Guidelines for the Initial Management of Patients in Emergency Departments with Suspected Ebola Virus Disease (EVD)

A. Ensure that a protocol is in place to rapidly identify a potential EVD patient and immediately isolate that patient in a private room to reduce potential risks to staff, visitors and other patients.

1. Personal Protective Equipment (PPE)
   - Have an ample supply of disposable gloves, hospital masks, and fluid resistant gowns, and be able to provide a face shield or goggles for all healthcare personnel (HCP) who may evaluate or care for a potential EVD patient.
   - KDPH recommends double-gloving in the care of suspected or confirmed EVD patients. Given the high mortality associated with EVD and lack of approved specific treatment for this infection, hospitals may consider having HCP use a higher level of personal protective equipment than the minimum measures described in the CDC guidance.
   - Maintain proficiency in the proper donning and doffing of PPE. A downloadable poster demonstrating the appropriate sequence is available at: http://www.cdc.gov/vhf/ebola/pdf/ppe-poster.pdf
     - **Both CDC and KDPH recommend the use of a buddy system when removing PPE in the care of suspected or confirmed EVD patients.**

2. Place posters in various areas, especially waiting rooms, to remind patients to inform staff of their travel history.
   - Posters are available from the Kentucky Department for Public Health in English and Spanish on the Kentucky Health Alert website that ask patients to immediately inform staff if they are ill and have recently traveled internationally.
   - Place posters at the entrance, in triage areas, and in patient care areas to serve as reminders.

3. Develop tools to cue staff to identify patients with EVD risk factors
   - Triage and clinical staff should be familiar with the African countries currently affected by the EVD outbreak. As of October 3, 2014, affected countries are Sierra Leone, Liberia, Guinea, and Nigeria. Current information is available from the Centers for Disease Control and Prevention (CDC) at http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html.
   - Any symptomatic patient identified with travel to an affected country within 21 days of illness onset should be **immediately isolated in a private room with private bathroom**, and clinical staff should be notified.
   - When evaluating patients who may have EVD, HCP should use standard, contact and droplet precautions, including eye protection. Clinicians should **collect a travel history in all patients presenting with fever**. Asking about travel is very important in acute care settings to rapidly recognize any potential communicable disease associated with an overseas outbreak.
• **Develop a stamp, sticker, or screening tool form** which can be used as a prompt for staff to ask EVD screening questions throughout the triage, registration, and patient evaluation process. Example →

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**PUT ON CHART OF ALL PATIENTS PRESENTING THROUGH EMERGENCY DEPARTMENT**

- Have you traveled from Africa?
  - If Yes, what country or countries? _____________
  - Date of return to U.S.A.:_____________

- If Yes, Ask about and circle any positive symptoms: Do you have any fever, vomiting, and diarrhea, muscle weakness or pain, abdominal pain, or bleeding/bruising?
  - Date of start of symptoms:___________

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**B. Healthcare personnel should take a thorough travel history for any suspect EVD patient and determine risk factors for EVD transmission.**

1. Determine whether travel from affected African countries has occurred within 21 days of symptom onset.
2. Ask the patient if any of the following exposures have occurred:
   - Contact with a person with known or suspected EVD
   - Worked or spent time in a health facility where EVD patients were being treated
   - Worked in a laboratory where specimens from EVD patients were being processed or analyzed
   - Participated in a funeral of a person who may have died of Ebola in an affected area of Africa

**C. Determine level of exposure (see CDC EVD Algorithm for Evaluation of Returned Traveler and Checklist for Patients Being Evaluated for Ebola Virus Disease in the United States – attached)**

**D. Clinical Evaluation:**

1. All patients should be asked detailed questions about risk exposures in an affected country or countries, as described above in B-2.
2. The differential diagnosis should consider the most common causes of fever in travelers returning from sub-Saharan Africa, including malaria, dengue, cholera, acute gastroenteritis, typhoid fever, influenza and ricketsial infection.

**E. Contact your local and state health departments (1-888-9-REPORT afterhours, weekends, and holidays) immediately if the following EVD criteria are met:**

1. Fever (subjective or ≥ 101.5°F or 38.6°C) OR headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or hemorrhage **AND**
2. Travel to an Ebola-affected area in the 21 days before illness onset

*After a suspected EVD patient is reported to your local and state health departments, a medical epidemiologist will review clinical details with the patient’s clinicians and, if indicated, consult CDC to determine whether Ebola virus testing is indicated.*

3. After consultation with your local and state health department, clinicians should notify:
   - Infection Control Department and Hospital Epidemiologist
   - Administration
   - Public Relations or Media Consultant
F. Routine Clinical Laboratory Testing:
1. Procedures for the collection, handling, and testing of specimens for EVD have been recommended by the CDC: [Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Persons Under Investigation for Ebola Virus Disease in the United States](http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html). Recently the CDC issued a supplementary guideline as well: [How U.S. Clinical Laboratories Can Safely Manage Specimens from Persons Under Investigation for Ebola Virus Disease](http://www.cdc.gov/vhf/ebola/hcp/safe-specimen-management.html)

2. Laboratory testing should be limited to testing which is essential for diagnostic evaluation and patient care (from the August 5, 2014 Clinician Outreach and Communication Activity (COCA) call “What U.S. Hospitals Need to Know to Prepare for Ebola Virus Disease” [http://emergency.cdc.gov/coca/transcripts/2014/call-transcript-080514.asp].

3. When it is feasible, laboratory testing should be performed inside the patient’s isolation room, using Point-of-Care (POC) instruments and testing methods, including routine blood chemistry, blood gases, hematology, and urinalysis. For further information, please refer to the American Society for Microbiology recently issued, “Interim Laboratory Guidelines for Handling/Testing Specimens from Cases or Suspected Cases of Hemorrhagic Fever Virus (HFV).” [http://www.aruplab.com/Testing-Information/resources/LTD/ASM-HFV-Ebola-Laboratory-Interim-Guidance.pdf]

4. Testing which requires transport of samples to labs outside the patient’s isolation room should be kept to a minimum.

5. All specimen manipulations must be performed in a certified Class 2 Biosafety Cabinet (BSC2) in a Biosafety Level 2 (or higher) laboratory, wearing appropriate PPE to protect skin and mucous membranes.

6. Laboratory and HCP should:
   - Label all specimens to indicate that they originate from a suspected EVD patient.
   - When it is necessary to transport specimens outside the patient’s room, the specimens should be double-bagged and placed in a biohazard transportation container.
     - The container should be wiped down with 10% bleach, hand-carried to the laboratory, and opened inside a biosafety cabinet.
   - HCP should not use a pneumatic tube system to send specimens.
   - Maintain a log of all personnel handling any specimen from suspected or confirmed EVD patients, including dates and times when the specimen was handled by each staff member and the identity of the patient (i.e., medical record number).

7. Testing for Ebola virus in suspected patient:
   - Ebola virus can only be reliably detected by real-time PCR [3 days after symptom onset](http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html).
   - If a specimen is taken and it has been less than 3 days since symptom onset, it may be negative and the patient will need to be tested again to rule out infection with Ebola virus.
   - Clinicians should call the local health department or state health department (502-564-3261 during normal business hours) when trying to determine the need for Ebola testing and prior to sending a specimen to the CDC for testing. The state health department will facilitate testing by CDC based on exposure and travel history. Afterhours, weekends, and holidays, telephone reports can be made to 888-9REPORT (888-973-7678). When contacting the local or state health departments, please make sure that you speak to a person and avoid leaving a voice message.

8. CDC has issued guidelines on how to collect, store, and transport specimens to the CDC. Please refer to: [Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease | Ebola Hemorrhagic Fever | CDC](http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html)
G. Environmental Isolation and Infection Control Principles and Practices.

Patients with suspected or confirmed EVD can be managed safely using established infection control principles and precautions:

1. All suspect and confirmed EVD patients should be isolated in a single room with a private bathroom that contains dedicated medical equipment. Airborne infection isolation rooms (negative pressure) are acceptable, but not required.
   - Use only a mattress and pillow with plastic or other covering that fluids cannot get through.
   - Do not place an EVD patient in carpeted rooms.
   - Remove all upholstered furniture and decorative curtains.

2. HCP entering this room must use standard, contact, and droplet precautions: gloves, gowns, mask, and eye protection.

3. Avoid aerosol-generating procedures, such as open suctioning of airways and intubation. If intubation or other aerosol-generating procedures are required, airborne precautions are needed as well, and should be performed in an airborne infection isolation room (negative pressure). Patients with pulmonary disease should be placed in airborne isolation to avoid the potential for droplet spread.

4. Use disposable medical equipment whenever possible.

5. Hand hygiene with soap and water or alcohol-based hand rubs must be performed diligently by all HCP after removing protective gear.

6. Restrict entry to a patient’s room to healthcare personnel; visitors should usually not be permitted within the patient’s room, with exceptions considered on a case-by-case basis and only when essential for patient care.

7. Maintain a log of all persons who have contact with the EVD patient since arrival at the facility.

8. Implement diligent environmental cleaning processes and procedures, using EPA-registered hospital disinfectants.
   - 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. EPA-registered hospital disinfectants with label claims against non-enveloped viruses (e.g., norovirus, rotavirus, adenovirus, and poliovirus) are broadly antiviral and capable of inactivating both enveloped and non-enveloped viruses.
   - The Ebola virus is susceptible to 3% acetic acid, 1% glutaraldehyde, alcohol-based products, and dilutions (1:10-1:100 for ≥10 minutes) of 5.25% household bleach (sodium hypochlorite), and calcium hypochlorite (bleach powder).
   - The WHO recommendations for cleaning up spills of blood or body fluids suggest flooding the area with a 1:10 dilution of 5.25% household bleach for 10 minutes for surfaces that can tolerate stronger bleach solutions (e.g., cement, metal). For surfaces that may corrode or discolor, they recommend careful cleaning to remove visible stains followed by contact with a 1:100 dilution of 5.25% household bleach for more than 10 minutes.

9. Discard all linens, non-fluid-impermeable pillows or mattresses, and textile privacy curtains. Linen should be placed in clearly-labelled, leak-proof bags (double-bagged) at the site of use and discarded as regulated medical waste. See the CDC website for more detailed guidance at http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html
H. Treatment for Patients with EVD
1. Patients with EVD are treated symptomatically as there is no FDA-approved vaccine or medicine. Chances of survival improve with:
   - Provision of intravenous fluids and balancing of electrolytes
   - Maintenance of oxygen status and provision of supportive oxygen therapy if needed
   - Maintenance of blood pressure
   - Treatment of other infections if needed
2. Experimental Treatments and Vaccines for Ebola
   - ZMapp is being developed by Mapp Biopharmaceutical and is an experimental treatment.
   - It has not been tested in humans for safety or effectiveness.

I. Ebola and Regulated Medical Waste:
1. The Ebola virus is classified as a Category A infectious substance and regulated by the U.S. Department of Transportation’s (DOT) Hazardous Materials Regulations.
2. Any item transported offsite for disposal that is contaminated or suspected of contamination with Ebola must be packaged and transported in accordance with HMR.49 C.F.R., Parts 171-180.
   - This includes:
     - Medical Equipment
     - Sharps
     - Linens
     - Used healthcare products (soiled absorbent pads or dressings, emesis pans, portable toilets)
     - PPE
     - Byproducts of cleaning
References:


Be sure to tell your nurse...

If you’ve travelled outside of the country during the past 3 weeks (21 days). Especially to the following countries in West Africa:

- Liberia
- Sierra Leone
- Guinea
- Nigeria

If you have the following symptoms:

- Fever
- Muscle pain
- Vomiting
- Diarrhea
- Intense Weakness
- Stomach pain
- Headache and sore throat

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Asegúrese de decirle a su enfermero(a)...

Si usted ha viajado fuera del país durante las últimas 3 semanas (21 días). Especialmente a los siguientes países de África Occidental:

- Liberia
- Sierra Leona
- Guinea
- Nigeria

Si usted tiene los siguientes síntomas:

- Fiebre
- Dolor muscular
- Vómitos
- Diarrea
- Debilidad
- Dolor de estómago
- Dolor de cabeza intenso y de garganta
Ebola Virus Disease (EVD)
Algorithm for Evaluation of the Returned Traveler

FEVER (subjective or ≥101.5°F or 38.6°C) or compatible EVD symptoms* in patient who has traveled to an Ebola-affected area** in the 21 days before illness onset
* headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain or hemorrhage

YES

1. Isolate patient in single room with a private bathroom and with the door to hallway closed
2. Implement standard, contact, and droplet precautions (gown, facemask, eye protection, and gloves)
3. Notify the hospital Infection Control Program and other appropriate staff
4. Evaluate for any risk exposures for EVD
5. IMMEDIATELY report to the health department

NO

Report asymptomatic patients with high- or low-risk exposures (see below) in the past 21 days to the health department

HIGH-RISK EXPOSURE
Percutaneous (e.g., needle stick) or mucous membrane contact with blood or body fluids from an EVD patient
OR Direct skin contact with, or exposure to blood or body fluids of, an EVD patient
OR Processing blood or body fluids from an EVD patient without appropriate personal protective equipment (PPE) or biosafety precautions
OR Direct contact with a dead body (including during funeral rites) in an Ebola affected area** without appropriate PPE

LOW-RISK EXPOSURE
Household members of an EVD patient and others who had brief direct contact (e.g., shaking hands) with an EVD patient without appropriate PPE
OR Healthcare personnel in facilities with confirmed or probable EVD patients who have been in the care area for a prolonged period of time while not wearing recommended PPE

NO KNOWN EXPOSURE
Residence in or travel to affected areas** without HIGH- or LOW-risk exposure

Review Case with Health Department Including:
- Severity of illness
- Laboratory findings (e.g., platelet counts)
- Alternative diagnoses

EVD suspected

The health department will arrange specimen transport and testing at a Public Health Laboratory and CDC
The health department, in consultation with CDC, will provide guidance to the hospital on all aspects of patient care and management

EVD not suspected

TESTING IS NOT INDICATED

If patient requires in-hospital management:
Decisions regarding infection control precautions should be based on the patient’s clinical situation and in consultation with hospital infection control and the health department

If patient’s symptoms progress or change, re-assess need for testing with the health department

If patient does not require in-hospital management
Alert the health department before discharge to arrange appropriate discharge instructions and to determine if the patient should self-monitor for illness
Self-monitoring includes taking their temperature twice a day for 21 days after their last exposure to an Ebola patient

** CDC Website to check current affected areas: www.cdc.gov/vhf/ebola
## Checklist for Patients Being Evaluated for Ebola Virus Disease (EVD) in the United States

### Upon arrival to clinical setting/triage
- Does patient have fever (subjective or ≥101.5°F)?
- Does patient have compatible EVD symptoms such as headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain or hemorrhage?
- Has the patient traveled to an Ebola-affected area in the 21 days before illness onset?

### Upon initial assessment
- Isolate patient in single room with a private bathroom and with the door to hallway closed
- Implement standard, contact, & droplet precautions
- Notify the hospital Infection Control Program at ________________________
- Report to the health department at ____________

### Conduct a risk assessment for:

#### High-risk exposures
- Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or body fluids from an EVD patient
- Direct skin contact with skin, blood or body fluids from an EVD patient
- Processing blood or body fluids from an EVD patient without appropriate PPE
- Direct contact with a dead body in an Ebola-affected area without appropriate PPE

#### Low-risk exposures
- Household members of an EVD patient or others who had brief direct contact (e.g., shaking hands) with an EVD patient without appropriate PPE
- Healthcare personnel in facilities with EVD patients who have been in care areas of EVD patients without recommended PPE

### Use of personal protective equipment (PPE)
- Use a buddy system to ensure that PPE is put on and removed safely

#### Before entering patient room, wear:
- Gown (fluid resistant or impermeable)
- Facemask
- Eye protection (goggles or face shield)
- Gloves

#### If likely to be exposed to blood or body fluids, additional PPE may include but isn’t limited to:
- Double gloving
- Disposable shoe covers
- Leg coverings

### Upon exiting patient room
- PPE should be carefully removed without contaminating one’s eyes, mucous membranes, or clothing with potentially infectious materials
- Discard disposable PPE
- Re-useable PPE should be cleaned and disinfected per the manufacturer’s reprocessing instructions
- Hand hygiene should be performed immediately after removal of PPE

### During aerosol-generating procedures
- Limit number of personnel present
- Conduct in an airborne infection isolation room
- Don PPE as described above except use a NIOSH certified fit-tested N95 filtering facepiece respirator for respiratory protection or alternative (e.g., PAPR) instead of a facemask

### Patient placement and care considerations
- Maintain log of all persons entering patient’s room
- Use dedicated disposable medical equipment (if possible)
- Limit the use of needles and other sharps
- Limit phlebotomy and laboratory testing to those procedures essential for diagnostics and medical care
- Carefully dispose of all needles and sharps in puncture-proof sealed containers
- Avoid aerosol-generating procedures if possible
- Wear PPE (detailed in center box) during environmental cleaning and use an EPA-registered hospital disinfectant with a label claim for non-enveloped viruses*

### Initial patient management
- Consult with health department about diagnostic EVD RT-PCR testing**
- Consider, test for, and treat (when appropriate) other possible infectious causes of symptoms (e.g., malaria, bacterial infections)
- Provide aggressive supportive care including aggressive IV fluid resuscitation if warranted
- Assess for electrolyte abnormalities and replete
- Evaluate for evidence of bleeding and assess hematologic and coagulation parameters
- Symptomatic management of fever, nausea, vomiting, diarrhea, and abdominal pain
- Consult health department regarding other treatment options

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* This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

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* [see](http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html) for more information

** [see](http://www.cdc.gov/vhf/ebola/hcp/interim-guidance-specimen-collection-submission-patients-suspected-infection-ebola.html) for more information