Emergency Management

Ebola Virus Disease Management Plan

UAB Health System
(Inpatient and Outpatient)

2014

Authors:
Bernard Camins 11/17/14
Bernard Camins, MD
Infection Prevention

JVann Martin 11/17/14
JVann Martin
Emergency Management

Reviewed and Approved by:
Sarah Nafziger 11/17/14
Sarah Nafziger, M.D.
Co-Chair, Emergency Management Committee

JVann Martin 11/17/14
JVann Martin
Co-Chair, Emergency Management Committee

Janet Pate 11/17/14
Janet Pate,
Chair, TKC
Emergency Committee

Approved by:
Anthony Patterson 11/16/14
Anthony Patterson
Sr. Vice President,
Inpatient Services

Loring Rue 11/17/14
Loring Rue, MD
Chief Medical Officer
UAB Medicine

Patricia Pritchett 11/16/14
Patricia Pritchett
Sr. Vice President,
Outpatient Services

Cross Reference: Emergency, Disaster and Emergency Management Plan for Credentialing MS# 16r3, Application and Credentialing of Advanced Practice Nurses and Physician Assistants # 456r6,

TJCH Ref#: EM, IC
CMS Ref#: NA

# 1367r Issued: 11/18/14
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAB Physician Announcement</td>
<td>3</td>
</tr>
<tr>
<td>UAB Staff (Employees) Announcement</td>
<td>4</td>
</tr>
<tr>
<td>Figure 1: CDC Emergency Department Algorithm</td>
<td>5</td>
</tr>
<tr>
<td>Figure 2: TKC Arrival Algorithm</td>
<td>6</td>
</tr>
<tr>
<td>Figure 3: TKC Scheduling Algorithm</td>
<td>7</td>
</tr>
<tr>
<td>Figure 4: Infectious Disease Group 1012 Member list/Media</td>
<td>8</td>
</tr>
<tr>
<td>Guidelines for Care for Patients Suspected or Confirmed to have Ebola Hemorrhagic Fever (Ebola Virus)</td>
<td>9</td>
</tr>
<tr>
<td>Table 1: Testing and Laboratory Procedures</td>
<td>11</td>
</tr>
<tr>
<td>Waste Management Procedure for Ebola Viral Disease Waste</td>
<td>14</td>
</tr>
<tr>
<td>Figure 5: Biohazard label</td>
<td>15</td>
</tr>
<tr>
<td>Appendix A:  Personal Protective Equipment Procedures</td>
<td>16</td>
</tr>
<tr>
<td>Appendix B: UAB Medicine Comprehensive Patient Flow Chart</td>
<td>22</td>
</tr>
</tbody>
</table>
Re: UAB Ebola Virus Disease Management Plan (EVD)

Given current events in West Africa regarding the resurgence of the Ebola virus disease (EVD), people traveling from the affected areas may have been exposed and may pose a risk to public health. **U.S. hospitals can safely manage a patient with EVD by following recommended isolation and infection control procedures.** The following are important steps to follow to prevent the spread of EVD if such a case were to present to the UAB Healthcare System:

1. Healthcare providers should be alert for and evaluate suspected patients for EVD using the following criteria:
   
   a. Epidemiologic risk factors within the past 3 weeks before the onset of symptoms:
      - travel to or residence in an area where EVD transmission is active (**Guinea, Liberia, Sierra Leone, Mali**) OR
      - contact with blood or other body fluids of a patient known to have or suspected to have EVD

   **AND**

   b. Clinical criteria (any one of the following symptoms):
      - Fever (> 38.0°C or > 100.4°F) OR
      - headache
      - weakness
      - muscle pain
      - vomiting
      - diarrhea
      - abdominal pain
      - unexplained hemorrhage

2. Contact Infection Prevention immediately—**Bernard C. Camins, MD,** Healthcare Epidemiologist (UAB pager # 7428).

3. Infection Prevention will notify the relevant health departments IMMEDIATELY based on CDC guidelines and ADPH requirements. State regulations require notification of the Alabama Department of Public Health (ADPH) within 4 hours of presentation. Call the **ADPH** at 1-800-338-8374 or the **Jefferson County Health Department** at (205) 933-9110.

4. All suspected cases will be housed in the UAB Hospital Main ER (Resuscitation Bay) until diagnostic testing can be obtained. We have developed a screening tool for Hospital use and for TKC and Clinic use. If a patient presents at TKC or an outlying clinic and the screening tool identifies the patient as at risk for EVD, coordination with the main hospital (Infection Prevention) will be required prior to transferring the patient to the main ER.

   CDC recommended personal protective equipment (PPE) will be available at UAB Hospital to care for a suspected or confirmed EVD patients (see Appendix A). We recommend that in order to evaluate these patients, **STANDARD + CONTACT + RESPIRATORY precautions.**

For additional information, the following websites are available online:

- [http://adph.org/ebola/](http://adph.org/ebola/)
Re: UAB Ebola Virus Disease Management Plan (EVD)

Given current events in West Africa regarding the resurgence of the Ebola virus disease (EVD), people traveling from the affected areas may have been exposed and may pose a risk to public health. The U.S. Centers for Disease Control and Prevention (CDC) has declared that U.S. hospitals can safely manage a patient with EVD by following recommended isolation and infection control procedures. The following are just some of the steps that the UAB Hospital Administration and Medical Directors have undertaken to prepare in case a patient with EVD were to present to the UAB Healthcare System:

1. We have advised healthcare providers that they should be alert for and evaluate suspected patients for EVD using the following criteria:
   a. Epidemiologic risk factors within the past 3 weeks before the onset of symptoms:
      - travel to or residence in an area where EVD transmission is active (Guinea, Liberia, Sierra Leone, Mali) OR
      - contact with blood or other body fluids of a patient known to have or suspected to have EVD
      AND
   b. Clinical criteria (any of the following symptoms:
      - Fever (> 38.0°C or > 100.4°F)
      - severe headache
      - muscle pain
      - chest pain
      - vomiting
      - diarrhea
      - abdominal pain
      - rash
      - unexplained hemorrhage  AND

2. We have instructed them to contact Infection Prevention immediately-- Bernard C. Camins, MD, Healthcare Epidemiologist (UAB pager # 7428). Infection Prevention with notify the Alabama Department of Public Health (ADPH) at 1-800-338-8374.

3. All suspected cases will be housed in the UAB Hospital Main ER (OB bay and/or POD 6) until testing results can confirm that they do not have EVD. We have developed a decision questionnaire tree for Hospital use and for TKC and Clinic use. If a patient presents at TKC or an outlying clinic and the decision questionnaire tree places the patient as suspect for EVD, coordination with the main hospital (Infection Prevention) will be required prior to transferring the patient to the main ER.

4. We have created a set of guidelines that will be followed when caring for a patient with suspected or confirmed EVD. These guidelines cover topics such as infection control practices, diagnostic procedures, environmental care services, and disease notification.

For additional information, the following websites are available online:
http://www.cdc.gov/vhf/ebola/index.html
http://adph.org/ebola/
Identify, Isolate, Inform: Emergency Department Evaluation and Management of Patients with Possible Ebola Virus Disease

1. Identify exposure history:
   - Has patient lived in or traveled to a country with widespread Ebola transmission or had contact with an individual with confirmed Ebola Virus Disease within the previous 21 days?

2. Identify signs and symptoms:
   - Fever (subjective or ≥100.4°F or ≥38.0°C) or Ebola-compatible symptoms: headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or hemorrhage

3. Isolate and determine personal protective equipment (PPE) needed
   - Place patient in private room or separate enclosed area with private bathroom or covered, bedside commode. Only essential personnel with designated roles should enter patient area and provide care to minimize transmission risk. The use of PPE should be determined based on the patient’s clinical status:
     - Patient exhibiting obvious bleeding, vomiting, copious diarrhea or clinical condition that warrants invasive or aerosol-generating procedures (e.g., intubation, suctioning, active resuscitation)?

4. Inform
   - IMMEDIATELY notify the hospital infection control program and other appropriate staff
   - IMMEDIATELY report to the health department

5. Further evaluation and management
   - Complete history and physical examination; decision to test for Ebola should be made in consultation with relevant health department
   - Perform routine intervention (e.g., placement of peripheral IV, phlebotomy for diagnosis) as indicated by clinical status
   - Evaluate patient with dedicated equipment (e.g., stethoscope)
Figure 2: The Kirklin Clinic (TKC) Arrival Algorithm

---

ARRIVAL

Patient Arrives at Front Desk

Begin Arrival Process in IDX

Have you traveled to Africa in last 21 days?

YES

Does patient have a travel history to Sierra Leone, Guinea, Liberia, Mali or history of exposure to person with Ebola within the last 21 days?

YES

Offer patient a mask and page the Supervisor immediately. Supervisor or designee will escort the patient to a single room to be isolated.

From outside the door, the supervisor or designee will ask the screening questions to include if he/she has fever, headache, muscle aches, chest pain, abdominal pain, diarrhea, vomiting, weakness or unexplained bleeding

YES

NO

If yes, Provider verifies travel history and clinical symptoms from outside the door. Calls UAB Healthcare Epidemiologist if positive screening (UAB pager 7428).

NO

Continue normal clinic process

---

Revised 11/17/14
Figure 3: The Kirklin Clinic (TKC) Scheduling Algorithm

1. Scheduling

2. New or Return Patient Calls for Appointment

3. Have you traveled to Africa in last 21 days?
   - YES
     - Does patient have a travel history to Sierra Leone, Guinea, Liberia, Mali or history of exposure to person with Ebola within last 21 days?
       - YES
         - Notify Infection Prevention at 801-8530 with patient name, phone number and DOB.
       - NO
         - Schedule Appointment
   - NO

4. Infection Prevention notifies respective Health Dept.
### Figure 4:
**INFECTIOUS DISEASE GROUP 1012 MEMBER LIST**

11/05/2014

#### Paging Terminal Member List

<table>
<thead>
<tr>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>DEPARTMENT</th>
<th>PAGER NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALFORD</td>
<td>INDIA</td>
<td>EMERGENCY DEPARTMENT</td>
<td>7309</td>
</tr>
<tr>
<td>BUCKINGHAM</td>
<td>ROBERT</td>
<td>EMERGENCY MEDICINE</td>
<td>9576</td>
</tr>
<tr>
<td>CAMINS</td>
<td>BERNARD</td>
<td>INFECTIOUS DISEASES</td>
<td>7428</td>
</tr>
<tr>
<td>COKER</td>
<td>SHANNON</td>
<td>HIGHLANDS EMERGENCY DEPT</td>
<td>0259</td>
</tr>
<tr>
<td>CRUMP</td>
<td>EDWARD</td>
<td>ENVIRONMENTAL SERVICES</td>
<td>5158</td>
</tr>
<tr>
<td>JOHNSON</td>
<td>JAMES</td>
<td>PULMONARY</td>
<td>8582</td>
</tr>
<tr>
<td>LIMDI</td>
<td>ARPAN</td>
<td>HOSPITAL PLANNING</td>
<td>7027</td>
</tr>
<tr>
<td>MOSER</td>
<td>STEPHEN</td>
<td>PATHOLOGY</td>
<td>0332</td>
</tr>
<tr>
<td>NAFZIGER</td>
<td>SARAH</td>
<td>EMERGENCY MEDICINE</td>
<td>7944</td>
</tr>
<tr>
<td>PAPPAS</td>
<td>PETER</td>
<td>INFECTIOUS DISEASES</td>
<td>7289</td>
</tr>
<tr>
<td>PATTERSON</td>
<td>ANTHONY</td>
<td>HOSPITAL ADMINISTRATION</td>
<td>7702</td>
</tr>
<tr>
<td>RODRIGUEZ</td>
<td>JORGE MARTIN</td>
<td>INFECTIOUS DISEASES</td>
<td>7656</td>
</tr>
<tr>
<td>ROTATING:</td>
<td>NRC</td>
<td>PATIENT ACCOMMODATIONS</td>
<td>8149</td>
</tr>
<tr>
<td>TAYLOR</td>
<td>BENJAMIN</td>
<td>GENERAL-INTERNAL MEDICINE</td>
<td>7591</td>
</tr>
<tr>
<td>Rue</td>
<td>Loring</td>
<td>Chief Medical Officer</td>
<td>7402</td>
</tr>
<tr>
<td>THOMAS</td>
<td>JARRED</td>
<td>EMERGENCY MEDICINE</td>
<td>5168</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Paging Terminal Members</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

#### Persons to Receive Message via AmCom when Group Paged

<table>
<thead>
<tr>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>DEPARTMENT</th>
<th>PAGER NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARTIN</td>
<td>JVANN</td>
<td>EMERGENCY MANAGEMENT</td>
<td>205-281-4728</td>
</tr>
<tr>
<td>POLHILL</td>
<td>SHERRY</td>
<td>RESPIRATORY CARE</td>
<td>205-889-0736</td>
</tr>
<tr>
<td>SANFORD</td>
<td>JANYCE</td>
<td>EMERGENCY MEDICINE</td>
<td>888-210-3317</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total AmCom Members</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

UAB Media Relations should be contacted at once if a patient with Ebola-like symptoms is being transported to the hospital or presents at any UAB clinical facility. Contact the media relations specialist on-call through UAB Paging, 934-3411 or direct at 934-3884.

The Media Relations office will assume the role of Public Information Officer and will coordinate communications with news media and the public, in conjunction with appropriate local, state and federal agencies. Media Relations will manage on-site media with the assistance of the UAB Police. The office will also coordinate internal communications to faculty, staff and students in conjunction with hospital and university leadership.
UAB Health System Guidelines for Care of Patients Suspected or Confirmed to have Ebola Virus Disease (EVD)

Authors: Rachael Lee, MD and Bernard Camins, MD, MSc

Introduction

Given current events in West Africa regarding the resurgence of the Ebola virus, people traveling from the affected area pose a risk to public health. This document provides guidance on the management of patients in whom an infection of Ebola (EVD) is considered, suspected, or confirmed.

Patient assessment

Ebola should be considered in any patient that presents with:

Epidemiologic Risk Factors
1. Individuals who have travelled to an area affected by Ebola (including Guinea, Liberia, Sierra Leone).
2. Individuals who have been exposed to a patient or animal infected with Ebola
3. Individuals who have worked in a laboratory with Ebola.

Fever (greater than 100.4°F or 38.0°C) or history of fever in the past 24 hours or other symptoms of Ebola such as headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or hemorrhage AND exposure history in the past 21 days:

Assessing Risk Level

High Risk:
- Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or body fluids of a person with Ebola while the person was symptomatic
- Exposure to the blood or body fluids (including, but not limited to, feces, saliva, sweat, urine, vomit, and semen) of a person with Ebola while the person was symptomatic without appropriate personal protective equipment (PPE)
- Processing blood or body fluids of a person with Ebola while the person was symptomatic without appropriate PPE or standard biosafety precautions
- Direct contact with a dead body without appropriate PPE in a country with widespread Ebola virus transmission
- Having lived in the immediate household and provided care to a person with Ebola while the person was symptomatic

Some Risk:
- In countries with widespread Ebola virus transmission: direct contact while using appropriate PPE with a person with Ebola while the person was symptomatic
- Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic (close contact is defined as being for a prolonged period of time while not wearing appropriate PPE within approximately 3 feet or 1 meter of a person with Ebola while the person was symptomatic)

Low (but not zero) Risk:
- Having been in a country with widespread Ebola virus transmission within the past 21 days and having had no known exposures
- Having brief direct contact (e.g., shaking hands) while not wearing appropriate PPE, with a person with Ebola while the person was in the early stage of disease
- Brief proximity, such as being in the same room for a brief period of time, with a person with Ebola while the person was symptomatic
In countries without widespread Ebola virus transmission: direct contact while using appropriate PPE with a person with Ebola while the person was symptomatic
- Traveled on an aircraft with a person with Ebola while the person was symptomatic

**No Identifiable Risk:**
- Contact with an asymptomatic person who had contact with a person with Ebola
- Contact with a person with Ebola before the person developed symptoms
- Having been more than 21 days previously in a country with widespread Ebola virus transmission
- Having been in a country without widespread Ebola virus transmission and not having any other exposures as defined above

Any patient found to be at High, Low, or Some risk of Ebola Virus Disease should be reported to Infection Prevention IMMEDIATELY. Infection Prevention will notify the Alabama Department of Public Health within 4 hours of arrival. **1-800-338-8374.**

**Signs and Symptoms**

Symptoms may appear anywhere from 2-21 days after exposure to Ebola virus, though 8-10 days is most common. Patients typically have fever, headache, joint and muscle aches, weakness, diarrhea, vomiting, abdominal pain, lack of appetite. Some patients may experience rash, red eyes, hiccups, cough, sore throat, chest pain, hemorrhage, and shock.

The virus may be present in blood, body fluids (including urine), on contaminated instruments, in waste, on contaminated surfaces or clothing.

**Infection Prevention**

Patients should immediately be isolated into a room with limited contact until Ebola has been ruled out.

**Standard +contact+ respiratory precautions are required** (see Appendix A for recommended PPE)

Recommended personal protective equipment (PPE) should be worn by all health care workers upon entry into patient rooms. For directions for donning and doffing of PPE see Appendix A.

**Diagnostic Testing**

Please notify the laboratory immediately if you suspect a patient to have Ebola. Full PPE is required for specimen collection. Laboratory technicians should wear full face shield, mask, gloves, fluid resistant gowns AND class II biosafety cabinet or plexiglass splash guard. All specimens should be labeled as "SUSPECTED HFV." Testing that requires specimen removal from patient’s room and transport to the laboratory should be kept to a minimum and the pneumatic tube system should not be used.

At UAB, diagnostic testing will be limited only to those available by point of care testing:
- Chemistry panel include Na, K, Glucose, Creatinine, Calcium, Lactate
- Blood gas parameters like pH, pO\(_2\), pCO\(_2\)
- Malaria antigen testing
- Rapid influenza antigen
- Hemoglobin
- urine pregnancy test
- urinalysis
- rapid strep

Blood cultures and a thin smear to rule out Malaria may be available as well.

Ebola virus is detected in blood only after onset of symptoms and it may take up to 3 days post onset for the virus to reach detectable levels. A minimum volume of 4mL whole blood preserved with EDTA, clot
activator, sodium polyanethol sulfonate, or citrate in PLASTIC collection tubes can be submitted. Call the Alabama Department of Public Health for laboratory processing at 1-800-338-8374.

Samples should be refrigerated or frozen on ice pack or dry ice (no glass tubes), in accordance with IATA guidelines as a Category B diagnostic specimen.

If you would like CDC to test for EVD, please follow the instructions below.


- Ship specimens directly to the Bureau of Clinical Laboratories (BCL), see address below or drop off specimens at your local county health department to be couriered to the BCL overnight. EVD specimens will be forwarded to CDC.

  BCL
  8140 AUM Drive
  Montgomery AL 36117

In addition to testing for Ebola, malaria testing should be included as part of the initial screening process.
## Laboratory guidelines

### Table 1 - Testing and Laboratory Procedures:

<table>
<thead>
<tr>
<th>Test</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimen containers must be wiped with laboratory bleach solution, placed into a double-bag that contains absorbent pads soaked with bleach, then placed in a biohazard rigid transport container. All transport containers must be wiped down with bleach prior to leaving the patient’s room. Laboratory processing of specimens should take place in the patient’s room or in a class II biosafety cabinet (BSC) located in an isolated section of the laboratory or, preferably, in a negative pressure room (e.g., AFB suite).</td>
<td></td>
</tr>
<tr>
<td>Chemistry, Coagulation, Hematology</td>
<td>Testing should be limited to iSTAT or equivalent POC testing systems and performed in the patient’s room (may limit to high risk or known patients).</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>Urinalysis available as a urine dipstick should be performed in the patient’s room.</td>
</tr>
<tr>
<td>Malaria Testing: Rapid Malaria antigen testing is preferred; test in patient’s room.</td>
<td>ONLY if the rapid malaria test is negative will the following be performed: 1. Collect in a lavender top (EDTA) blood tube. 2. Only thin blood smears should be prepared (no thick smears). 3. 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 remaining steps should be done inside a BSC located in a negative pressure room (e.g., AFB suite). 4. Remove stopper of lavender (EDTA) blood tube with a gauze wipe soaked in bleach to prevent aerosol formation. 5. Prepare a thin blood film, fix in methanol for 30 minutes. 6. Stain with Giemsa containing triton X-100 (inactivates virus) 7. The smears then can be carefully removed from the AFB suite/BSC and read as usual.</td>
</tr>
</tbody>
</table>
| Blood Cultures: Perform only if required and minimize blood draws for blood cultures. | Once received in the laboratory, all specimens should be opened inside a BSC, preferably inside a negative pressure room (e.g., AFB suite). 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 deliver to the AFB laboratory suite. Bottles will be decontaminated a second time with bleach and placed on the Blood culture instrument for monitoring. If during the 5 days of monitoring a positive is flagged then return bottle(s) to the AFB laboratory for processing: 1. Prepare slides for Gram stain examination and allow 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 removed from the AFB suite/BSC and processed 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...
<table>
<thead>
<tr>
<th>Test</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>plates, place plates in a biohazard baggie and incubate in the AFB suite in the 35°C CO₂ incubator.</td>
<td>2. Examine plates twice per day. 3. If any growth occurs, subculture the organism in the BSC onto fresh plates and incubate overnight. 4. The next day perform all spot testing and inoculations of appropriate ID/AST systems. Work only from the sub-cultured plates (not the primary inoculated plates) to minimize risk of contact with blood from the patient.</td>
</tr>
<tr>
<td>Prepare (and transport) all specimens in the patient’s room as previously described using laboratory bleach. All specimens should be opened inside a BSC, in an isolated section of the laboratory, preferably inside a negative pressure room (e.g., the AFB suite). 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 Microbiology or Laboratory Director.</td>
<td>Gram stains may be prepared as directed in the Blood culture section above. Seal culture plates. Subsequent secondarily sub-cultured colonies may be inoculated into the appropriate ID/AST systems.</td>
</tr>
<tr>
<td>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 suspect HFV patient.</td>
<td>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. OPTION: Documentation of disposal may be indicated on a Disposal Form.</td>
</tr>
</tbody>
</table>

**Notification**

If a patient suspected of having Ebola is admitted to our facility, please contact our Healthcare Epidemiologist, Dr. Bernard Camins (pager 7428). The ID consult team should also be contacted for clinical issues.

**Environmental Disinfection and Cleaning**

While the diagnosis of EVD is being confirmed, there is no need for environmental care services to perform routine cleaning and disinfection. The Ebola care team will perform routine cleaning and disinfection until the patient is moved from the room. If an EVS employee needs to enter the room, they will be required to don the same PPE that is recommended for the clinicians above. Disposable cleaning supplies should be used and any soiled materials will be disposed in designated bags for potential incineration. Although the Ebola virus is inactivated hot water, any soiled linen will be disposed of in designated containers and will be incinerated. Approved cleaning solutions for Ebola virus are 10% regular bleach solution (1 part bleach, 9 parts water) or OSHA approved quaternary ammonium solutions or with an EPA-registered hospital disinfectants with a label claim for one of the non-enveloped viruses.

**Dietary/Nutrition Issues**

Until EVD (Ebola) is ruled out, food will be served using disposable trays, plates, cups and utensils. All waste will also be disposed in designated bags and will be incinerated.

**Specimen Containers**

Specimen containers must be wiped with bleach solution, placed into a double-bag that contains absorbent pads soaked with bleach, then placed in a biohazard rigid transport container. All transport containers must be wiped down with bleach prior to leaving the patient’s room.

Waste Disposal/Incineration by OH&S Support Facility

Waste generated during procedures or processes involving patients with suspected or diagnosed Ebola Virus will be handled using current isolation and infection control procedures with the following modifications:

1. Place sharps into the smallest gasketed sharps container that will hold the waste (preferred) or double ASTM-D certified red bags inside an OH&S supplied transport container.
   
   a. All needles, syringes, tubes, transfer pipets, slides, specimens, and any other material used for suspected or highly infective tissue shall be placed in a gasketed sharps container (preferred).

2. Large items that cannot be safely sealed inside a gasketed sharps container may be placed in triple ASTM-D certified red bags which can be transferred to an OH&S Support Facility supplied transport container for incineration. The exterior of each bag shall be disinfected before placing in the container.

3. Solid waste shall be placed in triple ASTM-D certified red bags inside an OH&S Support Facility supplied transport container. The exterior of each bag shall be disinfected before placing in the container. This includes solidified human waste (urine, diarrhea, etc.) that is collected while the patient is in the Emergency Department. Liquid human waste, collected while in a designated inpatient Ebola care area may be flushed down the toilet, after disinfection for at least 5 minutes with bleach or OSHA approved quaternary ammonium solutions.

4. Label "Medical Waste for Incineration by OH&S Support Facility ONLY".

5. Contact the OH&S Support Facility by UAB pager 8744.
   
   a. Personnel must be trained to keep waste destined for the OH&S Support Facility Incinerator separate from other medical waste.

   b. Do not place with other medical waste to be picked up by Environmental Services or Stericycle.

6. The OH&S Support Facility personnel will supply, upon request, transport containers if not available in the area.

7. OH&S Support Facility personnel will transport and incinerate the waste according to current CDC/ADEM guidelines/regulations.
Figure 5: Medical Waste for Incineration Label

Medical Waste for Incineration by OH&S Support Facility Only

OH&S Director On Call
UAB Pager # 8744
Appendix A - Personal Protective Equipment (PPE) Procedures

PPE Donning Checklist for a Low Output Ebola Patient

PRIOR TO ENTERING DONNING AREA
1. Use restroom if needed
2. Remove all jewelry
3. Remove all clothing and undergarments (e.g. bra, panties, boxers, briefs)
4. Put on disposable undergarments and scrubs
5. Put on disposable footwear, tucking the leg of the paper scrubs into the top of the footwear
6. Ensure that fingernails are trimmed, hair is pulled back and secured in a low ponytail or bun
7. Ensure that there is no excess facial hair
8. Secure eyewear firmly with tourniquet

AFTER ENTERING DONNING AREA
1. Take and record vital signs (Heart Rate, Blood Pressure, and Temperature)
2. Hydrate
3. Wash hands
4. Inspect all exposed skin for wounds, cuts, and scrapes
5. *If there is any break in exposed skin, YOU MAY NOT DON OR CARE FOR THE PATIENT
6. Sitting down, apply clear plastic boot covers
7. Apply blue surgical mid-calf boot covers
8. Place blue bouffant cap on head, make sure all hair is covered under the cap
9. Put on N95 mask and check fit. Be sure to not crisscross the straps. The top strap goes high on the crown of the head, and the low strap goes to the back of the head. Ensure both are on the bouffant cap.
10. Put on hood
11. Put on blue impermeable gown, be sure to tuck the white hood underneath the collar of the gown. Tie inner and outer tie loosely.
12. Place clear apron over blue gown
13. Put on face shield over white hood.
14. Perform hand hygiene with an alcohol-based hand rub (ABHR) and let dry
15. Apply inner gloves bringing the cuffs of the gown over the inner glove
16. Apply long outer gloves over the inner gloves ensuring gown cuffs are covered
17. Perform final inspection before entering the patient care area. Move around in the suit to ensure the PPE is properly secured.
18. Perform safety stop
19. Sign log book and record time entering room
20. Enter the patient care area
Checklist for Doffing PPE for Low-Output Ebola Patient Care

1. **DE**: Lay out doffing pad (inspect for tears), waste disposal bag, open disinfectant wipes container, ABHR, position one chair on doffing pad, and obtain extra gloves. **DE** donned in complete PPE with doffing checklist.

2. **DE**: Disinfect your outer-gloved hands immediately after handling any healthcare worker PPE at any point in the doffing process.

3. Ensure that you are in the appropriate decontamination zone & **DE** is present and donned in complete PPE.

4. Stand on the doffing pad. Do not step off of the doffing pad until instructed.

5. **DE**: Remind healthcare workers to avoid reflexive actions that may put them at risk, such as touching their face.

6. **DE**: Ask healthcare worker if they experienced contamination via cut, needle stick, mucus membrane exposure, or direct skin contact. If so, Dr. Camins and the attending should be notified immediately to activate healthcare worker safety plan.

1. Inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then disinfect using an *EPA*-registered disinfectant wipe. Let them dry.

2. Disinfect outer gloves: Disinfect outer-gloved hands with an *EPA*-registered disinfectant wipe. Let them dry.

3. Remove clear plastic apron. Pull apron off from the front chest area, closing eyes and holding breath. The apron should tear apart on the back and come off in one fluid motion.

4. Disinfect outer gloves: Disinfect outer-gloved hands with an *EPA*-registered disinfectant wipe. Let them dry.

5. Remove blue mid-calf boot covers: Sit down in chair on doffing pad and ensure that the gown covers your knees. Pinch outside of blue boot covers and pull gently to remove blue mid-calf boot covers. Ensure clear plastic, inner boot covers remain. You may use both hands in this step.

6. Stand up

7. Disinfect outer gloves: Disinfect outer-gloved hands with an *EPA*-registered disinfectant wipe. Let them dry.

8. Remove outer gloves: Remove and discard outer gloves taking care not to contaminate inner gloves during removal process.
   a. Remove the first outer glove by pinching at the wrist and pulling up and away from the hand, thereby inverting the glove and exposing the uncontaminated inner surface.
   b. Using the uncontaminated inner surface of the first removed glove, pinch the wrist of the other remaining outer glove and pull up and away to discard, dropping both gloves on the doffing pad.


10. Remove face shield: Keeping eyes closed tightly and hold your breath when doing this, remove the full face shield by leaning forward at the waist, grabbing the rear strap and pulling it over the head, gently allowing the face shield to fall forward and discard. Avoid touching the front surface of the face shield.

11. Disinfect gloves: Disinfect gloved hands with an *EPA*-registered disinfectant wipe. Let them dry.

12. Remove Gown: Depending on gown design and location of fasteners, the healthcare worker can either untie fasteners, receive assistance by the PPE expert to unfasten the gown (if needed), or gently break fasteners. Avoid contact of scrubs or disposable garments with outer surface of gown during removal. Pull gown away from body, rolling inside out and touching only the inside of the gown.


v 1.04 11/3/2014
14. Remove hood: While keeping eyes closed tightly and holding breath, reach hands behind head and pull hood up and over the front of the head towards the face and discard onto donning pad. The DE may assist with the hood removal as needed.

15. Disinfect gloves: Disinfect gloved hands with an *EPA-registered disinfectant wipe. Let them dry.

16. Using the back of chair to balance, remove clear plastic boot covers: As you remove one plastic boot cover, place that foot on the clean area floor, off of the donning pad. Then, slowly but purposefully remove the other plastic boot cover, place that foot on the clean area floor, completely off of the donning pad.

17. Disinfect gloves: Disinfect gloved hands with an *EPA-registered disinfectant wipe. Let them dry.

18. Remove gloves: Remove and discard gloves.
   a. Remove the first glove by pinching at the wrist and pulling up and away from the hand, thereby inverting the glove and exposing the uncontaminated inner surface.
   b. Using the uncontaminated inner surface of the first removed glove, pinch the wrist of the other remaining glove and pull up and away to discard, dropping both gloves on the donning pad.

19. Perform Hand Hygiene: Perform hand hygiene with an alcohol-based hand rub (ABHR) and let dry.

20. Put on new pair of gloves: Hold your hand out, palms up, and the DE will drop a clean pair of gloves into your hands.

21. Remove Bouffant Cap and N95 respirator: While keeping eyes closed tightly and holding breath, remove the bouffant cap and N95 respirator by tilting the head slightly forward, grasping the back of the bouffant cap and both elastic bands of the N95, and remove without touching the front of the N95 respirator. Drop bouffant cap and N95 respirator onto donning pad.

22. Disinfect new gloves: Disinfect gloved hands with an *EPA-registered disinfectant wipe. Let them dry.

23. Remove gloves: Remove and discard gloves.
   a. Remove the first glove by pinching at the wrist and pulling up and away from the hand, thereby inverting the glove and exposing the uncontaminated inner surface.
   b. Using the uncontaminated inner surface of the first removed glove, pinch the wrist of the other remaining glove and pull up and away to discard, dropping both gloves on the donning pad.

24. Perform Hand Hygiene: Perform hand hygiene with an alcohol-based hand rub (ABHR) and let dry.

25. DE Final Inspection: Perform a final inspection of healthcare worker for any indication of contamination of the scrubs/disposable garments. If contamination is identified, immediately inform infection prevention team or occupational safety and health coordinator or their designee before exiting PPE removal area.

26. Reminder: If there is concern for contamination, DO NOT LEAVE THE DOFFING AREA.

27. Exit donning area

28. Sign log book and record time

29. Shower: Showers are recommended at each shift’s end for healthcare workers performing high risk patient care (e.g., exposed to large quantities of blood, body fluids, or excreta). Showers are also suggested for healthcare workers spending extended periods of time in the Ebola patient room.

30. Hydrate with water or non-caffeinated sports drinks

31. Protocol Evaluation/Medical Assessment: Healthcare worker should meet with the appropriate person to review patient care activities.

v 1.04 11/3/2014
PPE Donning Checklist for a High Output Ebola Patient

PRIOR TO ENTERING DONNING AREA
1. Use restroom if needed
2. Remove all jewelry
3. Remove all clothing and undergarments (e.g. bra, panties, boxers, briefs)
4. Put on disposable undergarments and scrubs
5. Put on disposable footwear, tucking the leg of the paper scrubs into the top of the footwear
6. Ensure that fingernails are trimmed, hair is pulled back and secured in a low ponytail or bun
7. Ensure that there is no excess facial hair
8. Secure eyewear firmly with tourniquet

AFTER ENTERING DONNING AREA
1. Take and record vital signs (heart rate, blood pressure, and temperature)
2. Hydrate
3. Wash hands
4. Inspect all exposed skin for wounds, cuts, and scrapes
5. *If there is any break in exposed skin, YOU MAY NOT DON OR CARE FOR THE PATIENT
6. Sitting down, apply clear plastic boot covers
7. Apply blue surgical mid-calf boot covers
8. Place blue bouffant cap on head, make sure all hair is covered under the cap
9. Put on N95 mask and check fit. Be sure to not crisscross the straps. The top strap goes high on the crown of the head, and the low strap goes to the back of the head. Ensure both are on the bouffant cap.
10. Put on white hood
11. Put on face shield on top of white hood
12. Perform hand hygiene with an alcohol-based hand rub (ABHR) and let dry
13. Put on long green inner gloves
14. Put on Tychem suit and zip closed ensuring that the cuffs of the Tychem suit cover the opening of the gloves. Ensure the following:
   a. The yellow hood of the Tychem suit goes over the white hood
   b. Legs of the suit stop at the ankle and blue boot covers are visible
   c. Zipper is in a locked (facing downward) position at the top of the suit.
15. Place clear apron over Tychem suit
16. Apply long, blue, outer gloves over the inner gloves and cuffs of the Tychem suit
17. Perform final inspection before entering the patient care area. Move around in the suit to ensure the PPE is properly secured.
18. Perform safety stop
19. Sign log book and record time
20. Enter the patient care area
Checklist for Doffing PPE for High-Output Ebola Patient Care

1. **DE:** Lay out doffing pad (inspect for tears), waste disposal bag, open disinfectant wipes container, ABHR, position one chair on doffing pad, and obtain extra gloves. DE donned in complete PPE with doffing checklist.

2. **DE:** Disinfect your outer-gloved hands immediately after handling any healthcare worker PPE at any point in the doffing process.

3. Ensure that you are in the appropriate decontamination zone & DE is present and donned in complete PPE.

4. Stand on the doffing pad. Do not step off of the doffing pad until instructed.

5. **DE:** Remind healthcare workers to avoid reflexive actions that may put them at risk, such as touching their face.

6. **DE:** Ask healthcare worker if they experienced contamination via cut, needle stick, mucus membrane exposure, or direct skin contact. If so, Dr. Camins and the attending should be notified immediately to activate healthcare worker safety plan.

---

1. Inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then disinfect using an *EPA-registered disinfectant wipe. Let them dry.

2. Disinfect outer gloves: Disinfect outer-gloved hands with an *EPA-registered disinfectant wipe. Let them dry.

3. Remove clear plastic apron. Pull apron off from the front chest area, closing eyes and holding breath. The apron should tear apart on the back and come off in one fluid motion.

4. Disinfect outer gloves: Disinfect outer-gloved hands with an *EPA-registered disinfectant wipe. Let them dry.

5. Unzip Tychem suit: Walk your hand up the length of the zipper from your waist towards your neck, following the teeth of the zipper until you find the pull tab. Then, unzip the suit.

6. Pull the back of the hood of Tychem suit up and away from your body.

7. **DE rolls Tychem suit down and away from doffing healthcare worker**


9. Sit down on chair on doffing pad

10. Remove Tychem suit and blue mid-calf boot covers while leaving the inner plastic boot covers in place. Pinch outside of blue boot covers and gently pull outwards to remove blue mid-calf boot covers and the rest of the Tychem suit. You may use both hands.

11. Stand up


13. Remove outer gloves: Remove and discard outer gloves taking care not to contaminate inner gloves during removal process.
   a. Remove the first outer glove by pinching at the wrist and pulling up and away from the hand, thereby inverting the glove and exposing the uncontaminated inner surface.
   b. Using the uncontaminated inner surface of the first removed glove, pinch the wrist of the other remaining outer glove and pull up and away to discard, dropping both gloves on the doffing pad.


15. Remove face shield: Keeping eyes closed tightly and hold your breath when doing this, remove the full face shield by leaning forward at the waist, grabbing the rear strap and pulling it over the head, gently allowing the face shield to fall forward and discard. Avoid touching the front surface of the face shield.

v 1.04 11/3/2014
17. Remove white hood: Reach hands behind head and pull hood up and over the front of the head towards the face. Keep eyes closed tightly and hold your breath when doing this. The DE may assist with the hood removal as needed.
19. Using the back of chair to balance, remove clear plastic boot covers: As you remove one plastic boot cover, place that foot on the clean area floor, off of the donning pad. Then, slowly but purposefully remove the other plastic boot cover, place that foot on the clean area floor, completely off of the donning pad.
21. Remove gloves: Remove and discard gloves.
   a. Remove the first glove by pinching at the wrist and pulling up and away from the hand, thereby inverting the glove and exposing the uncontaminated inner surface.
   b. Using the uncontaminated inner surface of the first removed glove, pinch the wrist of the other remaining glove and pull up and away to discard, dropping both gloves on the donning pad.
22. Perform hand hygiene: Perform hand hygiene with an alcohol-based hand rub (ABHR) and let dry.
23. Put on a new pair of new gloves: Hold your hand out, palms up, and the DE will drop a clean pair of gloves into your hands.
24. Remove bouffant and N95 mask and discard to donning pad: While keeping eyes closed tightly and holding breath, remove the bouffant cap and N95 respirator by tilting the head slightly forward, grasping the back of the bouffant cap and both elastic bands of the N95, and remove without touching the front of the N95 respirator. Drop bouffant cap and N95 respirator onto donning pad.
26. Remove new gloves: Remove and drop gloves onto donning pad without touching your skin.
   a. Remove the glove by pinching at the wrist and pulling up and away from the hand, thereby inverting the glove and exposing the uncontaminated inner surface.
   b. Using the uncontaminated inner surface of the first removed glove, pinch the wrist of the other remaining glove and pull up and away to discard, dropping both gloves on the donning pad.
27. Perform Hand Hygiene: Perform hand hygiene with an alcohol-based hand rub (ABHR) and let dry.
28. DE Final Inspection: Perform a final inspection of healthcare worker for any indication of contamination of the scrubs/disposable garments. If contamination is identified, immediately inform infection prevention team or occupational safety and health coordinator or their designee before exiting PPE removal area.
29. Reminder: If there is concern for contamination, DO NOT LEAVE THE DOFFING AREA.
30. Exit donning area
31. Sign log book and record time
32. Shower: Showers are recommended at each shift’s end for healthcare workers performing high risk patient care (e.g., exposed to large quantities of blood, body fluids, or excreta). Showers are also suggested for healthcare workers spending extended periods of time in the Ebola patient room.
33. Hydrate with water or non-caffeinated sports drinks
34. Protocol Evaluation/Medical Assessment: Healthcare worker should meet with the appropriate person to review patient care activities.
Appendix B - UAB Medicine Comprehensive Patient Flow Chart

TKC, Urgent Cares, Clinics - Ebola Patient Flow

**Patient Arrival @ Front Desk**

- **Screen Positive?**
  - NO: Continue normal process & patient care.
  - YES: Supervisor or designee notified. Patient masked and escorted to single room.

**Initial Arrival Process & Travel/exposure Screening**

- **Screen Positive?**
  - NO: From outside door, Supervisor confirms travel and signs & symptoms.
  - YES: Provider verifies travel history & clinical symptoms from outside the door.

**UAB Healthcare Epidemiologist, UAB pager 7428) notified for consultation**

**Notify Infection Prevention (801-8530) with patient name, phone number, and DOB.**

**Infection Prevention notifies Public Health Dept.**

**Terminal Clean of Room**

(See UAB Hospital – Ebola Patient Flow)
UAB Highlands & CEH Hospital – Ebola Patient Flow

Local Patient Unannounced Arrival

Initial Screening in Triage
Staff implements PPE as necessary.

Screen Positive?

NO

Standard triage & patient care.

YES

Patient/visitor given mask & transported to ED

Patient/visitor given mask & isolated in private room

Physician performs evaluation & risk level assessment.

UAB Healthcare Epidemiologist, UAB pager 7428) notified for consultation

Terminal Clean of Room

If needed, coordinate transfer of patient with UAB Hospital ED and Lifeguard EMS

Patient Arrival via EMS (Prenotification)

If EMS pre-screens positive for Ebola, divert to main ER

Patient Arrival via EMS (Prenotification)

Identified as ill and/or at risk for Ebola

Patient/visitor given mask & transported to ED

If needed, coordinate transfer of patient with UAB Hospital ED and Lifeguard EMS

(See UAB Hospital – Ebola Patient Flow)

(See UAB Hospital – Ebola Patient Flow)
UAB Hospital – Ebola Patient Flow

Local Patient Unannounced Arrival

Initial Screening in Triage Staff implements PPE as necessary

Screen Positive?

NO

Standard triage & patient care

Admission or Discharge

YES

Patient masked and transported to designated ED room (OB Bay/Pod 6).

Physician performs evaluation & risk level assessment

UAB Healthcare Epidemiologist, UAB pager 7428) notified for consultation

ADPH & JCDH notification

Rule out Ebola?

YES

Standard patient care.

NO

Implement Ebola primary care & waste management. (3 RNs/team)

Point-of-care lab testing as ordered.

Notify OH&S for waste pick-up/incineration

(Next Page)
(Continued)

Test for Ebola?

YES

Notify Lab & ADPH for packaging and transport

Specimen(s) to ADPH/CDC for testing.

Continue Ebola primary care

Reassess for high or low output status?

HIGH

LOW

Rotate primary care staff every 1-2 hours

Rotate primary care staff every 2-4 hours

Need for inpatient care or transfer?

NO

Continue Primary Care Rotations

Terminal Clean of ED Room

Confirmed Ebola test results?

Negative

Adjust patient care & PPE

Positive

Continue Primary Care Rotations

Discharge or Death

>48 Hrs

12-48 Hrs

Coordinate transfer with ADPH/CDC to designated facility

Transfer

INPATIENT CARE AREA

Stand-up Inpatient care area
Hold in ER up to 48 Hrs

Secure route of transport

Primary care team transport patient to inpatient area

Terminal Clean of Inpatient Area