

Ebola Virus Disease Protocol

Martin Health System

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MHS Ebola Virus Disease Protocol

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MHS Ebola Virus Disease Protocol

The Ebola virus is one of the most virulent human pathogens. Early recognition is critical for infection control. Health care providers should be alert for and evaluate any patients suspected of having Ebola Virus Disease. The risk for person-to-person transmission of hemorrhagic fever is greatest during the latter stages of illness when viral loads are the highest.

Signs and Symptoms

- Fever (greater than 38.6°C or 101.5°F)
- Severe headache
- Muscle pain
- Weakness
- Diarrhea
- Vomiting
- Abdominal (stomach) pain
- Unexplained hemorrhage (bleeding or bruising)

Symptoms may appear anywhere from 2 to 21 days after exposure to Ebola, but the average is 8 to 10 days.

Recovery from Ebola depends on good supportive clinical care and the patient's immune response.

Diagnosis

Diagnosing Ebola in a person who has been infected for only a few days is difficult. This is because the early symptoms, such as fever, are nonspecific to Ebola infection and are seen often in patients with more commonly occurring diseases, such as malaria and typhoid fever.

Treatment

No FDA-approved vaccine or antiviral drug is available for Ebola. Symptoms of Ebola are treated as they appear. The following basic interventions, when used early, can significantly improve the chances of survival:

- Providing intravenous fluids (IV) and balancing electrolytes
- Maintaining oxygen status and blood pressure

- Treating other infections if they occur

Experimental vaccines and treatments for Ebola are under development, but they have not yet been fully tested for safety or effectiveness.

Recovery from Ebola depends on good supportive care and the patient's immune response. People who recover from Ebola infection develop antibodies that last for at least 10 years, possibly longer. It isn't known if people who recover are immune for life or if they can become infected with a different species of Ebola. Some people who have recovered from Ebola have developed long-term complications, such as joint and vision problems.

Identification of Patients at Risk

All patients who present for care in any Martin facility will be screened for risk for Ebola, to include:

- a. Recent travel to West Africa.
- b. Exposure to persons and/or remains with Ebola.
- c. Existing symptoms: A fever, body aches, nausea, vomiting, diarrhea, abdominal pain, rash, bleeding from any source.

If a patient is found to be at risk:

1. Have the patient don a procedural mask over the nose and mouth and isolate the patient immediately. Contact the operator to call the on call infection control nurse.
 - a. If a patient presents and screens positive for EVD and is not actively vomiting or without exposed body fluids, we will have them don a procedural mask and have them walk to the closest isolation room as soon as possible.
 - b. If there is blood or body fluid exposure, we will have the patient don a procedural mask and isolate them where they are (clearing the area >6 foot distance from the patient and any blood or body fluids) and maintaining the patient in that space until staff is in appropriate PPE and able to transport the patient safely to an isolation room.
2. If the infection control nurse determines that the patient is a true risk, the caller will be directed to:
 - a. For outpatient areas: Call 911
 - b. For acute care hospitals: Call the command center at x5741 and request that the Ebola Emergency Response Team (EERT) be initiated. The command center will activate the Ebola incident command procedure.

3. Clear and secure the area within 6 feet around any location the patient had contact with since entering the facility. Isolate any healthcare workers who came into contact with the patient until decontamination can occur.
4. If there is an exposure of body fluids in a public area, evacuate and secure the area.
5. The infection control nurse will call the CDC and the appropriate Department of Health, depending upon the location of the facility:
 - a. Martin County: 772-221-4000 x 2214
 - b. St. Lucie County: 772-462-3883 (M-F 8am-5pm) or 772-462-3800 (after hours, holidays and weekends)
6. The Operations Chief and/or designee, in conjunction with the infection control nurse, will identify all persons (visitors, volunteers, associates and physicians) that have been in contact with the patient since arrival, and document on the patient contact log. Security will review video surveillance to ensure that all exposed areas are accurately identified.
7. Avoid contact with blood and body fluids unless appropriate PPE has been donned.
8. The Operations Chief and/or designee, in conjunction with the infection control nurse, will remove all exposed associates from the area for decontamination. Post-exposure prophylaxis standards include:
 - a. Immediately stop working and wash the affected skin surfaces with soap and water.
 - b. Irrigate affected mucous membranes (e.g., conjunctiva) with copious amounts of water.
 - c. Immediately contact your supervisor and Employee Health for assessment and access to post-exposure management services for all appropriate pathogens (e.g., Human Immunodeficiency Virus, Hepatitis C, etc.)
9. If the patient is unresponsive and unable to answer questions regarding travel/exposure history, and has existing symptoms (fever, body aches, nausea, vomiting, diarrhea, abdominal pain, rash, bleeding from any source), notify the infection control nurse.

Patient Care Procedures

1. Place the patient in a negative pressure or isolation room with an anteroom as soon as possible. Remove any unnecessary medical equipment from the room prior to patient placement. Utilize disposable equipment when possible. Remove privacy curtains if possible.
2. Ensure that a PPE Buddy is in place to assist in the proper donning and doffing of PPE. A second caregiver will be donned in full PPE, ready to assist with patient care, as needed.

Ensure that a Safety Officer is also in place to monitor isolation procedures for any breeches in protocol.

3. Avoid contamination of reusable porous surfaces that cannot be made single use. Protect the mattress by placing a containment bag or plastic sheeting over the stretcher or bed.
4. Restrict access to a limited number of healthcare workers.
5. Restrict all visitors until Ebola Virus Disease has been ruled out.
6. Consolidate all patient care activities as much as possible to reduce exposure and entry to the room. Only one care team per shift should provide care to the patient.
7. Post a patient contact log outside the room and document all persons entering and exiting.
8. Limit the use of needles and other sharps as much as possible.
9. Limit phlebotomy procedures and testing to the minimum necessary for essential diagnostic evaluation.
10. Avoid aerosol-generating procedures (i.e., bronchoscopy, intubation, nebulizer therapy) whenever possible. Ensure PAPRs are utilized if these procedures are necessary.
11. If the patient must be transported, notify incident command so they can contact security to clear the route and EVS to clean the route as directed. Place a procedural mask over the mouth and nose and wrap the patient in two layers of impervious material. The safety officer will accompany the patient. The transport worker and the safety officer will wear PPE during transport. Ensure that all persons not wearing PPE are more than 6 feet away from the patient.

Donning Personal Protective Equipment – Primary Care Giver and PPE Buddy

Prior to providing care, collecting specimens or cleaning services and entering the patient's room:

1. Remove all jewelry and personal clothing
2. Tie up long hair
3. Empty bladder
4. Don hospital provided scrubs and socks
5. Have vital signs (BP, P, RR, Temp) taken and document on the contact log
6. Hydrate as necessary
7. Perform strict hand hygiene.

Don in the following order:

- a. A pair of nitrile gloves

- b. A zippered protective suit with hood tucked in, leave unzipped at this time – above waist
 - c. Rubber boots
 - d. Bring pant legs to outside of boots, while seated
 - e. Shoe and leg covers over the pant leg / boot
 - f. A second pair of nitrile gloves over the sleeve of the suit. Have the PPE Buddy loosely tape the gloves to the sleeve of the suit with ChemTape (or 2” silk tape if ChemTape not available)
 - g. PPE Buddy turns on PAPR and checks for airflow
 - h. Don PAPR, by first applying the PAPR belt and tucking excess belt tail under belt.
 - i. Tuck innermost layer of PAPR hood into zippered suit
 - j. Zip suit and secure flap
 - k. If PAPR not available, N95 mask and hood may be substituted
 - l. An impervious isolation gown over the zippered protective suit / PAPR (Remove PAPR hose from hood momentarily, keeping the hose over the posterior neck of the impervious isolation gown). The PPE Buddy will tie with a simple bow (in the rear of the body – under the PAPR hose), tucking in the tails
 - m. A third pair of long chemo gloves over the sleeve of the suit. Have the PPE Buddy loosely tape the gloves to the sleeve of the impervious gown with ChemTape (or 2” silk tape if ChemTape not available)
8. If grossly contaminated at any point during the care of the patient, ask for a break and begin doffing process and decontamination immediately

Doffing Personal Protective Equipment – Primary Care Giver and PPE Buddy

After performing care, collecting specimens or cleaning services, and prior to exiting the patient’s room:

1. Ensure that the PPE Buddy is available to assist in the removal of the isolation equipment and that the safety officer observes for possible breaches in protocol
2. Ensure the doffing process is not rushed
3. Ensure a doffing pad is in place on the floor of the anteroom
4. Before exiting the patient’s room, wash gloved hands (paying special attention to between fingers) and anterior surfaces of impervious gown with bleach wipes and dispose of wipes in infectious waste container
5. Remove boot covers and place in infectious waste container
6. Wash gloved hands with bleach wipes (paying special attention to between fingers) and dispose in infectious waste container

7. Rip the bow of the impervious isolation gown, by grasping the sides and pulling forward. Grasp the gown at the shoulders and pull away from the body, breaking the neck strap
8. Keeping the dirty surfaces to the inside, remove the gown and first set of gloves by gently rolling it up
9. Wash gloved hands and anterior surfaces of zippered suit with bleach wipes (paying special attention to between fingers) and dispose in infectious waste container
10. Utilize clean bleach wipe to open the door, exit the room (stepping onto the doffing pad) and close the door behind you

Doff PPE and discard in the infectious waste container in the following order:

- a. PPE Buddy will wipe down PAPR hose and belt with bleach wipes and dispose of in infectious waste container
- b. Lift outer layer of PAPR hood above shoulders – do not remove PAPR hood at this time, but remove belt and hang on pole
- c. PPE Buddy washes gloved hands with bleach wipes (paying special attention to between fingers) and dispose in infectious waste container
- d. PPE Buddy (without stepping onto doffing pad) will unzip the zippered suit and assist in the removal of the zippered protective suit (from behind) and the second pair of gloves - keeping the dirty surfaces to the inside, rolling it up gently until reaching the top of the boots
- e. PPE Buddy removes outermost gloves and washes gloved hands with bleach wipes (paying special attention to between fingers) and dispose in infectious waste container
- f. With assistance from PPE Buddy, gently lean forward and while holding the outer edges of the PAPR hood – back out of PAPR hood, using caution not to touch PAPR hose
- g. PPE Buddy places PAPR in used PAPR container
- h. PPE Buddy washes gloved hands with bleach wipes (paying special attention to between fingers) and dispose in infectious waste container
- i. Step out of suit and boots and off doffing mat
- j. Remove final pair of gloves utilizing glove-in-glove technique
- k. Perform strict hand hygiene with alcohol –based hand sanitizer
- l. Wash hands with soap and water as soon as possible
- m. Remove scrubs and shower in the designated area in your department
- n. Vital signs will be taken and recorded
- o. PPE Buddy removes boots from doffing pad and places in used PAPR container, and zippered suit in infectious waste container
- p. PPE Buddy washes gloved hands with bleach wipes (paying special attention to between fingers) and dispose in infectious waste container

- q. PPE Buddy will then doff their own PPE onto doffing pad, in same order as above
- r. PPE Buddy will perform strict hand hygiene with alcohol –based hand sanitizer
- s. PPE Buddy will wash hands with soap and water as soon as possible
- t. PPE Buddy will remove scrubs and shower in the designated area in your department
- u. PPE Buddy will have vital signs taken and recorded

Donning Personal Protective Equipment – Safety Officer

The safety officer/doffing assistant should also wear personal protective equipment.

1. Perform strict hand hygiene.

Don in the following order:

- a. A pair of nitrile gloves
- b. White zippered protective suit
- c. Simple shoe covers
- d. N95 mask
- e. goggles
- f. A surgical bouffant cap (tuck hair neatly in under the cap. Two hair covers may be necessary to cover all hair.)

Doffing Personal Protective Equipment – Safety Officer

Doff in the following order:

- a. Wash gloved hands with bleach wipes (paying special attention to between fingers) and dispose in the regular trash.
- b. Remove shoe covers.
- c. Wash gloved hands with bleach wipes (paying special attention to between fingers) and dispose in the regular trash.
- d. Keeping the dirty surfaces to the inside, remove the zippered protective suit by gently rolling it up.
- e. Wash gloved hands with bleach wipes (paying special attention to between fingers) and dispose in the regular trash.
- f. Remove the bouffant cap(s).
- g. Goggles and mask without touching the front.
- h. Remove gloves using glove-in-glove technique.
- i. Perform strict hand hygiene with alcohol –based hand sanitizer.
- j. Wash hands with soap and water as soon as possible.

Laboratory Testing and Blood Products

No laboratory testing will occur in any MHS Laboratory until the patient has been cleared for Ebola. If laboratory tests are absolutely necessary, point of care devices will be utilized.

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.

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

If specimen testing is approved by public health, the laboratory supervisor will contact the Department of Health and the CDC Viral Special Pathogens Branch to coordinate the submission of specimens.

- CDC Viral Special Pathogens Branch: 404-639-1115 business hours
- CDC Emergency Operations Center: 770-488-7100 after hours
- Provide to the CDC via email the completed specimen collection form and tracking number of package(s)

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.

Specimen Collection

If approved by the CDC for testing, the specimens should be collected by someone who is trained to handle infectious specimens. Samples from patients are an extreme biohazard risk; testing should be conducted under maximum biological containment conditions with the PPE outlined above.

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. Specimen Requirements:

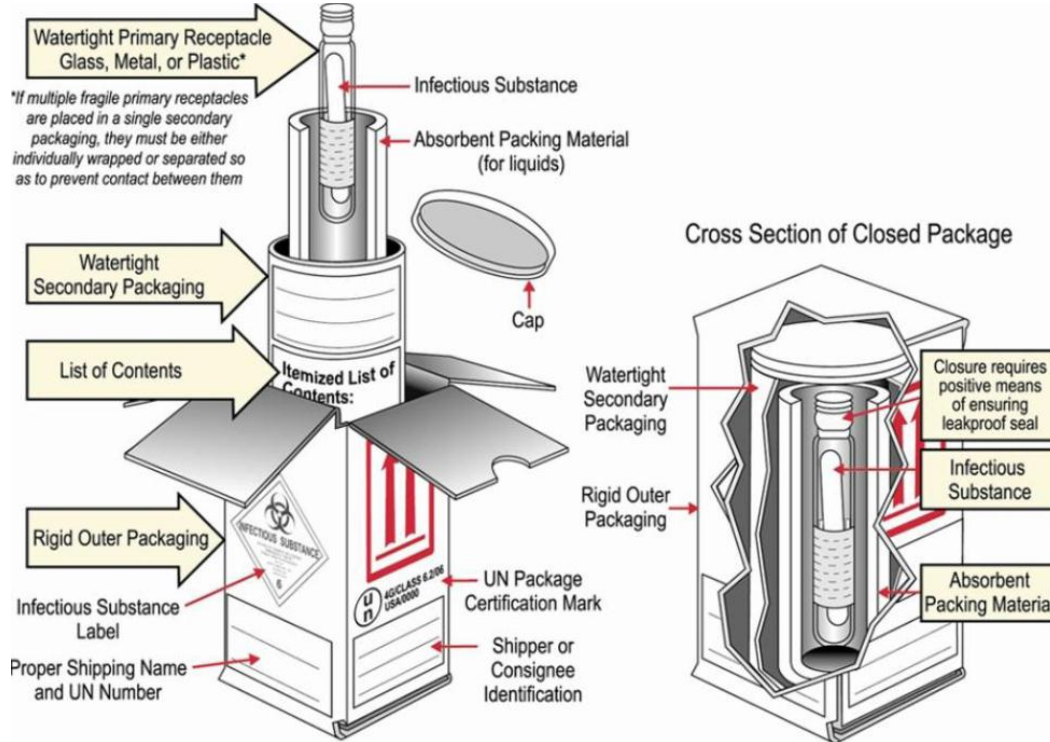
- Draw two purple top tubes with a minimum volume of 4mL each.
- Do not submit specimens to CDC in glass containers or heparin tubes.
- Apply standard labeling to each specimen.
- Specimens other than blood may be submitted upon consult with the CDC by calling the Emergency Operations Center at 770-488-7100.

Specimens collected for EVD testing should be packaged and shipped 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.

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.

A designated laboratory person will protect the specimen until it is handed off to the courier. The specimen will be shipped at 4°C.

Proper Packaging Process



Medical Waste

Discard all linens, pillows, mattresses, and textile privacy curtains as regulated medical waste.

When discarding solid medical waste (e.g., needles, syringes, and tubing) contaminated with blood or other body fluids, 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.

Place waste generated during laboratory testing in leak-proof containment and discard as regulated medical waste.

Discard all personal protective equipment following normal hospital procedures.

Fatality Management

If a patient dies, minimize handling of the body as the disease can be transmitted postmortem. Do not remove intravenous lines or endotracheal tubes that may be present. Avoid washing or cleaning the body.

Wrap the patient in the plastic sheeting that is covering the mattress. Place the body in a zippered containment bag. Seal the zipper with tape. Spray the outside surface with a 10% bleach solution and allow to dry. Place the body in a second containment bag and zip closed. Clean the outer surface of the bag with the bleach solution.

The Operations Chief and/or designee will arrange transport of the body to the appropriate facility. Do not transport the patient to an MHS morgue. Autopsies on patients who die of Ebola are not recommended. If an autopsy is necessary, consult with County/State health department and the CDC regarding additional precautions.

Cleaning the Patient's Room

After discharge, the patient room will be terminally cleaned by EVS according to the defined protocol wearing the PPE outlined above. Follow standard procedures per manufacturers' instructions for cleaning and/or disinfection of environmental surfaces and reusable equipment. Particular attention should be paid to areas that may have been exposed to body fluids.

Evaluation and Management of Exposed Healthcare Workers

Any associate who develops 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 Viral Disease should:

- Not report to work or immediately stop working
- Notify the immediate supervisor
- Seek prompt medical evaluation and testing
- Comply with work exclusion until they are deemed no longer infectious to others

Any associate with an unprotected exposure who is asymptomatic (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 Viral Disease should:

- Receive medical evaluation and follow-up care including fever monitoring twice daily for 21 days after the last known exposure.
- Work with business unit Employee Health office to report exposure and determine timeframe and reporting of potential symptoms and fever check documentation.
- 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

1. [Centers for Disease Control: Ebola Update](#)
2. [CDC Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On \(Donning\) and Removing \(Doffing\)](#)
3. [Guidance for Safe Handling of Human Remains of Ebola Patients in U. S. Hospitals and Mortuaries](#)
4. [Case Definition for Ebola Virus Disease \(EVD\)](#)
5. [Interim Guidance for Monitoring and Movement of Persons with Ebola Virus Disease Exposure](#)
6. [Factsheet: Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease](#)
7. [Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus](#)
8. [Ebola Virus Disease Information for Clinicians in U.S. Healthcare Settings](#)
9. [World Health Organization](#)
10. [OSHA: Toxic and Hazardous Substances](#)