



Health and Safety Guidelines

Recommendations
to protect frontline members
most at risk of exposure
to the Ebola virus

CUPE / *Canadian Union
of Public Employees*

Health and Safety Branch



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CUPE reserves the right to change or alter the positions stated in this paper as new information becomes available, or as conditions change.

Purpose

The purpose of these guidelines is to provide advice and guidance to CUPE members about the potential hazard of the Ebola Virus Disease (EVD). This document includes information on routes of transmission, effects of infection and preventative measures grounded in the precautionary principle. It is for occupational groups identified as being most at risk during an Ebola outbreak (acute care/hospital workers, paramedics, and flight attendants) but the information can be of use to any worker in an occupation that may be exposed to people infected with EVD. If after reviewing this guide you have any additional questions, please contact your CUPE National Servicing Representative or Regional CUPE National Health and Safety Representative.

Basic information

The Ebola virus causes an acute, serious illness which is often fatal if untreated. Recent studies have shown that 95 per cent of patients that become infected by an exposure to the Ebola virus disease (EVD) will show symptoms in two to 21 days, with most experiencing symptoms within 10 days.

It is important to note that humans are not infectious until they develop symptoms. The first symptoms are the sudden onset of fever, intense weakness and fatigue, muscle pain, headache and sore throat. Current observations have led to the proposal that humans are infectious as soon as they start to develop a fever; there is no specific temperature at which the person will cross the line from safe to infectious. The disease progresses to vomiting, diarrhea, rash, impaired kidney and liver function, and in some cases both internal and external bleeding (for example, oozing from the gums, blood in stool). Laboratory findings include low white blood cell and platelet counts and elevated liver enzymes. EVD infections can only be confirmed through laboratory testing.

Transmission is most likely to occur when EVD-infected people are symptomatic but not yet diagnosed. As a result, health care workers, first responders and airline transportation workers are at the highest risk of exposure because they may come into contact with infected blood or the bodily fluids of infected patients before effective prevention measures are put into place.

It is CUPE's position that any worker that is likely to be exposed to the Ebola virus must be protected. Appropriate personal protective equipment (PPE) as well as training on its use and related procedures must be provided before an incident of potential exposure occurs.

In addition to background information, this document will provide the opinions of the CUPE National Health and Safety branch on best practices and the minimal levels of protection that should be expected for CUPE members who work as acute health care providers, acute care support staff, paramedics, first responders, and flight attendants.

Transmission

In the industrialized world, person-to-person transmission from an infected individual is the greatest concern. EVD can be transmitted via direct contact (through broken skin or the mucous membranes of the eyes, nose or mouth) with:

- Blood or body fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk, and semen) of a person who is infected with Ebola.
- Objects (like needles and syringes) contaminated with these fluids.
- Surfaces and materials (like bedding and clothing) contaminated with these fluids.

While the Centers for Disease Control and Prevention (CDC) report that Ebola is not spread through the air or by water, activities that put an uninfected person close enough to come into contact with the airborne contaminants from aerosol-generating events (1 metre) are at high risk of contracting EVD. Aerosol-generating events include coughs, sneezes, profuse diarrhea or vomiting. These events produce aerosols (small droplets) which can be spread short distances into the environment and cause exposure to the Ebola virus, which may lead to infection. Studies have also shown that flushing a toilet without closing the lid can also create aerosolized particles that may travel for short distances.

People remain infectious as long as their blood and bodily fluids, including semen and breast milk, contain the virus. According to the CDC men who have recovered from the disease can still transmit the virus through their semen for up to three months after recovery from the illness.

Though transmission is possible through animals, this type of transmission is not a significant concern in North America. There is no evidence that mosquitoes or other insects can transmit the Ebola virus. Only mammals (for example, humans, bats, monkeys, and apes) are able to become infected with and spread the virus.

Residual transmission prevention (surfaces and materials)

Though scientific studies have been conducted, no one knows exactly how long the Ebola virus can survive on surfaces outside the human body. Estimates of several days are not unreasonable. As such, contaminated surfaces, clothing, materials, etc. can still spread the disease for a significant amount of time. Until every surface or material has been effectively decontaminated, protective measures must remain in place.

According to the Public Health Agency of Canada, the Ebola virus can be eliminated with heat, alcohol-based products or bleach. Ebola is susceptible to 3 per cent acetic acid, 1 per cent glutaraldehyde, alcohol-based products a 10-minute exposure to dilutions of 1:10 of 5.25 per cent household bleach (sodium hypochlorite), and bleach powder (calcium hypochlorite). For surfaces that may corrode or discolour, careful cleaning to remove visible stains followed by contact with a 1:100 dilution of 5.25 per cent household bleach for more than 10 minutes is recommended. For other surfaces Ebola will be inactivated by heating to 60°C for at least 60 minutes, or boiling for at least 5 minutes. Gamma irradiation (1.2×10^6 rads to 1.27×10^6 rads) combined with 1 per cent glutaraldehyde is also effective at rendering the virus inert.

The precautionary principle

In the aftermath of the 2002-03 outbreak of Severe Acute Respiratory Syndrome (SARS) an inquiry into the failures of prevention and medical systems was conducted. In the introduction to the final report, Justice Archie Campbell wrote:

The lack of preparation against infectious disease, the decline of public health, the failure of systems that should protect nurses and paramedics and others from infection at work – all these declines and failures went on through three successive governments of different political stripes. So too, in a sense, we as citizens failed ourselves because we did not insist that these governments protect us better. (The SARS Commission – Final report, p. 2)

Many lessons were learned from the experience with SARS and the subsequent H1N1 outbreak, however not all lessons have been taken seriously. Employers have not fully trained all CUPE members who may be exposed to EVD. We have multiple reports of hospital cleaners being told to clean rooms

without proper training or knowledge of where equipment is stored; flight attendants have not been provided with adequate protective equipment to deal with sick passengers on planes; paramedics have not been given information about sick patients they are transporting to and from hospitals. CUPE finds this employer behaviour unacceptable, especially in light of what we know about infection control from previous outbreaks.

Justice Campbell further wrote:

Scientific knowledge changes constantly. Yesterday's scientific dogma is today's discarded fable. When it comes to worker safety in hospitals, we should not be driven by the scientific dogma of yesterday or even the scientific dogma of today. We should be driven by the precautionary principle that reasonable steps to reduce risk should not await scientific certainty.

Until this precautionary principle is fully recognized, mandated and enforced in Ontario's hospitals, workers will continue to be at risk. ...

That is why it is better to forget dogmatic arguments based on current scientific understanding. That is why it is better to follow the precautionary principle that reasonable action to reduce risk should not await scientific certainty. And that is why it is important to recognize that Vancouver, which was spared the devastation that SARS inflicted on Ontario, had a far greater systemic commitment to the precautionary principle.

Though the routes of transmission are thought to be understood, the protection of workers must be paramount in the discussion of systematic infection control. Employers must not look to scrimp and save on bare minimum protective requirements; they should provide full protection to workers with the best known procedure.

All of the recommendations in this document are grounded in the precautionary principle.

Treatment

Currently, the prognosis of a person infected by EVD is poor. Estimates of the fatality rate of people affected by EVD range from 50 to 90 per cent. Survival rates are greatly improved with the use of supportive treatments like rehydration care with oral or intravenous fluids, treatment of specific symptoms such as pain, nausea, fever and anxiety, as well as dialysis treatment when there is kidney failure. In extreme cases blood transfusion and clotting agents have been used to reduce the negative effects of internal and external bleeding. However, there is currently no guaranteed proven treatment available for EVD.

Prevention and control of EVD transmission: General principles for all workplaces

The recommendations for preventing and controlling EVD transmission below apply to all at-risk occupations.

Policy

Employers with workers who may be exposed to Ebola must develop a policy to deal with the specific hazard in consultation with the joint health and safety committee or health and safety representative.

The policy ought to contain:

- Procedures for working with potentially infected patients
- Provisions for standardized, prescriptive protective equipment
- Procedures for the use and removal of protective equipment including the implementation of:
 - Specific donning and doffing procedures that include practical direction for activities like hand sanitization and changing gloves while in isolation (such as between care tasks).
 - Cleaning and waste disposal protocols.
 - Protocols for workers that have been exposed to EVD.

Hazard assessment

Employers must conduct initial and ongoing hazard assessments to determine the ability of the organization to cope with people who are presenting symptoms of EVD. This assessment should include identifying workers who could be exposed to the Ebola virus. Based on the level of expected exposures, prevention measures must be developed. Specific recommendations for various occupations are addressed later in this document.

Personal protective equipment inventory

Once the proper control mechanisms have been decided, the employer should act to determine where the protective equipment is physically located, and do a manual count to determine how much is actually available. This inventory should be done at the planning and prevention stage, not after the first suspected case arrives in the workplace. Supplies should also be positioned in the workplace so that they cannot be contaminated, and so that workers can access them easily. Employers should provide additional training and briefings to ensure that workers know where to locate the items when needed.

Screening

Screening and readiness protocols must be in place at any workplace where a person potentially infected with EVD may present themselves. These protocols should include measures like prominent signage, active screening by workers wearing proper PPE, EVD recognition training, the option to summon additional personnel when a possibly infected person is identified, and isolation measures for those with symptoms.

These simple questions can help identify possibly infected individuals:

- Does the person display any of the flu-like symptoms (as outlined above)?
AND
- Has the person travelled to a high-risk part of the world?
OR
- Has the person been in contact with someone who has travelled to a high-risk part of the world?

Right to refuse

Every worker has the right to refuse to perform work, do a task, or use equipment that *they believe* could cause themselves or others injury or illness (unless that refusal puts the health and safety of another person directly in danger). The right to refuse dangerous work is a fundamental health and safety right that ensures workers don't have to choose between their job and their health and safety. Every jurisdiction in Canada has a specific set of procedures for refusing dangerous work, but in general the steps to refuse are as follows:

1. A worker must report to their supervisor that they are refusing to perform work because they believe it is unsafe, and state why they believe the situation is unsafe.
2. If the situation isn't immediately corrected, an investigation is conducted with the worker, supervisor, and a joint health and safety committee member or a worker representative present.
3. If the unsafe condition is resolved with mutual agreement, the worker can resume the work.
4. If the condition is not resolved, a government health and safety inspector is called to investigate and provide a decision in writing.

No other worker should be assigned to do the work, task, or use the equipment in question unless they have been informed of the work refusal and the reasons for the refusal.

No worker can be disciplined for asserting their right to refuse. Any disciplinary actions should be reported to your local executive and CUPE Servicing Representative immediately. For more information on the right to refuse and your specific jurisdictional requirements see [CUPE's fact sheet on the right to refuse](#), or contact the regional CUPE Health and Safety Representative.

Response to a worker exposure

Policies and procedures must be in place to respond in the event that a worker has been exposed to EVD. Procedures must ensure that the worker receives medical treatment, and that the worker is not in a position to further spread the virus. There should also be a support system to help with the worker's family obligations.

Employers must develop a policy that ensures ongoing support of the affected worker. The policy should state that there will be no loss of pay, and specify that if a quarantine is necessary, it will be conducted in such a manner as to ensure the worker will be able to communicate with family and friends without putting them at risk.

Interacting with a suspected or confirmed case of EVD

The following principles apply to all work areas where contact with a suspected or confirmed EVD-infected person could occur:

- All personnel with an open skin wound or lesions on hands or forearms should not have contact with suspected or confirmed EVD cases or their environment.
- Workers must avoid touching the mucous membranes of their eyes, nose and mouth with their hands to avoid self-contamination.
- All potential exposure events for EVD (for example, exposure without appropriate PPE, direct injection by needlestick, or exposure via a skin break) must be reported to the immediate supervisor, occupational health services, and local public health authorities.
- Proactively report any absence of, deficiency in, or failure of equipment, protocols, measures or procedures to an immediate supervisor.

Hand hygiene

Proper hand hygiene is essential to prevent the spread of EVD. Procedures for proper hand hygiene include thorough washing with soap and running water, or by rubbing hands with an alcohol-based hand sanitizer that is 60 to 90 per cent alcohol. Due to the ease of installation, alcohol-based hand sanitizers should be made available at every point of care (at the entrance and within isolation rooms and areas). Running water, soap, and single-use towels should also be available where feasible.

The World Health Organization (WHO) found that alcohol-based solutions for hand hygiene remove organisms more effectively, require less time, and irritate skin less often than hand washing with soap or other antiseptic agents and water. However alcohol-based hand rubs cannot replace hand washing with soap and running water when the hands have been soiled.

Workers should keep their nails short, less than 0.5 cm beyond the finger tips. The WHO has compiled studies that have indicated that virus and bacterium are more likely to be present under longer nails. Longer sharp nails are more likely to pierce the fingers of gloves. Artificial nails should not be worn.

Employers must ensure that supplies for performing hand hygiene are available, including running water when procedures call for the use of soap. Hand hygiene procedures should be followed in these instances:

- Before donning gloves and PPE prior to entering the isolation room/area.
- After any exposure risk or actual exposure with a patient's blood or bodily fluids.
- After touching potentially contaminated surfaces, items, or equipment in the patient's surroundings.
- After removing PPE, upon leaving the isolation room/area.

Neglecting to perform hand hygiene after removing PPE will reduce or negate any benefits of the PPE.

Training

In addition to all the training requirements described to this point, all workers who may be required to work with potentially infected people must be trained in the following:

- How to identify signs and symptoms of Ebola infections and avoid risk of exposure.
- How to review patient assessment and management procedures.

- Protocols and procedures for notifying internal designated points of contact regarding a suspected case of EVD.
- Protocols and procedures for reporting suspected EVD cases to the appropriate public health officials through the designated points of contact within their organization.

Personal protective equipment

Dedicated medical equipment (preferably disposable, when feasible) should be used for all interactions with suspected or confirmed EVD-infected people. All non-dedicated or non-disposable equipment used for patient care must be cleaned and disinfected according to manufacturer's instructions and the employer's policies.

All workers involved need to be trained in the appropriate selection, application, removal and disposal of PPE. All aspects of PPE donning and doffing must be performed properly to ensure transmission of the virus does not occur.

Donning personal protective equipment

All equipment must be donned before entering an area that may be contaminated with the Ebola virus. It is critically important that the equipment is donned properly. To ensure this takes place, there are two possible strategies. Choosing one depends on the size of the facility and the number of workers who require the specialized PPE.

First, teams of two workers could be assigned to assist each other while donning the PPE. This policy allows one worker to act as a spotter and offer redundancy that ensures all PPE has been put on properly. Second, a team of experts can be assigned for helping everyone that is entering or exiting the isolated rooms/area.

Doffing (removal of) personal protective equipment

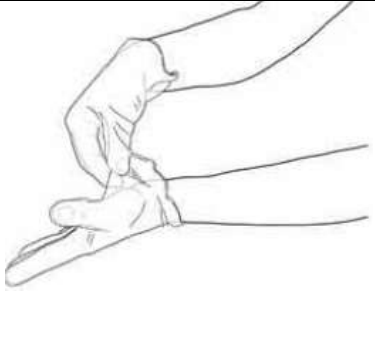
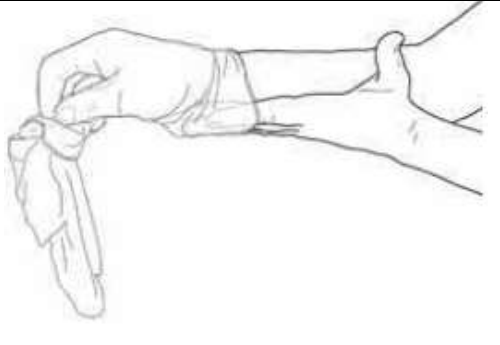
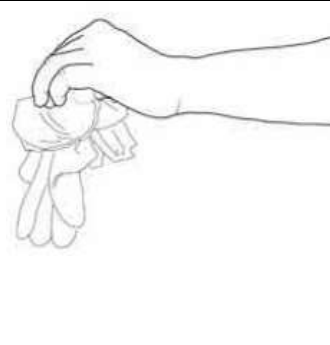
Soiled or potentially soiled gloves should be removed first, so as to not risk the spread of the virus to the face area. Proper glove removal techniques are described below. Once the gloves have been removed, all other potentially exposed PPE must be removed in the manner prescribed by the manufacturer, or as spelled out in the workplace procedures. Workers need to be allowed to practice removing PPE to ensure they understand the procedures before being exposed to potentially infected people.

Gloves

It is essential that proper removal techniques are followed so that the virus is not transferred to the worker. The removal of gloves that may have been exposed to the Ebola virus should be done according to the procedures outlined in the *WHO Guidelines on Hand Hygiene in Health Care*. Training and practice in these glove removal techniques should be provided so that users feel comfortable with the procedures before they are exposed to potential EVD.

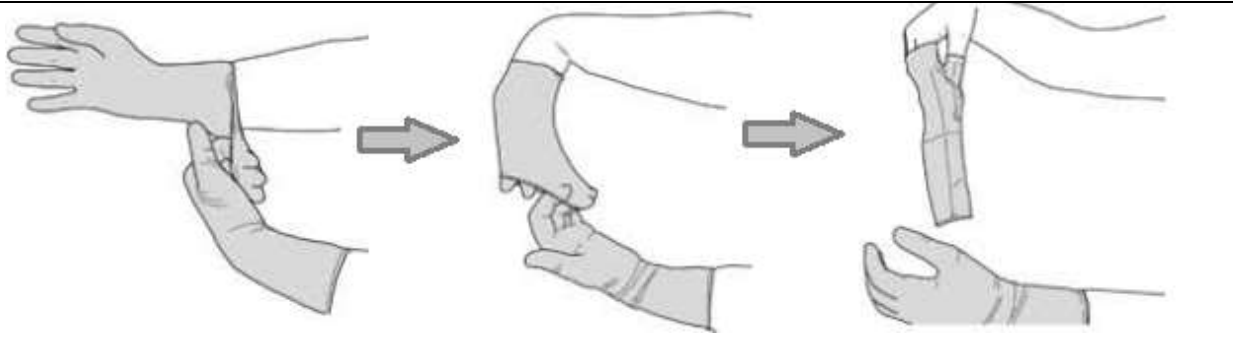
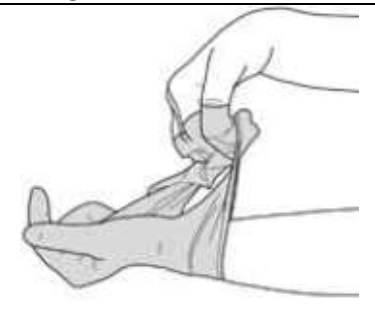
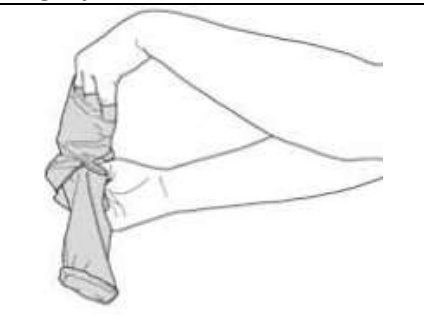
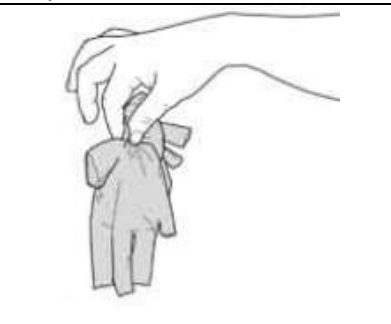
Loose Glove Removal

Source: *WHO Guidelines on Hand Hygiene in Health Care*, p. 149

		
<p>Pinch one glove at the wrist level to remove it, without touching the skin of the forearm, and peel away from the hand, thus allowing the glove to turn inside out.</p>	<p>Hold the glove in the gloved hand and slide the fingers of the ungloved hand inside between the glove and wrist. Remove the second glove by rolling it down the hand and fold into the first glove.</p>	<p>Discard the removed gloves and perform hand hygiene by rubbing with an alcohol-based hand rub or by washing with soap and running water.</p>

Sterile Glove Removal

Source: *WHO Guidelines on Hand Hygiene in Health Care*, p. 151

		
<p>Remove the first glove by peeling it back with the fingers of the opposite hand. Remove the glove by rolling it inside out to the second finger joints (do not remove it completely).</p>		
		
<p>Remove the other glove by turning its outer edge with the fingers of the partially ungloved hand.</p>	<p>Remove the glove by turning it inside out entirely to ensure that the skin of the worker is always and exclusively in contact with the inner surface of the glove.</p>	<p>Discard gloves and perform hand hygiene by rubbing with an alcohol-based hand rub or by washing with soap and running water.</p>

Staffing

During an outbreak, extra staff will be needed to provide appropriate time and resources required to follow proper safety protocols, and also to cover the increased work demands and additional requirements. Employers should consult workers and their union on the best way to achieve proper staffing levels.

Management preparedness plan

Employers should proactively establish an unrestricted, transparent, and confidential communication plan between the company, union(s), and managing public health authorities to ensure that all parties are aware of any changes in the threat of EVD.

The employer and the union(s) should also develop a joint communications plan, including message templates, to be used in the event of an EVD-related incident to inform the membership and prevent panic.

Prevention and control of EVD transmission: Acute care or hospital setting

Occupational groups involved with providing primary care for EVD patients are arguably at the greatest risk for exposure to EVD. During an EVD outbreak, governments and regional health authorities will establish a list of designated primary treatment facilities. Employers must be aware that even in non-designated hospitals there are many instances when workers in a primary care facility could interact with a potential or confirmed EVD patient.

Ideally, in a well-functioning system with effective public communications, patients who suspect that they may have contracted EVD would contact their regional public health office to determine what steps they should take. If they are deemed to be of a significant risk these patients should be transferred by a designated and trained team of paramedics to a designated hospital where they will be placed in isolative quarantine. However, no health system is perfect. Many people, especially if they are scared or panicked by media reports, may simply show up at the hospital for medical advice. Uncontrolled procedures at an emergency room cause delays and put others at risk.

As a result, CUPE strongly recommends establishing Ebola triage centres where people who are concerned that they have been exposed can go without disrupting the normal operations of hospital emergency rooms.

Until separate triage sites have been established, management at primary care facilities must consider the effects of this new hazard to staff that may come into contact with EVD.

Policy

Senior management of hospitals designated as treatment facilities for EVD must be aware of the increased risks to workers' health. The organization must develop a policy to deal with the hazard in consultation with the joint health and safety committee or health and safety representative. The policy must include:

- A process for completing an updated hazard assessment of the work with considerations for how EVD will affect the work processes.

- Provisions and procedures for limiting access to restricted areas of the hospital for both patients and staff.
- Onsite screening procedures when patients arrive to determine risk.
- A process for procuring adequate and appropriate PPE, and an inventory system to ensure that adequate levels are maintained.
- A process for distribution and replenishment of the required PPE at sites where it will be needed.
- Procedures for the use and removal of PPE, including:
 - Specific donning and doffing procedures that include practical direction for activities like changing gloves while in isolation (such as between care tasks) and hand sanitization.
 - Cleaning and waste disposal protocols.
 - Protocols for workers that have been exposed to EVD.

Hazard assessment

Employers must conduct a hazard assessment to determine how their existing policies and procedures will cope with the hazard of EVD. This assessment should include a systematic examination of how all employees at each phase of the care cycle could be exposed to EVD.

Stress

As the stress of providing ongoing care for an EVD patient can be quite high, the employer should work in consultation with the health and safety committee and the union to implement psychological support programs.

Additional staff

For increased safety workers should be assigned to work in pairs at all times when working with EVD patients and EVD-contaminated materials. The additional worker can ensure that PPE is donned and doffed properly, and would be able to provide help as needed at any phase of the treatment process. Having a second worker present in these difficult times would also provide workers with psychological support.

At all stages of patient care, management should recognize the increased demand of working with additional PPE, and caring for a person in an isolation ward. Procedures for monitoring fatigue should be in place, as people are more likely to make errors with protective equipment when they are fatigued. Work while wearing a respirator causes workers to fatigue faster. CUPE recommends that a worker should not work while wearing a respirator for more than one hour without a break. Most facilities will likely need to bring in additional staff so that proper breaks from extended use of the respirator can be provided.

Procedure for patient triage

Employers must ensure that sufficient protective measures and equipment are in place for all potential points of initial contact and screening. Signs should be posted around all building entrances and emergency rooms about where to go if you are concerned about having EVD (for example, the emergency room or another pre-determined Ebola triage area). These measures will help screen potential patients quickly, and reduce the risk of exposing other patients.

Depending on how a patient arrives at a care facility, they may be met by a receptionist or triage nurse. General reception areas should be designed so that a wall of glass separates patients from staff, with only a small opening at the bottom of the glass for papers and small items to be passed back and forth. Ideally, there would be a positive air pressure within the area where the receptions sit.

During an outbreak, staff in the reception area should follow the hand hygiene techniques described previously. If reception is open to the public, then the station should be designed in such a way that the patients are not able to be within one metre of staff. Regardless of design, clear signage should be posted indicating where patients who are concerned about having contracted EVD should proceed.

In the emergency room triage nurses are often the first point of contact. As they will be working with potentially ill patients in the early stages of the disease, they must be supplied with CSA-approved fit-tested N95 respirators, face shields, gloves, and aprons impermeable to liquids. If it appears that a patient is developing high-risk transmission symptoms, additional protective measures and isolation must be implemented immediately.

If after the screening, a patient is determined to be a likely EVD carrier, then they should be immediately isolated, and a specialized infection control team should be notified to see the patient before any additional health care workers are allowed access to the isolated room.

Procedure for provision of care for suspected or confirmed EVD patients

Patients who show symptoms of EVD should be considered positive until a double-negative test shows them to be free of the virus. Suspected or confirmed EVD patients must be isolated in the appropriate negative-pressure rooms or units.

Additional recommendations include:

- Setting up an anteroom.
- Extra security to ensure only authorized, trained personnel are granted access to restricted areas.
- Extra staff to assist during an Ebola outbreak. Employers should set up specialized teams so that the numbers of staff caring for patients in isolation are limited and staff caring for the infected patients can become more proficient and familiar with the PPE.
- Staff, supplies and equipment solely dedicated to those units/patients.
- Supplies and equipment stored outside the room so that they can be donned before entering.
- A private washroom that is only used by affected patients must be provided.
- Only personnel directly involved in the care of the patient should be granted access to the area where patients are treated.
- Patients should be instructed on proper hand hygiene techniques and directed to perform the techniques after using the toilet.

Procedure for primary care

CUPE believes that staff working with EVD patients must be protected from all aerosol-generating events. As such, CUPE recommends that the employer, in consultation with the health and safety committee, should implement the following recommendations:

- Biohazard suits should be provided to all staff, and put on prior to entering designated areas. The suit should consist of:
 - Powered Air-Purifying Respirators (PAPR) with an assigned protection factor of at least 50 or a higher standard as appropriate.

- Long-sleeved, cuffed, fluid proof or impermeable suits that leaves no skin exposed.
- Facial protection that includes the respirator, and a face shield that covers below the neck, or long enough to prevent splashing underneath. Note that eye glasses are not suitable as eye protection.
- Gloves that fit securely over cuffs.
- In late stages of EVD where there may be copious secretions and excretions, enhanced PPE should be used (like double gloving, leg and non-slip fluid-resistant foot protection).
- Once treatment is complete:
 - All reusable suits and other items should be removed and placed into a no-touch used linen receptacle immediately after use.
 - All disposable suits and other items should be discarded into a no-touch waste receptacle immediately after use.
- Hand hygiene should be performed on exit from the patient's room.
- The use of medical devices that are part of a closed system is recommended. They should be needless wherever possible.

Procedure for facility cleaning

As cleaning procedures can generate aerosolized particles, CUPE recommends that all cleaning staff assigned to disinfect rooms used by confirmed EVD patients be given a full biohazard protection suit with purified air supply, as described above. Rooms that house suspected EVD patients should be treated as if they were a confirmed threat until a double-negative test on the patient confirms that the patient did not have EVD.

Training for facility cleaning

Employers must ensure that workers who will be assigned to clean rooms where EVD patients resided are trained in the use of all measures and procedures related to their work, including the reason for and proper use of protective equipment, and all safety protocols.

Prevention and control of EVD transmission: Paramedics and other first responders

Paramedics are often the first workers to encounter sick patients. In many jurisdictions, other first responders also go to emergency calls. During an outbreak of EVD, it is essential that dispatch perform a pre-screen (as described below) and ensure that only trained and properly equipped paramedics are sent to potential EVD calls.

In the event of an EVD outbreak, public health will likely instruct people who are suffering from EVD symptoms and who were in situations where exposure may have occurred to be transported to specialized care facilities by ambulance. This work must be performed by a specially trained and equipped paramedic team.

Policy

Employers of paramedics who will be involved with the transportation of potentially infected patients must be aware of the increased risks to workers' health. The organization must develop a policy to deal with the hazard in consultation with the joint health and safety committee or health and safety representative. The policy must include:

- A process for completing an updated hazard assessment of the work with considerations for how EVD will affect the work processes.
- Enhanced ambulance dispatch centre screening so that callers provide EVD-relevant information to responding paramedics.
- Onsite screening procedures to determine the risk to health when transferring patients.
- A process for procuring adequate and appropriate PPE, and an inventory system to ensure that adequate levels are maintained.
- A process for the storage, distribution and replenishment of the required PPE.
- Procedures for the use and removal of PPE, including:
 - Specific donning and doffing procedure that include practical direction for activities like changing gloves while in isolation (such as between care tasks) and hand sanitization.
 - Cleaning and waste disposal protocols.
 - Protocols for workers that have been exposed to EVD.

Hazard assessment

Employers must conduct a hazard assessment to determine how their existing policies and procedures will cope with the hazard of EVD. This assessment should include a systematic examination of how paramedics could be exposed to EVD while treating patients and cleaning their ambulance.

Based on the level of expected exposures, prevention measures must be developed to protect paramedics from exposure. Employers should consider the added physiological stress that is placed on paramedics while wearing PPE, and consider additional rest periods.

Additional training and awareness

In consultation with the policy or workplace health and safety committee, paramedic employers should develop and issue policies and procedures for all paramedics who will be transporting suspected or confirmed patients with EVD.

As paramedics may be required to transport patients in any stage of the disease, full protective measures should be mandated. Where feasible, special teams should be designated as *Ebola response teams*, and given extra training and PPE. If sufficient resources are not available to create special teams, then all paramedics must receive the additional training and PPE. In short, every paramedic who is likely to transport a patient with EVD must receive additional training on how to use any new PPE, as well as a refresher course for any existing PPE that will continue to be used. This training must include practice drills on proper procedures to put on and take off PPE, proper decontamination procedures, and procedures for performing work while wearing the equipment.

Development of a procedure for transporting EVD patient

The employer, in consultation with the union, the health and safety committee or health and safety representative, shall develop a procedure for the transportation of suspected or confirmed EVD patients that includes the following:

- Only certified ambulance services will transport a suspected or confirmed case of EVD.
- If the patient's status is known, the emergency medical services staff must be notified to determine the requirements for transportation from any facility to a designated EVD treatment facility.
- The employer will provide designated ambulance resources, specially trained paramedics and specialized PPE to perform inter-facility transfers.
- As patients could be at any stage of the illness, CUPE recommends full biohazard suits with full respiratory protection for paramedics that will be transporting confirmed EVD patients.
- After the patient has been transported, the employer must provide appropriate time, equipment and supplies, for decontamination of the ambulance.

Prevention and control of EVD transmission: Flight attendants

Flight attendants are frontline safety workers aboard active aircrafts, and along with the flight crew, are responsible for ensuring the health and safety of the traveling public. Airline operators must recognize that it is their duty to prevent or reduce exposure to both flight attendants and travelling members of the public. If an EVD passenger starts to show symptoms during a flight, they may be able to infect a number of people onboard the aircraft. Airlines should implement heightened infection control measures. As such, CUPE recommends that all airlines implement the following policies, procedures and control measures before the first EVD-infected passenger gets on a Canada-based aircraft.

Policy

Management for airlines (especially those that travel overseas) must be aware of the risks associated with an EVD-infected passenger attempting to, or successfully boarding their aircraft. This risk requires that airlines develop a policy, in consultation with the union and the health and safety policy committee or workplace health and safety committee. The policy must include:

- A process for completing an updated hazard assessment of the work with considerations for how EVD will affect the work processes.
- Screening measures for passengers.
- Additional training or briefings to inform flight attendants of the hazard.
- Procedures for working with potentially infected travellers, and steps to take following a potential or confirmed exposure.
- A process for procuring adequate and appropriate PPE, and an inventory system to ensure that adequate levels are maintained.
- A process for the storage, distribution and replenishment of the required PPE.
- Procedures for the use and removal of PPE, including:
 - Specific donning and doffing procedure that include practical direction for activities like changing gloves while in isolation (such as between care tasks) and hand sanitization.
 - Cleaning and waste disposal protocols.
 - Protocols for workers that have been exposed to EVD

Hazard assessment

Employers must conduct a hazard assessment to determine how their existing policies and procedures will cope with the hazard of EVD. This assessment should include a systematic examination of how both ground and aircraft personnel could be exposed to EVD if an infected person attempts to travel on the airline. Based on the level of expected exposures, prevention measures must be developed.

Additional training and awareness

In consultation with the policy or workplace health and safety committee, airline operators should develop and issue training on the procedures for all crew in the event that a passenger exhibits signs or symptoms of EVD during a flight. Employers should also provide mandatory pre-flight briefings to reiterate the use of universal precaution procedures and equipment to prevent exposure on a flight, and to review steps in the event that a passenger exhibits signs or symptoms of EVD during a flight.

Every flight attendant should be fit tested and trained on how and when to use a CSA-approved N95 respirator. They should also be trained on what to do with their uniform should it become exposed to a potential or confirmed traveller with EVD. This training must include proper techniques to remove used gloves and other PPE as described previously in this guide.

Development of a procedure for flight attendants potentially exposed to EVD

The following procedures should be developed in consultation with the union and the policy and or workplace health and safety committee. In the event that a passenger exhibits symptoms of EVD, and the regional public health authorities determine that there is a reasonable likelihood that a flight attendant has been exposed to EVD, the following procedures should be ready to be put into effect:

- Immediately remove the flight attendant from duty (while maintaining full pay and benefits) for the entire disease incubation period.
- Ensure the incident is reported through a proper injury/incident declaration form.
- Ensure that all medical costs related to potential exposure are covered, including but not limited to tests, doctor visits, and medications.
- Immediately contact union leadership with the name, cell phone numbers, current location, and in-sheltering location of the affected flight attendant.
- Coordinate with the flight attendant's union leadership around any issues related to care and protection of the flight attendant.
- Provide an external (non-airline employee) mental health professional who can make daily confidential wellness calls to the in-sheltering flight attendant. The Flight attendant must be able to accept or decline calls at their own discretion.
- Within eight hours of knowledge of the incident, the company and the union must implement a communications plan to inform other staff about the incident while maintaining the medical confidentiality of the potentially infected flight attendant.

If the worker is away from their home base, the airline should also:

- Provide all resources necessary to safely in-shelter the flight attendant during the incubation period. For example, a safe and secure location should be provided with meals and medical supplies including but not limited to thermometers for self-monitoring and protective respirators.
- Once the in-sheltering period is over, provide transportation to the flight attendant's home base.

Screening

Screening of all passengers by an airline could prevent both the exposure of the workers and other passengers on board, but also prevent the transmission of the disease to another country. While flight attendants onboard can identify people who look ill, and potentially screen them before the plane takes off, the task would be difficult. If the threat of EVD is elevated, CUPE recommends that flight operators set up a system where all passengers must check in at a company counter before receiving their boarding card, where a mandatory screening could take place using the questions described earlier, plus any additional measures deemed necessary.

Employers should provide each aircraft with a device that is capable of determining the temperature of a passenger without coming into contact with bodily fluids. If a passenger starts to exhibit symptoms midflight, flight attendants need to be aware of the process for containing the passenger in such a manner as to limit the exposure of other passengers. Any passenger that exhibits symptoms including a high fever should be considered a risk, and onboard quarantine procedures should be put into effect.

Flight preparation

Before the departure of all flights, aircrafts should be stocked with all of the required PPE and ensure the facilities for washing are functional, with running water and soap. This equipment should be considered a no-go item (required for aircraft dispatch) during an EVD outbreak.

Onboard personal protective equipment

Airline operators must prepare to protect flight attendants from passengers that start to show symptoms of EVD midflight. In the case of a transatlantic flight, there will be no way to ground the plane and evacuate quickly, so other measures like training and the provision of PPE must be considered.

The recommended PPE that should be onboard and accounted for before each flight is outlined below. There should be enough for every flight attendant on all flights:

- An adequate supply of non-allergenic gloves that are rated for handling biohazardous material. This supply should include enough sets of gloves and adequate sizes so that they may be worn at all times, and can be changed several times if they become soiled.
- An adequate supply of CSA-approved N95 respirators. The required quantity will be based on the duration of the flight, and the time of usage before the failure rating provided by the manufacturer. Due to the varying size requirements of flight attendants, the employer must devise a system to ensure that everyone onboard would be properly protected.
- Additional medical supplies should be available for highly trained medical personnel who may be travelling on the flight, and volunteer to help.
- Ensure each flight has one universal precaution kit for every flight attendant on duty plus two additional kits for intervening health care personnel. Universal precaution kits should have all items specified by the WHO, including but not limited to:
 - Face/eye mask (separate or combined)
 - Gloves (disposable)
 - Protective apron that reaches below the knees
 - Skin wipes
 - Germicidal disinfectant for surface cleaning
 - Dry powder that can convert small liquid spills into a sterile granulated gel
- Ensure an adequate supply of masks and sick bags for passengers who exhibit symptoms.

Onboard procedures for a potential or confirmed exposure

If a passenger exhibits the symptoms of EVD described above, the following procedures should be activated immediately.

Management of an ill person

The following procedure should be used to reduce the spread of contaminants.

- Provide an airsick bag to the passenger and instruct them on proper use and disposal procedures, including that the sick person closes/seals the bag and places it inside the plastic garbage bag, so that the flight attendant does not have to handle the bag.
- Any waste material produced on the flight must be treated as biohazardous, and should be stored in a manner that ensures it will not be disturbed or released back into the cabin. For example, a garbage cart could be designated. Special disposal bags at least 2 mil thick should be provided to store the waste material.
- If they are able to use a surgical mask, provide the ill person with one to cover their nose and mouth. If this is not possible, ask the person to cover their nose and mouth with a tissue, especially if they are sneezing or coughing.
- Provide the ill person with a plastic bag for disposing of soiled tissues and used airsick bags.
- Encourage the ill person to wash their hands with soap and water or, when hands are not visibly soiled, with an alcohol-based hand cleaner.
- If possible, keep the ill person separate from others. Ideally, the ill person should be close to a washroom designated for their exclusive use.
- As per the determined protocol, notify airport authorities at the destination airport of the ill traveller as soon as possible.

Protective measures for flight attendants

If a passenger is showing symptoms of EVD:

- Do not interact with an EVD-suspected passenger without the use of eye protection, CSA-approved N95 respirator, and gloves. If the passenger is vomiting, the flight attendant should make use of the universal precaution kit.
- Change gloves and clean hands with alcohol-based hand sanitizer, or soap and running water after every contact with the ill person, their belongings, or their immediate environment.
- Treat all bodily fluids (such as phlegm, diarrhea, vomit, or blood) as potentially infectious.
- Keep contact with the ill passenger to a minimum. Assign one flight attendant (two if the person needs more assistance) to take care of the ill person. It is preferable to assign someone who has already been in contact with the ill person.
- If the flight attendant has been in close proximity to the potentially infected traveller, their uniform should be considered exposed, and should not be worn home. Procedures for dealing with an exposed uniform should be followed.

If a flight attendant becomes ill within 21 days following exposure to EVD, telephone a health care provider and notify the employer immediately. The flight attendant should then call the regional public health authority. Before travelling to a designated treatment centre, the flight attendant should alert the health care provider about the possible exposure and symptoms, so that health care staff can make appropriate arrangements.

Additional Aircraft Cleaning

If a suspected case of EVD was present onboard an aircraft, that aircraft should not be used until a deep clean and decontamination that meets or exceeds WHO recommendations has been performed, or double-negative testing (two separate independent negative results) of the traveller has ruled out Ebola as the cause of their symptoms. Cleaning crews must also be made aware of the potential exposure.

If any passenger shows symptoms of EVD, it is strongly recommended that the employer do additional decontamination for six rows above and four rows behind where that passenger was sitting. The cleaning crew should be made aware of the potential hazard before they come onboard.

Staffing

Recently, a number of airlines have reduced the ratio of flight attendants to passengers to 1:50 from 1:40. Airline operators should re-evaluate how proper safety procedures would be completed if a flight attendant needs to be permanently assigned to a person showing symptoms of EVD, and consider introducing extra flight attendants when EVD is a threat.

Upon arrival at the airport

Once the flight has landed flight attendants should take the following steps:

- Upon arrival, ensure that the ground crew is informed about what has happened, and that proper procedures to contact public health authorities have been followed.
- Ensure that all passengers remain seated until the ill passenger is assessed or removed from the plane.

Upon arrival the ill passenger will be assessed either by a Quarantine Officer, Canada Border Services Agency Officer or Emergency Medical Services personnel, who will provide further instructions to the flight attendants and other passengers regarding required actions.

If there is reason to believe that others onboard the aircraft have potentially been exposed to EVD, information from the flight attendants and other passengers may be collected at that time. Flight attendants may be required to assist in this process, if needed, by asking passengers to complete locator forms and by making onboard announcements. These forms should be provided by the regional public health authority.

Resources

AFA E bola Checklist: <http://afa-cwa.net/wp-content/uploads/2014/10/Ebola-Checklist.pdf>

Best EL, Snadoe JA, Wilcox MH. Potential for aerosolization of Clostridium difficile after flushing toilets: the role of toilet lids in reducing environmental contamination. J Hosp Infect 2012 Jan;80(1):1-5

Barker J, Jones MV. The potential spread of infection caused by aerosol contamination of surfaces after flushing a domestic toilet. J Appl Microbiol 2005;99(2):339-47

Public Health Agency of Canada, Pathogen Safety Data Sheets and Risk Assessment, Ebolavirus (<http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/ebola-eng.php>) Accessed Oct 20, 2014

Public Health Agency of Canada, Interim Guidance for Airline Cabin Crews, Cleaning Personnel and Cargo Personnel <http://www.phac-aspc.gc.ca/id-mi/vhf-fvh/ebola-cabin-cabine-eng.php>

WHO Guidelines on hand hygiene in health care, (http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf)