Viral Hemorrhagic Fever / Ebola Management and Treatment Protocol

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Background

The hemorrhagic fever viruses (HFVs) are a diverse group of organisms that are all capable of causing clinical disease associated with fever and bleeding disorder, classically referred to as viral hemorrhagic fever (VHF). These organisms can be divided into 4 distinct families of viruses:

1. **Filoviridae**: Ebola and Marburg viruses;
2. **Arenaviridae**: Lassa fever virus and a group of viruses referred to as the New World arenaviruses (eg, Junin, Machupo, Guanarito, and Sabia viruses);
3. **Bunyaviridae**: Crimean Congo hemorrhagic fever virus, Rift Valley fever virus, and a group of viruses known as the "agents of hemorrhagic fever with renal syndrome" (eg, Hantaan, Dobrava-Belgrade, Seoul, and Puumala viruses); and
4. **Flaviviridae**: dengue, yellow fever, Omsk hemorrhagic fever, and Kyasanur Forest disease viruses.

Screening Tool for Viral Hemorrhagic Fevers: Ebola

All clinicians are asked to use the following screening tool when evaluating a patient. **VHF should be suspected in persons who have both consistent symptoms AND risk factors within 21 days of symptom onset as follows:**

<table>
<thead>
<tr>
<th>RISK FACTORS</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence in—or travel to—an area where Ebola Virus Disease (EVD) transmission is active(^1) OR Had direct unprotected contact with blood, other body fluids, secretions, or excretions of a person or animal with EVD</td>
<td></td>
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</tr>
<tr>
<td>Direct handling of bats, rodents, or primates from disease endemic areas AND SYMPTOMS</td>
<td></td>
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</tr>
<tr>
<td>Fever &gt;38.6 °C or 101.5 °F</td>
<td></td>
<td></td>
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<tr>
<td>Chills</td>
<td></td>
<td></td>
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<tr>
<td>Myalgia</td>
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<tr>
<td>Diffuse erythematous maculopapular rash (day 5 to 7), usually involving the face, neck, trunk, and arms, that can desquamate</td>
<td></td>
<td></td>
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<tr>
<td>Severe watery diarrhea</td>
<td></td>
<td></td>
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<tr>
<td>Nausea or vomiting</td>
<td></td>
<td></td>
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<tr>
<td>Abdominal pain</td>
<td></td>
<td></td>
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<tr>
<td>Confusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-organ failure</td>
<td></td>
<td></td>
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<tr>
<td>Septic shock</td>
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</tbody>
</table>

*This screening tool is provided as one method to gauge the likelihood that a person has been exposed to this agent; see CDC guidelines for additional information. See also Fever in Returned Travelers to rule out other causes for fever.*

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\(^1\) Outbreak affected countries include Guinea, Liberia, Sierra Leone, and Nigeria as of 27-August-2014.

Note: Democratic Republic of Congo has reported cases of Ebola in a remote area of the country; these cases do not appear to be epidemiologically linked to the outbreak of Ebola in West Africa, based on preliminary investigation.
Infection Prevention

Patient Management
Contact with blood and bodily fluids of infected individuals and animals should be avoided. This is essential to preventing infection.

Infection Prevention Summary *Revised*

**Patient Placement**
- A procedural mask shall be placed over the nose and mouth of any patient with fever and productive cough until an explanation of the symptoms is obtained.
- Patients should be placed in a single patient room (containing a private bathroom). If a single patient room is not available, a negative pressure room may be used. The door to the room must remain closed.
- Use only a mattress and pillow with plastic or other covering that fluids cannot get through. Do not place patients with suspected or confirmed Ebola virus infection in carpeted rooms and remove all upholstered furniture, curtains or other room decorations that cannot be disinfected from room before use.
- **Patients being tested for Ebola will remain in a single room until test results are received from the CDC or public health authorities.**

**Standard, Contact and Droplet Precautions**
- Strict hand hygiene
- Gloves
- Mask
- Gown, fluid resistant or impermeable
- Eye Protection
  - Goggles (tight fitting) or face shield and facemask
- **Additional PPE may be required** in certain situations with copious amounts of blood or other body fluids, including: double gloving, disposable shoe covers, and leg coverings.
- **Avoid aerosol-generating procedures to include but not limited to bronchoscopy.** When performing these procedures, PPE should include respiratory protection (N95 filtering facepiece respirator or higher) and the procedure should be performed in an airborne isolation room.

Transmission
Human-to-human transmission of the Ebola virus is primarily associated with direct or indirect contact with blood and body fluids. Transmission to health care workers has been reported when appropriate infection control measures have not been observed.

Symptoms may appear anywhere from 2 to 21 days after exposure to the Ebola virus though 8-10 days is most common. No VHF infection has been reported in persons whose contact with an infected person occurred only during the incubation period (i.e., before onset of fever). There are reports of Ebola virus transmission occurring within a few days after onset of fever; however, the presence of other symptoms...
in the source patients and the level of exposure to body fluids among secondary cases are unknown in these instances.

The risk for person-to-person transmission of hemorrhagic fever viruses is greatest during the latter stages of illness when virus loads are highest; latter stages of illness are characterized by vomiting, diarrhea, shock, and, in less than half of infected patients, hemorrhage.

**Isolation** *Revised*

- Only essential supplies and equipment should be taken into the room.
- Access will be restricted to a limited number of healthcare workers. Only one Care Team per shift should provide care to the patient.
- Before exiting the room of a patient with suspected EVD, safely remove and dispose of all protective gear. If shoe covers have not been worn, clean and disinfect shoes soiled with body fluids using hospital standard procedures as described in the section on Environmental Services (below). Immediately wash hands.

**Log**

An observer will be assigned and re-evaluated as needed following the hospital’s regular process.

- Any person entering room will need to enter information on the personnel log and be compliant with hand hygiene and personal protective equipment.
- The observer will need to sign in and out on the Observer Log in case any further information is requested.
- This information must be returned to Infection Prevention and kept on file.

**Transport**

Patients suspected of Ebola exposure should not be moved.

- If the patient must be transported, the observer/controller will accompany the patient, providing information and direction as needed.
- If transport is necessary, patient should wear a face mask to contain respiratory droplets during transport and be wrapped in one to two layers of impervious material during the move.
- The transport worker and observer will wear PPE.
- Contact business unit Infection Prevention before transporting patients if there are questions.

**Visitors**

Visitors who have been in contact with the Ebola patient before and during hospitalization are a possible source of EVD for other patients, visitors, and staff. Visits should be controlled to allow evaluation of risk to the health of the visitor and ability to comply with precautions providing instruction, before entry into the patient care area on hand hygiene, limiting surfaces touched, and use of PPE according to current UPMC policy while in the patient’s room.

- Visitors will not be permitted until Ebola is ruled out or by a physician’s order in the patient’s medical record.
- Once permitted, visitors will wear mask, gown, gloves, and eye protection when entering the patient’s room.
- All materials must be discarded in the room before exiting the room.
- Visitors must wash hands after removal of PPE.

*Based on data available from the CDC as of August 28, 2014. This document will be reviewed monthly and updated only when CDC recommendations require a significant change to these guidelines.*
Patient Care Equipment/Considerations

- Dedicated medical equipment (preferably disposable, when possible) should be used for the provision of patient care
- All non-dedicated, non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer's instructions and hospital policies
- Limit the use of needles and other sharps as much as possible
- Phlebotomy, procedures, and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care
- All needles and sharps should be handled with extreme care and disposed in Sharps containers.

Environmental Services Revised

- Each business unit should develop a plan to ensure that effective cleaning of the room and its contents has been completed. This may include post-cleaning inspection by supervisory personnel.
- No new patient will be admitted to the room until discharge (terminal) cleaning has been completed.
- Healthcare providers performing environmental cleaning and disinfection should wear recommended PPE (see Infection Prevention Summary) and consider use of additional barriers (e.g., shoe and leg coverings) if needed. Face protection (face shield or facemask with goggles) should be worn when performing tasks such as liquid waste disposal that can generate splashes.
- Follow standard procedures, per hospital policy and manufacturers’ instructions, for cleaning and/or disinfection of environmental surfaces and equipment. Particular attention should be paid to areas that may have been exposed to body fluids.

Linens Revised

- 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.
- To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, non-fluid-impermeable pillows or mattresses, and textile privacy curtains as a regulated medical waste.

Medical Waste

- When discarding solid medical waste (e.g., needles, syringes, and tubing) contaminated with blood or other body fluids from VHF patients, contain the waste with minimal agitation during handling; dispose as per normal infectious waste practices.
- Liquid medical waste such as feces and vomitus can be disposed of in the sanitary sewer following local sewage disposal requirements. PPE should be work when performing tasks that can generate splashes.
- Personal protective equipment should be discarded following normal hospital procedures.

Case Definitions

Ebola virus is typically spread person-to-person through direct contact with bodily fluids such as, but not limited to, blood, urine, sweat, semen, and breast milk. The incubation period is usually 8–10 days (ranges from 2–21 days). Patients can transmit the virus while febrile and through later stages of

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disease, as well as postmortem, when persons touch the body during funeral preparations. The likelihood of acquiring Ebola is considered low in persons who do not meet any of these criteria.

Even following travel to areas where VHF has occurred, persons with fever are more likely to have infectious diseases other than VHF (e.g., common respiratory viruses or endemic infections such as Malaria, Typhoid, or Lassa Fever). Clinicians should promptly evaluate and treat patients for these more common infections while awaiting confirmation of a VHF diagnosis through the CDC or PADOH.

Testing of patients with suspected EVD should be guided by the risk level of exposure:

**Person Under Investigation (PUI)**
A person who has both consistent symptoms and risk factors as follows: 1) Clinical criteria, which includes fever of greater than 38.6 degrees Celsius or 101.5 degrees Fahrenheit, and additional symptoms such as severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage; AND 2) Epidemiologic risk factors within the past 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*.

**Probable Case**
A PUI who is a contact of an EVD case with either a high or low risk exposure (see below).

**Confirmed Case**
A case with laboratory confirmed diagnostic evidence of Ebola virus infection.

**Contacts of an EVD Case**
Contacts of an EVD case may have different levels of exposure. CDC recommends testing for all persons with onset of fever within 21 days of having a high-risk exposure. A high-risk exposure includes any of the following:

A. Percutaneous or mucous membrane exposure or direct skin contact with body fluids of a person with a confirmed or suspected case of EVD without appropriate personal protective equipment (PPE),
B. Laboratory processing of body fluids of suspected or confirmed EVD cases without appropriate PPE or standard biosafety precautions, or
C. For persons with a high-risk exposure but without a fever, testing is recommended only if there are other compatible clinical symptoms present and blood work findings are abnormal (i.e., thrombocytopenia <150,000 cells/µL and/or elevated transaminases) or unknown.

**Case Reporting** *Revised*

- Consult with Infectious Disease on any suspect or probable patients
- Notify Infection Prevention or the after hour designee; facilities that do not maintain an on-call IP resource after hours should follow their normal Infection Prevention after hour notification process.

- Infection Prevention will notify the following:
  - Allegheny County Health Department (412-687-2243) 24/7 or Erie County Dept of Health (814-451-6700) 24/7

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Laboratory Testing/Diagnostics

Diagnosis of VHF is based on clinical presentation of symptoms and confirmed by laboratory testing. There are no rapid clinical diagnostic tests available. Malaria, Dengue, Typhoid and Lassa Fever diagnostics should also be a part of initial testing because it is a common cause of febrile illness in persons with a travel history to the affected countries.

CDC recommends testing for all persons with onset of fever within 21 days of having a high-risk exposure such as:

- Persons with high-risk exposure who meet the criteria provided in the Screening Tool and/or the Case Definitions section.
- Percutaneous or mucous membrane exposure or direct skin contact with body fluids of a person with a confirmed or suspected case of EVD without appropriate personal protective equipment (PPE), or
- Laboratory processing of body fluids of suspected or confirmed EVD cases without appropriate PPE or standard biosafety precautions.

For persons with a high-risk exposure but without a fever, testing is recommended only if there are other compatible clinical symptoms present and blood work findings are abnormal (i.e., thrombocytopenia <150,000 cells/µL and/or elevated transaminases.
Specimens are only accepted with prior consultation with Allegheny County, Erie County, or PA Health Departments.

**When Specimens Should Be Collected for Ebola Testing**

Ebola virus is detected in blood only after onset of symptoms, most notably fever. It may take up to 3 days post-onset of symptoms for the virus to reach detectable levels. Virus is generally detectable by real-time RT-PCR from 3-10 days post-onset of symptoms, but has been detected for several months in certain secretions. Specimens ideally should be taken when a symptomatic patient reports to a healthcare facility and is suspected of having an EVD exposure; however, if the onset of symptoms is <3 days, a subsequent specimen will be required to completely rule-out EVD.

**Submitting Specimens to the Viral Special Pathogens Branch (VSPB)**

If testing is indicated and has been approved by the CDC, an Infectious Disease physician should collect the following specimens, as noted.

**Infection Control for Collecting and Handling Specimens**

It is expected that all laboratorians and other healthcare personnel collecting or handling specimens follow established standards compliant with the OSHA bloodborne pathogens standard, which encompasses blood and other potentially infectious materials. This includes wearing appropriate personal protective equipment (PPE) and adhering to engineered safeguards, for all specimens regardless of whether they are identified as being infectious.

**Specimen Collection**

If approved by the CDC for testing, the specimens should be collected by someone who is trained to handle infectious specimens.

A. Contact the Infectious Disease service (*not Infection Prevention*) to make recommendations for diagnostic or differential diagnosis and samples needed. The hospital on-call physician can be reached through MedCall at 412-647-7000 or 1-800-544-2500.

B. Samples from patients are an extreme biohazard risk; testing should be conducted under maximum biological containment conditions.

C. **PPE recommendations for specimen collection:**

   Any person collecting specimens from a patient with a case of suspected Ebola virus disease should wear gloves, water-resistant gowns, full face shield or goggles, and masks to cover all of nose and mouth Additional PPE may be required in certain situations.

D. Because of the potential risks associated with handling infectious materials, **laboratory testing should be the minimum necessary for diagnostic evaluation and patient care.**

E. No specimen testing of any type is to be performed in any UPMC laboratory until Ebola has been ruled out by the CDC.

F. Based on the patient’s history, if it is determined that PCRs are needed for other viral infections, i.e., Malaria, Typhoid, Dengue, Lassa Fever, the CDC will be contacted for assistance. Health care providers needing assistance with diagnosis or management of suspected cases of malaria should call the CDC Malaria Hotline:

   1. 770-488-7788 or 855-856-4713 toll-free (M-F, 9am-5pm, eastern time)
   2. Emergency consultation after hours, call: 770-488-7100 and request to speak with a CDC Malaria Branch clinician
   3. Non-urgent questions can be emailed to: malaria@cdc.gov

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G. **If diagnostic tests are required, laboratory testing will be performed in the patient’s room using point of care equipment.** In the event there are several patients in a unit, point of care machines will be set up within the unit and infection prevention measures must be followed.

1. The labs will use the full range of iSTAT cartridges available to provide for BMP, H&H, platelets, PT/INR and a few others (BNP, TnT, Ca, etc.)
2. For blood, the Blood Bank will use emergency waiver packs of O-negative blood and AB-positive platelets and plasma.
3. If the number of patients warrant, a unit will be cordoned off and a simplified lab established for type and cross for blood products, a small Act5Diff for full CBC+diffs, and even a small chemistry analyzer to get a Chem 20.

**Preferred Specimens for Ebola Testing**

- A minimum volume of 4mL whole blood preserved with EDTA, clot activator, sodium polyanethol sulfonate (SPS), or citrate in **plastic** collection tubes can be submitted for EVD testing.
- Specimens other than blood may be submitted upon consult with the CDC by calling the Emergency Operations Center at 770-488-7100.
- Specimens should be shipped at 4°C.
- **Do not submit specimens to CDC in glass containers.**
- **Do not submit specimens preserved in heparin tubes.**
- Standard labeling should be applied for each specimen. The requested test only needs to be identified on the requisition and CDC specimen submission forms.

**Diagnostic Testing for Ebola Performed at CDC**

- Several diagnostic tests are available. Acute infections will be confirmed using a real-time RT-PCR assay (CDC test directory code CDC-10309 Ebola Identification) in a CLIA-accredited laboratory. Virus isolation may also be attempted. Serologic testing for IgM and IgG antibodies will be completed for certain specimens and to monitor the immune response in confirmed EVD patients (#CDC-10310 Ebola Serology).
- Lassa fever is also endemic in certain areas of West Africa and may show symptoms similar to early EVD. Diagnostic tests including but not limited to RT-PCR, antigen detection, and IgM serology may be utilized to rule out Lassa fever in EVD-negative patients.

**Specimen Handling**

- **Notify the Hospital Lab Director or Supervisor of the need to collect samples.**
- **Personal Protective Equipment:** Any person testing specimens from a patient with a suspected case of Ebola virus disease should wear gloves, water-resistant gowns, full face shield or goggles, and masks to cover all of nose and mouth, and as an added precaution use a certified class II Biosafety cabinet or Plexiglas splash guard with PPE to protect skin and mucous membranes. All manufacturer-installed safety features for laboratory instruments should be used.
- A senior laboratory staff member with specific training in packaging and shipping of infectious materials will come to the patient’s room with all supplies (including dry ice) necessary to pack the sample. The sample will be packaged and sealed before it leaves the patient’s room and then hand carried back to the laboratory.

1. The senior laboratory staff member will complete the Viral Special Pathogens Branch (VSPB) Specimen Submission Form (see Appendix A).

**Based on data available from the CDC as of August 28, 2014. This document will be reviewed monthly and updated only when CDC recommendations require a significant change to these guidelines.**
2. **Specimens collected for EVD testing should be packaged and shipped** (see below) without attempting to open collection tubes or aliquot specimens. Specimens for shipment should be packaged following the basic triple packaging system which consists of a primary receptacle (a sealable specimen bag) wrapped with absorbent material, secondary receptacle (watertight, leak-proof), and an outer shipping package.

3. Care should be taken not to contaminate the external surfaces of the containers. The outside surface of the specimen bags should be wiped with a suitable disinfectant before being placed in the packaging/shipping container.

**Specimen Transport within Hospital**
- Specimens should be placed in a durable, leak-proof secondary container for transport within a facility.
- **DO NOT USE** pneumatic tube to transport suspected EVD specimens. They will be carried back to the lab for shipping.

**Packaging and Shipping Clinical Specimens to the CDC**
- Specimens should be packaged and shipped without attempting to open collection tubes or aliquot specimens and sent as rapidly as possible.
- Specimens for shipment should be packaged following the basic triple packaging system, which consists of a primary receptacle (a sealable specimen bag) wrapped with absorbent material, secondary receptacle (watertight, leak-proof), and an outer shipping package as shown below:
Submission Process to the CDC

- Contact county health department or PADOH for notification and consultation for Ebola testing requests and prior to contacting CDC. NO specimens will be accepted without prior consultation.
- Contact your County (Allegheny, Erie) and/or PADOH and CDC to determine the proper category for shipment based on clinical history and risk assessment by CDC. For consultation call the EOC at 770-488-7100.
- Email tracking number to EOCVENT246@CDC.GOV.
- Send specimens for overnight delivery; however, DO NOT ship for weekend delivery unless instructed by CDC.
- Ship to:
  **Centers for Disease Control and Prevention**
  ATTN STAT LAB: VSPB, UNIT #70
  1600 Clifton Road NE
  Atlanta, GA 30333
  Phone 770-488-7100

  - Include the following information: your name, the patient’s name, test(s) requested, date of collection, laboratory or accession number, and the type of specimen being shipped.
  - Include the CDC Infectious Disease (CDC Form 50.34) and Viral Special Pathogens Branch specimen submission forms.
  - On the outside of the box, specify how the specimen should be stored: refrigerated or frozen.
  - Specimens must be shipped either by the State Health department courier or by Federal Express. UPS does not handle this kind of infectious material!

Management of Laboratory Waste

- Waste generated during laboratory testing should be placed in leak-proof containment and discarded as regulated medical waste.
- To minimize contamination of the exterior of the waste bag, place this bag in a rigid waste container designed for this use.
- If available, steam sterilization (autoclave) or incineration as a waste treatment process can inactivate the virus and reduces waste volume.

Treatment

Timely treatment of Ebola HF is important but challenging since the disease is difficult to diagnose clinically in the early stages of infection. Because early symptoms such as headache and fever are nonspecific to Ebola viruses, cases of Ebola HF may be initially misdiagnosed.

Standard treatment for Ebola HF is still limited to supportive therapy. This consists of:
- balancing the patient’s fluids and electrolytes
- maintaining their oxygen status and blood pressure
- treating them for any complicating infections

Supportive therapy can continue with proper protective clothing until the patient has been tested by the CDC to confirm infection.

Continued, next page...
During initial treatment of the patient, all needed blood products will be provided without full cross-match as O-neg/pos red cells or AB plasma/platelets. This is done to minimize exposure to this highly contagious disease.

Currently, there are no approved antiviral medications for the treatment of any of the HFVs.

Treatment with convalescent-phase plasma has been used with success in some patients with Argentine hemorrhagic fever. Unfortunately, no antiviral medications have been shown to be useful in the treatment of the other families of viruses (Filoviridae and Flaviviridae).

If the patient requires a surgical or obstetric procedure, consult the PADOH regarding appropriate precautions for invasive procedures.

Recovery

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, possibly longer.

Fatality Management

If a patient dies, handling of the body should be minimal as the disease can be transmitted postmortem.

Personal Protective Equipment for Postmortem Care Personnel

- Prior to having any contact with a deceased Ebola patient, staff MUST wear PPE as noted in the Infection Prevention Summary. Additional PPE (leg coverings, apron) may be required if there are copious amounts of blood, vomit, feces, or other body fluids.
- PPE should be in place BEFORE contact with the body, worn during the process of collection and placement in body bags, and should be removed immediately after and discarded as regulated medical waste. Use caution when removing PPE as to avoid contaminating the wearer. Hand hygiene (washing your hands thoroughly with soap and water or an alcohol based hand rub) should be performed immediately following the removal of PPE. If hands are visibly soiled, use soap and water.

Postmortem Preparation

- The body should be wrapped in a plastic shroud within in the patient room. Wrapping of the body should be done in a way that prevents contamination of the outside of the shroud. Change gown or gloves if they become heavily contaminated with blood or body fluids. Do not remove intravenous lines or endotracheal tubes that may be present. Avoid washing or cleaning the body. After wrapping, the body should be immediately placed in a body bag and zippeder closed. The bagged body should then be placed in another body bag and zippeder closed before being transported to the morgue.
- Prior to transport to the morgue, perform surface decontamination of the corpse-containing body bags by removing visible soil on outer bag surfaces with standard hospital disinfectant. Follow the product’s label instructions to clean any visible soil, reapply the disinfectant to the entire bag surface and allow to dry for standard dwell time. Following the removal of the body, the patient room should be cleaned and disinfected. Reusable equipment should be cleaned and disinfected according to standard procedures.
- For more information on environmental infection control, please refer to Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus.

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• Autopsies on patients who die of Ebola should be avoided. If an autopsy is necessary, consult with County/State health department and CDC regarding additional precautions.

For additional information regarding management of Ebola decedents, see CDC document: Guidance for Safe Handling of Human Remains of Ebola Patients in U. S. Hospitals and Mortuaries.

Post-exposure Prophylaxis
Persons with percutaneous or mucocutaneous exposures to blood, body fluids, secretions, or excretions from a patient with suspected VHF should:
• Immediately stop working and wash the affected skin surfaces with soap and water.
• Mucous membranes (e.g., conjunctiva) should be irrigated with copious amounts of water.
• Immediately contact your supervisor and Employee Health for assessment and access to postexposure management services for all appropriate pathogens (e.g., Human Immunodeficiency Virus, Hepatitis C, etc.)

Evaluation and Management of Close Contacts—including Exposed Healthcare Workers
• HCP who develop sudden onset of fever, intense weakness or muscle pains, vomiting, diarrhea, or any signs of hemorrhage after an unprotected exposure (i.e. not wearing recommended PPE at the time of patient contact or through direct contact to blood or body fluids) to a patient with Ebola HF should
  o Not report to work or should immediately stop working
  o Notify their supervisor
  o Seek prompt medical evaluation and testing
  o Comply with work exclusion until they are deemed no longer infectious to others
• UPMC Infection Prevention will report any exposed or ill HCPs to local, state, and federal public health authorities.
• For asymptomatic HCP who had an unprotected exposure (i.e., not wearing recommended PPE at the time of patient contact or through direct contact to blood or body fluids) to a patient with Ebola HF should:
  o Receive medical evaluation and follow-up care including fever monitoring twice daily for 21 days after the last known exposure.
  o Work with business unit Employee Health office to report exposure and determine timeframe and reporting of potential symptoms and fever check documentation.
  o Continue to work while receiving twice daily fever checks, based upon hospital policy and after discussion with local, state, and federal public health authorities.
References

See:

- **CDC:**
  - Health Alert Network (HAN 368): CDC Ebola Response Update #4 – August 28 (CDC)
  - Health Alert Network (HAN) INFOService: CDC Ebola Response Update #3 – August 22 (CDC)
  - Case Definition for Ebola Virus Disease (EVD) – August 22 (CDC)
  - Interim Guidance for Monitoring and Movement of Persons with Ebola Virus Disease Exposure – August 22 (CDC)
  - Factsheet: Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease – August 21 (CDC)
  - Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus – August 19 (CDC)
  - Sequence for Putting On and Removing Personal Protective Equipment (PPE) – August 18 (CDC)
  - Ebola Virus Disease Information for Clinicians in U.S. Healthcare Settings – August 10 (CDC)
  - Questions and Answers on Ebola: August 1, 2014
- UPMC Center for Health Security
- World Health Organization
- OSHA: Toxic and Hazardous Substances, Bloodborne Pathogens
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Example of completed form:

**Viral Special Pathogens Branch Diagnostic Specimen Submission Form**

**Patient Name:** Doe, John  
**ID No.:** 664384654  
**DOB:** 07/29/1995  
**Date of Symptom Onset:** 08/01/2014

**Clinical Description:**  
Patient returning from three weeks missionary service in Liberia. Presents with fever, myalgia, arthralgia, diarrhea, vomiting.

<table>
<thead>
<tr>
<th>No.</th>
<th>Specimen ID No.</th>
<th>Specimen Lab ID No.</th>
<th>Date Collected</th>
<th>Specimen Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lab accession no.</td>
<td>08/04/2014</td>
<td>Blood</td>
<td></td>
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</tbody>
</table>

**For State Health Department:**

- **Reporting Person:** Laboratory Director or Supervisor  
- **Hospital Name:**  
- **Hospital Address:** City, Pennsylvania Zip  
- **Phone Number and Email Address:** 412-nnn-nnnn (phone), 412-nnn-nnnn (fax)

- **State Health Lab:** PA Department of Health Laboratory  
- **Contact Information:** (610) 280-3464

- **Physician's Name:**  
- **Hospitals Name:**  
- **Affiliation:**  
- **Phone Number and Email Address:** 412-nnn-nnnn

- **Attending Physician:** Lisa Dettinger  
- **Contact Information:** 484-570-6416

*Based on data available from the CDC as of August 28, 2014. This document will be reviewed monthly and updated only when CDC recommendations require a significant change to these guidelines.*
Appendix B: CDC Specimen Submission Form: Specimens of Human Origin

<table>
<thead>
<tr>
<th>Select the Specimen Origin to Begin the Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC SPECIMEN SUBMISSION FORM: SPECIMENS OF HUMAN ORIGIN</td>
</tr>
</tbody>
</table>

**LABORATORY INFORMATION FOR REGISTRATION**
- Test order code:
- Test name:
- Suspected agent(s):
- Date sent to CDC:
- Attention:

**PATIENT INFORMATION**
- Patient name:
- Sex:
- Date of birth:
- Age:
- Race:
- Other:

**SPECIMEN INFORMATION**
- Specimen collected date:
- Time:
- Material submitted:
- Specimen source (type):
- Specimen source site:
- Collection method:
- Treatment of specimen:
- Transport medium:
- Specimen packaging:
- Specimen labeling:

**CDC CHECKLIST**
- Hypogamma:
- Immunodeficiency:
- Laboratory:
- Specimen list:
- Back-up specimen list:
- E-mail at CDC:
- E-mail at laboratory:
- Time:

**CDC SPECIMEN SUBMISSION FORM: SPECIMENS OF HUMAN ORIGIN**
- Specimen:
- Alternate Specimen:
- Patient:
- Alternate Patient:
- Date:
- Time:

**CONTACT INFORMATION**
- Phone:
- Fax:

**MAILING INFORMATION**
- Address:
- City:
- State:
- Zip:

**INSTITUTION NAME**
- Name:
- Address:
- City:
- State:
- Zip:

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### Appendix C: Infection Prevention Supplies for Ebola Response

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Order Number</th>
<th>Unit of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gowns – clinical and morgue use (latex free)</td>
<td>Isolation impervious closed back polyester LF blue w/elastic cuffs</td>
<td>MEDLINE 9386; inventory</td>
<td>50/ca; $0.63/ea; $0.69/ea XL</td>
</tr>
<tr>
<td>Gowns – lab use (latex free)</td>
<td>Isolation closed back LF white NS disposable w/elastic cuffs</td>
<td>MEDLINE 100045; NON27114; inventory</td>
<td>50/ca; $0.63/ea; $0.69/ea XL</td>
</tr>
<tr>
<td>Goggles, fluid protection</td>
<td>Indirect vent, elastic strap, clear</td>
<td>MS03085, NON24776</td>
<td>36/box; $81.59/box</td>
</tr>
<tr>
<td>Shield, full face splash</td>
<td>Full face plastic disposable with foam forehead</td>
<td>FISHER HEALTH 8130; inventory</td>
<td>12/bx; 12/ca</td>
</tr>
<tr>
<td>Impervious drape sheet ¾”</td>
<td>OR; 44”x65” (for patient transports)</td>
<td>164385; non-stock item</td>
<td>20/case; $49.71/case</td>
</tr>
<tr>
<td>Cover boot protector</td>
<td>Impervious STA-DRI Universal Disposable</td>
<td>SLOAN 8653; inventory</td>
<td>50/case; $370/case</td>
</tr>
<tr>
<td>Surgical scrub suit – morgue use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical cap – morgue use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bag, body adult</td>
<td>Post mortem 36”x90”</td>
<td>9405; inventory</td>
<td>25/ca; $8.00/ea</td>
</tr>
<tr>
<td>Bag, body infant</td>
<td>Post mortem 18”x26”</td>
<td>101858; inventory</td>
<td>50/ca; $5.50/ea</td>
</tr>
<tr>
<td>Bag, body bariatric</td>
<td>Post mortem 72”x90”</td>
<td>126990; inventory</td>
<td>10/ca; $12.65/ea</td>
</tr>
<tr>
<td>Bag, body child</td>
<td>Post mortem 30”x48”</td>
<td>139867; inventory</td>
<td>25/ca; $8.50/ea</td>
</tr>
</tbody>
</table>

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