

MSA Ebola Virus Disease (EVD) Brief



October 24, 2014 (for the United States, Canada and Mexico)

Guidance on the Ebola virus is available from international and national organizations, such as the World Health Organization (WHO), the United States Centers for Disease Control and Prevention (USCDC), the European Centre for Disease Prevention and Control (ECDC), and/or your local health authority.

Of these organizations, the USCDC published updated guidelines as of October 20, 2014.

The purpose of this bulletin is to provide an update of the MSA Ebola Virus Disease (EVD) Brief of October 7, 2014, using the USCDC "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)."

Additionally, this bulletin will provide some recommendations on potential MSA personal protective equipment (PPE) that may be suitable for use under these circumstances in the United States, Canada and Mexico ONLY. This bulletin is NOT a substitute for the detailed information provided about the disease or any related topics by these organizations.

For the most up-to-date information, as well as actions needed to prevent, control and manage contact with Ebola virus, you should regularly consult one of these authorities:

USCDC	http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html
ECDC	http://www.ecdc.europa.eu/en/healthtopics/ebola_marburg_fevers/Pages/ebola-outbreak-west-africa.aspx
WHO	http://who.int/mediacentre/factsheets/fs103/en/

What is Ebola virus disease (EVD)?

Ebola is a severe, often fatal, disease caused by infection with a virus of the family *Filoviridae*, genus *Ebolavirus*. The first case of Ebola was diagnosed in the United States on September 30, 2014; in 2014, more than 7400 cases have been reported across the globe¹, with nearly half ending in death².

Where is EVD found?

Ebola is found naturally in several African countries.

How is EVD transmitted?

The host of Ebola remains unknown, but researchers believe the virus is animal-borne, with bats being the most likely vector.

If an infection occurs in humans, there are several ways the virus can be spread to others. These include:

- direct contact with the blood or body fluids (including but not limited to feces, saliva, urine, vomit and semen) of a person who is already infected; and/or
- contact with objects (like needles and syringes) that have been contaminated with the blood or body fluids of an infected person or animal.

The virus enters another person's body through broken skin or unprotected mucous membranes, such as eyes, nose, or mouth. Ebola can spread quickly during outbreaks, especially in settings where those exposed are not wearing appropriate PPE.

The USCDC indicates that Ebola is spread through direct contact with a contaminated source.

Who is at risk?

During an outbreak, those at higher risk of infection are:

- healthcare workers;
- family members or others in close contact with infected people, whether alive or deceased.

How can I protect myself from EVD?

There is no FDA-approved vaccine for Ebola. However, exposure to the virus can be controlled through the use of protective measures where contact with the virus could occur.

Dedicated medical or personal protective equipment (preferably disposable) should be used by anyone exposed to Ebola. Proper cleaning and disposal of such equipment, is also important. If the equipment is not disposable, it must be sterilized properly before being used again. Without adequate sterilization, virus transmission can continue and amplify an outbreak.

What PPE should I use?

Authorities on Ebola recommend PPE for activities where exposure to Ebola is possible. Specifically, the USCDC's October 20, 2104 recommendation is:

- **PAPR or N95 Respirator.** If a NIOSH-certified PAPR and a NIOSH-certified fit-tested disposable N95 respirator is used in facility protocols, ensure compliance with all elements of the [OSHA Respiratory Protection Standard, 29 CFR 1910.134](#), including fit testing, medical evaluation, and training of the healthcare worker.
- **PAPR:** A PAPR with a full face shield, helmet, or headpiece. Any reusable helmet or headpiece must be covered with a single-use (disposable) hood that extends to the shoulders and fully covers the neck and is compatible with the selected PAPR. The facility should follow manufacturer's instructions for decontamination

¹ <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html>

² Death rates as high as 90% have been reported, according to WHO and USCDC.

of all reusable components and, based upon those instructions, develop facility protocols that include the designation of responsible personnel who assure that the equipment is appropriately reprocessed and that batteries are fully charged before reuse.

- A PAPR with a self-contained filter and blower unit integrated inside the helmet is preferred.
- A PAPR with external belt-mounted blower unit requires adjustment of the sequence for donning and doffing, as described below.

Though the USCDC has provided guidance which states that an N95 respirator would provide adequate protection, MSA recommends the following list of products for a threat of this nature.

OptimAir® TL Powered Air Purifying Respirator	
PART NUMBER	DESCRIPTION
10081116	OptimAir TL Kit, for Hoods, standard battery
10081117	OptimAir TL Kit, for Hoods, Extended-Life battery
10088150	OptimAir TL Kit Blower Unit only

Hoods	
PART NUMBER	DESCRIPTION
10083381	Tychem SL (Saranex-coated Tyvek) Hood, single bib, threaded connector, w/suspension (4 pack)
10083382	Tychem SL (Saranex-coated Tyvek) Hood, double bib, threaded connector, w/suspension (4 pack)
10083385	Tychem SL (Saranex-coated Tyvek) Hood, single bib, standard, w/suspension (4 pack)
10083386	Tychem SL (Saranex-coated Tyvek) Hood, double bib, standard, w/suspension (4 pack)

Cartridges	
PART NUMBER	DESCRIPTION
10080455	Cartridge, HE (hi-efficiency), (6pack)
10080454	Combination Cartridge (OV/AG/HE), (6pack)
10080456	Combination Cartridge (AG/AM/FM/HE), (effective against OV), (6-pack)

Decon Accessories	
PART NUMBER	DESCRIPTION
10075799	Decon Cover, OptimAir TL, clear, (pack of 5)
10087152	Decon Cover, OptimAir TL, yellow, (pack of 5)
10091958	Decon Cover, Heavy Duty, yellow (pack of 5)
10074725	Decon Belt (cam buckle)
10078201	Decon Belt (back pack buckle)

Accessories and Parts	
PART NUMBER	DESCRIPTION
10076108	Battery, standard, OptimAir TL
10076109	Battery, Extended-Life, OptimAir TL
10076110	Charger, standard battery, OptimAir TL
10076107	Charger, Extended-Life battery, OptimAir TL
10068152	Spark and water protective cover, cartridge (single unit) (2 required)

MSA recommends the use of decontamination coverings to reduce the risk of the PAPR motor housing and air hose becoming contaminated. Ensure proper disposal procedures are followed after each use.

- Single-use (disposable) fluid-resistant or impermeable gown that extends to at least mid-calf or coverall without integrated hood. Coveralls with or without integrated socks are acceptable.
- Single-use (disposable) nitrile examination gloves with extended cuffs. Two pairs of gloves should be worn. At a minimum, outer gloves should have extended cuffs.
- Single-use (disposable), fluid-resistant or impermeable boot covers that extend to at least mid-calf or single-use (disposable) shoe covers. Boot and shoe covers should allow for ease of movement and not present a slip hazard to the worker.
- Single-use (disposable) fluid-resistant or impermeable shoe covers are acceptable
- Single-use (disposable), fluid-resistant or impermeable apron that covers the torso to the level of the mid-calf should be used if Ebola patients have vomiting or diarrhea. An apron provides additional protection against exposure of the front of the body to body fluids or excrement. If a PAPR will be worn, consider selecting an apron that ties behind the neck to facilitate easier removal during the doffing procedure.

For instructions on donning and doffing procedures please review the MSF procedures found here: <http://nyti.ms/1qFjhBw>

MSA offers respiratory protection that may be suitable for use when working in environments where potential exposure is an issue. Be sure to follow the CDC or other authority's proper PPE donning and doffing instructions, as the sequence followed can help prevent the spread of infection. Additionally, ensure proper disposal of ALL PPE after each use. **MSA PPE is not designed for use in medical operations requiring sterilized product. Until the USCDC, NIOSH, EPA or WHO release a recommended cleaning procedure/agent to properly decontaminate PPE, MSA will continue to recommend the disposal of ALL PPE, including PAPR components, even if considered "Reusable."**

Keep in mind, as well, that PPE can prevent infected material from coming in contact with mucous membranes and exposed, open skin, but it is essential that all relevant infection prevention and control (IPC) protocols, and our manufacturer's user instructions are followed when using our PPE.

When making a personal decision to use a government approved respirator to help reduce exposure to particulates containing the Ebola virus, the user needs to understand that:

1. Reducing exposure to Ebola Virus particles does not mean that the risk of exposure, infections and illness has been eliminated. Respirators will not prevent you from becoming infected by the virus in other ways such as by touching your mouth, nose or eyes with contaminated hands or objects, or by other means mentioned above.
2. In order for a respirator to be most effective you must properly wear the respirator during the entire time you're exposed. Removing the respirator to eat, drink, talk or smoke while you are in a contaminated area will increase the likelihood that you may be exposed to virus particles. You should also contact the respirator manufacturer to understand how to properly fit the respirator to your face.
3. Fit of the respirator to your face is very important to minimize virus particles from getting inside your respirator. Particles can enter your respirator through any leaks between the respirator and your face. Hair from beards and mustaches or anything that prevents the respirator from directly touching your skin can prevent a proper seal. Following the instructions to assure a proper fit is essential. Achieving a good fit means more of the air you breathe goes through the respirator filter rather than around the mask.

4. Respirators are not intended for use by children or by individuals with a medical condition that might prevent the use of a respirator, such as asthma, emphysema or a history of heart disease. If you have such a condition, consult your health care provider before use.

5. Proper disposal of the respirators after they are used. Once used, respirators should not be shared with others.

6. Be sure to read and follow all instructions on the fit, use and warnings provided by the manufacturer before using any respirator.

7. Please be cautious of claims being made by Websites and other sources regarding the use of respirators for protection against Ebola Virus. We recommend that you reference your National Government or National Health Protection Agency for guidance.

For additional information or help selecting MSA products, please contact your local MSA affiliate.

Resources Used in the Development of this Brief

World Health Organization (WHO). Ebola virus disease. Fact sheet number 103, April 2014 - <http://www.who.int/mediacentre/factsheets/fs103/en/>

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) - <http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html>

First Imported Case of Ebola Diagnosed in the United States, CDC website -

<http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/united-states-imported-case.html>

Ebola (Ebola Virus Disease) Prevention - <http://www.cdc.gov/vhf/ebola/prevention/index.html>

Ebola (Ebola Virus Disease) Transmission - <http://www.cdc.gov/vhf/ebola/transmission/index.html>

Ebola Fact Sheet - www.cdc.gov/vhf/ebola/pdf/ebola-factsheet.pdf

WHO - <http://www.who.int/en/>

Centers for Disease Control and Prevention and World Health Organization. Infection Control for Viral Haemorrhagic Fevers in the African Health Care Setting. Atlanta, Centers for Disease Control and Prevention, 1998: 1-198

Note: This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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