

Ministry of Health
Directorate General for Disease Surveillance & Control
Department of Infection Prevention and Control
Personal Protective Equipment for Ebola virus disease

This document provides guidance on the types of personal protective equipment (PPE) to be used and the processes for donning and doffing (i.e., putting on and removing) PPE for all healthcare workers managing hospitalized patient suspected/ confirmed with Ebola virus disease (Ebola). These guidelines are based on recommendations of the World Health Organization (WHO), the U.S. Centers for Disease Control (CDC), and Association Professionals in Infection Control and Epidemiology (APIC) as per last updating.

1. Recommends for Personal Protective Equipment:

1.1. Protection of the mucosae of the eyes, nose and mouth:

According to WHO recommendation (October 2014) emphasizes that HCWs should use PPE to completely cover the mucous membranes of their eyes, mouth and nose while providing clinical care for patients with Ebola virus disease (EVD) in order to prevent virus exposure. It suggested using either a face shield or goggles while providing clinical care for patients with Ebola virus disease in order to prevent virus exposure. The HCWs should also wear a fluid-resistant medical/surgical mask with a structured design that does not collapse against the mouth (e.g. duckbill, cup shape) while caring for patients with Ebola virus disease in order to prevent virus exposure (WHO 2014). In addition, WHO October 2014 recommendations stressed that the fluid-resistant particulate respirator should be used while caring for patients with Ebola virus disease and performing procedures that generate aerosols of body fluids in order to prevent virus exposure.

However, CDC recommended that use PAPR (Powered Air respirator) 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.

- 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.

CDC also emphasizes to wear single-use (disposable) N95 respirator in combination with single-use (disposable) surgical hood extending to shoulders and single-use (disposable) full face shield. If N95 respirators are used instead of PAPRs, careful observation is required to ensure HCWs are not inadvertently touching their faces under the face shield during patient care (CDC 2014).

1.2. Gown/ coverall:

WHO recommendations emphasize the HCWs should wear protective body wear in addition to regular on-duty clothing, (e.g. surgical scrubs), while caring for patients with Ebola virus disease in order to prevent virus exposure. Compared with other forms of protective body wear, the choice of PPE for covering clothing should be either a disposable gown and apron, or a disposable coverall and apron; the gown and the coverall should be made of fabric that is tested for resistance to penetration by blood or body fluids or to blood-borne pathogens (WHO 2014). The WHO suggested for the choice of apron should be in order of preference:

- Disposable, waterproof apron.
- If disposable aprons are not available, heavy duty, reusable waterproof aprons can be used if appropriate cleaning and disinfection between patients is performed.

CDC (2014) recommended HCWs for 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. Consideration should be given to selecting gowns or coveralls with thumb hooks to secure sleeves over inner glove. If gowns or coveralls with thumb hooks are not available, personnel may consider taping the sleeve of the gown or coverall over the inner glove to prevent potential skin exposure from separation between sleeve and inner glove during activity. However, if taping is used, care must be taken to remove tape gently. Experience in some facilities suggests that taping may increase risk by making the doffing process more difficult and cumbersome.

In addition, CDC recommended 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.

1.3. Gloves:

WHO recommended to all HCWs should wear double gloves while providing clinical care for patients with Ebola virus disease in order to prevent virus exposure. WHO also suggested using Nitrile gloves over latex gloves for health workers providing clinical care for patients with Ebola virus disease in order to prevent virus exposure. On the other hand, CDC (2014) emphasis that single-use (disposable) nitrile examination gloves with extended cuffs and should wear two pairs of gloves. At a minimum, outer gloves should have extended cuffs.

1.4. Foot wear:

WHO (2014) recommended all HCWs should wear waterproof boots (e.g. rubber/ gum boots) while caring for patients with Ebola virus disease in order to prevent virus exposure. While CDC suggested 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. CDC also stressed that single-use (disposable) fluid-resistant or impermeable shoe covers are acceptable only if they will be used in combination with a coverall with integrated socks.

1.5. Head Cover:

WHO recommended all HCWs should wear a head cover that covers the head and neck while providing clinical care for patients with Ebola virus disease in order to prevent virus exposure. It also suggested the head cover to be separate from the gown or coverall, so that these may be removed separately (WHO 2014). On the other hand, CDC (2014) did not discuss about the head cover.

Practical demonstration on donning and doffing of PPE refer to the link video which adopted from CDC: <http://www.medscape.com/viewarticle/833907>