



## **Epidemiology Unit**

### **Ministry of Health**

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## **Working guideline for the management of patients having Ebola Virus Disease (EVD)**

### **Case definition for Ebola Virus Disease (EVD)**

#### **Suspected case**

*A person who has both consistent symptoms and risk factors as follows:*

- *Clinical criteria, which includes fever of greater than 38.6 °C or 101.5 °F, and additional symptoms such as severe headache, muscle pain, vomiting, diarrhoea, abdominal pain, or unexplained haemorrhage;*

#### **AND**

- *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; or direct handling of bats or non-human primates from disease-endemic areas.*

#### **Probable case**

*A suspected case whose epidemiologic risk factors include high or low risk exposure(s).*

#### **High risk exposures**

- *Percutaneous (e.g., needle stick) or mucous membrane exposure to blood or bodily fluids of EVD patient*
- *Direct skin contact with, or exposure to blood or body fluids of, an EVD patient without appropriate personal protective equipment (PPE)*
- *Processing blood or body fluids of a confirmed EVD patient without appropriate PPE or standard biosafety precautions*
- *Direct contact with a dead body without appropriate PPE in a country where an EVD outbreak is occurring*

#### **A low risk exposure includes;**

- *Household contact with an EVD patient*
- *Other close contact with an EVD patients in health care facilities or community settings.*
- *Close contact is defined as*

- *being within approximately 3 feet (1 meter) of an EVD patient or within the patient's room or care area for a prolonged period of time (e.g., health care personnel, household members) while not wearing recommended personal protective equipment.*
- *Having direct brief contact (e.g., shaking hands) with an EVD case while not wearing recommended personal protective equipment.*

### **Confirmed Case**

*A case with laboratory-confirmed diagnostic evidence of Ebola virus infection*

*Source: CDC (Centers for Disease Control and Prevention) USA*

### **Training**

Overall preparation for care of Ebola patients (including training of the staff) in a facility must be overseen by a trained person such as the Matron/Sister/Infection control nursing officer/Nurse in-charge.

Identify essential healthcare workers needed for care of Ebola patients, for collection of laboratory specimens and management of the environment and waste material.

Ensure that all relevant healthcare workers have been trained in all recommended protocols, especially in the putting on/removal of PPE in the correct sequence, handling infectious material (including dead bodies) and collection and transport of blood samples.

### **Arrangement of patient care areas (including areas where PPE is put on and where PPE is removed)**

Facilities should ensure that space and layout allow for physical barriers between clean and potentially contaminated areas, along with visible signage, to separate distinct areas (i.e. where PPE are put on, where patient is kept and where PPE are removed).

Ensure a one-way flow of caregivers moving from clean areas (e.g., area where PPE is put on and unused equipment is stored) to the patient room and to the area where PPE are removed.

Identify at least one single patient room with a closed door and separate toilet facilities for that particular room (one toilet for one room)

Limit the number of healthcare workers who come into contact with the Ebola patient (e.g., avoid short shifts), and restrict non-essential personnel and visitors from the patient care area.

Monitor the patient care area at all times, and log at a minimum entry and exit of all healthcare workers who enter the room of an Ebola patient.

Ensure that practical precautions are taken during patient care, such as keeping hands away from the face, limiting touch of surfaces and body fluids, preventing needle stick and sharps injuries, and performing frequent disinfection of gloved hands using an alcohol-based hand rub (ABHR), particularly after handling body fluids.

PPE must remain in place and be worn correctly for the duration of exposure to potentially contaminated areas. PPE should not be adjusted during patient care.

Provisions for performing hand hygiene (with soap and water and ABHR) and leak-proof infectious waste containers for storing contaminated PPE should be made available where PPE are removed. A place which can be cleaned and disinfected should be provided to sit on while removing shoe covers/boots.

Frequent environmental cleaning and disinfection (with regular cleaning material and 1% Chlorine solution or 70% alcohol) of the PPE removal area should be undertaken, including upon completion of removal of PPE by the healthcare workers. Facilities should consider making showers available for use by healthcare workers after removing PPE.

If partial or total breach in PPE occurs during patient care (e.g., gloves separate from sleeves leaving exposed skin, a tear develops in an outer glove, a needlestick) occurs, the healthcare worker must move immediately to the PPE removal area to assess the exposure. Implement the facility exposure plan (see below), if indicated by assessment.

## **PPE**

- Each step of every PPE putting on/removal of proper PPE procedure must be supervised by a trained person (as mentioned above) to ensure proper completion of established PPE protocols. Checklists can be used for this purpose
- Designate spaces so that PPE can be put on/removed in separate areas.
- Ensure that healthcare workers have sufficient time to put on and remove PPE correctly without disturbances.

### Protocol for putting on PPE

1. Gather all the necessary items of PPE beforehand
2. Remove Personal Clothing and Items (e.g., jewellery, watches, cell phones, pagers, pens etc).

3. Put on the scrub suit in the changing room.
4. Put on rubber boots. If not available, make sure you have closed, puncture and fluid resistant shoes and put on overshoes (shoe covers)
5. Place the impermeable gown over the scrubs
6. Put on face protection:
  - 6.a) Put on a medical mask,
  - 6.b) Put on goggles or a face shield. ,If available, put a head cover on at this time.
7. Perform hand hygiene.
8. Put on gloves (over cuff).
9. If an impermeable gown is not available, place waterproof apron over gown.

### **While wearing PPE,**

- Avoid touching or adjusting PPE
- Remove gloves if they become torn or damaged
- Change gloves between patients
- Perform hand hygiene before putting on new gloves
- Use **double gloves** if any strenuous activity (e.g. carrying a patient or handling a dead body) or tasks in which contact with blood and body fluids are anticipated. Use **heavy duty/rubber gloves** for environmental cleaning and waste management.

### **Removal of Personal Protective Equipment (PPE)**

1. Remove waterproof apron and dispose it safely. If the apron is to be reused, place it in a container with disinfectant
2. If wearing overshoes, remove them with your gloves still on (If wearing rubber boots, see step 4).
3. Remove gown and gloves and roll inside-out and dispose them safely.
4. If wearing rubber boots, remove them (ideally using the boot remover) without touching them with your hands. Place them in a container with disinfectant.
5. Perform hand hygiene.
6. If wearing a head cover, remove it now (from behind the head).
7. Remove face shield or goggles (from behind the head). Place eye protection in a separate container for cleaning and disinfection.
8. Remove mask from behind
9. Perform hand hygiene.

### **Cleaning and Disinfection**

PPE should be worn when cleaning the patient care area /PPE removal area.

Disinfect immediately any visibly contaminated PPE, equipment, or patient care area surfaces (including spills of infectious waste) with either 1% Chlorine solution or 70% alcohol (contact time 30 minutes) after cleaning with standard detergents /disinfectants.

Perform regular cleaning and disinfection of patient care area surfaces, even in places where visible contamination is not present and cleaning should be done at least once a day . First, these areas should be cleaned with regular standard detergents /disinfectants and then with 1% Chlorine solution or 70% alcohol.

Cleaning with a moistened cloth helps to avoid contaminating the air and other surfaces with air-borne particles.

Allow surfaces to dry naturally before using them again.

Dry sweeping with a broom should never be done. Rags holding dust should not be shaken out and surfaces should not be cleaned with dry rags.

Cleaning should always be carried out from “clean” areas to “dirty” areas, in order to avoid contaminant transfer.

### **Cleaning of linen**

PPE should be worn when handling soiled linen. Soiled linen should be placed in clearly-labelled, leak-proof bags or buckets at the site of use and the container surfaces should be disinfected (using an effective disinfectant) before removal from the isolation room/area. If there is any solid excrement such as faeces or vomit, scrape off carefully using a flat firm object and flush it down the toilet before linen is placed in its container. If the linen is transported out of the patient room/area for this procedure, it should be put in a separate container and that container should never be held against the body.

Linen should then be transported directly to the laundry area in its container and laundered promptly with water and detergent.

For low-temperature laundering, wash linen with detergent and water, rinse and then soak in 0.1% chlorine solution for approximately 30 minutes.

Linen should then be dried according to routine standards and procedures.

Washing contaminated linen by hand should be discouraged. However, if washing machines are not available or power is not ensured, take the soiled linen out of the container and empty it into a large drum container of hot water and soap. Soak the linen in this drum and make sure it is totally covered with water.

Use a stick to stir; then throw out the water and refill the drum with clean water and add chlorine 0.1% chlorine solution and allow to soak for 30 minutes. Remove the linen and then rinse in clean water. Remove excess water and spread out to dry. Avoid as much splashing as possible.

If safe cleaning and disinfection of heavily soiled linen is not possible or reliable, it may be prudent to burn the linen to avoid any unnecessary risks to individuals handling soiled linen.

### **Disposal of Waste Material.**

Waste should be segregated at point of generation to enable appropriate and safe handling. Sharp objects (e.g. needles, syringes, glass articles) and tubing that has been in contact with blood or body fluids should be placed inside puncture resistant waste containers and these should be located as close as practical to the patient care area where the items are used, and the same should be done in laboratories also.

Collect all solid, non-sharp, infectious waste using leak-proof waste bags and covered bins. Bins should never be carried against the body (e.g. on the shoulder).

Waste should be placed in a designated pit of appropriate depth (e.g. 2 meters or about 7 feet) and filled to a depth of 1–1.5 m (or about 3–5 feet). After each waste load, the waste should be covered with a layer of soil 10 –15 cm deep.

An incinerator may be used for short periods during an outbreak to destroy solid waste. However, it is essential to ensure that total incineration has taken place.

Placenta and anatomical samples should be buried in a separate pit.

The area designated for the final treatment and disposal of waste should have controlled access to prevent entry by animals, untrained personnel or children.

Waste, such as faeces, urine and vomit, and liquid waste from washing, can be disposed of in the sanitary sewer or pit latrine. No further treatment is necessary

### **Post-mortem care.**

Post-mortem examination of patients who died from Ebola Virus Disease (EVD) should be limited to essential evaluations only and should be performed by trained personnel wearing protective equipment. Remains should be buried promptly by trained personnel.

Prior to contact with body, post-mortem care personnel must wear PPE.

PPE should be in place **BEFORE** handling the body, worn during the process of collection and placement in body bags, and should be removed immediately after and discarded appropriately. Exercise 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.

### **Post-mortem preparation**

- **Preparation of the body:** At the site of death, the body should be wrapped in a plastic shroud. Wrapping of the body should be done in a way that prevents contamination of the outside of the shroud. Change your gown or gloves if they become heavily contaminated with blood or body fluids. Leave any intravenous lines or endotracheal tubes that may be present in place. Avoid washing or cleaning the body. After wrapping, the body should be immediately placed in a leak-proof plastic bag of sufficient thickness and zippered closed. The bagged body should then be placed in another leak-proof plastic bag of sufficient thickness and zippered closed before being transported to the morgue.
  - **Surface decontamination:** Prior to transporting the body to the morgue, perform surface decontamination of the corpse-containing body bags by removing visible soils on outer bag surfaces with either 1% Chlorine solution or 70% alcohol. After the visible soils have been removed, reapply the disinfectant to the entire bag surface and allow to air dry. Following the removal of the body, the patient room should be cleaned and disinfected using the same disinfectants (i.e. 1% Chlorine solution or 70% alcohol). Reusable equipment should be cleaned and disinfected according to standard procedures.
- Individuals driving or riding in a vehicle carrying human remains:** PPE is not required for individuals driving or riding in a vehicle carrying human remains, provided that drivers or riders will not be handling the remains of a suspected or confirmed case of Ebola, and the remains are safely contained and the body bag is disinfected as described above.

### **Mortuary Care**

Do not perform embalming. The risks of occupational exposure to Ebola virus while embalming outweighs its advantages; therefore, bodies infected with Ebola virus should not be embalmed.

Do not open the body bags.

Do not remove remains from the body bags. Bagged bodies should be placed directly into a hermetically sealed casket (i.e. a casket that is airtight and secured against the escape of microorganisms. A casket will be considered hermetically sealed if accompanied by valid documentation that it has been hermetically sealed AND, on visual inspection, the seal appears not to have been broken).

Mortuary care personnel should wear PPE listed above when handling the bagged remains. In the event of leakage of fluids from the body bag, thoroughly clean and decontaminate areas of the environment with either 1% Chlorine solution or 70% alcohol. Reusable equipment should be cleaned and disinfected according to standard procedures

### **Disposition of Remains**

Remains should be cremated or buried promptly in a hermetically sealed (air tight) casket. Once the bagged body is placed in the sealed casket, no additional cleaning is needed unless leakage has occurred.

No PPE is needed when handling the cremated remains or the hermetically sealed closed casket.

### **Transportation of human remains**

Transportation of remains that contain Ebola virus should be minimized to the extent possible.

All transportation, including local transport, for example, for mortuary care or burial, should be coordinated with relevant local and state authorities in advance.

Transportation of remains that contain Ebola virus outside Sri Lanka would need to comply with the regulations of the country of destination, and should be coordinated in advance with relevant authorities.

### **Facility Exposure Plan**

Tracing and follow up of healthcare personnel who may have been exposed to Ebola through close contact with patients are essential. As the primary mode of person-to-person transmission is contact with contaminated blood, secretions or body fluids, people who have had close physical contact with patients should be kept under strict surveillance. Their body temperature should be checked twice a day, with immediate hospitalization and strict isolation in the case of onset of fever.

### **Household Contacts**

The same should be done for the household contacts of Ebola patients as in the case of Healthcare workers who may have been exposed to Ebola Virus. This should be carried out by the Medical Officer of Health (MOH) of the area with the help of the Regional Epidemiologist of the relevant district.

### **Very Important**

Notify the Epidemiology Unit/Regional Epidemiologist/Hospital director as soon as possible when a patient is suspected of having EVD

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For more information on environmental infection control, please refer to “[Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus](http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html)” (<http://www.cdc.gov/vhf/ebola/hcp/environmental-infection-control-in-hospitals.html>).

  
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