

REPUBLIC OF RWANDA

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MINISTRY OF HEALTH
P.O Box 84 Kigali
www.moh.gov.rw

The Ag. CEO of KFH
The Director General of CHUs
The Directors of Districts Hospitals (all)

Dear All,

RE: Transmission of guidelines for the prevention and management of Viral Hemorrhagic Fever in health care settings.

I am pleased to transmit herewith enclosed the guidelines for the prevention and management of Viral Hemorrhagic Fever in health care settings for your consideration and quick dissemination to all health care providers within your respective institutions.

I thank you for your usual commitment towards improving health care service delivery rendered to our population.

Sincerely,

Dr Agnes BINAGWAHO
Minister of Health

CC:

- Hon. Minister of State in charge Public Health and Primary Health Care
- Permanent Secretary
- Director General/RBC

REPUBLIC OF RWANDA



MINISTRY OF HEALTH

**MINISTERIAL GUIDELINES ON ENVIRONMENTAL HEALTH
MANAGEMENT OF EBOLA VIRUS DISEASE IN RWANDA**

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KEY MESSAGES FOR INFECTION PREVENTION AND CONTROL TO BE APPLIED IN HEALTH CARE

1. Isolate suspected or confirmed hemorrhagic fever (HF) cases in single isolation rooms or cohort them in specific confined areas while rigorously keeping suspected and confirmed cases separate. Assure restricted access to these areas and dedicated.
2. Ensure that prior to entering the patient isolation rooms/areas, all visitors and health-care workers rigorously use personal protective equipment (PPE) and perform hand hygiene as indicated in this document. PPE should include at least: gloves, gown, boots/closed shoes with overshoes (and mask and eye protection for splashes).
3. Ensure safety of injections and phlebotomy procedures and management of sharps.
4. Ensure regular and rigorous environmental cleaning, decontamination of surfaces and equipment, and management of soiled linen and of waste as indicated in this document.
5. Ensure that all visitors are provided with related instructions before entry into the isolation room/area and use Personal Protective Equipment.

INTRODUCTION

Ebola is a severe illness caused by Ebola virus. It is highly infectious, rapidly fatal, with a death rate of up to 90%, but can be prevented. It is spread through direct contact with body fluids like blood, saliva, urine, sperm etc. of an infected person and by contact with contaminated surfaces or equipment, including linen soiled by body fluids from an infected person. The Ebola virus can be relatively easily eliminated with heat, alcohol-based products, and sodium hypochlorite (bleach) or calcium hypochlorite (bleaching powder) at appropriate concentrations.

This document provides a summary of Environmental Health Guidelines for those providing direct and non-direct care to patients with suspected or confirmed cases of Ebola Virus Disease (EVD) in health-care facilities (HCFs). These Guidelines should be applied not only by health-care professionals but by anyone in direct contact with patients (e.g., visitors, family members, volunteers), as well as by those not in contact with patients but potentially exposed to the virus through contact with the environment (e.g., cleaners, laundry, house-keepers, waste handlers and incinerator operators).

PATIENT TRACING AND RECEPTION

It is advisable also to provide workers undertaking contact tracing and case finding in the community with alcohol-based hand rub solutions and instructions to appropriately perform hand hygiene. Certain measures are to be implemented during interviews for contact tracing and case finding in the community;

1. Shaking hands should be avoided;
2. A distance of more than one meter should be maintained between interviewer and interviewee;
3. PPE is not required if this distance is assured and when interviewing asymptomatic individuals (e.g., neither fever, nor diarrhea, bleeding or vomiting) and provided there will be no contact with the environment, potentially contaminated with a possible/probable case.

DISINFECTION

MATERIALS AND DISINFECTANTS

The following is a list of materials required:

1. Disinfectants (e.g. Chlorine, Alcohol);
2. Soap;
3. Water;
4. Spray pumps with a respirator;
5. Personal Protective Equipments; (Impermeable overall, heavy duty gloves, Goggles or Face shield, Closed shoes (Gum Boots), Impermeable aprons, respiratory mask, head cover,
6. Adequate 100lts+ and 50lts plastic buckets;
7. Adequate paddle opening waste bins;
8. Adequate red plastic bags;
9. Floor drier materials.

BODY HYGIENE

Perform hand hygiene:

- Before donning gloves and wearing PPE on entry to the isolation room/area,
- Before any clean/aseptic procedures being performed on a patient,
- After any exposure risk or actual exposure with the patient's blood and body fluids,
- After touching (even potentially) contaminated surfaces/items/equipment in the patient's surroundings,
- After removal of PPE, upon leaving the care area.
- Gloved hands after contact with each EVD patient or after contact with infectious body fluids.

All medical, nursing, laboratory and cleaning staff should disinfect hands and skin after contact with EVD patient or infectious body fluids and on exit from the isolation room.

SURFACES

It is essential to undertake cleaning of the environment and patient care equipment safely following Standard disinfection procedures including appropriate formulation of disinfectant. Environmental surfaces or objects contaminated with blood, other body fluids, secretions or excretions should be cleaned and disinfected as soon as possible using 0.5% chlorine solution or a solution containing 1,000 ppm. A step by step on How to make 0.5% chlorine solutions (from different solution with different concentrations) for environmental disinfection is attached.

- Surfaces or objects contaminated with blood, other body fluids, secretions or excretions should be disinfected as soon as possible using standard hospital detergents/disinfectants (e.g. a 0.5% chlorine solution or a solution containing 1,000 ppm) for a minimum of 30 minutes. *Application of disinfectants should be preceded by cleaning* to prevent inactivation of disinfectants by organic matter
- If locally prepared, prepare cleaning and disinfectant solutions every day.
- Change cleaning solutions and refresh equipment frequently while being used during the day, as they will get contaminated.
- Clean floors and horizontal work surfaces at least once a day with clean water and detergent. 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.
- Do not spray in open air of occupied or unoccupied clinical rooms with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.

LINEN MANAGEMENT

- Linen that has been used on patients can be heavily contaminated with body fluids (e.g. blood, vomit) and Splashes may result during handling. When handling soiled linen from patients, **use gloves, overall, closed Shoes (e.g., boots) and facial protection (mask and goggle or face shield)**.
- Soiled linen should be placed in clearly-labeled, 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.
- Soiled linen should not be washed or disinfected in the same area as other laundry.
- If there is any solid excrement such as faeces or vomit, scrap off carefully using a flat firm object and flush it down the toilet. If the linen is transported out of the patient room/area for this procedure it should be put in a separate container – it should never be carried against the body but instead on a trolley (wheeled table).
- Linen should be then 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 0.05% chlorine for approximately 30 minutes. Linen should then be dried according to routine standards and procedures.
- Washing contaminated linen by bare hands 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 pour out the water in a designated toilet/pit and refill the drum with clean water and add bleach 1,000ppm and allow to soak for 10 –15 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 these items.

PPE USE AND MANAGEMENT

Before entering the isolation rooms/areas, wear **PPE** in dedicated changing zones.

- Correctly sized **gloves** (non-sterile examination gloves) when entering the patient care area.
- Consider changing gloves if heavily soiled with blood or any body fluids while providing care to the same patient (perform careful hand hygiene immediately after removal).
- Always change gloves and perform hand hygiene immediately after removal, when moving from one patient to another while caring for patients in the same room.
- Consider double gloving when the quality of gloves appears to be poor (e.g., if holes and tears form rapidly during use).
- A disposable, impermeable **overall** to cover clothing and exposed skin.
- A medical **mask** and **eye protection** (eye visor or goggles or face shield) to prevent splashes to the nose, mouth and eyes.
- Closed and fluid resistant **shoes (e.g. rubber boots)** to avoid contamination with blood or other body fluids or accidents with misplaced, contaminated or sharp objects. If boots are not available, overshoes should be used but these must be removed while still wearing gloves and with caution to avoid hand contamination
- When undertaking any strenuous/tough activity (e.g. carrying a patient) or tasks in which contact with blood and body fluids is anticipated (e.g., the patient has symptoms like diarrhoea, bleeding or vomiting and/or the environment could be contaminated with blood or body fluids), in addition to the above mentioned PPE also use **double gloving**, and wear a **waterproof apron** over the gown if for any reasons your gown is non-impermeable, and disposable overshoes and leg coverings, if boots are not available.
- Before exiting the isolation room/area, **carefully remove and dispose of PPE** (including boots) into waste containers and perform hand hygiene.
- When removing PPE, be careful to avoid any contact between the soiled items (e.g. gloves, gowns) and any area of the face (i.e. eyes, nose or mouth) or non-intact skin.
- **Do not recycle any single-use disposable PPE.** However, if the decontamination of goggles and visors is necessary, it is essential that these items should be cleaned with

water (\pm detergent) to remove any organic matter and then immersed fully in 1,000 ppm [parts per million] of available chlorine (0.5%) for a minimum of 30 mins (preferably overnight) for decontamination. After decontamination, they should be thoroughly rinsed with water (to remove irritating hypochlorite residues and salt deposits) before reuse. The wipes used for the initial cleaning should be treated as infectious waste; the disinfectant can be safely poured down a sink or drain.

OTHER PRECAUTIONS

1. Avoid aerosol-generating procedures and if possible. Wear a *respirator* (FFP2 or EN certified equivalent or US NIOSH-certified N95), if any procedures that stimulate coughing or promote the generation of aerosols (e.g., aerosolized or nebulized medication administration, diagnostic sputum induction, bronchoscopy, airway suctioning, endotracheal intubation, positive pressure ventilation via face mask) is planned to be performed.
2. Carefully *clean and decontaminate* reusable equipment.
3. Rigorously use *dedicated equipment* (e.g. stethoscopes) for each patient. However, if this is not possible, decontaminate the items between each patient contact.
4. Items and equipment should not be moved between isolation rooms/areas and other areas of the Health Facility, unless they are appropriately discarded and disposed. For instance, the patient charts and records should be kept outside the isolation rooms/areas to avoid their contamination.

INJECTION SAFETY AND WASTE MANAGEMENT

INJECTION SAFETY

1. Each patient should have *exclusively dedicated injection medication equipment* which should be disposed of at the point of care. Syringes, needles or similar equipment should never be reused.
2. Limit the use of needles and other sharp objects as much as possible.
3. If the use of sharp objects cannot be avoided, ensure the following precautions are observed:
 - Never replace the cap on a used needle.
 - Never direct the point of a used needle towards any part of the body.
 - Do not remove used needles from disposable syringes by hand, and do not bend, break or otherwise manipulate used needles by hand.
 - Dispose of syringes, needles, scalpel blades and other sharp objects in appropriate, puncture-resistant containers.
 - Ensure that puncture-resistant containers (Safety boxes-Boites de Sécurité) for sharp objects are placed as close as possible to the immediate area where the objects are being used ('point of use') to limit the distance between use and disposal, and ensure the containers remain upright at all times. If the sharps container is far, never carry sharps in your hand but place them all in a kidney dish or similar to carry to the sharps container.
 - Ensure that the puncture-resistant containers are securely sealed with a lid and replaced when 3/4 full.
 - Ensure the containers are placed in an area that is not easily accessible by visitors, particularly children (e.g. containers should not be placed on floors or on the lower shelves of trolleys in areas where children might gain access).

WASTE MANAGEMENT

Laboratory waste management

Laboratory wastes include patient Biological samples, Laboratory consumables and PPE used by Laboratory staff. For procedures to safely collect blood or other samples from persons suspected or confirmed to be infected, follow the instructions provided here;

- All laboratory sample processing must take place under a safety cabinet or at least a fume cabinet with exhaust ventilation. Do not carry out any procedure on the open bench.
- Activities such as micro-pipetting and centrifugation can mechanically generate fine aerosols that might pose a risk of transmission of infection through inhalation as well as the risk of direct exposure.
- Laboratory personnel handling potential EVD clinical specimens should wear closed shoes with overshoes or boots, gloves, a disposable, impermeable gown, eye protection or face shields.
- When removing PPE, avoid any contact between the soiled items (e.g. gloves, gowns) and any area of the face (i.e. eyes, nose or mouth).
- Do not hang up the apron or gown for reuse- discard immediately.
- Perform hand hygiene immediately after the removal of PPE used during specimen handling and after any contact with potentially contaminated surfaces even when PPE is worn.
- Place specimens in clearly-labeled, non-glass, leak-proof containers and deliver directly to designated specimen handling areas
- Disinfect all external surfaces of specimen containers thoroughly (using an effective disinfectant) prior to transport.

Waste management in isolation room

STORAGE

Within each Health Facility's EVD isolation room, 3 pedal opening waste bins equipped with Red plastic bags and injection safety boxes should be provided with different colours to ease collection and efficient disposal.

- Red waste bin: This shall contain mainly liquid wastes.
- Yellow waste bin: This shall contain all combustible wastes.
- Green waste bin: This shall contain human body parts.
- Injection Safety box.

COLLECTION

- All wastes should be collected by a designated and trained person with full PPE attire.
- All wastes shall be transported in their respective pedal opening dustbins and not on the back of a person but instead on a trolley.
- Ensure every type of waste is transported to a designated disposal site.

DISPOSAL

1. Each Health Facility shall allocate a specific area for all types of wastes to be disposed.
2. 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.
3. *Organic waste should be placed in a designated pit of appropriate depth (e.g. 2 m 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.*
4. Combustible waste should be incinerated immediately. It is essential to ensure that total incineration has taken place by observing the following:
 - Ensuring that the incinerator is pre-heated to a temperature above 850°C **before** waste is loaded in the combustion (primary) chamber.
 - Ensuring that Incinerator temperature is maintained at above 1100°C in the post (secondary) combustion chamber **during** incineration.
5. Placenta and other anatomical samples should be buried in a separate pit.
6. Waste bins should be disinfected at the site of disposal to ensure all wastes are disposed safely.

Waste management: waste definitions, collection, transport and disposal

Type of Waste	Definition and Examples	Collection	Transport	Disposal
Burnable waste	Dry waste is all waste that has low moisture content and is therefore easily burnt. Examples are dressings, packaging, paper, used protective clothing (gowns, gloves, etc), etc. Wet waste is waste that has high moisture content. In practice, mainly contaminated waste that has been disinfected with chlorine (clothes, mattresses, etc).	To reduce the risk of leaks, 2 bags, one inside the other, should be used to collect both wet and dry waste. Burnable waste is collected in doubled plastic garbage bags. The bags should be supported in a garbage-bag-holder. When the double bag is ¾ full, collect it and close with a string or tape. Disinfect the outer bag. Put new double bags in the bin immediately.	The waste worker must promptly transport the bag(s) to the waste area. The bag(s) can be carried in a wheelbarrow to reduce the risk of the bag splitting and possible contamination of the compound.	Bags must be burned without opening them. Assist burning with paraffin or diesel as necessary.
Liquid waste	Examples are body fluids: vomit, soft stools, urine, blood, etc. Body fluids can be excreted in two ways: In a controlled way (into a bucket); In an uncontrolled way (spills on floor, bed, clothes, etc).	Controlled: Collect waste in a bucket with 2cm of 0.5% chlorine solution. When waste has been excreted, add enough 0.5% solution to cover completely the waste. Allow minimum of 15 minutes for chlorine to act. Uncontrolled spills: Pour 0.5% solution directly on the spill without splashing. Leave for 15 minutes. Mop up with an absorptive pad or towel. Place the waste into a bucket.	Transport the covered bucket to the latrine without splashing or spilling.	Liquid waste can be disposed of into a special liquid waste pit or Liquid into a pit latrine. The soaked pads should be disposed of into a pit latrine (never into a flush toilet!), or into the waste pit / burning pit.
Organic waste	Organic waste originating from the human body: placentas, body parts, etc. Other organic waste e.g. food leftovers.	Organic waste originating from the human body is a huge biohazard and must be disposed of immediately. Organic waste can be collected in a double plastic bag or bucket. Close the bags with a string or tape. Disinfect the outside of the bag or bucket.	The bags or buckets must be taken immediately to the waste zone.	Organic waste can be disposed of in a specially built organic waste pit or if not available, a pit latrine can be used.
Sharps	Items that can cause cuts or puncture wounds including needles, scalpels, knives, infusion sets, saws, broken glass, nails, etc.	Sharps containers must be – waterproof, puncture resistant, and clearly marked "SHARPS".	Disinfect outside of the sharps container before transporting.	Sharps pit.
Waste water	Run off water: rainwater from the roof, or compound. Wastewater: water used for cleaning, from footbaths, used chlorine solutions, etc.	Avoid that run off water flows out of higher risk into lower risk areas. Wastewater must be channelled to, and disposed of in a soak away.	Direct run off water and wastewater to separate gutters, ideally lined with concrete or cement mortar.	Run off water and wastewater has to be controlled and directed to safe disposal areas. If wastewater is disposed of in a soak away, a grease trap should be installed. The grease trap must be thoroughly disinfected before cleaning.

FIRST AID OF EXPOSED SERVICE PROVIDER

- Service providers with percutaneous or muco-cutaneous exposure to blood, body fluids, secretions, or excretions from a patient with suspected or confirmed HF should *immediately and safely stop any current tasks, leave the patient care area, and safely remove PPE.*
- Immediately after leaving the patient care area, *wash* the affected skin surfaces or the percutaneous injury site with soap and water. Accordingly, water mucous membranes (e.g. conjunctiva) with copious amounts of water or an eyewash solution, and not with chlorine solutions or other disinfectants.
- Immediately report the incident to the Head of Health Facility. This is a time-sensitive task and should be performed as soon as the service provider leaves the patient care unit.
- Exposed persons should be *medically evaluated* including for other potential exposures (e.g., HIV, HCV) and *receive follow-up care*, including fever monitoring, twice daily for 21 days after the incident.

Immediate consultation with an expert in infectious diseases is recommended for any exposed person who develops fever within 21 days of exposure.

- Service provider suspected of being infected should be cared for/isolated, and the same recommendations outlined in this document must be applied until a negative diagnosis is confirmed.
- Contact tracing and follow-up of family, friends, co-workers and other patients, who may have been exposed to Ebola virus through close contact with the infected service provider is essential.

SAFE BURIAL PRACTICES

- The handling of a dead body and human remains should be kept to a minimum. Medical concern should take precedence to any Religious belief.
- Only Qualified HealthCare providers are allowed to handle dead bodies and human remains including burial process.
- The team concerned with burial of dead bodies and disposal of human remains should have obtained training regarding Environmental Health EVD management and based at the Health Facility.
- Anybody involved in the burial of a dead body and disposal of human remains should always wear PPE (impermeable overall, mask, eye protection and double gloves) and closed shoes or boots.
- Plug the natural orifices. Place the body in a double bag, wipe over the surface of each body bag or wrapping in a Tarpaulin (sheeting) with a suitable disinfectant (e.g., 0.5% chlorine solution) and seal and label with the indication of highly-infectious material. Burial process should immediately be arranged as the body (body remains) is moved to the mortuary.
- Dead body and human remains should not be sprayed, washed or embalmed. Any religious or cultural practice of washing the remains in preparation of “clean burials” is strongly discouraged.
- After wrapping in sealed, leak-proof material, remains should be placed inside a coffin if possible, and buried promptly.
- Transportation of the dead body (human remains) should be done using a vehicle with an open cabin. The vehicle after transportation should immediately be disinfected at the burial site.

Annex 1: How to make chlorine solutions for environmental disinfection

Procedure #1: Using Liquid Chlorine (Bleach)

$$\left[\frac{\% \text{ chlorine in liquid bleach}}{\% \text{ chlorine desired}} \right] - 1 = \text{Total parts of water for each part bleach}$$

Example: To make a 0.5% chlorine solution from 12% bleach, substitute according to the formula below

$$\left[\frac{12\%}{0.5\%} \right] - 1 = 24 - 1 = 23 \text{ Parts water for each part bleach.}$$

Therefore, you must add 1 part 12 % bleach to 23 parts water to make a 0.5% chlorine solution

Procedure #2: Using Bleach Powder

If using bleach powder, calculate the amount of bleach to be mixed with each litre of water by using the following formula:

$$\left[\frac{\% \text{ chlorine desired}}{\% \text{ chlorine in bleach powder}} \right] \times 1000 = \text{Grams of bleach powder for each litre of water.}$$

Example: To make a 0.5% chlorine solution from calcium hypochlorite (bleach) powder containing 35% active chlorine, substitute according to the formula below:

$$\left[\frac{0.5\%}{35\%} \right] \times 1000 = 0.0143 \times 1000 = 14.3. \text{ Therefore you must dissolve 14.3 grams of calcium hypochlorite (bleach) powder in each litre of water used to make a 0.5% chlorine solution.}$$

Note: When bleach powder is used; the resulting chlorine solution is likely to be cloudy (milky).

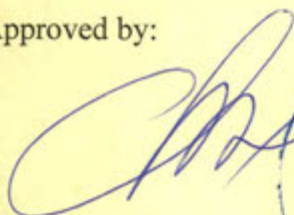
Formula for Making a Dilute Solution from a Concentrated Solution

Total Parts (TP) (H₂O) $\left[\frac{\% \text{ of concentrate}}{\% \text{ of dilute}} \right] - 1$.

Example: To make a dilute solution (0.1%) from 5% concentrated solution

$\left[\frac{5.0 \%}{0.1 \%} \right] - 1 = 50 - 1 = 49$. Therefore, you will Take 1 part concentrated solution and add to 49 parts boiled water.

Approved by:



Dr. Agnes BINAGWAHO

Minister of Health

