

**State of Kuwait  
Ministry of Health  
Infection Control Directorate**

**Infection Prevention and Control Recommendations for  
Hospitalized Patients with Known or Suspected Ebola  
Hemorrhagic Fever**

**2014**

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## Background

Although the natural reservoir of Ebola viruses has not yet been proven, researchers have hypothesized that the first patient becomes infected through contact with an infected animal.

When an infection does occur in humans, the virus can be spread in several ways to others. The virus is spread through direct contact (through broken skin or mucous membranes). Healthcare workers (HCWs) and the family in close contact with Ebola patients are at the highest risk of getting the disease. During outbreaks of Ebola HF, the disease can spread quickly within healthcare settings.

**Standard, contact, and droplet precautions** are recommended for management of hospitalized patients with known or suspected Ebola hemorrhagic fever (Ebola HF).

### 1. Notification

All treating physicians and preventive medicine department should notify infection control department for all patients suspected or confirmed of Ebola HF to apply the optimal precautions in the proper time.

### 2. Triage

- A. Rapid identification of patients suspected of Ebola HF with prompt application of appropriate precautions, and implementation of source control is recommended.
- B. Organize the space and process to permit spatial separation (at least 1 meter) between patients with Ebola H.F. and other individuals. Ensure that triage and waiting areas are adequately ventilated.
- C. **Infection control measures in triage area**
  - **Standard precautions** should always be applied in all healthcare settings for all patients.
  - **Contact and Droplet precautions** should be applied for any patient known or suspected to have Ebola H.F. see appendix (1)
  - **Airborne precautions** shall be applied only for aerosol-generating procedures .

### 3. Hand hygiene

- HCWs should apply “My 5 moments for hand hygiene”: before touching a patient, before any clean or aseptic procedure, after body fluid exposure risk, after touching a patient, and after touching a patient’s surroundings, including contaminated items or surfaces.
- HCWs should perform hand hygiene frequently, particularly before putting on and upon removal of personal protective equipment (PPE), including gloves.
- Healthcare facilities should ensure that supplies for performing hand hygiene are available.

#### 4. Personal protective equipments (PPE)

- All persons upon entering the room of the patient and when handling blood, body substances, excretions and secretions should wear at least:
  - a. Gloves
  - b. Gown (fluid resistant or impermeable)
  - c. Eye protection (goggles or face shield)
  - d. Facemask e.g. procedure or surgical mask
- Additional PPE may be required in certain situations (e.g., copious amounts of blood, other body fluids, vomit, or feces present in the environment), including but not limited to:
  - a. Double gloving
  - b. Disposable shoe covers
  - c. Leg coverings
- For aerosol generating procedures use of a respirator e.g. N95mask or equivalent is essential.
- The following persons should wear PPE:
  - a. All HCWs (e.g. doctors, nurses, radiographers, and physiotherapists).
  - b. All support staff dealing with the patient and cleaners of patient area.
  - c. All laboratory workers handling specimens from a patient being investigated for Ebola HF.
  - d. All sterilization service staff handling equipment that requires decontamination and has come from a patient with Ebola HF.
  - e. Family members or visitors.
- Wear PPE in the following order:
  - a. Disposable shoe covers or leg coverings if required
  - b. Long-sleeved cuffed gown and plastic apron if splashing of blood, body fluids, excretions and secretions is anticipated.
  - c. Face mask or higher.
  - d. Protective eyewear (goggles or face shield),
  - e. Disposable clean gloves
- Recommended PPE should be worn by HCWs upon entry into patient rooms or care areas. Upon exit from the patient room or care area, PPE should be carefully removed without contaminating one's eyes, mucous membranes, or clothing with potentially infectious materials, and either:
  - a. Discarded, or
  - b. For re-useable PPE, cleaned and disinfected according to the manufacturer's reprocessing instructions and infection control policies.
- Maintain adherence to hand hygiene by washing with soap and water or using alcohol-based hand sanitizer immediately after removing gloves and other PPE
- Instructions for Putting on and removing PPE . see appendix (2)

## **5. Isolation of patients**

- Single patient room (containing a private bathroom) with the door closed is essential
- Facilities should maintain a log of all persons entering the patient's room
- Consider posting personnel at the patient's door to ensure appropriate and consistent use of PPE by all persons entering the patient room and to ensure only permitted personnel entering the room.
- Items should be always available at entrance of isolation room. See Table (1) Suggested checklist for isolation room

## **6. Duration of Infection Control Precautions**

- Duration of precautions should be determined on a case-by-case basis. This should be performed in conjunction with the treating physicians
- Factors that should be considered include, but are not limited to: presence of symptoms related to Ebola HF, date symptoms resolved, other conditions that would require specific precautions (e.g., *Tuberculosis*, *Clostridium difficile*) and available laboratory information.

## **7. Transfer of patients**

### **A. Transfers to other departments**

- Avoid the movement and transport of patients out of the isolation room.
- Where possible, all procedures and investigations should be carried out in the isolation room with a minimal number of staff present during any procedures.
- The use of designated portable X-ray equipment and other important diagnostic equipment may make this easier.

### **B. Transfer to other institutions**

- Avoid the transport of patients unless necessary according to the Ministry of health plan.
- Dedicate well trained ambulance staff for patient transportation.
- Dedicate certain ambulance car for patient transportation.
- The ambulance car should only be equipped with the absolutely necessary material.
- Notify in advance the ambulance staff and staff of destination hospital.
- Transfer of only one patient in the ambulance at a time.
- The ambulance staff that have direct contact with the patient during patient transportation should :
  - Perform hand hygiene frequently, including before and after all patient contact, contact with potentially infectious material, and before putting on and upon removal of PPE.
  - Wear the appropriate PPE: gloves, impermeable gown, eye protection, surgical mask, and in certain situations (e.g., copious amounts of blood,

other body fluids, vomit, or feces) consider double gloving and disposable shoe covers or leg coverings.

- Ensure that the patient wear a 'surgical ' mask if can be tolerated.
- In the presence of blood and other body fluids secretions ensure immediate disinfection and don't wait till the completion of the transport.
- After completion of the transport, clean and then disinfect the vehicle's interior and used objects including work surfaces (PPE should be worn while cleaning). Surfaces (stretcher, chair, door handles etc) should be cleaned with a detergent and a hypochlorite solution 500 ppm . In case of blood spillage refer to ( *Appendix 3*)

## **8. Patient Care Equipment**

- Dedicated medical equipment (preferably disposable) should be used for the provision of patient care
- All non-dedicated, non-disposable medical equipment used for patient care should be cleaned and disinfected according to manufacturer's instructions and infection control policies.

## **9. Safe Injection practices**

- Facilities should follow policies of Infection Control Directorate for safe injection(2010) and policy for the Prevention and Management of Needle stick Injuries /Blood & Body Fluid Exposure among Healthcare Personnel in Healthcare Setting (2013)
- Limit the use of needles and other sharps as much as possible
- Phlebotomy, procedures, and laboratory testing should be limited to the minimum necessary for essential diagnostic evaluation and medical care
- All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed container
- Any injection equipment or parenteral medication container that enters the patient treatment area should be dedicated to that patient and disposed of at the point of use.

## **10. Aerosol Generating Procedures**

- Procedures that are usually aerosol generating are: bronchoscopy, Bilevel Positive Airway Pressure (BiPAP), sputum induction, intubation and extubation, and open suctioning of airways.
- Avoid aerosol generating procedures for Ebola HF patients.
- Use a combination of measures (contact, droplet, and airborne) to reduce exposures from aerosol-generating procedures.
- Visitors should not be present during aerosol-generating procedures.
- Limiting the number of HCWs present during the procedure to only those essential for patient-care and support.
- Conduct the procedures in a private room and ideally in an Airborne Infection Isolation Room (AIIR) when feasible. Room doors should be kept closed during the procedure except when entering or leaving the room, and entry and exit should be minimized during and shortly after the procedure.
- HCWs should wear gloves, a gown, disposable shoe covers, and either a face shield that fully covers the front and sides of the face or goggles, **and** respiratory protection that is at

least as protective as a NIOSH certified fit-tested N95 filtering face piece respirator or higher (e.g., powered air purifying respiratory or elastomeric respirator) during aerosol generating procedures.

- Conduct environmental surface cleaning following procedures .
- If re-usable equipment or PPE (e.g. Powered air purifying respirator, elastomeric respirator, etc.) are used, they should be cleaned and disinfected according to manufacturer instructions and hospital policies.
- Collection and handling of soiled re-usable respirators must be done by trained individuals using PPE for routine patient care.

### **11. Monitoring and Management of Potentially Exposed Personnel**

- Assign probable or confirmed cases to be cared for exclusively by a group of skilled HCWs both for care and to reduce opportunities for inadvertent infection control breaches that could result in unprotected exposure.
- Facilities should develop sick leave policies for HCWs consistent with ministry of health guidance.
- HCW with percutaneous or mucocutaneous exposures to blood, body fluids, secretions, or excretions from a patient with suspected Ebola HF should:
  - a. Stop working and immediately wash the affected skin surfaces with soap and water.
  - b. Mucous membranes (e.g., conjunctiva) should be irrigated with copious amounts of water or eyewash solution
  - c. Immediately contact preventive medicine for assessment and post exposure management
- For symptomatic HCW who develop sudden onset of fever, intense weakness or muscle pains, vomiting, diarrhea, or any signs of hemorrhage after an unprotected exposure (i.e. not wearing/ improperly wearing recommended PPE at the time of patient contact or through direct contact to blood or body fluids) to a patient with Ebola HF should:
  - a. immediately stop working
  - b. Notify their supervisor and preventive medicine
  - c. Seek prompt medical evaluation and testing according to ministry protocol
  - d. Comply with work exclusion until they are deemed no longer infectious to others
- For asymptomatic HCW who had an unprotected exposure (i.e. not wearing/ improperly wearing recommended PPE at the time of patient contact or through direct contact to blood or body fluids) to a patient with Ebola HF should receive medical evaluation and follow-up care including symptoms and fever monitoring daily for 21 days after the last known exposure.

### **12. Visits**

- Avoid entry of visitors into the patient's room.
- Exceptions may be considered on a case by case basis for those who are essential for the patient's wellbeing.
- Visitor should consult with the nurse in charge -if allowed- before entry into the isolation area.
- Visits should be scheduled and controlled (e.g., logbook) to allow for:

- a. Screening for Ebola HF (e.g., fever and other symptoms) before entering or upon arrival to the hospital
  - b. Evaluating risk to the health of the visitor and ability to comply with precautions
  - c. Providing instruction, before entry into the patient care area on hand hygiene, limiting surfaces touched, and use of PPE according to the current facility policy while in the patient's room
- Visitor movement within the facility should be restricted to the patient care area and an immediately adjacent waiting area.
  - Visitors should not be present during aerosol-generating procedures.

### **13. Handling Laboratory specimens**

All specimens should be regarded as potentially infectious.

#### **Specimen collection:**

Full face shield or goggles, masks to cover all of nose and mouth, gloves, fluid resistant or impermeable gowns. Additional PPE may be required in certain situations.

#### **Transporting Specimens:**

- Ensure that personnel who transport specimens are trained in safe handling practices and spill decontamination procedures
- Double bag: Place specimens for transport in leak-proof specimen bags (secondary container) that have a separate sealable pocket for the specimen (i.e. a plastic biohazard specimen bag), with the patient's label on the specimen container (primary container), and a clearly written request form
- Full face shield or goggles, masks to cover all of nose and mouth, gloves, fluid resistant or impermeable gowns. Additional PPE may be required in certain situations.
- Specimens should be placed in a durable, leak-proof secondary container for transport within a facility.
- To reduce the risk of breakage or leaks, do not use any pneumatic tube system for transporting suspected specimens.

#### **Laboratory testing:**

- Full PPE **AND** use of a certified class II Biosafety cabinet or plexiglass splash guard. Do not carry out any procedure on the open bench.
- Laboratory personnel handling potential clinical specimens should full PPE **AND** particulate respirators.(e.g N95 or equivalent) , or powered air purifying respirators (PAPR) when aliquot ting, performing centrifugation or undertaking any other procedure that may generate aerosols.
- 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-labelled, 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.

#### **14.Environmental cleaning and disinfection and waste management**

- Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is paramount, as blood, sweat, emesis, feces and other body secretions represent potentially infectious materials
- Meticulous daily cleaning of the isolation unit using Ministry of Health approved hospital disinfectant shall be carried out to disinfect hard non-porous surfaces.
- The isolation area should be cleaned after the rest of the ward area.
- Dedicated or disposable equipment must be used for cleaning.
- Reusable cleaning equipment must be cleaned after each use. Mop heads should be sent to the laundry for proper laundering in hot water.
- HCWs including cleaners performing environmental cleaning and disinfection should wear recommended PPE (described in appendix 2) and consider use of additional barriers (shoe and leg coverings, etc.) if needed.
- Face protection (face shield or facemask with goggles) should be worn when performing tasks such as liquid waste disposal that can generate splashes.
- Follow standard procedures, per hospital policy and manufacturers' instructions, for cleaning and/or disinfection of:
  - a. Environmental surfaces and equipment
  - b. Textiles and laundry
  - c. Food utensils and dishware
  - d. Blood and body fluid spillage, see appendix (3)
- All waste should be discarded into clinical waste bag inside the room. When waste is to be collected for disposal, place in another bag outside the room and then treat as infectious waste.

#### **15.Management of Linen**

- 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, then treat as infectious.
- Use PPE: gloves, gown, closed shoes (e.g., boots) and facial protection (mask and goggle or face shield) when handling linen.
- Soiled linen should be placed in clearly-labeled, leak-proof heat soluble bags at the site of use.
- If there is any solid excrement such as feces or vomit, scrap off carefully using a flat firm object and flush it down the toilet or in the sluice before linen is placed in its bag.
- If the linen is transported out of the patient room/area, it should be put in another bag (double bagging). It should never be carried against the body.
- Linen should be then transported directly to the laundry area in its bag and laundered promptly with water and detergent.
- Wash infectious linen according to routine standards and procedures.

- Washing contaminated linen by hand should be discouraged.
- If safe cleaning and disinfection of heavily soiled linen is not possible or reliable, it may be prudent to burn.

## **16.Human Remains**

### **Movement and Burial**

- The handling of human remains should be kept to a minimum.
- The following recommendations should be adhered to in principle, but may need some adaptation to take account of cultural and religious concerns.
- Wear PPE to handle the dead body of a suspected or confirmed case of Ebola HF:
  - impermeable gown,
  - mask,
  - eye protection
  - double gloves
  - closed shoes or boots
- Plug the natural orifices.
- Place the body in a double body bag, wipe over the surface of each body bag with a suitable disinfectant (chlorine solution) and seal and label with the indication of highly-infectious material.
- Immediately move the body to the mortuary.
- PPE should be put on at the site of collection of human remains, worn during the process of collection and placement in body bags, and should be removed immediately after. Hand hygiene should be performed immediately following the removal of PPE.
- Remains should not be sprayed, washed or embalmed. Any practice of washing the remains in preparation of “clean burials” should be discouraged.
- Only trained personnel should handle remains during the outbreak.
- PPE is not required for individuals driving or riding a vehicle to collect human remains, provided that drivers or riders will not be handling a dead body of a suspected or confirmed case of HF.
- After wrapping in a double sealed, leak-proof material, remains should be buried promptly.

### **Post-Mortem Examinations**

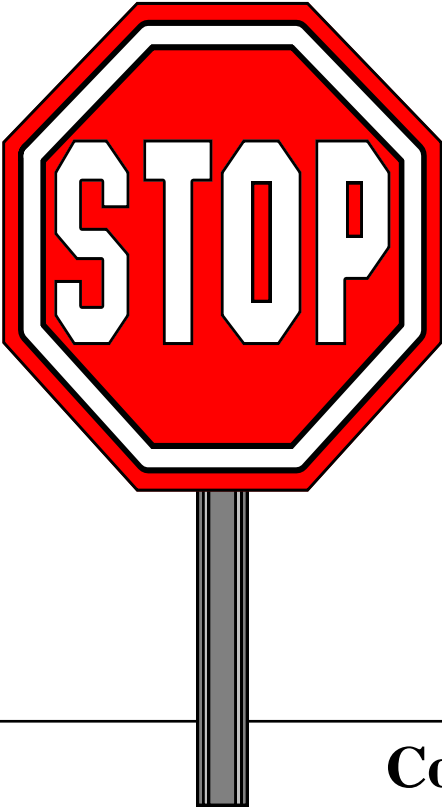
Post-mortem examination of HF patient remains should be limited to essential evaluations only and should be performed by trained personnel.

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- Infection Control Guidelines At Ambulance setting 2005. Infection Control Directorate, Kuwait Ministry of Health
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- Interim Guidance for Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease -Centers for Disease Control and Prevention. August 2014.
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- Guideline for Environmental Infection Control in Healthcare Facilities. Centers for Disease Control and Prevention Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC).U.S. Department of Health and Human Services. Centers for Disease Control and Prevention (CDC)-2003
- Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Setting. Centers for Disease Control and Prevention- 2007

**Appendix (1): Isolation Signs**

**CONTACT ISOLATION PRECAUTIONS SIGN**



**Contact Precautions**



**Clean Hands**

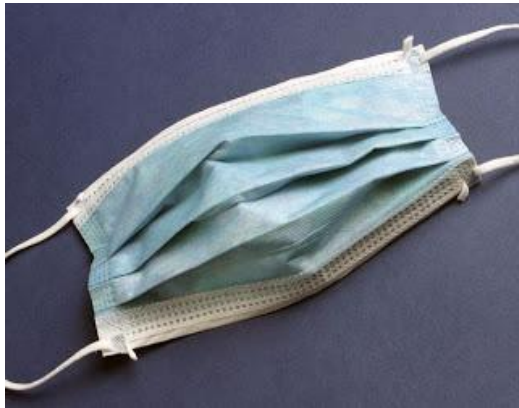
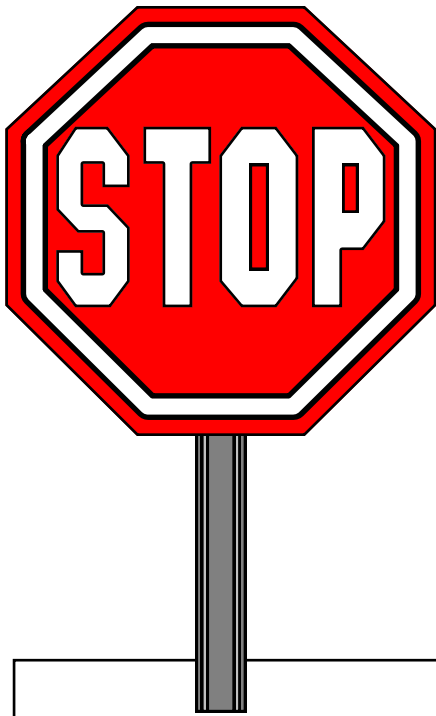


**Wear gloves**



**Wear gown**

**DROPLET ISOLATION PRECAUTIONS SIGN**



**Wear surgical mask**



**Clean Hands**

## Appendix (2): Putting on and Taking off personal protective equipment (PPE)

### Putting on Personal Protective Equipment

#### 1. Wash Hands

- Perform proper Hand Hygiene.



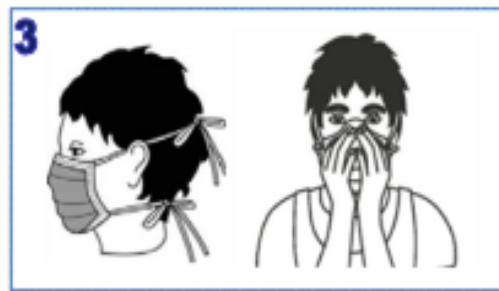
#### 2. GOWN

- Fully cover torso from neck to knees, arms to end of wrist, and wrap around the back.
- Fasten in back at neck and waist.



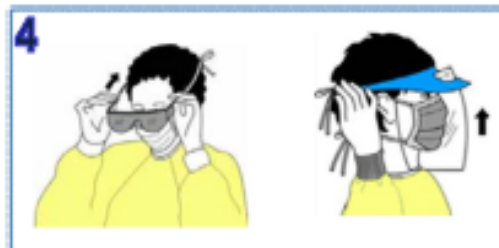
#### 3. MASK OR RESPIRATOR

- Secure ties or elastic band at middle of head and neck.
- Fit flexible band to nasal bridge.
- Fit snug to face and below chin.
- Fit-check respirator.



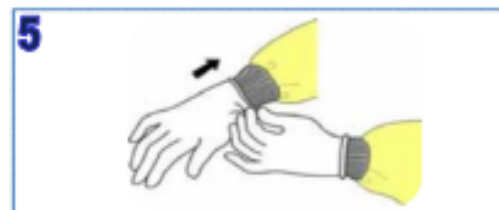
#### 4. GOGGLES/FACE SHIELD

- Put on the face and eyes and adjust to fit.



#### 5. GLOVES

- Use non-sterile for isolation.
- Select according to hand size.
- Extend to cover wrist of isolation gown.



#### SAFE WORK PRACTICES

- Keep hands away from face.
- Limit surfaces touched.
- Work from clean to dirty.
- Change when torn or heavily contaminated.

## Tacking off Personal Protective Equipment

1. PPE should be removed in an order that minimizes the potential for cross-contamination.
2. Except for respirator, remove PPE at doorway or in anteroom.
3. Remove respirator after leaving patient room and closing door.

### 1. GLOVES

- Outside of gloves are contaminated.
- Grasp outside of glove with opposite gloved hand; peel off.
- Hold removed glove in gloved hand.
- Slide fingers of ungloved hand under remaining glove at wrist.
- Peel glove off over first glove
- Discard gloves in waste container.



### 2. GOGGLES/FACE SHIELD

- Outside of goggles or face shield are contaminated!
- To remove, handle by "clean" head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container.



### 3. GOWN

- Gown front and sleeves are contaminated!
- Unfasten neck, then waist ties.
- Remove gown using a peeling motion; pull gown from each shoulder toward the same hand.
- Gown will turn inside out.
- Hold removed gown away from body, roll into a bundle and discard into waste or linen receptacle.



### 4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated – DO NOT TOUCH!
- Grasp ONLY bottom then top ties/elastics and remove.
- Discard in waste container.



### 5. HAND HYGIENE

- Perform hand hygiene immediately after removing all PPE!



## **Appendix (3): Cleaning Spills of Blood and Body Fluids**

### **Procedures for dealing with small Spillages e.g. splashes and droplets (<10 ml) :**

1. Gloves and a plastic apron must be worn
2. The area should be wiped thoroughly using disposable paper roll / towels.
3. The areas should be cleaned using a neutral detergent and warm water.
4. Recommended concentration of sodium hypochlorite to decontaminate surfaces is 525-615 ppm chlorine of 1:100 dilution (1 tablet presept of 2.5 gm in 2.5 liters).
5. Used the gloves, apron / towels should be disposed in to yellow waste bag.
6. Wash hands.

### **Procedure for dealing with large spills (>10 ml) :**

#### **- Large blood spills in a 'wet' area** e.g. a bathroom or toilet area:

1. Where large spills have occurred in a 'wet' area, such as a bathroom or toilet area, the spill should be carefully washed off into the sewerage system using copious amounts of water and the area flushed with warm water and detergent.
2. The area must then be disinfected using a chlorine releasing agent. Use a concentration of 525-615 ppm of 1:100 dilution (1 tablet presept of 2.5 gm in 2.5 liters)

#### **- Large blood spills in 'dry' areas** (such as clinical areas)

1. Where possible, isolate spill area
2. Where a spillage of potentially infectious material has occurred the area must be vacated for at least 30 minutes for aerosol particles to be dispersed.
3. Wear protective equipment like disposable cleaning gloves, eyewear, mask and plastic apron
4. Cover the spill with paper towels or absorbent granules, depending on the size of the spill, to absorb the bulk of the blood or body fluid/substance. Use disposable (for example, cardboard) scraper and pan to scoop up absorbent, paper towel and any unabsorbed blood or body substances
5. Place all contaminated items into yellow plastic bag or in sharp container for disposal.
6. First use 1:10 dilution of 5,000 ppm chlorine solution (10 tablet presept of 2.5 gm in 2.5 liters). Pour and allow 10 minutes to react then wipe up making sure that you don't allow it to come into contact with your skin or clothing and discard in biohazard waste.
7. Decontaminated areas should then be cleaned thoroughly with warm water and neutral detergent.
8. Follow this decontamination process with a terminal disinfection by using a 1:100 dilution of 525-615 ppm chlorine (1 tablet presept of 2.5 gm in 2.5 liters.)
9. Discard contaminated materials (absorbent toweling, cleaning cloths, gloves and plastic apron).
10. Wash hands
11. Clean and disinfect bucket and mop. Dry and store appropriately

### **Procedure for dealing with spilled Urine, feces, sputum and vomit:**

1. Single use gloves and a plastic apron must be worn.
2. The spillage should be covered with disposable paper towel to absorb the spilled material. These should then be gathered up and placed in a yellow waste bag. The area must then be cleaned thoroughly using detergent and hot water and dried.
3. The area must then be disinfected using a chlorine releasing agent. Use a concentration of 525-615 ppm. 1:100 dilution (1 tablet presept of 2.5 gm in 2.5 liters)
4. Protective clothing and paper must be discarded into the yellow waste bag.
5. Wash hands



**Table (1): Suggested checklist for isolation room**

The following items should be always available

| Equipment   | Stock present |
|---|---------------|
| <b>Face shield/visor/goggles</b>  |               |
| <b>Gloves</b><br>reusable vinyl or rubber gloves for environmental cleaning<br>latex single-use gloves for clinical care  |               |
| <b>Medical (surgical or procedure) masks</b>  |               |
| <b>Particulate respirators e.g. N95, or equivalent</b> (used only for aerosol generating procedures)  |               |
| <b>Gowns and aprons:</b><br>Single-use long-sleeved fluid-resistant or reusable non-fluid resistant Gowns<br>Plastic aprons (for use over non-fluid-resistant gowns if splashing is anticipated and if fluid-resistant gowns are not available) |               |
| <b>Hair covers (optional)</b>   |               |
| <b>shoe covers (optional)</b>   |               |
| <b>Leg coverings (optional)</b>   |               |
| <b>Alcohol-based hand rub</b>   |               |
| <b>liquid antiseptic soap for washing hands</b>   |               |
| <b>Clean single-use towels (e.g. paper towels)</b>  |               |
| <b>Sharps containers</b>  |               |
| <b>Appropriate detergent for environmental cleaning and disinfectant for surface or instrument/equipment disinfection</b>   |               |
| <b>Large plastic bags</b>   |               |
| <b>Appropriate clinical waste bags</b>  |               |
| <b>Linen bags</b>   |               |
| <b>Body bag</b>   |               |