



Ebola Guidelines

For

Agencies and Responders

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I. Overview

What is Ebola?



Image 1

Ebola (Ebola Virus Disease or EVD), previously known as viral hemorrhagic fever is a rare, often deadly disease that occurs from infection of one of the Ebola virus strains. There are currently five types of Ebola viruses. Four of the five occur in humans and nonhuman primates (monkeys, chimpanzees, and gorillas) and in bats; the fifth virus is only known to affect nonhuman primates.

Ebola was first documented in 1976 and has sporadically occurred in Africa since that time. The original source that started Ebola remains unknown. However, it is believed that the virus is likely animal-borne and that bats are most likely the reservoir.

What are the symptoms of Ebola?

The incubation period for Ebola ranges from 2 to 21 days, but most commonly symptoms are seen around 8 to 10 days. This period of time is when signs and symptoms will occur. If you have a patient with symptoms of Ebola AND meets risk factor criteria, be aware that these patients are contagious. Take standard, contact and droplet precautions.

Signs and Symptoms

Initial s/s include:

- Fever (100.4 or >)
- Severe headache
- Muscle pain
- General weakness

4-6 days after illness onset:

- Stomach ache and/or abdominal pain
- Diarrhea, which can be EXTREMELY profound
- Vomiting
- Unexplained hemorrhage and/or bruising

AND

Risk Factors

- Recent travel to or have resided in countries affected by Ebola, such as West Africa, specifically in Guinea, Liberia, Sierra Leone, or Mali
- Personal contact with a **symptomatic** EVD patient
- Handling of infected mammals known to carry the Ebola virus (bats, monkeys, chimpanzees, and gorillas) – Not a risk in the U.S.
- Contact with blood and/or bodily fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk, and semen) and of another individual with or suspect of having Ebola
- Male semen harbors the Ebola virus for up to 70 days after recovery from illness
- Contaminated objects (such as needles and syringes) used on an individual with or suspect of having Ebola
- Contact with a corpse or carcass with or suspect of having Ebola



Image 2

II. Approach

Preparedness should be of the utmost importance when regarding any infectious disease. We hope to assist with some insight regarding preparedness for pre-hospital agencies and providers.

1. Inventory your isolation supplies. You should have, at a minimum:
 - Impermeable (fluid resistant) gowns, coveralls, or suits- the yellow isolation gowns DO NOT meet this requirement for a contagious (symptomatic) patient.
 - Respiratory protection that is AT LEAST as protective as NIOSH certified fit-tested N95 filtering face piece respirators, powered air purifying respirator (PAPR) or higher. A respirator must be used especially if utilizing aerosol-generating procedures (i.e. endotracheal intubation, suctioning and nebulized medication) – the surgical masks DO NOT meet this requirement for a contagious (symptomatic) patient. In order to have appropriate fit for N95 masks and respirators, providers should have received proper fit testing. Providers that have not been fit tested are not recommended to respond to these incidents.
 - Disposable shoe coverings and leg coverings.
 - Plenty of gloves – the minimum recommendation is to double glove and that gloves have a maximum wear time of three (3) hours. Gloves should be long enough that no skin is exposed at the wrist.
 - Eye protection (goggles or face shield that fully covers the front and sides of the face).
 - Tarp or some sort of plastic barrier to separate patient and driver's compartment. As long as there is a barrier between the two compartments, there is no need for the driver to wear PPE.
 - Duct tape (for the tarp or plastic).
 - Foot rinse basin which contains a bleach solution, for entry in and out of the residence.
 - Spray bottles with a 0.5% sodium hypochlorite (weak bleach). The recommended bleach-water ratio is 1:10, that is one and a half (1.5) cups of household bleach in one (1) gallon of water. Bleach should be used as a disinfectant, not as a cleaner. Bleach is rapidly deactivated in the presence of organic soil. If you are using the bleach solution to disinfect the cleaning process should go as follows:
 - 1) Use soap and water to clean
 - 2) Use bleach solution to disinfect, should be applied for 10 minutes and allowed to air dry.

Note: When you have completed your agency's inventory, please submit a complete inventory list to the Council at lfemspi@vaems.org. The Lord Fairfax EMS Council has been tasked with obtaining inventory information for the Virginia Department of Health Office of EMS in an effort to determine current need across the Commonwealth.

2. Review your infection control policies and procedures, ensure the point of contact for exposure information is correct, update as necessary.

NOTE: When members read or are trained on policy have them sign a statement that declares that they have read the policy and understand it. File as part of your Performance Improvement program.

3. Train responders on identification of signs & symptoms and the risk factors of Ebola and post the screening criterion in conspicuous locations frequented by responders (i.e. lounge area, bathrooms, patient compartments, etc.) for review and as reminders
4. Train responders on the different PPE options which are based on patient presentation (*Appendix 2*), appropriate donning and doffing procedures and infection control. Those who respond to a suspected Ebola incident should be knowledgeable enough of Ebola to perform an initial screening from at least a three (3) feet distance. If, based on the conclusion of this screening the provider suspects Ebola then PPE should be utilized and Standard, Droplet and Contact precautions should be followed. Information set forth by the Virginia Department of Health regarding these precautions are discussed in *Appendix 3*. **Repeated training and drills are also highly recommended.**
5. Test the knowledge of your agency's responders after training them to ensure they are incorporating this Ebola screening in their patient assessment practice, are able to initiate the appropriate notification process (*Appendix 4*), and can appropriately don and doff PPE.
6. Remember that fit-testing is required prior to utilizing any type of respirator. If any providers haven't been fit-tested they should not respond to these incidents.
7. Ensure that you have the correct cleaning and disinfecting supplies, EPA-registered hospital disinfectant with claims for non-enveloped virus (norovirus, rotavirus, adenovirus, and poliovirus) and/or 0.5% sodium hypochlorite (weak bleach). An understanding of the correct cleaning and disinfecting process is also recommended.

III. Personal Protective Equipment

A. Donning and Doffing of PPE

Utilizing a trained observer (as of 11/16/2014) is highly encouraged for donning and doffing of PPE.

The trained observer is defined by the Center for Disease Control and Prevention (CDC) as an individual with the sole responsibility of assuring adherence to the entire donning and doffing process (source: CDC website). This individual is tasked with having detailed knowledge of the PPE being used, its functionality and its proper use, policy and protocol regarding the PPE (donning, doffing, disposal, etc.), and should also have the knowledge to provide feedback regarding guidance and technique to the individual putting the PPE on or removing it. The trained observer should also have knowledge of the exposure plan, should an exposure occur. Another function of the trained observer is to read aloud the donning/doffing checklists (*Appendix 1*) while visibly confirming and documenting that each step has been completed correctly. In no circumstance should the trained observer do patient care or come in contact with anything that would contaminate the trained observer.

B. Decontamination

- Decontamination should be done while at Winchester Medical Center (decontamination is clearly necessary **IF** the patient's blood or other bodily fluids leak) and will be performed under the canopy where the ambulance will be unloading the patient, all other EMS units bringing patients to the emergency department will be diverted to enter through the main entrance of the emergency room.
- Additional equipment that may be needed (i.e. cleaning supplies, etc.) will be stored in the ER decontamination shower room.
- There will be available PPE for redress to decontaminate the ambulance. PPE **must** be worn while cleaning and decontaminating the ambulance.
- Contaminated reusable patient care equipment should be placed in (a minimum of two) **red** biohazard bags and labeled for "cleaning and disinfection". Be vigilant to avoid contaminating the outside of the bags that the equipment is in.
- Ensure that the sharps container used is bleached on the outside once used, contained and controlled as a dangerous HAZMAT agent, double **red** bagged and delivered to the appropriate site for final disposition (i.e. incineration).

IV. Patient Care and Transport Considerations

When encountering a patient with confirmed or suspect of having Ebola

- Being mindful of protecting your own mucous membranes (eyes, nose, and mouth) from splashes of infectious material, or self-inoculation from soiled gloves, is of the utmost importance.
- Make all attempts to avoid using expensive and reusable equipment
- Limiting the use of invasive procedures (IV or IO, nebulized medications, endotracheal intubation, suctioning, etc).
- Limiting potential exposure to other providers, **ONLY** take what and who you absolutely need in the residence.
- Know who to contact and when (*Appendix 4*)
- Plan on hanging drapes (plastic, tarps, etc.) up inside of the patient compartment to reduce the chance of contaminating equipment.
- When documenting remember to include a list of all public safety providers (career and volunteer) involved in the response and level of contact of those providers with the patient. This information will need to be shared with Lord Fairfax Health District. See *Appendix 5* for an appropriate form.
- **DO NOT** transport family members, bystanders, or anyone else who was with the patient to the hospital. Instead get their name and phone number and ask/encourage them to stay at the residence until they have received direction from Virginia Department of Health or Valley Health Infectious Disease Department.

V. Uniforms

Should an EMS crew transport a patient ill with Ebola or suspected of having Ebola to one of the Valley Health hospitals, after you have been decontaminated you will be given a set of scrubs and pair of shoes to leave in after you have been dismissed by an appropriate authority. Please use the following guidance information regarding your belongings:

IF PPE was worn during the incident:

- The uniform (or other clothing) worn under the PPE can be laundered **by the hospital** if there is no gross contamination (i.e. blood, vomit, stool, etc.). The uniform (or other clothing) worn with the PPE still needs to be carefully and safely bagged and held pending determination if the patient actually has Ebola.
- The uniform (or other clothing) may be returned to the agency, and then to the provider **IF** the patient is found to be free of Ebola, **this process will take 3 or more days.**
- If the patient tests positive, the uniform (or other clothing) will be incinerated.

IF PPE was NOT worn during the incident:

- Grossly contaminated (**with ANY bodily fluid**) clothing, not protected by PPE, these uniforms (or other clothing) will be placed in the waste stream at the hospital and incinerated.
- Holding the contaminated items pending the definitive diagnosis (could take 3 or more days) is **NOT** recommended for clothing.

Station boots, footwear, etc.

- Footwear worn that was protected by PPE **AND** not grossly contaminated should be carefully and safely bagged and held pending determination of diagnosis (could take 3 or more days).
 - If the patient tested negative for Ebola the foot wear will be released to the agency to be returned to the provider
 - If the patients tested positive for Ebola, the footwear will placed in the waste stream at the hospital and incinerated
- Footwear that is **VISIBLY** contaminated with body fluids from an Ebola suspected patient will be placed in the waste stream at the hospital and incinerated.
- Rubber fire boots are impervious and can be cleaned and sanitized like other reusable impervious equipment. Leather fire boots are **NOT** impervious.

Appendix 1

The Lord Fairfax EMS Council is actively making every effort to support the region with continual updates and assistance with documents regarding the Ebola outbreak. On November 16, 2014 the Centers for Disease Control and Prevention (CDC) released updated information regarding the procedure of donning and doffing personal protective equipment (PPE), this document can be found by following <http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html>.

Within the document you will find that the CDC expresses emphasis on the utilization of a “trained observer” and use of a checklist. A “trained observer” is defined as an individual with the sole responsibility of assuring adherence to the entire donning and doffing process. This individual is tasked with having detailed knowledge of the PPE being used, its functionality and use, policy and protocol regarding the PPE (donning, doffing, disposal, etc.), and should also have the knowledge to provide feedback regarding guidance and technique to the individual putting the PPE on and removing the PPE. The trained observer should also have knowledge of the exposure plan, should an exposure occur. A function of the “trained observer” is to read aloud the checklist while visibly confirming and documenting that each step has been completed correctly. The “trained observer” does not do any patient care activities. At a minimum the “trained observer” should have on the following PPE:

1. Disposable fluid resistant or impermeable gown
2. Disposable full face shield
3. Two pairs of nitrile exam gloves and at a minimum the outer pair should have extended cuffs
4. Disposable fluid-resistant or impermeable shoe coverings

** Should the “trained observer” assist with doffing of PPE (touch the contaminated PPE), the “trained observer” should immediately disinfect outer gloved hands with an EPA-registered disinfectant wipe or alcohol based hand rub (ABHR).

Designated Area for Donning/Doffing of PPE

- This area should have physical barriers (ex. plastic enclosure), conspicuous signage to separate each area (ex. clean area and dirty area).
- As pre-hospital providers you really do not have the capability of having separate donning areas prior to entering an incident. As far as doffing of the PPE on scene, refer to the Lord Fairfax Health Department or your local hazardous materials team for assistance.

Preparing for Donning of PPE

- 1) Engage Trained Observer
 - Ensure that the PPE is serviceable; integrity verified
 - 2) Remove personal clothing (if possible) and items – change into surgical scrubs (or disposable garments, if available) and dedicated washable (plastic or rubber, rubber fire boots are acceptable; leather fire boots are not) footwear
- ** No personal items (ex. jewelry, watches, cell phone, etc.) should be brought into contact with this patient or the area; if they do, they are subject to being destroyed**
- 3) Inspect PPE prior to Donning – not only is the Trained Observer going to inspect the PPE, but so should the healthcare worker perform a secondary inspection
 - 4) Use the appropriate size gown or coverall; ensure that the gown or coverall is large enough for unrestricted movement (able to bend, raise arms above head, etc.)

Donning Checklist

This checklist shall be read aloud, in a step-wise fashion

✓ After each task has been successfully completed and print name at the end

- Perform hand hygiene with Alcohol-Based Hand Rub (ABHR); allow to dry completely
- Put on inner gloves
- Put on boots or shoe coverings
- Put on gown or coverall (use appropriate size) **AND** ensure that inner gloves are tucked **UNDER** the sleeve of the gown or coverall
- Put on N95 respirator **AND** complete user seal check
- Put on surgical hood – ensure that this extends past the neck to the shoulders and that ears and neck are covered completely; **NO** skin should be visible
- Put on outer apron (if used)
- Put on outer gloves – the second pair of gloves (with extended cuffs) should be pulled **OVER** the sleeves of the gown or coverall
- Put on face shield
- Verify – the integrity of the ensemble, ensure unrestricted movement (able to bend at waist, extend arms, etc.) and that no skin is visible
- Disinfect the Outer Gloves with ABHR and allow to dry completely

Printed name of Trained Observer & date

Name of person observed & date

Preparing for Doffing

- All contaminated PPE should be placed in a leak-proof infectious waste container
- Prior to entering the removal area, inspect (look for any contamination, cuts, or tears) and disinfect (with an EPA-registered disinfectant) any visible contamination

Doffing Checklist

This checklist shall read aloud, in a step-wise fashion

- ✓ After each task has been successfully completed and print name at the end
- Disinfect outer gloved hands with and EPA-registered disinfectant or ABHR and allow it to dry
- Ensure that a trained observer is waiting and ready for you to begin removal
- Remove apron (if used) – after removal inspect again for contaminates (if there are visible contaminates, disinfect with an EPA-registered disinfectant), cuts, or tears
- Disinfect outer gloved hands with and EPA-registered disinfectant or ABHR and allow it dry
- Remove boots or shoe coverings (while sitting) and discard
- Disinfect and remove outer gloves – use an EPA-registered disinfectant or ABHR; taking care that you do not contaminate inner gloves during this process
- Inspect and disinfect inner gloves – look for any cuts, tears, or contaminates on gloves;
** if visibly contaminated disinfect with and EPA-registered disinfectant or ABHR, remove inner gloves, perform hand hygiene with ABHR on bare hands and don a clean pair of gloves
** if no visible contamination, cuts, or tears are found on inner gloves, disinfect with an EPA-registered disinfectant or ABHR
- Remove face shield – tilt head forward, grab rear strap and pull it over your head, allow the face shield to fall forward, then discard. Do not touch the front of the face shield
- Disinfect inner gloves
- Remove surgical hood – unfasten, remove and discard; the trained observer may be needed for this step

- Disinfect inner gloves

- Remove gown or coverall – remove and discard
 - i. Depending on gown design and location of fasteners, the healthcare worker can either untie fasteners, receive assistance by the trained observer to unfasten the gown, 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.
 - ii. To remove coverall, tilt head back to reach zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out. Avoid contact of scrubs with outer surface of coverall during removal, touching only the inside of the coverall

- Disinfect and change inner gloves – disinfect inner gloves, remove and discard; perform hand hygiene on bare hands and don a new pair of gloves

- Remove N95 respirator – tilt head forward, grasping first the bottom strap or tie and then grasping the top strap or tie; remove without touching the front of the respirator and discard

- Disinfect inner gloves

- Disinfect washable shoe – while sitting on a clean chair or bench use an EPA-registered disinfectant wipe to wipe all external surfaces of the washable shoe

- Disinfect and remove inner gloves – disinfect using an EPA-registered disinfectant or ABHR, remove and discard gloves taking care not to contaminate bare skin

- Perform hand hygiene with ABHR

- Inspect – perform final inspection of the healthcare worker for any indication of contamination, if found contact Infection Control Officer or designee, before exiting PPE removal area

- Scrubs – you should leave the PPE removal area wearing previously dedicated washable footwear and surgical scrubs or disposable garment

- Shower after patient contact; it is recommended for healthcare workers to shower at the end of each shift; for pre-hospital providers this is not exclusively reported on. So, shower.

**** Protocol Evaluation/Medical Assessment** – Either the infection preventionist or occupational health safety and health coordinator or their designee on the unit at the time should meet with the healthcare worker to review the patient care activities performed to identify any concerns about care protocols and to record healthcare worker’s level of fatigue.

**** All EMS on the incident who has had contact with the patient will be followed by the health department for 21 days after exposure****

Printed name of Trained Observer & date

Name of person observed & date

Appendix 2

Based on clinical presentation of the patient, there are two Personal Protective Equipment options:

- A. If the patient is **not** exhibiting obvious bleeding, vomiting, or diarrhea and there is no concern for bleeding, vomiting, or diarrhea, then EMS personnel should at a minimum wear the following PPE:
 - 1. face shield and surgical face mask
 - 2. impermeable gown, and
 - 3. two pairs of gloves

- B. If the patient is exhibiting obvious bleeding, vomiting, or diarrhea or there is concern for potential bleeding, vomiting, or diarrhea then EMS personnel should wear PPE described in the “Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospital, Including Procedures for Putting On (Donning) and Removing (Doffing)”

Appendix 3

Standard Precautions

- Hand washing
- Personal protective equipment
- Patient care equipment (i.e. toothbrush or eating and drinking utensils) – to handle in a manner that prevents transfer of germs to others and to the environment
- Environment cleaning and disinfection
- Patient placement – limit the number of individuals around the patient
- Handling of textiles/laundry (i.e. the sheet on the ambulance stretcher) – handle in a manner that prevents transfer of microorganisms to other items and the environment
- Safe injection practice – **only practice invasive procedures if absolutely necessary**
 - Do not recap, bend, break or hand manipulate used needles
 - Use safety features when available
 - Place used sharps in puncture-resistant container
 - Ensure that the sharps container used is bleached on the outside once used, contained and controlled as a dangerous HAZMAT agent, double bagged and delivered to the appropriate site for final disposition (i.e. incineration)
- Patient resuscitation practices
 - Do not practice mouth-to-mouth resuscitation
 - Utilize a King® LT Airway instead of Endotracheal Intubation
- Respiratory hygiene/cough etiquette
 - Maintain spatial separation (at least 3 feet), wear a mask, and/or place a mask on the patient (if they are able to tolerate)
 - Cover mouth/nose when coughing/sneezing
 - Use tissues and promptly dispose of them
 - Perform hand hygiene as necessary

Transmission-Based Precautions - include contact, droplet, and airborne precautions. Contact and droplet precautions are the only precautions recommended for protection from Ebola. Doffing of contaminated PPE is a **VERY** risky procedure. Be very careful and consider wiping PPE with 0.5% sodium hydrochlorite (weak bleach) during or in preparation of doffing.

Contact Precautions

- Used for a patient that has an infection that can be spread by contact with a person's skin, mucous membrane, feces, vomit, urine, wound drainage, or other bodily fluids, or by contact with equipment or environmental surfaces that may have been contaminated by the patient or their secretions and excretions.
- In addition to standard precautions:
 - Wear a gown and gloves upon entry to patient location
 - Utilize disposable single-use equipment, when available
 - Ebola does not have spores; however, hand hygiene should be conducted with soap and water and environmental disinfections should be done with

a bleach solution or EPA-registered hospital disinfectant with label claims to a non-enveloped virus (norovirus, rotavirus, poliovirus, adenovirus)

NOTE– the Ebola virus is sensitive to these disinfectants, remember to allow enough time for the disinfectant to work (the above noted hospital disinfectant usually requires a 30-minute contact time). Ebola may survive for days on a surface when it is protected by slow to dry bodily fluids (feces vomit, etc.)

Droplet Precautions

- Utilized for a patient with an infection that can be spread through close respiratory or mucous membrane contact with respiratory secretions
- Respiratory protection is recommended in addition to standard precautions
- Patient on droplet precautions should also wear a mask (if tolerated) and be encouraged to follow respiratory hygiene/cough etiquette

Appendix 4

Notification Process

1. Lord Fairfax Health District (see below for contact information), LFHD will be able to assist you with decision making and transport. All of the Health Departments are currently following every individual who came to this area from one of the affected countries. Lord Fairfax Health Department is our greatest asset when dealing with Ebola.
2. Receiving Facility, your transport may be diverted to Winchester Medical Center.
3. Second crew or HazMat Team to assist with decontamination at the receiving facility (refer to your jurisdictions SOP).

Important Phone Numbers

Lord Fairfax Health Department (This covers all of the Valley Health hospitals)

Hours of operation, 8 a.m. to 4:30 p.m., Monday thru Friday

Main number: (540)722-3470

After hours answering service: (540)665-8611

****If you are calling after hours (see hours of operation above) please be aware that you will initially be speaking with an answering service (who is ONLY taking phone calls, not answering questions) who will then call the person on-call, who will return your call as quickly as possible.**

Hampshire County Health Department

Point of contact – Tamitha Wilkins

Main number – (304)496-9640

After hours contact – 9-1-1, who will then contact the Health Department

Morgan County Health Department

Hours of operation, 8:30 a.m. to 4:30 p.m., Monday thru Friday

Point of contact – Patricia Caldwell

Main number – (304)258-1513

After hours contact – (304)671-8360

Appendix 5

Incident Number: _____

Date of Incident: _____

Level of contact examples
no contact, direct contact
with patient, direct contact
via decon, etc.

Public Safety Providers (print)	Affiliation	Phone #	Level of Contact with Patient

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Image 1

Alamy. “Colorized Transmission Electron Micrograph of an Ebola Virus Virion.” © *Health, Science and Space*, New York. *Alamy*. October 2014. http://www.alamy.com/stock-photo-Colorized_transmission_electron_micrograph_TEM_rof_an_Ebola_virus-30182762.html

Image 2

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