



Office of the
Provincial Health Officer

Recommendations for Environmental Services, Biohazardous Waste Management, and Food and Linen Management for Ebola Virus Disease (EVD)

Provincial Ebola Expert Working Group

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This document describes recommendations for environmental services staff and health care workers while performing cleaning and while disposing of waste (including liquid waste, used personal protective equipment, food and linen) related to anyone being investigated or treated for EVD. It also specifies what personal protective equipment will be worn by environmental service workers while performing their tasks.

A. Preamble

While the probability of a person with Ebola virus disease (EVD) arriving in British Columbia is low, preparedness to ensure health care workers can safely and effectively care for patients is essential. Preparedness relies on clear processes, appropriate personal protective equipment supply and deployment, and appropriate training for staff in the processes and equipment.

EVD is spread through direct contact (via broken skin or mucous membranes of the eyes, nose or mouth) with the blood/body fluids¹ of an EVD-infected person, or items contaminated with blood/body fluids from an EVD patient. The risk of transmission increases with the amount of infectious materials to which the individual is exposed. 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 a hazardous material.

A patient infected with the Ebola virus is not infectious before the onset of symptoms, but communicability increases with each subsequent stage of illness. The risk of transmission of EVD is considered lower in the early stages (e.g., when the patient presents with fever, with or without fatigue and myalgia, with minimal diarrhea and vomiting, and the patient's body fluids are contained), and higher in the later stages of their illness when viral load rises and the patient experiences copious fluid loss due to diarrhea, vomiting or hemorrhage.

B. Guiding Principles

1. Along with the safety and care of patients, the safety of health care workers and environmental services workers is of paramount importance.
2. The number of health care workers entering the room must be kept to the minimum necessary to provide medical care. All health care workers entering the room must be tracked and documented.

¹ Body fluids include stool, emesis, urine, saliva, semen and sweat.

C. General Recommendations

1. Prior to admitting a patient under investigation², or confirmed³ EVD case to a room, all non-essential equipment and furniture (including curtains) should be removed from the room.
2. Each site must have a designated area for holding infectious/biohazardous waste generated by a patient under investigation or confirmed EVD case. The area must be locked and in a secure place.
3. Ensure education is provided to personnel for the situation where 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:

- a. personnel to stop work immediately;
- b. remove personal protective equipment as per protocol;
- c. leave the area;
- d. 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; and
- e. immediately follow health authority protocol for reporting a breach.⁴

D. Recommended Personal Protective Equipment for Environmental Service Workers

Ongoing cleaning in EVD patient rooms while a patient is present in the room and undergoing care will be done by nurses or physicians already providing care for that patient⁵.

Environmental service workers will only provide services in two situations related to EVD patients:

1. Any spill of blood or body fluids, which occurs outside the isolation room.
2. Completing the discharge or terminal clean when an EVD patient has been discharged from the room.

In both situations, there will be no patient with EVD in the immediate vicinity (they will have either cleared the area outside the room or they will have been discharged from the room). The risk of transmission in these scenarios is low, and therefore, lower transmission risk personal protective equipment (PPE) is appropriate for the environmental service workers providing these services.

² Defined as anyone with a potential exposure to the Ebola virus, any symptoms compatible with EVD (Public Health Agency of Canada).

³ Defined as anyone with laboratory confirmation of EVD infection.

⁴ In most regions, report the exposure immediately by calling Workplace Health. After hours, call the medical health officer on call to report the breach and receive further instructions.

⁵ Available at: www.health.gov.bc.ca/pho/pdf/recommended-personnel-for-evd-cases.pdf.

Lower transmission risk PPE is described in *British Columbia Ebola Virus Disease Personal Protective Equipment Guidelines*, available at: www.health.gov.bc.ca/pho/pdf/ebola-ppe-guidelines-2014-11-17.pdf.

Environmental services workers must follow directions for donning and doffing PPE as described in *Recommendations for Donning (putting on) and Doffing (taking off) Personal Protective Equipment for Health Care Workers during the Management of Persons Under Investigation or Confirmed Cases of Ebola-Virus Disease – Lower Transmission Risk Scenario*, available at: www.health.gov.bc.ca/pho/physician-resources-ebola.html.

E. Recommendations for Patient Room Set-up

For each person under investigation or for any confirmed EVD patient, special precautions must be taken with respect to setting up the patient room to effectively isolate the patient and prevent transmission of disease. Ideally, each room will have two doorways – one to be used for clean entry and the other to be used for soiled exit:

1. The anteroom or clean room is a designated clean space where the **donning** of PPE occurs under the supervision of the trained observer. This is an admission-restricted clean zone, which is set up and prepared by nursing staff. Clean PPE will be stored in this room.
2. The designated exit room or exit space is outside the patient room, and is used for the doffing of PPE. **Ideally this space will include a window and an intercom, so the trained observer can observe from outside the room. If this is not possible the space should be large enough for the trained observer to maintain a reasonable distance from the person doffing PPE. The exit doorway is only to be used for exiting the patient room. Entry to the patient room is only through the clean zone.**

It is recognized that some facilities do not have patient rooms with two doors, or with anterooms. In these situations, health care providers will work with physical plant leadership to develop modified structures which meet the intent of the guidelines for effectively isolating the patient and preventing transmission of disease. This can be accomplished by using two adjacent patient rooms for the designated clean and soiled spaces, or by constructing temporary walls to create such spaces.

Once the patient room and designated clean and soiled areas outside the room have been prepared, another necessary step is removing all unnecessary equipment and furniture (including curtains) from the room.

F. Recommendations for Environmental Cleaning

Daily Clean

The following are to be done by nurses and physicians already caring for the patient:

1. The minimum standard for daily cleaning is once a day, with a second daily clean of high touch surfaces. Spills should be cleaned up as they occur.
2. Dedicate environmental housekeeping equipment (e.g., mop handle and head, mop bucket, wipes) to the patient room.
3. Use disinfectant wipes for cleaning environmental surfaces and equipment following the manufacturer's specified contact times.
4. Use each wipe for one item only (do not re-use); then, dispose of wipe in biohazardous waste container.
5. A disinfectant with a broad spectrum virucide claim with a DIN should be used according to the manufacturer's instructions.

Terminal Clean

To be done by environmental service workers when a patient under investigation or confirmed EVD case is discharged from the room.

1. Discard all disposable supplies (unused/opened/used) in biohazardous waste container.
2. Discard all housekeeping products and equipment in biohazardous waste container when the terminal clean is completed.
3. Environmental services and infection prevention and control must perform an inspection of the room before it is used for another patient.
4. Equipment in the patient room is not to be moved from the room or used for another patient, until it has been cleaned as follows:
 - a) For confirmed EVD positive patients, cleaning must be conducted according to an approved decontamination process⁶.
 - b) For confirmed EVD negative patients, cleaning must be done according to normal protocols.

⁶ Process under development. Will be posted to the Office of the Provincial Health Officer website once complete.

G. Management of Environmental Contamination Due to Spills of Blood and Other Body Fluids

1. For on-site spills containing EVD-associated human fluids (blood, emesis, urine, stool, etc.), only individuals trained to don/doff appropriate personal protective equipment (PPE) and dispose of waste should be involved in the cleanup.
2. Spill kits⁷ should be made available for use in designated assessment/care areas.
3. To avoid any splashes and splatter, do not spray disinfectant onto spill and do not use a wet vacuum.
4. The following measures should be followed:
 - ▶ Wear appropriate PPE as previously described.
 - ▶ Allow fluid and droplets to settle.
 - ▶ Put disposable paper towels down to cover the material so it doesn't spread further.
 - ▶ To avoid any splashes and splatter, do not spray disinfectant onto spill and do not use a wet vacuum.
 - ▶ Over the paper towels, gently apply (do not spray) a disinfectant according to the manufacturer's instructions (use a product with a broad spectrum virucidal claim and a drug identification number).
 - ▶ Allow the product to remain in place to ensure a minimum contact time of 10 minutes or as per manufacturers' instructions.
 - ▶ Pick up the towels and organic material and dispose of in biohazardous waste bin.
 - ▶ Disinfect the floor. Start at one end of the affected area and move in one direction until the whole surface has been disinfected. Do not use a circular motion.

H. Recommended Process for Infectious/Biohazardous Waste Removal

The blue drum referred to in the following section is the container approved by Transport Canada for the transportation and disposal of EVD waste by Stericycle (pictured right). It is the only container accepted by Stericycle.

Any other containers used in the patient room must be placed inside the blue drum for disposal. Containers placed inside the drum must be leak proof, and in the case of a sharps container, puncture resistant.



⁷ Spill kit includes paper towels, absorbent granules, virucide, dust pan/scoop, yellow or red bags.



Not all sites will have blue drums immediately available. Therefore, the recommendation is to use the 20 litre red bucket (pictured left) as the alternative receptacle for all waste in the patient room. Once $\frac{3}{4}$ full, the lid will be attached and the bucket must be wiped down using the same procedure as the blue drum and stored in the patient room until the blue drum is available. This red bucket with lid can then be placed inside the blue drum.

It is recommended to use clips to attach bags to the waste containers so bags don't fall into the container when waste is added.

Anteroom

The anteroom or clean room is a designated clean space where the donning of personal protective equipment (PPE) occurs under the supervision of the trained observer. This is an admission-restricted clean zone, which is set up and prepared by nursing staff. Clean PPE will be stored in this room. Regular hospital waste receptacles will be used for waste generated in this room.

For patient rooms with two doors, the anteroom provides the only allowed entry to the patient room. For patient rooms with only one door, the door is used for both entry and exit from the room.

Drum Preparation

Two blue drums are required for the patient isolation suite: one in the patient room and one in the exit room or designated exist space.

- ▶ All drums are prepared by environmental services.
- ▶ All drums will be lined with two red bags, which will drape over the edge of the drum.
- ▶ Two zip ties will be included for final tie off. Each red bag must be closed by zip tie independently. Environmental services will tape them to the edge of the drum, underneath the drape.
- ▶ Every blue drum must have a lid and fastener clamp in the room located near the drum.

Patient Room

The patient's room is prepared by nursing staff before patient arrives. All waste receptacles will be removed from the patient room. A specific category 1C sharps container will be placed in the patient room.

1. Before the blue drum is placed in the patient room, the nurse will mark with an indelible metallic silver permanent marker on the outside of the bin and on the lid "suspect, infection control patient #1." The number used on the bins will be assigned by infection control and will correspond to the infection control line listing for persons under investigation or confirmed Ebola patients. The drum and lid is then placed in the patient room. Environmental services will mark each bin as Bin #1, Bin #2, Bin #3, etc.

2. This will be the primary container for all waste in the patient room. All waste products generated in this room will be discarded into this drum, including the sealed category 1C sharps container.
3. Collection devices containing patient bodily fluids must be sealed and placed directly into the blue drum. This is to be performed in such a way that free fluid would not likely leak from the containers.
4. In the patient room, the bin is only filled to the $\frac{3}{4}$ fill mark. There will be no compacting of waste.
5. When the blue drum is $\frac{3}{4}$ full, each of the two red bags will be closed and zip tied independently, and the lid will be placed on the drum. The lid itself does not snap onto the drum. It is the closure device when applied that pulls the lid and drum together to create the seal. The closure device must be placed right side up to allow the small secondary metal safety lock mechanism to be set. Holding the clamp fastener at nine o'clock and three o'clock, the nurse will then attach the clamp fastener and secure it.
6. If possible, the blue drum will remain in the patient room until the patient is discharged.

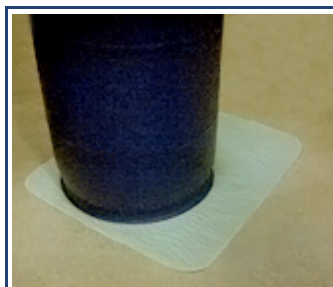
All equipment entering a patient room must be retained in the room until such time as the person is confirmed to be EBV negative or the equipment is subjected to an approved decontamination process at the time of terminal room cleaning.

Designated EXIT Room or Exit Space (outside patient room)

For each patient room containing a person under investigation or confirmed EVD patient, a designated exit room or exit space is required. An exit room/space is a designated space where the doffing of personal protective equipment (PPE) occurs under the supervision of the trained observer. This is an admission-restricted soiled zone, which is set up and prepared by nursing staff. Soiled PPE will be stored in this room.

The blue drum present in the exit room/space is the waste receptacle for the doffing of PPE and the waste generated from disinfecting this drum (cloth soaker and paper towels). It is not for patient generated waste.

1. The full drum will be retrieved by environmental services. A worker, wearing the required PPE, will place the drum on a cloth soaker pad saturated with hospital grade disinfectant.



A cloth soaker pad that has been saturated with a hospital grade disinfectant is placed on the floor. The blue drum is then positioned on top of the soaker pad.

A new soaker pad is used for each new bin.

2. Environmental services will wipe down the drum with hospital grade disinfectant, following the required dwell time. A second worker in required PPE will retrieve the drum, wipe the drum down (on a second soaker pad) for the second time (as close to the outside of the exit room/exit space as feasible), observe the dwell time, and transfer to a designated barrel dolly.
3. Both workers will then doff their PPE in the exit room/space.
4. The two staff, having now donned clean gowns and gloves, will transport the drum to the locked, restricted, segregated holding area.
5. The waste will not be left unattended en route to the secure segregated holding area. After delivery of the drum, the environmental services staff will remove the gowns and gloves and use an alcohol hand rub.

Disposal of Human Waste

There is no evidence to date that Ebola is transmitted via sewage systems, with or without wastewater treatment (World Health Organization, 2014). Liquid waste (e.g. urine, stool and emesis) may be disposed of through the normal sanitary sewer system (i.e. toilets), or in accordance with municipal/regional regulations.

Some workers⁸ come in contact with untreated sewage before it enters the wastewater treatment plant and could be at very low risk of exposure to Ebola virus. Communications should be planned in the event of an Ebola case and appropriate PPE should be worn by workers handling untreated sewage from individuals with EVD. Refer to US CDC guidelines (www.cdc.gov/vhf/ebola/prevention/handling-sewage.html) and the CDC Frequently Asked Questions (www.cdc.gov/vhf/ebola/prevention/faq-untreated-sewage.html).

In settings where on-site sewage disposal systems are used (i.e., septic tanks), no specific measures are needed as long as the system is adequately operating. Most septic systems rely on settling and pumping the tank to dispose of the waste.

- Contain the wastewater for a period of time⁹ to allow for natural die-off of Ebola virus prior to pumping. This will reduce the concentration of Ebola virus that may be found in wastewater (World Health Organization, 2014).
- If there are concerns about a septic system not operating adequately, consult the MHO for further guidance.

⁸ These workers include: plumbers in hospitals that are currently treating an Ebola patient, sewer maintenance workers working on the active sewer lines serving the hospital with an Ebola patient, construction workers who repair/replace active sewer lines serving the hospital with an Ebola patient.

⁹ The period of time required is unknown but is likely a number of days.

I. Recommended Process – Labeling Procedure

CONFIRMED Ebola Waste

- ▶ Once laboratory confirmation has been received as positive for Ebola, infection control will advise environmental services. For positive Ebola waste, a “UN 2814” label and an “Incinerate Only” label must be applied to the blue drum. (These labels are supplied in the Stericycle kit).

NEGATIVE Ebola Waste

- ▶ Once laboratory confirmation has been received as negative for Ebola, infection control will advise environmental services. For negative Ebola waste, a “UN 3733” label must be attached to the blue drum.
- ▶ This waste can then be moved to the regular holding/storage area for all other biohazardous waste.

J. Sharps Container

In Patient Room:

Only a leak and puncture proof category 1C gasket closing designated sharps container may be used. Once 2/3 full, the category 1C sharps containers is sealed and placed directly as is into the blue drum.

K. Food and Linen Management

1. All food must be delivered with disposable dishes/cutlery/trays and brought into the patient room by clinical staff.
2. Discard all linens and any non-fluid impermeable pillows and mattresses.
3. Handle soiled linen with a minimum of agitation to avoid contamination of air, surfaces and persons.

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