Liberia, Nigeria and Sierra Leone¹

- Unexplained Bleeding 18.0 %
- Confusion 13.3 %
- Hiccups 11.4 %
- Jaundice 10.4 %

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

Key Time Periods – Ebola Outbreak 2014¹

- Mean incubation period: 11.4 days
 - Approximately 95% within 21 days

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

* Plus-minus values are means \pm SD.

Key Time Periods – Ebola Outbreak 2014¹

- Mean time* after symptom onset to:
 - Hospitalization: 5.0 \pm 4.7 days
 - Discharge: 16.4 \pm 6.5
 - Death: 7.5 \pm 6.8

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

* Plus-minus values are means \pm SD.

Key Time Periods – Ebola Outbreak 2014¹

- Mean time* after hospitalization to:
 - Discharge: 11.8 \pm 6.1 days
 - Death: 4.2 \pm 6.4 days
- Mean length of hospital stay: 6.4 days

¹ Ebola Virus Disease in West Africa - The First 9 Months of the Epidemic and Forward Projections. WHO Ebola Response Team. NEJM 2014 Sep 22. Accessed 09/24/2014

* Plus-minus values are means \pm SD.

Symptoms of Ebola

- Fever (greater than 101.5°F)
- Severe headache
- Muscle pain
- Weakness
- Diarrhea
- Vomiting

Symptoms of Ebola

- Abdominal (stomach) pain
- Lack of appetite
- Unusual bleeding

Symptoms of Ebola

- Recovery from Ebola depends on the patient's immune response
- People who recover from Ebola infection develop antibodies that last for at least 10 years

How is Ebola Spread?

- Ebola is spread through direct contact (through broken skin or mucous membranes) by:
 - Person - to - person: Ill person's body fluids (blood, urine, saliva, feces, vomit and semen)

How is Ebola Spread?

- Surface - to - person: Objects (such as needles) contaminated with infected body fluids
- Animal - to - person: Contact with infected animals in Africa (wild animals hunted for meat or bats)
- Ebola cannot be spread by air, water, or food

Plea to the People of Liberia, Sierra Leone, Guinea & Nigeria

- Please regard this Ebola problem seriously
- Please seek medical attention if you become ill
- Please do not hide sick people in your homes

Plea to the People of Liberia, Sierra Leone, Guinea & Nigeria

- Please cooperate with authorities about not travelling if you are sick
 - Don't go back home to the village if sick
- Don't touch blood, urine, or any bodily fluid of sick person

Plea to the People of Liberia, Sierra Leone, Guinea & Nigeria

- Go to quarantine areas if you know you have been exposed
- Let the authorities take care of and bury the dead

Plea to HCW in the Region

- Please take infection control practices seriously
- Please learn about the disease and how it is spread
- A little bit of bodily fluid from an infected person can infect you if it comes into contact with skin or mucosa

Plea to HCW in the Region

- Learn how to put on and take off PPE correctly
- Above measures will help protect you, your colleagues and your patients in quarantine, who are not infected
- Think about other conditions that can mimic Ebola, like malaria or typhoid fever

Plea to HCW in the Region

- I thank you for all the risk you have taken, the hard work you have done and continue to do
- God will bless you

Case Definition for Ebola Virus Disease (EVD)

- **Person Under Investigation (PUI):**
A person who has BOTH consistent symptoms and risk factors:

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Case Definition for Ebola Virus Disease (EVD)

- 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

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Case Definition for Ebola Virus Disease (EVD)

- 2) Epidemiologic risk factors within the past 21 days before the onset of symptoms, such as contact with blood or other body fluids or human remains 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

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Case Definition for Ebola Virus Disease (EVD)

- **Confirmed Case:** A case with laboratory - confirmed diagnostic evidence of Ebola virus infection
- **Probable Case:** A PUI whose epidemiologic risk factors include high or low risk exposure(s)

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- **High risk exposures**
 - Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or body fluids of EVD patient

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- 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

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- Direct contact with a dead body without appropriate PPE in a country where an EVD outbreak is occurring*

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- **Low risk exposures**
 - Household contact with an EVD patient
 - Other close contact with EVD patients in health care facilities or community settings

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- **Close contact is defined as:**
 - 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) while not wearing recommended personal protective equipment (i.e., standard, droplet, and contact precautions; see Infection Prevention and Control Recommendations)

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- Having direct brief contact (e.g., shaking hands) with an EVD patient while not wearing recommended personal protective equipment
- **Brief interactions, such as walking by a person or moving through a hospital, do not constitute close contact**

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

Exposure Risk Levels

- **No known exposure**
 - Having been in a country in which an EVD outbreak occurred within the past 21 days and having had no high or low risk exposures

<http://www.cdc.gov/vhf/ebola/hcp/case-definition.html> Accessed 09/25/14

What is CDC Doing?

- **Activated its Emergency Operations Center at Level 1 to help coordinate technical assistance and control activities with partners**

What is CDC Doing?

- **CDC teams are deployed to affected countries to assist with response efforts**
 - Surveillance
 - Contact tracing
 - Data management
 - Laboratory testing
 - Health education

What is CDC Doing?

- **Updating communication products and web pages with new information for the general public and specific audiences**
 - <http://www.cdc.gov/vhf/ebola/outbreaks/guinea/whats-new.html>

What is CDC Doing?

- **Actively working to educate United States healthcare workers on how to isolate patients and protect themselves from infection**
 - **Resources:**
<http://www.cdc.gov/vhf/ebola/hcp/index.html>

What is CDC Doing?

- **Currently available guidance and recommendations**
 - **Infection prevention and control recommendations for hospitalized patients with known or suspected Ebola Hemorrhagic Fever in United States hospitals**

What is CDC Doing?

- **Interim guidance for environmental infection control in hospitals for Ebola virus**
- **Interim guidance for specimen collection, transport, testing, and submission for persons under investigation for Ebola virus disease in the United States**

What is CDC Doing?

- **Safe management of patients with Ebola Virus Disease (EVD) in United States hospitals**

What is ADPH Doing?

- **Established an interdisciplinary ADPH Ebola Response Team**
 - **Communicable Diseases**
 - **Epidemiology**
 - **Emergency Preparedness**
 - **Nursing**
 - **Pharmacy**

What is ADPH Doing?

- **Emergency Medical Services**
- **Communications**
- **Legal**
- **Dental**

What is ADPH Doing?

- Developing ADPH recommendations and educational materials
- Actively communicating with CDC and healthcare partners
- Developed an ADPH Ebola Webpage:
– www.adph.org/ebola

ADPH Information for the Public



WHAT IS EBOLA?

- Ebola is also known as Ebola Virus Disease (EVD) or Ebola Hemorrhagic Fever (EHF). There are five Ebola subspecies, four of which are known to cause the disease.
- Ebola was first identified in 1976 near the Ebola River in the country now known as the Democratic Republic of the Congo.
- All suspected cases of viral hemorrhagic fever viruses must be reported immediately to the Alabama Department of Public Health.

WHAT IS MY RISK OF GETTING EBOLA?

- All known cases of human illness or death have occurred in Africa.
- While some citizens have been transported back to the United States (U.S.) for treatment and care, there have been no cases of people being infected in the U.S.
- People at highest risk of contracting Ebola include those who travel to countries with active Ebola outbreaks and are:
 - Healthcare workers
 - Family and friends of an Ebola patient that were in direct contact with the person who was infected with the virus.

WHAT ARE THE SYMPTOMS OF EBOLA?

ADPH Information for the Public

- Consumers in Alabama with questions should call the ADPH Center for Emergency Preparedness (CEP) at 1 - 866 - 264 - 4073

www.adph.org/ebola

Reporting of Suspected Cases

- All suspected viral hemorrhagic fever cases are required to be reported to ADPH immediately

Reporting of Suspected Cases

- If a patient with a travel history to an affected country presents signs or symptoms of possible Ebola:
 - Complete the ADPH Ebola Viral Disease Investigation Form
 - Contact the Epidemiology Division immediately at 1 - 800 - 338 - 8374

Reporting of Suspected Cases

- ADPH will use the CDC algorithm to determine if a patient should be tested for Ebola
- All Ebola testing requests must be submitted to the CDC by ADPH
 - If a patient is determined to require testing, instructions on sample collection, packaging and shipping will be communicated to the provider

Screening of Suspected Cases

Ebola Virus Disease (EVD) Screening

Emergency Department screening criteria for patient isolation/testing are likely to be:

1. Fever, headache, joint and muscle aches, weakness, fatigue, diarrhea, vomiting, stomach pain and lack of appetite, and in some cases bleeding.

AND

2. Travel to West Africa (Guinea, Liberia, Nigeria, Senegal, Sierra Leone or other countries where EVD transmission has been reported by WHO) within 21 days (3 weeks) of symptom onset.

If both criteria are met, then the patient should be moved to a private room with a bathroom, and STANDARD, CONTACT, and DROPLET precautions followed during further assessment.

IMMEDIATELY Report Person Under Investigation (PUI) for Ebola to:

1. Hospital Leadership: Enter Name Enter Email Enter Phone
2. Local and State Public Health Authorities: AL Dept of Public Health: Epidemiology Division 1-800-228-6274

http://www.adph.org/bcd/assets/Nonfillable_Ebola_Inv_%20Form.pdf

ADPH Self - Monitoring Form

Self-Monitoring Chart: Morning (AM) and night (PM) for 21 days

Day 1 = Date Returned to United States

| Day | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | Day 8 | Day 9 | Day 10 | Day 11 | Day 12 | Day 13 | Day 14 | Day 15 | Day 16 | Day 17 | Day 18 | Day 19 | Day 20 | Day 21 | |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| Temperature | | | | | | | | | | | | | | | | | | | | | | |
| Headache | | | | | | | | | | | | | | | | | | | | | | |
| Diarrhea | | | | | | | | | | | | | | | | | | | | | | |
| Vomiting | | | | | | | | | | | | | | | | | | | | | | |
| Stomach pain | | | | | | | | | | | | | | | | | | | | | | |
| Lack of appetite | | | | | | | | | | | | | | | | | | | | | | |
| Bleeding | | | | | | | | | | | | | | | | | | | | | | |

http://www.adph.org/bcd/assets/Self_Monitor_Chart.pdf

Reporting of Suspected Cases

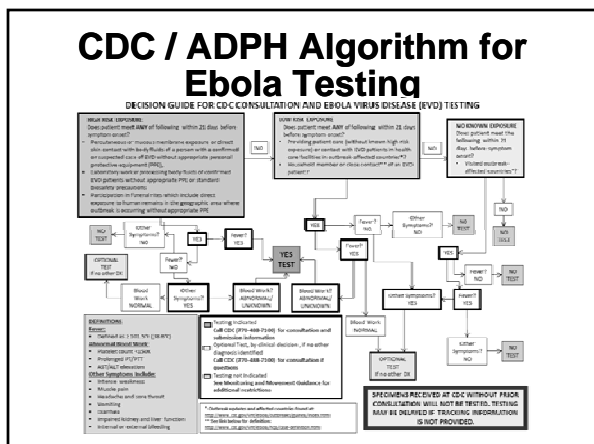
Page 1

http://www.adph.org/bcd/assets/Nonfillable_Ebola_Inv_%20Form.pdf

Reporting of Suspected Cases

Page 3

http://www.adph.org/bcd/assets/Nonfillable_Ebola_Inv_%20Form.pdf



Are US Hospitals Ready to Care for Patients with Ebola Virus Disease (EVD)?

- **Yes: Any United States hospital that is following CDC's infection control recommendations and can isolate a patient in a private room is capable of safely managing a patient with EVD**

Are US Hospitals Ready to Care for Patients with Ebola Virus Disease (EVD)?

- CDC recommends that United States hospitals isolate the patient in a private room and implement standard, contact, and droplet precautions

CDC Preparedness Checklists for Hospitals

<http://www.cdc.gov/vhf/ebola/pdf/hospital-checklist-ebola-preparedness.pdf>

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Be sure environmental services staff wear recommended personal protective equipment including, at a minimum, disposable gloves, gown (fluid resistant/ impermeable), eye protection (goggles or face shield), and facemask to protect against direct skin and mucous membrane exposure of cleaning chemicals, contamination, and splashes or spatters during environmental cleaning and disinfection activities

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Additional barriers (e.g., leg covers, shoe covers) should be used as needed
- If reusable heavy - duty gloves are used for cleaning and disinfecting, they should be disinfected and kept in the room or anteroom

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Be sure staff are instructed in the proper use of personal protective equipment including safe removal to prevent contaminating themselves or others in the process, and that contaminated equipment is disposed of as regulated medical waste

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Use a United States Environmental Protection Agency (EPA) - registered hospital disinfectant with a label claim for a non - enveloped virus (e.g., norovirus, rotavirus, adenovirus, poliovirus) to disinfect environmental surfaces in rooms of patients with suspected or confirmed Ebola virus infection

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Although there are no products with specific label claims against the Ebola virus, enveloped viruses such as Ebola are susceptible to a broad range of hospital disinfectants used to disinfect hard, non - porous surfaces
- In contrast, non - enveloped viruses are more resistant to disinfectants

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- As a precaution, selection of a disinfectant product with a higher potency than what is normally required for an enveloped virus is being recommended at this time

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- EPA - registered hospital disinfectants with label claims against non - enveloped viruses (e.g., norovirus, rotavirus, adenovirus, poliovirus) are broadly antiviral and capable of inactivating both enveloped and non - enveloped viruses

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Avoid contamination of reusable porous surfaces that cannot be made single use
- Use only a mattress and pillow with plastic or other covering that fluids cannot get through

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- Do not place patients with suspected or confirmed Ebola virus infection in carpeted rooms and remove all upholstered furniture and decorative curtains from patient rooms before use

Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus

- To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, non - fluid - impermeable

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **Isolate the patient:** Patients should be isolated in a single patient room (containing a private bathroom) with the door closed

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **Wear appropriate PPE:** Healthcare providers entering the patients room should wear gloves, gown (fluid resistant or impermeable), eye protection (goggles or face shield) and a facemask

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **Additional protective equipment** 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

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **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

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **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

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **Avoid aerosol - generating procedures:** If performing these procedures, PPE should include respiratory protection (N95 or higher filtering face piece respirator) and the procedure should be performed in an airborne infection isolation room

If a patient in a US hospital is identified to have suspected or confirmed EVD, what infection control precautions should be put into place?

- **Implement environmental infection control measures: Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is of paramount importance, as blood, sweat, vomit, feces, urine and other body secretions represent potentially infectious materials should be done following hospital protocols**

Personal Protective Equipment

<http://www.cdc.gov/vhf/ebola/pdf/ppe-poster.pdf>

Recommended Infection Control Measures

- **Patient placement: Patients should be placed in a single patient room (containing a private bathroom) with the door closed**

Recommended Infection Control Measures

- **Healthcare provider protection: Healthcare providers should wear: gloves, gown (fluid resistant or impermeable), shoe covers, eye protection (goggles or face shield), and a facemask**

Recommended Infection Control Measures

- **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**

Recommended Infection Control Measures

- **Aerosol - generating procedures: Avoid aerosol - generating procedures**
- **If performing these procedures, PPE should include respiratory protection (N95 filtering face piece respirator or higher) and the procedure should be performed in an airborne isolation room**

Recommended Infection Control Measures

- **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

Recommended Infection Control Measures

- Appropriate disinfectants for Ebola virus and other filoviruses include 10% sodium hypochlorite (bleach) solution, or hospital - grade quaternary ammonium or phenolic products

Recommended Infection Control Measures

- 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

Recommended Infection Control Measures

- Face protection (face shield or facemask with goggles) should be worn when performing tasks such as liquid waste disposal that can generate splashes

Recommended Infection Control Measures

- Follow standard procedures, per hospital policy and manufacturers' instructions, for cleaning and / or disinfection of environmental surfaces, equipment, textiles, laundry, food utensils and dishware

Interim Guidance for Specimen Collection, Transport, Testing

- **Key Points**
- United States clinical laboratories can safely handle specimens from these potential Ebola patients by taking all required precautions and practices in the laboratory, specifically designed for pathogens spread in the blood

Interim Guidance for Specimen Collection, Transport, Testing

- Risk assessments should be conducted by each laboratory director, biosafety officer, or other responsible person to determine the potential for sprays, splashes, or aerosol generated during laboratory procedures

Interim Guidance for Specimen Collection, Transport, Testing

- Any person collecting specimens from a patient with suspected Ebola virus disease should wear gloves, water - resistant gowns, full face shield or goggles, and masks to cover all of nose and mouth

Interim Guidance for Specimen Collection, Transport, Testing

- Anyone collecting specimens from a patient should follow the procedures below for transporting them through the healthcare facility, clean - up of spills, storing, packaging and shipping to CDC for testing

CDC Laboratory Guidance



<http://www.cdc.gov/vhf/ebola/pdf/ebola-lab-guidance.pdf>

Laboratory Testing

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

<http://www.cdc.gov/vhf/ebola/diagnosis/index.html>

Contact Information

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