

Manitoba Health, Healthy Living and Seniors
Ebola Virus Disease (EVD)

Infection Prevention and Control Interim Guidelines in Health Care Settings

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Introduction

These guidelines may change as more information becomes available. For updates and other guidelines on Ebola Virus Disease (EVD), please refer to the Ebola Virus site on the Manitoba Health, Healthy Living, and Seniors Public Health website: (available at: <http://www.gov.mb.ca/health/publichealth/diseases/ebola.html>)

The advice in this document is intended for health care settings where there may be potential for care of a person who is suspected (person under investigation) or confirmed to have EVD. Though these guidelines focus mostly on the hospital setting, some of the recommendations can be applied to other health care settings.

Each RHA must ensure infection prevention and control processes are in place in the event an individual presents with EVD that requires medical care within their region.

Ebola virus is transmitted by direct contact (e.g. through non-intact skin or mucous membranes) with the blood or other body fluids (e.g. stool, emesis, urine, saliva, semen, sweat) of an infected individual and/or indirectly through contact with environmental surfaces and fomites contaminated with body fluids. Airborne transmission has not been documented.

It is important to apply Routine Practices when providing care to ALL patients regardless of the signs and symptoms they present with. This is especially important because the initial manifestations of EVD may be non-specific. Hand hygiene and cleaning and disinfection of all shared equipment are important measures of Routine Practices. All patient care should be undertaken using approaches that will minimize the potential exposure of health care workers (HCWs) to contaminated blood and body fluids (i.e. no-touch approach).

Please refer to *Manitoba Health, Healthy Living and Seniors Ebola Virus (EVD) Interim Protocol* available on the Ebola Virus site for information on the case definitions, reporting requirements, clinical presentation, etiology and epidemiology, specimen collection and handling and case and contact management.

Please refer to *Manitoba Health, Healthy Living and Seniors Ebola Virus Disease (EVD) Emergency Medical Services (EMS) and Transportation Infection Prevention and Control Interim Guidelines* for infection prevention and control guidance for emergency medical services, pre-hospital care and air and land transportation of EVD patients.

1) Infection Prevention and Control (IP&C)

Regional IP&C works in collaboration with others in their region to provide training on EVD infection prevention and control precautions to all staff who may be involved (e.g., those providing direct patient care, cleaning staff, security services etc.).

- Regional IP&C must be notified as soon as possible if there is a suspect or confirmed EVD patient.

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- Communicate with appropriate authorities, administrative personnel, department heads and other affected personnel on an ongoing basis when needed.
- Collaborate with appropriate Public Health (PH) staff where patient, significant others or other contact follow-up or investigations may be required.
- Notify receiving facility, physician, other health care agencies or health care departments as appropriate.
- Provide IP&C consultation if needed.

2) **Hierarchy of Controls for EVD**

The hierarchy of controls is a fundamental occupational health and safety framework, designed to optimize protection of the HCW from exposures to hazards, including infectious hazards such as EVD. Following the hierarchy of controls will produce safer systems and reduce illness or injury. Engineering and administrative controls are at the top of the hierarchy of controls. In health care settings, personal protective equipment (PPE) is often the primary focus. Although it is a critical element in implementing infection prevention and control practices, it is the last control between the HCW and the infectious hazard. For the PPE to be effective, the other controls must be in place. For more detailed information regarding the hierarchy of controls please refer to Manitoba Health *Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* (available at: <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>).

PPE refers to all personal protective equipment and clothing recommended for use by the employer. The employer must ensure the appropriate PPE is available, in good working order and adequate instruction and supervision has been provided regarding its correct usage. The manager and HCW must know the hazards for any potential exposure to blood, body fluids or surfaces contaminated with Ebola virus. The manager is responsible to ensure HCWs use the PPE required by the employer, HCWs are responsible for using the PPE as instructed by the employer.

3) **Regional Health Authority (RHA) Responsibilities**

To ensure the health and safety of HCWs caring for patients with EVD, RHAs must conduct risk assessment to identify potential hazards and implement a coordinated and systematic response.

Principles include following the hierarchy of controls, remembering that engineering controls can be the most effective in preventing or limiting exposure. Administrative controls, with emphasis on vigilant screening of patients, patient care models minimizing the number of HCWs exposed, careful selection of PPE as well as education on putting on, using and removing PPE will best prepare the HCW for the provision of safe patient care. This will also provide the HCW with the foundation and tools for safe work practice. Repeat ongoing training is necessary and RHAs must develop and implement a schedule in relation to the type of risk the HCW would be exposed to during care of a patient with Ebola virus.

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RHAs must implement administrative and environmental controls as well as provide onsite management and oversight on the safe use of PPE with continuous safety checks through direct observation of HCWs during putting on and removing of PPE.

The RHA in collaboration with IP&C, Occupational Health (OH)/designate and other key individuals in their organization must:

- Comply with federal and provincial OH and Safety legislation.
- Establish and implement triage protocols to promptly identify patients who may have EVD and immediately institute the precautions/measures outlined in this document.
- Designate individuals as site managers/leaders responsible for overseeing the implementation of infection prevention and control precautions for HCWs and patient safety. It is recommended a site manager be on-site at all times in the location where the Ebola patient is being cared for. A site manager's responsibility is to ensure the safe and effective delivery of Ebola care/treatment.
- Identify clinical procedures and essential HCWs for care of EVD patients, for collection of laboratory specimens (where laboratory specimens are collected), and for management of the environment and waste in advance.
- Identify a core group of individuals that need to be trained which would include HCWs who would be involved with the care of an EVD patient.
- Ensure HCWs have been trained in all recommended protocols for safe care of EVD patients before they enter the patient area.
- Train HCWs on all PPE recommended in the organization protocols. HCWs should practice putting on and removing PPE procedures and must demonstrate competency during the training process through testing and assessment before caring for EVD patients.
 - Use site-based trained monitors to monitor for correct PPE use and adherence to protocols for putting on and removing PPE, and guide HCWs at each point of use with a checklist for the procedure.
 - Use a 3 person team approach (primary HCW, assistant, monitor) to putting on and removing of PPE.
 - If this is not feasible, the assistant and monitor role may be combined.
- Document training of monitors and HCWs for proficiency and competency in putting on and removing PPE, and in performing all necessary care-related duties while wearing PPE.
- Designate spaces so PPE can be put on and removed in separate areas.

4) General Guidelines for HCWs' Fitness to Provide Direct Care to EVD Patients

Fitness to work incorporates factors that relate to the individual HCW's ability to safely perform the duties of their job. If it relates to how they might be able to perform their job, the HCW must be made aware whenever there are changes in the tasks to be performed, changes in the work environment within which these tasks are performed or changes in recommended PPE. HCWs should be encouraged to share any concerns

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they have (e.g., underlying health issues) through the usual reporting channels (e.g., manager, OH/designate). Certain health conditions or pregnancy may preclude some HCWs from providing direct care to EVD patients. The following should be taken into consideration when making this decision.

- Inability to sustain work times required while providing direct patient care in the recommended PPE.
- Demonstrated or expected higher EVD mortality based on the underlying health condition.

Examples of conditions that should be considered when determining fitness to provide direct care for EVD patients include:

- Underlying medical conditions that could affect the HCW's ability to exit the room quickly and safely, or that may require another HCW to enter the room to provide urgent medical assistance to the HCW (e.g. seizure disorder, hypoglycemia)
- Inability to safely put on, use, or remove recommended PPE (e.g. fit-testing failure for N95 respirators for AGMPs; claustrophobia, body morphology, mobility issues)
- Skin integrity
- Impaired immune system
- History of heat stroke
- Pregnancy (due to reported maternal mortality of >95% and fetal mortality of 100%)

Where necessary, the ability of a HCW to engage in work activities related to caring for an EVD patient should be assessed by an OH/designate.

5) Triage for Patients Suspected to have EVD

- Triage measures must be followed according to Manitoba Health *Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* (available <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>).
 - Direct patients to the appropriate care area and initiate appropriate precautions for those who have called ahead (e.g. home or emergency room) to notify they have symptoms with possible EVD and have a travel history to an EVD-affected region.
 - Give patients a procedure mask to wear and place them into an appropriate isolation room as soon as possible. The patient may remove the mask when in the room. Instruct the patient to adhere to respiratory hygiene, including hand hygiene (HH).
 - Place patients with vomiting or acute diarrheal illness into a single examining room with dedicated toilet or commode as soon as possible.
 - Where possible, do not place patients with suspected or confirmed Ebola virus infection in carpeted rooms and remove all upholstered furniture and decorative curtains from patient room before use.
 - Develop and post signs to direct patients with symptoms consistent with acute EVD infection (e.g. cough, fever, fatigue, vomiting, diarrhea, coryza, rash,

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conjunctivitis to the appropriate waiting area. Use a barrier (e.g. plastic partition at triage desk, 2 metre distance, appropriate PPE) between infectious sources and susceptible hosts.

- Maintain recommended spatial separation is 2 metres/6 feet between patients.
- Provide supplies for respiratory hygiene and emesis management (e.g. masks, tissues, emesis bags, hand hygiene products, designated hand washing sinks and no-touch waste receptacles).
- Refer individuals who accompanied a symptomatic suspect EVD patient to the receiving facility to regional public health for follow-up.

6) Infection Prevention and Control Precautions for Person Under Investigation(PUI) and Patients with Confirmed EVD

6.1) Infection Prevention and Control Precautions

- **In addition to Routine Practices, droplet/contact precautions plus airborne precautions for aerosols during AGMPs must be applied. Use the minimum HCWs necessary to perform the AGMPs.**
 - Please refer to Manitoba Health *Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* (available <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>).
 - Strict compliance with infection prevention and control precautions is required to avoid potential exposure to infectious materials. Transmission to HCWs has been documented when infection prevention and control precautions are not strictly practiced.
 - Healthcare workers must have sufficient knowledge, skills and resources to perform a point-of-care-risk-assessment (PCRA) and to apply appropriate control measures before every interaction with a patient.
 - Frequent use of alcohol-based hand rub (60-90%) or washing with soap and water (preferred if hands are visibly soiled) including but not limited to before and after contact with patient, following contact with items/surfaces in the patient's room, after contact with blood/body fluids, after removing PPE (e.g. gloves, facial protection, gown, mask) and after leaving isolation room.
 - Place patient in a single room with dedicated toilet or commode; keep the door closed. Place isolation sign on the door.
 - Airborne precautions are needed ONLY when performing AGMPs. Only perform medically essential AGMPs.
 - If required, closed endotracheal suction systems should be used whenever possible.
 - Droplet/contact precautions plus airborne precautions and strategies to reduce aerosol generation during AGMPs should remain in effect until EVD is excluded.
 - As polymerase chain reaction (PCR) testing for EVD may be negative within the first 3 days of symptoms, a second test may be required before EVD can be excluded as the cause of the patient's symptoms. This will be determined on a case-by-case basis.

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- For patients with confirmed EVD, the duration of precautions will be determined on a case-by-case basis in consultation with the IP&C program, an Infectious Diseases expert and PH.
- Negative testing for EVD does not rule out other Viral Hemorrhagic Fevers and patients with compatible symptoms should remain in appropriate isolation precautions pending definitive diagnosis.
- Eating or drinking by HCWs or visitors is not permitted in areas where these patients are cared for, including the nursing station or in reprocessing or laboratory areas consistent with Routine Practices.
- Do not bring patient charts/records, mobile computers or cell phones into the patient isolation room.
- Women under investigation or confirmed EVD cases must not breastfeed as EVD is transmitted in breast milk.
- Patients with symptoms must be assessed in a timely manner for EVD and for other alternative or co-existing potential communicable infections (e.g. malaria, dysentery, typhoid fever, tuberculosis, measles, gastroenteritis).
- Assess for travel within 21 days to an Ebola-affected region, or contact with an individual with onset of symptoms within 21 days of travel to an Ebola-affected region.
- Assess for symptoms of EVD according to Manitoba Health, Healthy Living and Seniors *Ebola Virus Disease (EVD) Interim Protocol* (available at: <http://www.gov.mb.ca/health/publichealth/cdc/protocol/ebola.pdf>).

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Table 1. Factors Influencing Risk of Exposure to Ebola Virus within Health Care Settings

Exposure Risk	EVD-infected Patient
Lower Risk of Exposure	<p>Patient Criteria</p> <ul style="list-style-type: none"> • Early stage of EVD (e.g., fever with fatigue and myalgia) • Convalescing stage of EVD when diarrhea and vomiting have resolved • Patient’s body fluids (e.g. blood, emesis) contained • Formed stool • No emesis • Continence • Good hygiene • Capable of self-care • Adequate patient placement <p>Interventions that reduce exposure risk</p> <ul style="list-style-type: none"> • Procedures or interventions that do not put the HCW in direct contact with patient’s body fluids (e.g., triage or history taking) • Providing the patient with a single use emesis bag (e.g. Hygie bag) to use whenever possible based on his/her condition • Supporting the patient in independent use of toilet and bathroom whenever possible based on his/her condition • Allowing the patient to complete vomiting or the diarrhea episode before providing direct care whenever possible • Use of disposable or single use equipment.
Higher Risk of Exposure	<p>Patient Criteria</p> <ul style="list-style-type: none"> • Later stages of EVD, involving copious fluid loss (e.g. vomiting, diarrhea, bleeding) • Patient’s body fluids soiling the environment • Diarrhea • Emesis • Incontinence • Poor hygiene • Not capable of self-care due to physical condition, age or cognitive impairment • Inadequate patient placement <p>Interventions that increase exposure risk</p> <ul style="list-style-type: none"> • AGMPs (e.g., intubation) • Where there is risk of percutaneous injury to the HCW with a sharp instrument or needle contaminated with the patient’s body fluids (e.g., phlebotomy, intravenous insertion) • Involving direct contact with patient’s blood or other body fluids (e.g., changing incontinence product, cleaning soiled environment, attending to the patient during diarrhea or vomiting, and post-mortem care) • Direct or indirect contact with contaminated environment or fomites (e.g., cleaning and disinfection of patient care equipment and

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	environment)
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6.2) PPE

The type of PPE and the sequence for putting on and removing PPE may vary slightly depending on organizational needs, PPE choices and preferences. Each RHA should develop comprehensive policies and procedures for putting on and removing PPE with a clear goal of reducing the possibility of self-contamination.

The effectiveness of PPE is dependent on prior training and experience with PPE, as well as the appropriate selection, education on proper use, including correct technique for putting on and removing, discarding into designated receptacles and hand hygiene to minimize transmission. HCWs must conduct a PCRA with each patient to evaluate their potential exposure to blood and/or body fluids. This should be done to determine the need for additional PPE. **While working in PPE, HCWs caring for EVD patients should have no exposed skin.** PPE must be put on and removed and hand hygiene performed according to *Putting On and Removing PPE* (Appendix 1).

- PPE must be large enough to allow unrestricted free movement of body and arms.
- HCWs must have sufficient dedicated/uninterrupted time to put on and remove PPE correctly.
- A HCW who is wearing additional PPE may be at risk of overheating, and potential dehydration.
 - This should be taken into consideration when scheduling work.
- PPE must be correctly in place before entering the patient care area.
- PPE must be put on correctly in proper order before entry into the patient care area and not later modified while in the patient care area.
- PPE must remain in place and be worn correctly for the duration of the exposure to potentially contaminated areas. PPE must not be adjusted during patient care.
- PPE equipment must be inspected continually for tears and/or fluid penetration.
- If there are problems with PPE (e.g., fogging, tearing of gloves), the HCW should stop patient care, initiate PPE removal process (Appendix 1).
- If PCRA indicates increased risk of exposure to blood or other body fluids (e.g. patient at risk for vomiting or experiencing diarrhea), the HCW should stop patient care and initiate PPE removal process (Appendix 1).
 - After completion of PPE removal process, HCW should put on additional PPE if needed (Appendix 1) prior to re-entering patient room.
- Do not touch facial protection while wearing.
- Do not wear the same PPE for successive patients.
- The removal of used PPE is a high-risk process that requires a structured procedure, a trained monitor and a designated area for removal to ensure protection.
 - Removal of PPE presents high risk for self contamination if not done properly.
 - A stepwise procedure should be developed and used during training and practice.

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- The need for additional PPE (e.g. double gloves, head and neck coverings, foot and leg coverings) is determined by assessing the risk of heavy exposure to blood and body fluids.

6.2.1 Education and Training on Appropriate Use of PPE

- Provide expert training for putting on and removing PPE according to procedures (Appendix 1) outlined in this document as well as strategies to avoid contamination during care of the patient including when handling waste and during environmental cleaning.
- HCWs are required to demonstrate competency in the use of PPE, including putting on and removing while being observed by a trained monitor before working with EVD patients.
- During practice, HCWs and their trainers must assess their proficiency and comfort with performing required duties while wearing PPE.
- Ensure a trained individual is available at all times to monitor the HCW's activities during care of the EVD. Provide expert training to individuals whose tasks will be to monitor the HCWs activities during care of the EVD patient and when putting on and removing PPE. These individuals should also receive training in how to assist in putting on and removing PPE (e.g. buddy system).
- Ensure all HCWs entering the patient room know how to perform a PCRA for potential exposure to EVD and are able to select the appropriate PPE.
- Ensure that all HCWs who may come in contact with a patient with suspected or confirmed EVD:
 - Meet all training requirements for appropriate use of PPE and IP&C measures,
 - Have proper medical clearance,
 - Have been fit-tested for their N95 respirator for use during AGMPs, and
 - Are trained on management and exposure precautions for suspected or confirmed EVD patients.

6.2.2 Trained Monitors Responsibilities

- To assist with and ensure adherence to entire PPE selection, putting on, use and removal process by HCWs providing direct patient care.
- Monitor/supervise putting on of PPE and safe removal.
- Guide/read aloud to HCW, each step in putting on the PPE (e.g. use a checklist).
- Ensure that PPE fits correctly and that all skin is covered before the HCW enters patient room.
- During PPE removal, observe and assist with removal of specific components of PPE as indicated in the PPE checklist.
- Visually confirm and document (e.g. checklist) that each step was completed correctly for PPE use and removal.

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- Constantly monitor technique while HCW is in patient room and observe for signs of fatigue or difficulty in performing tasks.
- Provide corrective instruction (e.g. PPE becomes dislodged, if HCW not following recommended procedures) in real-time.
- Know the facility EVD exposure management plan in the event of unintended breach in procedure.
- A trained monitor should be present at all times for the HCWs providing patient care and should monitor entry and exit to the room (i.e. allowing essential HCWs only).

6.2.3 Designated areas for Putting On and Removing PPE

- There should be a designated space and layout with clear separation between clean and potentially contaminated areas.
- The HCW should have sufficient dedicated and undisturbed time to put on and remove PPE correctly.
- RHAs should consider making showers available for use by HCWs after removal of PPE if the need arises.
- Post signage to highlight key aspects of putting on and removing PPE
 - Designated clean areas versus potentially contaminated areas.
 - Reminding HCWs to wait for a trained monitor before removing PPE.
 - Reinforcing need for slow and deliberate removal of PPE to prevent self-contamination.
- A communication system between the HCW and the trained monitor must be developed (e.g., video monitor, intercom system, observation window)

6.2.4 PPE Storage and Putting On of PPE Area

- This is an area outside of the Ebola patient room/anteroom where clean PPE is stored and where HCWs can put on the PPE before entering the patient's room.
- Do not store potentially contaminated equipment, used PPE or waste removed from the patient's room in this area. If waste must pass through this area, it must be properly contained and external surfaces cleaned/disinfected.

6.2.5 PPE Removal Area

- This is an area in proximity to the patient's room (e.g. anteroom or adjacent vacant patient room that is separate from the clean area), where HCWs leaving the patient's room can remove and discard their PPE.
- Alternatively, some steps of the PPE removal process may be performed in a clearly designated area of the patient's room near the door, provided these steps can be seen and supervised by a trained monitor (e.g. through a window such that the HCW removing PPE can still hear the instructions of the trained monitor (e.g. video monitor). Do not use this designated area within the patient's room for any other purpose.

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- Provide supplies for disinfection of grossly contaminated PPE and for performing HH, and space to remove PPE. Consider including a place for sitting that can be easily cleaned and disinfected where HCWs can remove boot covers, if space allows.
- Provide leak-proof biomedical waste containers for discarding used PPE.
- If a facility must use the hallway outside the patient room as the PPE removal area, and a physical barrier cannot be constructed to close the hallway to through traffic, the PPE removal area must be clearly delineated (e.g. tape, signs). Restrict access to this hallway to essential HCWs who are properly trained on recommended infection prevention and control practices for the care of EVD patients.
- A trained monitor should be present to ensure appropriate removal and disposal of PPE. The monitor will observe and ensure HCWs are not contaminating themselves.

6.2.6 Specific PPE that is required when caring for all patients

- Use disposable PPE whenever possible.
- Closed toe and heel shoes must be worn.
- Gloves
 - Worn prior to entry to the patient room.
 - Sized correctly to securely cover wrist without rolling over (extended cuff glove).
 - Must be pulled over the cuff of the gown/coverall so there is no exposed skin or clothing.
 - Change gloves in the PPE removal area if heavily soiled with blood or body fluids while providing care to the same patient, performing careful hand hygiene immediately after removal.
 - Double gloves should be considered for situations where there is risk of exposure to blood and body fluids, (e.g. undertaking any strenuous activity like carrying a patient, patient has symptoms of diarrhea, bleeding, vomiting, and/or the environment could be contaminated with blood and body fluids). When double gloves are worn, the first glove should be under the cuff and the second over the cuff.
- Face protection
 - Worn prior to entry to the patient room.
 - Procedure or surgical mask.
 - Disposable full face shields that are long enough to prevent splashing underneath. Eye glasses, goggles, or masks with visors are not suitable eye protection.
- Coveralls
 - Designated disposable, fluid-resistant.
 - Coveralls are the equivalent of a hazardous material suit.
 - Designated, disposable fluid resistant leg and shoe covers are required if coveralls are not used.
- Gowns
 - Disposable, fluid-resistant/impermeable and long sleeved.

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- N95 respirators
 - Fit tested, seal-checked N95 respirators are used for airborne precautions for AGMPs.
 - They should be put on prior to entry to the patient room.
 - Worn by all personnel in the room during the procedure.

6.2.7 Additional PPE

Required in areas where there will be high risk of exposure to blood and body fluids

- Disposable fluid resistant scrubs must be worn under the PPE. Personal clothing is not to be worn.
 - Remove disposable scrubs in a manner minimizing self-contamination.
 - If working in a health care facility, prior to leaving EVD designated areas.
 - When visibly soiled with patient's blood or body fluids.
- Fluid resistant leg and shoe covers
 - These will be required when undertaking any strenuous activity (e.g. carrying a patient), tasks where contact with blood and body fluids is anticipated (e.g. patient has symptoms of diarrhea, bleeding, vomiting, and/or the environment could be contaminated with blood and body fluids).

6.2.8 PPE for Assistant HCW if an Assistant is used

- Disposable, fluid repellent/impermeable and long sleeved gown.
- Disposable full face shield that is long enough to prevent splashing underneath.
- Procedure or surgical mask and gloves.

6.2.9 PPE in Community Settings

- If needed, the recommended PPE in community settings when EVD is suspected is disposable impermeable gown, gloves, procedure or surgical mask, full face shield, and shoe/leg covers (if required).

7) HCWs Caring for EVD Patients

- All HCWs involved with the patient must be aware of and comply with the guidelines for EVD.
 - Prior to working with EVD patients, HCWs involved with patient care must have received repeated training and have demonstrated competency in performing all EVD related infection prevention and control practices and procedures, specifically in putting on/removing PPE.
 - HCWs should be educated regarding Routine Practices and Additional Precautions including hand hygiene, PCRA and cleaning and disinfection of non-critical equipment.
 - HCWs should be educated about signs and symptoms of EVD, appropriate control measures; and the need to self-monitor for EVD symptoms while caring for cases of EVD and for 21 days following last contact with patients with EVD.

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- Limit the number of HCWs caring for EVD patients. HCWs with appropriate PPE must be the only ones entering the room.
- HCWs who have not been assessed as fit to provide direct care to an EVD patient cannot provide care.
- HCWs with open skin areas/lesions on hands or forearms should not have contact with EVD cases or their environment.
- Students should not provide care for these patients
- Clinical and non-clinical HCWs should be assigned exclusively to EVD patients with no staff movement between EVD patient care areas and other clinical areas. If this is not possible, the patient care model should seek to minimize the number of HCWs exposed.
- A trained monitor with experience in the use of PPE must be assigned outside the entrance to the patient room (if in an AIIR it should be outside the anteroom) to log all people entering the room. They are to monitor appropriate putting on/removing of PPE to minimize risk of self-contamination until the patient is transferred to another area. A log sheet should be used. A communication method must be devised (e.g., portable video monitor) to allow the trained monitor to communicate with the HCW providing patient care.
- HCWs caring for the patient should monitor themselves for any symptoms consistent with EVD twice daily for 21 days after last exposure to the patient. HCWs may continue to work as long as they remain asymptomatic.
 - HCWs must ensure they are following Routine Practices at all times.
 - If any EVD symptoms occur, HCWs must immediately follow their RHA/facility processes for notification.

8) **HCW Exposure**

- To prevent self-contamination, HCWs must follow practical measures during patient care such as not touching the mucous membranes of their eyes, nose and mouth with their hands, limiting touch of surfaces and body fluids, preventing needlestick and sharps injuries, and choosing patient care interventions which will limit potential exposures to blood and body fluids. Any visibly contaminated PPE surfaces, equipment, or patient care area surfaces must be immediately disinfected using an RHA/facility approved disinfectant.
- If during patient care a partial or total breach in PPE (e.g. gloves separate from sleeves leaving exposed skin, a tear develops in an outer glove, a needlestick injury) occurs, the HCW must move immediately to the PPE removal area to assess the exposure.
- If HCWs are accidentally exposed to potentially infectious material from the patient, this must be reported immediately (after following post-exposure care) according to your RHA/facility procedures. They will then be followed according to *Manitoba Health's Ebola Virus Disease (EVD) Interim Protocol*.
- HCWs with percutaneous, mucocutaneous (e.g. mucous membranes of the eyes, nose or mouth) or other exposure to blood, body fluids, secretions or excretions from the

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patient must immediately and safely stop any current tasks, leave the patient care area and safely remove PPE.

- Remove PPE carefully to prevent exposure to EVD during PPE removal.
- Perform first aid immediately if there has been exposure to blood or body fluids.
- Wash the affected skin surfaces or the percutaneous injury site with soap and water immediately after leaving the patient care area. Irrigate mucous membranes (e.g. conjunctiva) with copious amounts of water or an eyewash solution.
- Non-intact skin exposures (e.g. if skin becomes non-intact while performing care) should be rinsed thoroughly with running water if contaminated with blood, body fluids, secretions or excretions.

9) Dedicated Equipment

- Non-critical patient care equipment (disposable when possible) should be dedicated to the patient for single-patient use.
- Non-critical reusable patient-care equipment (e.g. commode) should be dedicated to the use of one patient and cleaned and disinfected according to manufacturer/RHA/facility policies and procedures before reuse with another patient.
- Single-use devices should be used and discarded in a designated no-touch biomedical waste receptacle after use.
- The use of single-patient-use elimination devices (e.g. Hygie bags) is preferred over reusable bedpans and commodes for the patient unable to use a toilet.
- Re-useable bedpans and commodes should be provided for single patient use and labeled appropriately.

10) Reprocessing (Cleaning, Disinfection and Sterilization of Medical Equipment)

- The use of single-patient-use disposable items, such as bedpans and blood pressure cuffs, is preferred.
- Semi-critical and critical equipment that cannot be disposed is to be reprocessed according to RHA/facility policies and procedures.
- Follow RHA/facility processes for reusable equipment/medical devices.
- In selecting disinfectants that are expected to inactivate Ebola virus on non-critical hard surfaces and medical devices, Health Canada recommends products with the following approved criteria:
 - Registered in Canada with a Drug Identification Number (DIN)
 - Labeled as a "broad spectrum virucide" claim and/or acknowledge effective testing against any of: Adenovirus type 5, Bovine Parvovirus, Canine Parvovirus and Poliovirus type 1
- Provide education, hands-on training, repeated practice, observation of ability to adhere to correct processes and procedures, and appropriate PPE to those responsible for reprocessing (decontamination, cleaning, disinfection and sterilization) reusable medical equipment.

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- Assign responsibility and accountability for reprocessing non-critical patient care equipment.
- Non critical patient care equipment should be cleaned and disinfected according to a regular schedule and when visibly soiled.

11) Environmental Cleaning

- Environmental cleaning staff should wear the same level of protection as HCWs providing care to the patient with the exception of gloves. They must use heavy duty/rubber gloves for environmental cleaning which should be discarded after use.
- Clean and disinfect immediately any visibly contaminated equipment or patient care area surface with RHA/facility approved disinfectant.
- Environmental Services/Housekeeping should implement twice daily cleaning and disinfection of all horizontal and frequently touched surfaces, and when soiled, with RHA/facility approved disinfectant with approved Health Canada DIN.
 - Do not bring Housekeeping carts in the patient room.
 - Use several clean cloths to clean and disinfect a room. Use a new disposable cloth for different surfaces or zones within the room. Do not reuse cloths.
 - Clean and disinfect Housekeeping equipment before putting back into general use.
- Additional cleaning and disinfection is also required on surfaces likely to be touched and/or used frequently, even when visible contamination is absent.
 - This includes surfaces in close proximity to the patient, e.g. bedrails, bedside/over-bed-tables, call bells, and frequently touched surfaces in the patient care environment such as door knobs, surfaces in the patient's bathroom.
 - Where possible, this should be performed by the nurses or physicians as part of patient care activities in order to limit the number of additional HCWs who enter the room.
- Additional cleaning measures or frequency may be warranted in situations where environment soiling has occurred.
- When precautions are discontinued or the patient is moved, terminal cleaning of the room and bathroom, changing of the privacy curtains, changing of the string/cloth call bells or light cords should be done.

12) Waste Management

- Refer to Waste Management Guidelines (Appendix 3)
 - All waste must be considered as biomedical waste and handled and disposed of in a sanitary sewer or septic system according to RHA/facility processes.
- Sharps
 - Dedicate puncture-resistant sharps containers to rooms with EVD patients that are easily accessible at the point-of-use.
 - Limit the use of needles and other sharps as much as possible.
 - Safety engineered devices should be made available and used.

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- Used needles should not be recapped but should be disposed of immediately along with other single-use sharps into the designated puncture-resistant container.
- Clean and disinfect used sharps containers once sealed. Handle with care to avoid injuries during disposal.
- Biomedical Solid Waste (Non-sharp)
 - Solid waste would include sponges, dressings, surgical drapes soaked with blood or secretions etc.
- Biomedical Liquid Waste
 - Liquid waste includes blood, suctioned fluids, excretions and secretions etc.

13) Linen

- Change patient bed linen regularly, when soiled, upon discontinuation of precautions and following patient discharge.
- Dispose of linen/textiles used in the patient room as biomedical waste.
 - Refer to the Waste Management Guidelines for EVD (Appendix 3).
- Use only a mattress and pillow with plastic or other covering that fluids cannot penetrate.
- HCWs handling linen must wear appropriate PPE.

14) Dishes and Cutlery

- Though not required, disposable dishes/cutlery are recommended. Dispose in a designated biohazard receptacle at the point-of-use.

15) Deceased Bodies

- For the handling of deceased bodies, The *Public Health Act* Dead Bodies Regulation <https://www.canlii.org/en/mb/laws/regu/man-reg-27-2009/latest/part-1/man-reg-27-2009-part-1.pdf> should be adhered to. A protocol for handling dead bodies infected with Ebola virus is under development.

16) Transport within the facility

- Instruct transport staff and receiving staff on the required precautions prior to moving the patient or transporting other items.
 - Patient should wear a procedure mask if tolerated and comply with respiratory hygiene during transport.
 - Ensure any patient wounds are covered.
 - Take measures to contain body fluids.
 - HCWs must follow infection prevention and control precautions and use PPE.
- Avoid non-essential transport of the patient. If an internal transfer cannot be avoided, ensure the new room is ready before transfer to minimize time outside of the patient room.

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- Transport the patient or other items in a manner that minimizes patient contact with other persons non-essential to the transport of the patient. Use the most direct route to the destination.
- HCWs providing transport must discard PPE according to Appendix 1 as they leave the room, and put on new PPE prior to transporting patient.
- Contact Security Services/designate to provide security during transport and on the unit if necessary
 - Security Services/designate must apply gloves, gown, mask and face shield. Shoe and leg coverings are required when there is uncontrolled blood or body fluids.
 - Clear the elevators and transit corridors of all persons non-essential to the transport of the patient in advance of patient transport.

17) Education of Patients and Visitors

- Educate patients, their visitors, families and their decision makers about the precautions being used, the duration of precautions, as well as the prevention of transmission of disease to others, with a particular focus on hand hygiene and respiratory hygiene.
- Discharge planning should be managed on a case-by-case basis in consultation with Infectious Disease specialists, IP&C and PH.

18) Visitors

- Avoid entry of visitors into the patient's room.
 - Rare exceptions may be considered on a case-by-case basis for those who are essential for the patient's well being such as a child's parent.
 - Do not allow other visitors to enter the EVD patient care area.
- When an exception is made and a visitor is allowed, they must be screened for signs and symptoms of EVD before entering or upon arrival to the facility.
- Instruct visitors to speak with a staff member before entering the patient area in order to evaluate the risk of health of the visitor and the ability of the visitor to comply with precautions.
- Restrict visitors to visiting only one patient unless there are exceptional circumstances (e.g. one parent has more than one child with EVD). Visitors visiting an EVD patient should not be allowed to visit other patients.
- Visitors should be educated by the unit staff regarding infection prevention and control.
 - This education should include the precautions being used, education on applying and removing PPE, the duration of precautions, and prevention of transmission of disease to others with a particular focus on hand hygiene and respiratory hygiene. Visitors should also be educated on self-screening for fever.
- All visitors will be considered contacts and managed according to the Manitoba Health, Healthy Living and Seniors *Ebola Virus Disease (EVD) Interim Protocol* available at: <http://www.gov.mb.ca/health/publichealth/diseases/ebola.html> .

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- Visitor activities and compliance with use and removal of PPE will be monitored in the same manner as health care workers.
 - Visitors will be included on the room log sheet ensuring current contact information is provided.

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APPENDIX 1

1. Putting on and Removing PPE

1.1 Equipment Required for the Primary HCW

The following is the equipment that may be needed to care for a patient with EVD in all areas. The HCW is to use the appropriate PPE for the area they are working in or for the tasks they will be performing (e.g., N95 respirator for performing AGMPs, double gloves where there is risk of exposure to blood and body fluids).

- Fluid-resistant coveralls with attached hood (with or without shoe covers attached).
- Fluid-resistant/impermeable gown according to RHA/facility procedure
- Long gloves with secure cuff and fluid-resistant shoe/leg coverings:
 - Two pairs of gloves needed when undertaking any strenuous activity, (e.g. carrying a patient) or tasks which contact with blood and body fluids is anticipated (e.g. patient has symptoms of diarrhea, bleeding, vomiting, and/or the environment could be contaminated with blood and body fluids).
 - This will be determined according to RHA/facility procedures
- N95 respirator
 - Required when performing AGMPs
- Procedure or surgical mask
- Full face shield
- Fluid-resistant shoe/leg covers

1.1.1 Steps to Put On PPE for HCW Who Will Have Patient Contact:

Trained monitor

- Putting on PPE is conducted under the guidance and supervision of a trained monitor who confirms visually that all PPE is serviceable and has been put on successfully. The trained monitor will confirm each step in putting on the PPE and can assist with ensuring and verifying the integrity of the PPE. No exposed skin or hair of the HCW should be visible at the conclusion of putting on the PPE.

Remove personal clothing and items

- No personal items (e.g. jewelry, watches, cell phones, pagers) should be brought into the patient room.
- If HCW works in an area where there will be high risk of exposure to blood and body fluids they must change into disposable scrubs.
- No exposed skin or hair of the HCW should be visible at the conclusion of putting on the PPE.

Inspect prior to putting on

- Visually inspect the PPE to be worn to ensure it is in serviceable condition, all required PPE and supplies are available, and that the sizes selected are correct for the HCW.

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- The trained monitor reviews and reads (step by step) the sequence for putting on PPE with the HCW.

Hand Hygiene

- Alcohol-based hand rub (ABHR) is acceptable unless visible soiling is present. Soap and water required if visible soiling is present.
 - RHA/facility may choose to include hand hygiene in other steps in their PPE putting on and removing procedures.
- RHAs may choose to disinfect gloves according to RHA/facility processes

Procedure

- Perform HH.
- Put on 1st pair of gloves if 2 pairs are needed.
- Put on coveralls; zip/fasten closed, pull hood securely onto head.
 - If using 2 pairs of gloves, ensure 1st set of gloves are under sleeves of coveralls.
- Put on shoe/leg covers if needed.
- Put on fluid-repellent/impermeable gown if needed.
 - Ensure gown covers back. If not completely covered, first put on a gown as a housecoat, then put on the second gown as usual.
- Put on mask or N95 respirator over hood.
- Put on full face shield over hood.
- Put on gloves (2nd set if have put on gloves previously)
 - Ensure cuffs of gown are secure over cuff of coveralls and/or gown
- Verify
 - After putting on the PPE, the integrity of all of the PPE is verified by the trained monitor. The HCW should be comfortable and able to extend the arms, bend at the waist and go through a range of motions to ensure there is sufficient range of movement while all areas of the body remain covered.

1.1.2 Steps to Remove PPE for HCW who had Patient Contact:

Removal of PPE should be performed in a designated PPE removal area. Place all PPE waste in a leak-proof waste container.

Trained Monitor:

- The removal process is conducted under the supervision of a trained monitor who reads aloud each step of the procedure and confirms visually the PPE is removed properly.
- Prior to removal of the PPE, the trained monitor reminds the HCW to avoid reflexive actions that may put them at risk, such as touching their face. Post this instruction and repeat it verbally during the PPE removal process.

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Hand Hygiene

- Alcohol-based hand rub (ABHR) is acceptable unless visible soiling is present. Soap and water required if visible soiling is present.
 - RHA/facility may choose to include hand hygiene in other steps in their PPE putting on and removing procedures.
- RHAs may choose to disinfect gloves according to RHA/facility processes

Inspect prior to removal:

- Inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is potentially contaminated, the exposure must be assessed.
- If HCWs are accidentally exposed to potentially infectious material from the patient, this must be reported immediately (after performing post-exposure care) according to regional/organization's procedures. They will then be followed according to *Manitoba Health's Ebola Virus Disease (EVD) Interim Protocol*.

Procedure

- If wearing 2 pairs of gloves, remove outer set of gloves, using glove-to-glove, skin-to-skin technique.
- Remove gown if used.
- Remove shoe and leg coverings if used.
- Perform HH if only 1 set of gloves used.
- Remove face shield (by strap behind head).
- Remove N95 respirator/mask by straps behind head and with eyes closed:
- Remove coveralls with assistance.
 - Assistant to carefully unfasten coveralls to lower abdomen by pulling front area of coveralls downwards, tilting head upwards, and continuing to unfasten.
 - Using outside of hood, assistant to carefully uncover hood from head.
 - Assistant to peel suit downwards to expose shoulders, allowing hood to be further away from neck.
 - Using outside of sleeves, assistant to remove 1 sleeve at a time. Carefully roll coveralls downward in a manner avoiding contamination of disposable scrubs (if they are worn). Remove coveralls.
- Remove gloves using glove-to-glove, skin-to-skin technique.
- Perform HH.

Final inspection:

- Perform a final inspection of HCW for any indication of contamination of the PPE. If contamination is identified this must be reported immediately according to your RHA procedures. This will then be followed according to *Manitoba Health's Ebola Virus Disease (EVD) Protocol*.

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1.2 The following steps are to be used by the assistant (if an assistant is used) when putting on and removing their PPE.

1. Refer to Techniques for Putting On and Taking Off PPE in the *Manitoba Health Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* (available at: <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>).
2. Use designated PPE for EVD, e.g. fluid-resistant gown

Perform HH whenever possible hand contamination has taken place, at any point during PPE removal.

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APPENDIX 2

List of Acronyms

AGMP:	Aerosol generating medical procedures
AIIR:	Airborne infection isolation room
DIN:	Drug Identification Number
EVD:	Ebola virus disease
HCW:	Health care worker
HH:	Hand hygiene
IP&C:	Infection prevention and control
OH	Occupational Health
PCRA:	Point-of-care-risk assessment
PH:	Public Health
PPE:	Personal Protective Equipment
RHA	Regional Health Authority
RPAP:	Routine practices and additional precautions

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APPENDIX 3

3. Waste Management Guidelines for EVD

3.1) Introduction

The purpose of this section is to ensure safe collection, removal, transport and disposal of EVD waste from a health care facility in a manner that is safe to personnel and in compliance with all applicable regulations, standards and guidelines.

Health care organizations are responsible to minimize the risk of exposure to and transmission of infectious diseases. Organizations should establish the following measures for the safe management of Ebola-associated waste and linen.

Ensure implementation of a biomedical waste management program with the development of policies and procedures to include the following:

- Protocols for segregating, packaging, labeling, moving, storing and transporting EVD-associated waste (both on- and off-site) as appropriate
- Methods for keeping records of the quantities of EVD-associated waste generated and disposed of
- A list of all regulations and legislation concerning EVD-associated waste that are applicable in the organization's jurisdiction
- A list of those responsible for managing EVD-associated waste in the event of an accident or spill
- Protocols for regular, ongoing training and education on proper handling and potential hazards of EVD-associated waste, type and quality of waste and linen containers, and PPE selection and use.
- Provision for regular and ongoing, education for PPE for the management of EVD-associated waste, including the safe use and disposal of sharps, and linen, and
- Provision for regular and ongoing education on Routine Practices, including hand hygiene performed frequently with alcohol-based hand rub or washing with soap and water (if hands are visibly soiled) according to RHA/facility PPE protocol.

Assign experienced HCWs, Environmental Services/Housekeeping staff trained and educated in occupational health and safety, IP&C practices, and appropriate use of PPE to the management of EVD-associated waste.

Develop and implement a monitoring system for putting on and removing PPE when handling EVD-associated waste and linen. This should be the same system utilized for 'regular' patient care activities.

Develop and implement protocols for the containment and storage of EVD-associated waste as per organization's hazardous material policies, and for off-site transport in accordance with Transport Canada Transportation of Dangerous Goods (TDG) Regulations.

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Determine capability for transporting EVD-associated waste within the municipality/region and ensure waste is disposed of in accordance with local, municipal or regional requirements and regulations and/or bylaws for regulated infectious waste, including sharps.

Develop and implement a written procedure to handle and report needlestick injuries and other waste-handling incidents.

Provide education when a breach in safe handling and containment occurs during the management of EVD-associated waste or linen with subsequent potential exposure to EVD. This includes:

- Personnel to immediately stop work, safely remove PPE according to RHA/facility protocol and leave the area;
- Rinse the affected skin surface with soap and water OR for mucous membrane splashes (e.g., conjunctiva) irrigate with copious amounts of water or eyewash solution;
- Report immediately according to RHA/facility exposure/injury protocol, including notification to Public Health authorities, and
- Adhere to follow-up procedures.

3.2) GENERAL PRINCIPLES

- Published guidelines from the Public Health Agency of Canada (PHAC), World Health Organization (WHO), and the Centers for Disease Prevention and Control (CDC) indicate disposal of patient excretions using sanitary sewer as safe. However, as a precautionary measure, with an overabundance of caution, waste with high viral load will be treated prior to disposal. The intended audience for this guideline is acute care facilities across the province where suspect and confirmed EVD patients may present themselves.
- Facilities not on a municipal system should consult with Manitoba Conservation and Water Stewardship staff regarding the compatibility of disinfectants used in hospital systems with the flushed waste entering a septic system.
- Disposal must be in accordance with provincial regulations and/or TDG regulations.
- The City of Winnipeg permits use of the sanitary sewer system for EVD waste from a patient (e.g., urine, feces, emesis) **ONLY IF** the waste is treated prior to flushing. An alternate option for the management of liquid waste is to add a solidifier (such as Xsorb, Super Sorb, Red Z, Hygie System) prior to disposal and treat as biomedical waste.
- For municipalities other than Winnipeg, it is recommended to contact the operators of the wastewater treatment plant to discuss the acceptability of flushing **treated** EVD waste into the sewer system. If this is impractical or otherwise cannot be done, the alternate option presented above (i.e., solidifier) is acceptable.
- EVD-associated waste that has been appropriately incinerated or autoclaved is not infectious, does not pose a health risk, and is not considered to be regulated medical waste or hazardous material.

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- If at all possible, biomedical waste shall be incinerated on the grounds of the healthcare facility where it was generated.
 - An incinerator that has been approved and licensed by Manitoba Department of Conservation shall be identified in advance of an EVD patient presenting to the site.
 - All biomedical waste shall be incinerated as a priority, and in accordance with this guideline and all other applicable regulations, standards and guidelines.
- Where an approved incinerator is not available, or incineration is otherwise impractical, dispose of all waste as biomedical. This shall be in collaboration with a RHA/facility-approved biomedical waste handling firm.
 - Note the firm's requirements for pick-up of EVD waste to prevent refusal of pick-up.
- Disinfectants with a broad spectrum virucide claim with a Drug Identification Number (DIN) must be used, according to manufacturer's instructions. Health Canada recommends products with the following approved criteria:
 - Registered in Canada with a Drug Identification Number (DIN)
 - Labeled as a "broad spectrum virucide" claim and/or acknowledge effective testing against any of: Adenovirus type 5, Bovine Parvovirus, Canine Parvovirus and Poliovirus type 1.
- Canadian Standards Association (CSA) document Z317.10-09 (R2014) "Handling of waste materials in health care facilities and veterinary health care facilities" must be followed for the management of waste including storage containers.
- A supply of RHA/facility approved designated biomedical waste containers and other supplies required for management of biomedical waste shall be available at all times.
- **Any reference to 'biohazard bag' in this document shall be assumed to be an RHA/facility approved biohazard bag.**
- **Any reference to 'disinfectant' in this document shall be assumed to be an RHA/facility approved disinfectant.**
- **Staff shall wear PPE required for EVD at all times when managing the EVD biomedical waste and put on and remove (Appendix 1). All references to 'PPE' shall be assumed to be referring to this document.**

3.3) WASTE MANAGEMENT: NON-SHARPS, SOLID

Options for disposal of solid EVD waste include both incineration and contract removal via a biomedical waste management firm. If an approved incinerator is on the grounds of the healthcare facility, incineration can be a quick, easy and effective method of disposal. If an incinerator is used, it must be assured that the waste container can fit through the opening in the incinerator chamber. If incineration is not available or impractical or the waste must be transported to another site for incineration, then a firm qualified and experienced in handling biomedical waste should be contracted to dispose of it.

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- Handling of human waste occurs in the patient-care room by trained HCWs wearing appropriate PPE. When a contract removal firm is used, their requirements must be followed as well.
- Waste bags should not be over-filled; bags should be closed when two-thirds full. Pick-up bags by the neck and carry away from the body; never throw or compress. Do not carry a bag over the shoulder where it could drip and create an exposure. Do not drag a bag on the floor.
- Waste should be:
 - Contained at point of generation
 - Placed immediately into a sturdy, leak and tear resistant waste-disposal biohazard bag; securely sealed
 - Balloon tie, tape, or zip tie (required by the DOT Special Permit) the bags to prevent the release of any material from the bag if inverted (goose-necking with tape or zip ties is permitted). The closure method must not tear, puncture or otherwise damage the bags.
 - While holding the bag over the container it was in, apply a disinfectant to the exterior of the bag, and use according to the manufacturer's instructions
 - If it was not in a container or is too heavy, place an absorbent pad down to capture possible disinfectant drips from the bag, place the bag on the pad and wipe. Dispose of the absorbent pad as EVD waste.
 - Move the bag into the anteroom once the secondary bag has been prepared in the anteroom
 - Line a large trash can with a biohazard bag. This bag will become the secondary bag.
 - Place primary bag into secondary bag and balloon tie, or tape, or zip tie (required by the DOT Special Permit) the bags to prevent the release of any material from the bag if inverted (goose-necking with tape or zip ties is permitted). The closure method must not tear, puncture or otherwise damage the bags.
 - Remove the bag from the trash container and while holding the bag over the trash container, decontaminate by wiping using a disinfectant and use according to the manufacturer's instructions. If necessary, set the bag on an absorbent pad(s) to capture drips off the bag. Dispose of the absorbent pad(s) as EVD waste.
 - Mark the secondary bag with the words 'EVD Waste'
- To remove the double-bagged waste from the patient's environment, the HCW should place the double-bagged linen in a designated leak-proof/impervious, puncture-resistant plastic or metal single-use container:
 - The container should be located at the periphery/outside of the area for taking off PPE to avoid risk of recontamination of the container during PPE removal

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- The container should be securely sealed and clearly labeled and identified as EVD-associated biomedical material
- The outside of the container should be decontaminated by wiping using a disinfectant and used according to the manufacturer's instructions, immediately before removing waste containers from the room.
- Segregate waste collected from EVD patients from all other patient care wastes.
- Place waste into an RHA/facility-approved biomedical waste container. Note: biomedical waste handling firms will have storage container requirements that must be adhered to for pick-up. Follow their methodology strictly to avoid a potential refusal to remove waste. Check with the firm for their specific requirements.
- Containers should not be re-opened; double-bagged waste should not be handled.
- The staff removing the waste from the area should only handle the outer container and transport carts.
- Use carts with guard rails or raised edges for moving large or heavy containers, and load in a manner to prevent items from tipping.
- Disinfect carts after each use with a disinfectant and use according to the manufacturer's instructions.
- Move the container to a designated, locked holding area with restricted access. The quarantine area for the storage of EVD waste shall be identified prior to the identification of a PUI or confirmed case of EVD.
- During movement, public areas will be closed by security until cart movement is complete and floors are wiped with a disinfectant mop. Transport the EVD waste in the cart directly from the patient care area to the storage area and unload. Once unloaded, move the cart to the designated disinfection area and disinfect.
- Store according to the RHA/facility's hazardous material policies.
 - Storage of biomedical waste other than sharps shall be at 4 °C or lower if stored for more than 4 days.
- Clearly mark waste storage areas with a biohazard symbol, and kept separate from other storage areas.
- Necessary equipment and supplies include
 - PPE required for Ebola (Appendix 1)
 - Disinfectant and wipes
 - RHA/facility approved biomedical waste bags and containers
 - Receptacle for waste
 - Disposable patient under pad or other absorbent covering
 - RHA/facility approved collection cart

3.4) WASTE MANAGEMENT: NON-SHARPS, LIQUID

The following procedures can be used if the Municipality approves use of the sanitary sewer system for EVD waste.

3.4.1 Fluid Dump and Flush Procedure

This procedure is for waste not excreted directly into the toilet by the patient.

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This should be applied in any location where an EVD patient excretes liquid wastes into a collection vessel other than a fixed toilet.

- Auto-flush toilet valves must be disabled to ensure manual flushing only.
- Cover receptacle (bed pan, collection container) with disposable patient under pad or similar covering as needed to prevent spills.
- Remove the receptacle containing the waste from the patient area to the patient's bathroom.
- Apply 1 cup of disinfectant around the bowl in the same manner as liquid/gel toilet bowl cleaner (i.e., apply to the inside top of the bowl and allow to run down into the bowl).
- Empty waste into toilet in a controlled manner preventing splashing, and lower toilet lid. If toilet lacks a lid, place a barrier over it.
- Wait 15 minutes THEN flush toilet with lid closed.
- After flush, disinfect other surfaces of the toilet with a disinfectant (e.g., seat, handle, lid, inside bowl, outside of bowl, back).
 - Ensure complete surface contact when wiping surfaces. Dispose of the used wipe(s) as EVD waste.
- Dispose of empty waste container and patient under pad in EVD waste container.

3.4.2 Patient Flush Procedure

This procedure is for waste excreted directly into the toilet by the patient.

This should be applied in any location where an EVD patient excretes liquid wastes into toilet.

- Auto-flush toilet valves must be disabled to ensure manual flushing only.
- Instruct the patient not to flush the toilet after use.
- Apply 1 cup of a disinfectant around the bowl in the same manner as liquid/gel toilet bowl cleaner.
- Wait 15 minutes THEN flush toilet with lid closed.
- After flush, disinfect other surfaces of the toilet with a disinfectant (e.g., seat, handle, lid, inside bowl, outside of bowl, back).
 - Ensure complete surface contact when wiping surfaces. Dispose of the used wipe(s) as EVD waste.

3.4.3 Patient Shower

- Just prior to patient entering the shower, apply to shower floor drain three tablespoons of granular calcium hypochlorite (65%–70% available chlorine). This is a widely available swimming pool water treatment chemical. This amount shouldn't clog the drain or create a pile of granules and a tripping hazard but will stay in the drain until the shower water starts, whereas liquid products would quickly flow down the drain.
 - Store in an air tight container to avoid contamination by moisture.
- Immediately after the patient's shower, apply one cup of a disinfectant to shower floor drain. Wait 15 minutes then flush with water.
- Immediately after shower, apply a disinfectant to shower surfaces, wipe with disinfectant to ensure contact with all areas of surface, and allow to air dry.

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3.5) WASTE MANAGEMENT: SHARPS

- Must be discarded at point of use
 - Directly into single-use containers that are leak-proof/impervious, puncture resistant, fitted with securely closed lids and specifically designed for sharps waste
- Sharps containers should not be filled beyond two-thirds full, to allow for safe closure
- For EVD-associated sharps waste, take the following measures
 - Wipe the outer container using a disinfectant and use according to the manufacturer's instructions
 - Place sharps container into a second biohazard container
 - Second container should be securely sealed, clearly labeled and identified as EVD-biomedical material, and
 - The outer container should be wiped using a disinfectant and use according to the manufacturer's instructions
- Transport as per **NON-SHARPS WASTE** section above

3.6) EVD WASTE COLLECTION CART

3.6.1 *Dedicated Use:* Dedicate a cart(s) strictly to the containment and movement of EVD waste throughout the facility. Label the cart(s) with 'EVD Waste'.

3.6.2 *Cart Specifications:* The cart(s) will be constructed of non-porous, readily cleanable material: plastic or stainless steel. The cart will be equipped with a lid that is kept closed when transporting EVD waste through the facility. The cart will be sized to allow easy loading, unloading, and cleaning. A spill kit for EVD waste will be attached to the cart.

- If the EVD waste is in a small clinic, a trash receptacle with a lid may be utilized as the transport cart.

3.6.3 *Cart Disinfection:* The cart will be disinfected using a disinfectant and use according to the manufacturer's instructions. Wipe down the entire cart, paying special attention to all surfaces in touch with the EVD waste bags and contact surfaces touched to move the cart. Allow the cart interior to air dry before closing the lid. Disinfection will be done each time waste is removed and placed into the EVD storage area.

- Disinfection will be performed in a designated area and approved by RHA/facility IP&C. The area will be secured to prevent access by unauthorized personnel and will not be utilized for storage of materials except those necessary for disinfection of the EVD waste cart. **An emergency eyewash device must be located in the cart cleaning area;** the device must be functional and maintained according to manufacturer's recommendations.
- Personnel who clean and disinfect the cart and/or transport EVD waste in the cart must wear PPE required for EVD.
- Cart disinfection waste will be managed as EVD waste. The disinfection area should be equipped with the supplies and equipment necessary to perform the double bagging procedure. An outer packaging container may be positioned in the disinfection room to completely seal the disinfection wastes. Once the disinfection wastes are completely sealed in the container, it may be transported to the EVD waste storage area using a drum

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handler/dolly. Do not move the container to the storage area without performing the notification step and putting on proper PPE to enter the EVD waste storage area.

- Spills will be cleaned immediately using a disinfectant and use according to the manufacturer's instructions.

3.7) APPROVED MOVEMENT OF WASTE

3.7.1 Designated Routes: Only move EVD waste through the facility using designated routes. Movement routes will be designated from isolation units, laboratories, and applicable initial patient care areas to the EVD waste storage area. Avoid high traffic areas. Use freight elevators if possible.

3.7.2 Notification: RHA/facility must designate individuals who must be notified of impending transport of EVD waste to the storage area, to arrange for access to the storage area.

3.7.3 PPE: PPE required for Ebola must be worn to handle EVD waste and transport EVD waste to the storage and cart cleaning areas.

3.7.4 Handling the RHA/facility approved biomedical waste bags: Carefully place bags into the cart. Only pick-up bags by the neck and never throw or compress the bags. Do not fill more than 2/3 full. Do not pick-up a bag unless it has been bagged per the processes identified above.

3.7.5 Lid: Close the lid on the cart prior to moving from the generation site. Do not overfill the cart with EVD waste to the point where the lid will not close. The lid should be able to close without compressing the waste. Keep the cart lid closed at all times, except when adding/removing waste, undergoing disinfection, or when air drying after disinfection.

3.7.6 Cart Storage: Store the clean cart in a clean, secure area until it is removed for EVD waste transport within the facility. If storage in a clean area is not possible, store the cart in the EVD waste storage area. If the cart is not stored in a clean area, it must be disinfected prior to use in the facility.

3.8) EVD WASTE STORAGE AREA REQUIREMENTS

3.8.1 Dedicated EVD Waste Storage Area: EVD waste must be kept in separate, secure storage from all other facility wastes (restricted access).

3.8.2 Location: Should be on or near the Materials Management/Logistics loading dock and must provide security and access control. Temporary storage options are discussed below since EVD waste is not expected to become a routine facility waste stream and the storage requirement will cease when EVD patients are no longer expected at the facility. The location must be free from pests (insects and rodents) and protected from inclement weather.

3.8.3 Security: The EVD waste storage area must be secured at all times except when authorized personnel are accessing the area to place waste inside and/or retrieve the EVD waste cart.

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3.8.4 *Hazard Indicators*: Mark the entrance of the EVD waste storage area with the words “Isolation Waste Storage Area—EVD Waste” and the universal biohazard symbol. Marking must be visible upon approach at minimum distance of 15 feet. Other information may be added at the discretion of the facility or as required by other applicable regulatory requirements.

3.8.5 *Conditions*: The EVD waste storage area will be maintained in a clean, putrid-free state. If spills occur in the storage area, they will be immediately cleaned and disinfected with disinfectant.

3.8.7 *Storage Time*: The facility may not be able to control storage time depending on regulatory approval of a special transportation permit. If waste is expected to be stored longer than 4 days, utilize an area inside a building with air conditioning or a refrigerated storage area (if outside).

3.9) TRANSPORTATION OF DANGEROUS GOODS

Personnel handling, shipping or transporting the dangerous goods must be trained in regards to the conditions of the Transportation of Dangerous Goods (TDG) Regulations, and should be experienced in the transportation of biomedical waste.

Outer packaging must contain the dangerous goods classification “INFECTIOUS SUBSTANCE, AFFECTING HUMANS, Class 6.2, UN2814, Category A” printed legibly and in permanent marker.