

Manitoba Health | Ebola Virus Disease (EVD) Infection Prevention and Control Interim Guidelines for PreHospital Settings

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Introduction

These guidelines may change as more information becomes available. For updates and other guidelines on 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>)

Please refer to *Manitoba Health, Healthy Living and Seniors Ebola Virus (EVD) Interim Protocol* on the Ebola Virus website 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 the *Manitoba Health, Healthy Living and Seniors Ebola Virus Disease (EVD) Infection Prevention and Control Interim Guidelines* on the Ebola Virus website for detailed infection prevention and control information.

This document provides advice for the safe care during transport of persons under investigation (PUI) or confirmed EVD cases. Its use is intended for prehospital organizations including, but not limited to, medical first responders, emergency ground and air transport personnel and personnel within these organizations responsible for education and training, occupational health (OH) and infection prevention and control (IP&C).

The transportation of a patient must be done by trained health care professionals in an appropriate vehicle/carrier. The vehicle/carrier must only transport essential personnel and equipment for care of the EVD patient.

1) Engineering Control Measures

Engineering control measures are those elements of the organization's structure that function to prevent exposure to and/or transmission of the infectious agent, such as the Ebola virus. Engineering controls related to transporting EVD patients include but not limited to:

- Designated emergency vehicle should be dedicated to a single patient and thoroughly cleaned and disinfected following use.
- Aerosol generating medical procedures (AGMPs) should be performed only when absolutely necessary on patients with EVD. The need for AGMPs should be assessed and if necessary, performed prior to transport.
- To prevent exposure of staff and contamination of the emergency vehicle, the patient should be wrapped in blankets and placed on disposable absorbent pads if blood and body fluid contamination is a risk during transport.

2) Administrative Control Measures

Administrative controls include policies, procedures, education, training and patient care practices intended to prevent exposure to and/or transmission of an infectious agent during the provision of care. To be effective in preventing transmission of EVD and/or detecting

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cases of EVD, administrative controls must be implemented from the first encounter with a PUI and continue until the patient is accepted into a receiving facility. Ineffective or inconsistent application of administrative controls can lead to unnecessary exposure.

Administrative controls include by are not limited to:

- Specialized training, including drills or simulations, in the selection, application, use, removal and disposal of personal protective equipment (PPE).
 - Trained, tested and drilled monitors must be assigned to coach, observe and monitor appropriate selection, application, removal and disposal of PPE, to prevent contamination of staff and that are outside of the patient care environment.
- Respiratory Protection Program.
- Keeping response and transport personnel to the minimum required to safely carry out the transport.
- Monitoring and maintaining a log of all personnel involved in the transport.
- Determining personnel fitness to provide care to EVD patients.
- IP&C measures for call assessment and safe transport of EVD patients.
- Screening protocols for EVD risk factors and EVD compatible symptoms during the call assessment.
- Triage procedures and prompt initiation of additional precautions and appropriate PPE.
- Determining the emergency response (type and scope) based on patient's needs prior to transport and allow for medical management of any deterioration in clinical condition that could occur during transport.

3) General Guidelines for Staff Fitness to Provide Direct Care to EVD Patients

Fitness to work incorporates factors that relate to the individual staff's ability to safely perform the duties of their job. If it relates to how they might be able to perform their job, the staff 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. Staff should be encouraged to share any concerns 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 staff 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:

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- Underlying medical conditions that could affect the staff's ability to exit the room/area quickly and safely or that may require another staff to enter the room/area to provide urgent medical assistance to the staff (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 staff to engage in work activities related to caring for an EVD patient should be assessed by an OH/designate.

4) Infection Prevention and Control Precautions for Persons Under Investigation (PUI) and Patients Confirmed with EVD

- **In addition to routine practices, droplet/contact precautions plus airborne precautions for aerosols during Aerosol Generating Medical Procedures (AGMPs) must be applied.**
 - Please refer to *Manitoba Health, Healthy Living and Seniors 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>).
 - Airborne precautions are needed only when performing AGMPs. Only perform medically essential AGMPs.
 - Procedures must be performed only when medically necessary, (e.g. establishing IV, intubation).
- Staff 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.
- Strict compliance with IP&C precautions is required to avoid potential exposure to infectious materials. Transmission to staff has been documented when infection prevention and control precautions are not strictly practiced.
- 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 patient items and environmental surfaces that may be contaminated, after contact with blood/body fluids and after removing PPE (e.g. gloves, facial protection, gown, mask).
- Patient transfers must be kept to a minimum. These (e.g. bed to stretcher, movement in and out of the vehicle/carrier), can be particularly high-risk exposure periods due to the close contact and physical manipulations of the patient that is often required.
- Disposable equipment must be used whenever possible.

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- RHA/organization approved disinfectant should be available during transport to manage contamination events or cleaning of the environment if required.
 - 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 criteria:
 - Registered in Canada with a DIN.
 - Labelled as a "broad spectrum virucide" claim and/or acknowledges effective testing against any of: Adenovirus type 5, Bovine Parvovirus, Canine Parvovirus and Poliovirus type 1.
- Eating or drinking must not occur when transporting these patients.
- Staff must not have personal items with them during the transport, (e.g. cooler bag, cell phone)
- Designated staff must be assigned to transport patient.

5) Personal Protective Equipment (PPE)

The type of PPE may vary slightly depending on the situation /setting. The sequence for putting on and removing PPE may vary slightly depending on the PPE choices and preferences. RHA/organization management should ensure there are comprehensive policies and procedures developed 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. Staff must conduct a point of care risk assessment (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, staff 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.
- Staff must have sufficient dedicated/uninterrupted time to put and remove PPE correctly.
- PPE must be worn by staff who are involved with moving the patient into and out of the transport vehicle.
- Staff wearing PPE may be at risk of overheating, and potential dehydration.
 - This should be taken into consideration when there are situations that may cause overheating.
- 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.

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- Staff should stop patient care, initiate PPE removal process (Appendix 1) if there are problems with PPE (e.g. fogging, tearing of gloves).
- Staff should stop patient care and safely initiate the PPE removal process (Appendix 1), if PCRA indicates increased risk of exposure to blood or other body fluids (e.g. patient at risk of vomiting or experiencing diarrhea).
 - After completion of PPE removal process, staff should perform hand hygiene and then put on additional PPE if needed (Appendix 1) prior to re-entering the patient area.
- Facial protection must not be touched while wearing.
- The same PPE must not be worn for successive patients.
- PPE should not be worn in the cab of the ambulance as this will contaminate surfaces that are difficult to clean.
 - If assisting with transfer of the patient to the ER on arrival at the hospital, the driver should put on appropriate PPE if required.
- 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.
- The need for additional PPE (e.g. double gloves, head and neck covering, foot and leg coverings) is determined by assessing the risk of heavy exposure to blood and body fluids.
- Potentially contaminated equipment, used PPE or waste must not be stored in the area where clean PPE is stored.
- There should be a designated space for putting on and removing PPE with clear separation between clean and potentially contaminated areas.
 - Provide supplies for disinfection of grossly contaminated PPE and for performing hand hygiene.
 - If space allows, consider including a place for sitting that can be easily cleaned and disinfected where staff can remove boot covers, if space allows.
 - Provide leak-proof biomedical waste containers for discarding used PPE.
- A trained monitor must be present to ensure appropriate removal and disposal of PPE. The monitor will observe and ensure staff are not contaminating themselves.

5.1) Specific PPE that is required when caring for patients

- Use disposable PPE whenever possible.
- Closed toe and heel shoes must be worn.
- Gloves
 - Worn prior to entry to the patient area.
 - 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.

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- 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 a 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 of the gown and the second over the cuff of the gown.
- Face protection
 - Apply prior to entry to the patient area.
 - Procedure or surgical mask if gown is being worn.
 - 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 suit.
 - Designated, disposable fluid-resistant leg and shoe covers are required if coveralls are not used.
- Gowns
 - Disposable, fluid-resistant/impermeable and long sleeved.
- 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 area.

5.2) Additional PPE

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

- If available, disposable fluid resistant scrubs must be worn under PPE. If personal clothing is worn, there must be a process developed for disposable or laundering of these clothes.
 - Remove disposable scrubs in a manner minimizing self-contamination.
- Fluid resistant leg and shoe covers
 - These are 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.)
 - These are not required if they are wearing the coveralls that have the shoe covers.

5.3) 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.
- Staff must 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, staff and their trainers must assess their proficiency and comfort with performing required duties while wearing PPE.
- Ensure all staff entering the patient area know to perform a PCRA for potential exposure to EVD and are able to select the appropriate PPE.
- Ensure all staff 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 and confirmed EVD patients.

5.4) Trained Monitor Responsibilities

- Monitor/supervise, assist with and ensure there is adherence to entire PPE selection, putting on, use and removal process by staff providing direct patient care.
- Guide/read aloud to staff, each step in putting on the PPE (e.g. use a checklist).
- Ensure PPE fits correctly and all skin is covered before the staff enter the patient area.
- 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 (e.g. checklist).
- Know the EVD exposure management plan in the event of unintended breach in procedure.

6) Patient

- Patient must be wrapped in blankets and placed on disposable absorbent pads prior to being placed onto the stretcher and into the transport vehicle. This is to avoid environmental contamination if risk of blood and body fluid contamination is anticipated.
- Patient should wear a surgical or procedure mask to contain droplets (if tolerated). If not tolerated, advise patient to use tissues to contain respiratory secretions and to

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cover nose and mouth during coughing or sneezing, with prompt disposal into a biomedical waste receptacle.

- Patient should be asked and assisted to perform hand hygiene after toileting and vomiting.

7) **Emergency Vehicle/ Carrier**

- Retain on board only the minimum equipment and supplies necessary for the transfer on board. Remove everything else to reduce the risk of cross contamination.
 - Sufficient IP&C supplies (e.g. PPE, disinfectant, hand hygiene products, emesis management supplies, biohazardous containers) should be available for the duration of the transport.
 - The location of equipment on board should also be reviewed to minimize the potential for contamination.
 - RHA/organization approved disinfectant should be available in ready-to-use (non-spray) or as a commercially prepared wipe for use during transport.
- A method/process for containing and disposing of body fluids (e.g. urine, stool, emesis, blood) including the use of a secure disposable container (e.g. bedpan, urinal, other device) with the addition of a solidifier as well as how the waste is to be disposed must be determined before the transport of the patient.

8) **Moving the Patient Into and Out of the Transport Vehicle**

- Those involved with moving the patient into and out of the transport vehicle must wear PPE.
- Appropriate care must be taken to avoid dislodging or tearing PPE and subsequent possible contamination during transfer of patient from stretcher to stretcher, as transfer requires close contact and physical manipulation of the patient.
- The patient must be taken directly to the receiving area in the facility by the most direct route secured and monitored to avoid exposure to other individuals (e.g. patients, visitors, staff who are not involved in the patient's care).
 - Alternatively, Emergency staff could meet the ambulance with the prepared stretcher to limit prehospital staff movement within the facility.

9) **Emergency Land Transports**

- If emergency land transport is needed, screening for patient risk must be done through the Manitoba Transportation Coordination Center (MTCC) or Winnipeg Fire Paramedic Service (WFPS).
 - Screening for patient risk will include travel history, activities in countries affected/area that would increase risk, presence or absence of signs and symptoms according to *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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- If through screening, the patient is identified be a person under investigation, implement infection prevention and control measures as outlined in the section above.
- If the patient is ambulatory status, a single care attendant can be used.
 - The patient can load themselves on the stretcher; sit in a chair/wheelchair themselves.
- Isolate the patient from any further direct contact with persons not wearing all of their required PPE. Wrap patient in linen as much as possible to avoid environmental contamination.
- Provide patient with a procedure or surgical mask to wear if tolerated. If the patient requires oxygen, a nasal cannula under the mask can be used or an oxygen mask should be used (e.g. high concentration/low flow oxygen mask) as appropriate.
- When the patient is ready to transport, the driver should remove PPE to drive the vehicle/carrier.
 - Discard PPE in an impervious waste bag that will discarded when the vehicle/carrier is cleaned.
 - If PPE has been removed and the driver is going to assist with transferring the patient on arrival to their destination, the driver must first apply appropriate PPE.
 - The driver must put on and remove their PPE according to *Putting On and Taking Off PPE Procedures* (Appendix 1).

10) Air Transports

- If air transport is needed, screening for patient risk must be done between the sending and receiving physician to determine the patient risk.
 - Screening for patient risk should include travel history, activities in affected countries/areas that would increase risk and presence or absence of signs and symptoms according to *Manitoba Health, Healthy Living and Seniors Ebola Virus Disease (EVD) Interim Protocol* (available at <http://www.gov.mb.ca/health/publichealth/diseases/ebola.html>)
 - Follow EVD notification guidelines.
- Patients with EVD should be transported on a dedicated carrier with minimum of crew members.
 - Only designated staff will participate with EVD patient transport.
- It is desirable to have the greatest separation possible between the aircrew and patient particularly for longer duration flights.
- Use of a portable isolation unit is recommended to minimize potential contamination of the aircraft with the patient's blood or other body fluids.
 - The unit should be completely enclosed, large enough to provide sufficient space for medical care and patient needs as well as fluid repellent/impermeable.

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- Ideally, the unit should be disposable or if not disposable, have validated reprocessing instructions.
- When a portable isolation unit is not available, a specific area for the patient should be designated on the carrier.
- An isolation unit/area should be established
 - Sufficient space for staff to provide medical care, including procedures if necessary, storage of essential medical supplies, equipment and monitors properly secured.
 - Most medical supplies and all PPE should be stored outside of the isolation unit/area. This area can also be reserved for the crew/staff if they wish to rest.
 - A perimeter should be established for designating “clean” and “dirty” areas for the purpose desirable.
 - There should be a shelf or table upon which to place supplies while putting on PPE before entering the isolation unit/area
 - Receptacle for soiled linen, waste and reusable equipment should be placed inside the isolation unit/area.
 - Supplies for cleaning spills should be kept in the area, including RHA/organization approved disinfectant.
 - A method/process for containing and disposing of body fluids (e.g. urine, stool, emesis, blood) including the use of a secure disposable container (e.g. bedpan, urinal, other device) with the addition of a solidifier as well as how the waste is to be disposed must be determined before the transport of the patient.
- Sufficient supplies should be available onboard to support the expected duration of the flight plus additional time in the event the carrier experiences maintenance delays or weather diversions.
 - There should also be sufficient supplies to appropriately manage potential exposures to the patient’s blood or body fluids during travel.
- Mechanical ventilators should provide HEPA or equivalent filtration of airflow exhaust.
 - Appropriate filtration capability and the effect of filtration on positive-pressure ventilation should be confirmed with the ventilator manufacturer.
- Pilots should not have contact with the patient during the flight.
 - At the end of the flight when they leave the plane, pilots should wear gown and gloves if they assess they will have contact with contaminated surfaces.
- They should remove their PPE once they are out of the area according to *Putting On and Removing PPE Procedure* (Appendix 1).

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11) Waste Management

- Ensure implementation of a biomedical waste management program with the development of policies and procedures to include the following:
 - Protocols for adequate supplies of biohazard waste bags/containers, disinfectants and PPE.
 - Protocols for segregating, packing, labelling, moving, storing and transporting EVD associated waste.
 - A list of individuals/teams responsible for managing EVD associated waste in the event of an accident/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, PPE selection and use.
- Staff must wear appropriate PPE according to the PPE section in this document to handle waste.
- Limit the number of staff handling waste.
- Waste must be handled, stored and transported according to the approved RHA/organization biomedical management company procedures.
- Clearly mark EVD associated waste storage areas with a biohazard symbol and keep separate from other storage areas.
- Determine prior to transport how the biomedical waste containers are to be managed.
 - They may be handed over to the receiving facility if these arrangements have been made in advance.
- Sharps
 - Sharps include syringes, needles, razors, scalpels.
 - Dedicate point-of-use puncture-resistant sharps containers that are easily accessible.
 - Limit the use of needles and other sharps as much as possible.
 - Safety engineered devices should be made available and used.
 - Used needles should not be recapped but should be disposed of immediately along with other single-use sharps into the designated puncture-resistant container.
 - Handle waste containers with care to avoid injuries during disposal.
- Biomedical Solid Waste (Non-sharp)
 - Solid waste would include PPE, disposable bedpans, disposable linen, dressings, sponges, pads, procedure drapes, incontinent products/diapers, cleaning cloths/wipes, mop cloths/wipes, intravenous/gastrointestinal/urine catheters and bags, suctioning equipment/tubing, non impermeable pillows or mattresses.
 - Consider all supplies used in the patient care environment as contaminated, whether it was used or not.
 - Contain waste at point of generation.

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- Biomedical Liquid Waste
 - Liquid waste includes blood, suctioned fluids (respiratory and throat secretions), emesis, feces, urine, other excretions and secretions.
 - A secure disposable container (e.g. bedpan, emesis, other device) should be used for containment of emesis, feces or other body fluid.
 - Spills containing EVD associated waste (e.g. blood, emesis, urine and feces) should be managed by trained staff wearing appropriate PPE according to PPE section of this document.
 - “Spill kits” should be made available, according to RHA/organization policy for use in designated areas.
 - The spill area should be isolated from access to other individuals until cleaning and disinfection is completed.
 - All spill incidences should be documented for purpose of record keeping and follow-up.
 - The following cleaning and disinfection measures should be followed:
 - allow fluid and droplets to settle,
 - gently cover the spill with disposable absorbent paper towels, wipes or pads (a solidifier agent may be used); remove organic/bulk material, and place immediately into approved RHA/organization biomedical waste container,
 - with disposable cleaning cloths or wipes, apply a RHA/organization approved disinfectant to the surface and allow sufficient contact time according to manufacturer’s instructions,
 - do not spray disinfectant or use wet vacuum in order to avoid any splashes and splatter, and
 - start at one end of the affected area and move in one direction until all surfaces have been disinfected. Do not use a circular motion.
 - Use cleaning cloths, wipes, etc only once and after use, discard all cleaning items immediately into RHA/organization approved biomedical waste container.

12) Linen

- Handling and containing linen should occur in the patient care area by trained staff wearing appropriate PPE according to the PPE section of this document.
- Consider all linen in the patient care area as contaminated, whether it was used or not.
- The following measures should be taken for linen:
 - Contain linen at point of generation.
 - Fold linen inward and handle with a minimum of agitation and shaking to avoid contamination of air, surfaces and persons.

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- Handle linen, discard and transport linen according to approved RHA/organization biomedical waste company procedures.

13) Cleaning and Disinfection of Vehicle/Carrier and Equipment

- Education, hands-on training, practice and observation of ability to adhere to correct processes and procedures, and appropriate PPE should be provided to those responsible for cleaning.
 - Cleaning and decontamination of vehicle/carrier must be performed by staff who have received training on the equipment and on the decontamination procedures.
- Responsibility and accountability for cleaning and disinfection of the patient care environment should be assigned and monitored to ensure appropriate processes.
- Take the vehicle/carrier to a separate segregated area to clean and decontaminate.
- Staff must wear appropriate PPE according to the PPE section in this document to clean and disinfect.
 - Those responsible for cleaning and disinfection should wear the same level of protection as staff providing care to the patient.
 - Heavy duty/rubber gloves may be used and should be discarded after use.
 - Put on and remove PPE prior to cleaning and disinfection of the vehicle/carrier and equipment according to *Putting On and Taking Off PPE Procedures* (Appendix 1).
- Cleaning and disinfection of the vehicle/carrier includes, but is not limited to
 - The removal of all dirty/used items (e.g. suction container, disposable items).
 - The use of RHA/organization approved disinfectant.
 - The use of cloths and other cleaning supplies.
- Clean and disinfect all environmental surfaces and reusable equipment or patient care area surface the patient or their blood and other body fluids have potentially contacted with RHA/organization approved disinfectant.
 - This includes patient care areas/equipment (including transport stretchers, railings, medical equipment control panels and adjacent flooring, walls and work surfaces likely to be directly contaminated during care).
 - This also includes all non-contaminated areas of the vehicle/carrier according to RHA/organization protocol (e.g. areas where there was not cross contamination from equipment/items, personnel with PPE, etc.).
 - Use as many disposable wipes/cloths for cleaning and disinfection. Use a new disposable cloth for different surfaces or zones within the vehicle/carrier. Do not reuse cloths.
 - Follow manufacturer's recommendations for application and contact time of the RHA/organization approved disinfectant.
 - Clean and disinfect all surfaces.

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- Fluid contaminants must be controlled during the cleaning process to ensure contamination of the cleaning area does not occur (e.g. body fluids such as emesis are not “hosed out”).
- Spray applications of disinfectants must not be used.
- Compressed air or sprayers should not be used for cleaning. All other equipment used to clean the vehicle/carrier must be cleaned and disinfected before being put back into general use (or disposed of if it cannot be cleaned and disinfected).
- Discard all contaminated linen and cloths used during the cleaning process.
- Clean and disinfect all equipment and reusable containers prior to their return to the transport vehicle/carrier.
- 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. frequently touched surfaces in the patient care environment.
 - Where possible, this should be performed by the nurses or physicians as part of patient care activities.
 - Additional cleaning measures or frequency may be warranted in situations where environmental soiling has occurred.
 - Non-patient-care areas should be cleaned and managed according to regional/organization cleaning and disinfection processes.
 - Follow regional/organization processes for reusable equipment/medical devices.
 - Do not remove large amounts of solid soil, (e.g. feces or blood clots) from linen by spraying water or hand sprayers.
 - Handle all disposable equipment including blankets, linen, cloths plus materials used in the cleaning and disinfection procedure according to *Manitoba Health, Healthy Living and Seniors Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care* <http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>.
 - Waste must be placed in a leak proof waste bag
 - Contain waste at point of use.
 - Blood, body fluids, excretions, secretions, should be disposed according to biomedical waste company procedures.

14) Staff

- All staff involved with the patient must be aware of and comply with the guidelines for EVD.
 - They should be educated regarding routine practices and additional precautions including hand hygiene, PCRA and cleaning and disinfection of non-critical equipment.

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- They should be educated about signs and symptoms of EVD, appropriate control measures; and the need to self-monitor while caring for cases of EVD for 21 days following the last contact with the patient.
- Perform hand hygiene with alcohol-based hand rub (ABHR) or with soap and water.
- All PPE and disposable items must be handled according to *Manitoba Health Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Health Care*
<http://www.gov.mb.ca/health/publichealth/cdc/docs/ipc/rpap.pdf>.
- Place all reusable items in a clear plastic bag and transport to a Medical Device Reprocessing Department for reprocessing according to regional/organization processes.
- Follow RHA/ organization processes for reusable equipment/medical devices.
- Staff who were in contact with the patient should self monitor themselves for symptoms for 21 days after last exposure to patient.
 - Staff should ensure they are following Routine Practices at all times.
 - If any symptoms occur, it is important they immediately notify their regional Occupational Health Program/designate according to RHA/organization processes.
- If staff are exposed, follow the staff exposure section of the *Manitoba Health, Healthy Living and Seniors Ebola Virus Disease (EVD) Infection Prevention and Control Interim Guidelines*.
(available at <http://www.gov.mb.ca/health/publichealth/diseases/ebola.html>)

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APPENDIX 1

1. Putting on and Removing PPE

1.1 Equipment Required for the Primary Staff

The following is the equipment that may be needed to care for a patient with EVD. The staff 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/organization procedures
- N95 respirator
 - Required when performing AGMPs
- Procedure or surgical mask
- Full face shield
- Fluid-resistant shoe/leg covers according to RHA/organization procedure

1.1. Steps to Put On PPE for Staff 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 staff should be visible at the conclusion of putting on the PPE.

Remove personal clothing and items

- No personal items (e.g. jewellery, watches, cell phones, pagers) should be worn.
- If staff work 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 staff 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 staff.
- The trained monitor reviews and reads (step by step) the sequence for putting on PPE with the staff.

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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/organization may choose to include hand hygiene in other steps in their PPE putting on and removing procedures.
- RHA/organization may choose to disinfect gloves according to RHA/organization 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 staff 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 Staff 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 staff 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.

Hand Hygiene

- Alcohol-based hand rub (ABHR) is acceptable unless visible soiling is present. Soap and water required if visible soiling is present.

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- RHA/organization may choose to include hand hygiene in other steps in their PPE putting on and removing procedures.
- RHA/organization may choose to disinfect gloves according to RHA/organization 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 staff 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, Healthy Living and Seniors 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 staff for any indication of contamination of the PPE. If contamination is identified this must be reported immediately according to your RHA/organization procedures. This will then be followed according to *Manitoba Health, Healthy Living and Seniors Ebola Virus Disease (EVD) Interim 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.

APPENDIX 2

List of Acronyms

AGMP:	Aerosol generating medical procedures
DIN:	Drug Identification Number
EVD:	Ebola virus disease
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