

TITLE

EMERGENCY MEDICAL SERVICES CLEANING AND DISINFECTING, MEDICAL EQUIPMENT AND VEHICLES

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NOTE: The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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OBJECTIVES

- To provide guidelines for Alberta Health Services (AHS) Emergency Medical Services (EMS) employees; to reduce the risk of exposing patients, health care workers and others to infectious agents.
- To define a process for **cleaning** and disinfecting EMS vehicles, medical equipment and facilities.
- To define a process for **reprocessing** of reusable medical equipment.
- To define a process for cleaning and disinfecting of EMS vehicles and facilities routinely and between patients.

APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

ELEMENTS**1. Cleaning Instructions**

1.1 General Cleaning Instructions

- a) Surfaces and equipment that are in direct contact with patients will be cleaned and disinfected between patients.
- b) Always use clean hands when handling clean equipment and supplies.
- c) Medical devices and equipment must be cleaned and disinfected in a designated area. Gloves and safety glasses; **Personal Protective Equipment (PPE)** must be worn during all cleaning and disinfecting. A gown and mask must be worn in addition when handling items that are **grossly soiled**, when handling liquids (E.g. cleaners, **disinfectants**) or when cleaning large blood and body fluid (BBF) spills.
- d) **One Step Cleaning** is sufficient if there is no visible soil and the disinfectant product is applied wet for the minimum contact (wet) time and allowed to air dry.
- e) **Two Step Cleaning** is required for **high-touch surfaces** or surfaces and devices that are visibly soiled. The two step process is as follows:
 - (i) Start wiping from a clean area moving inwards to the centre.
 - (ii) Wipe the surface with a moist disinfectant towel using firm pressure to remove the soil.
 - (iii) Discard used towel.
 - (iv) Use a new disinfectant towel and repeat the process.
 - (v) Ensure surface remains wet for 3 to 5 minutes (contact time is product specific; check disinfectant manufacturer's instructions).
 - (vi) Allow surface to air dry.
- f) When cleaning, start from the least soiled areas and move to the most soiled areas.
- g) When cleaning, keep soiled items separate from clean items.
- h) The manufacturer's instructions will be followed to determine the correct dilution amounts as well as the contact (wet) time when using cleaning and disinfecting solutions.
- i) When finished, dispose of empty containers of cleaners/disinfectants; do not '*top up*' existing container contents. This practice is not acceptable as it can result in contamination of the container and solution.
- j) When cleaning, always be alert for needles and other sharp objects; sharps will be carefully disposed into sharps containers.

- k) When cleaning equipment, classify the cleaning need according to the **Spaulding Classification System**. (See Appendix 1)
 - l) **Non-critical items** (requiring **low-level disinfection**) will be cleaned and disinfected by practitioner.
 - m) Non-critical items (requiring low-level disinfection) which are excessively contaminated will be **damp wiped** by practitioners and then reprocessed at specifically designated locations.
 - n) **Semi-critical items** (requiring **high-level disinfection**) will be damp wiped by practitioners and then reprocessed at specifically designated locations.
 - o) Post-event (Terminal) Cleaning of the ambulance or support vehicles, other mobile units and medical equipment includes thorough cleaning and **disinfection** after every event, by the practitioner.
- 1.2 Ambulance Cleaning Instructions - Front Cab
- a) When cleaning the front cab area, damp wipe all high-touch surfaces including, but not limited to, door handles, grab handles, radio microphone, switches and dials, steering wheel, gear shift, ignition switch and arm rests.
 - b) When soiled or potentially contaminated, spot damp wipe the ceiling, door panels, visor, dash, and windows.
 - c) When cleaning the floor, remove large debris and dry mop or sweep followed by wet mopping.
- 1.3 Ambulance Cleaning Instruction - Rear Compartment
- a) When cleaning the rear compartment, remove general waste, contaminated dressings, and carefully dispose of sharps.
 - b) Gross soiling, and large blood and body fluid spills are to be removed prior to routine cleaning and disinfecting.
 - c) When cleaning start with the least soiled and **low-touch surfaces**, moving to more highly soiled and high-touch areas last.
 - d) Always wet wipe all high-touch surfaces. These include, but are not limited to door handles, grab bars, light switches, oxygen flow meter, suction flow meter, cardiac monitor latch, patch phone, cabinet handles/latches, seats, seat belt, seat adjustment lever and squad bench.
 - e) If visibly soiled or potentially contaminated, spot wet wipe walls, ceiling and other low-touch surfaces.

- f) Be sure to change the cleaning cloth frequently.
- g) When cleaning, large debris that is located on the floor will be dry mopped or sweep followed by wet mopping.
- h) Waste bins will be emptied after each event.
- i) The sharps containers will be replaced when they are $\frac{3}{4}$ full. Sharps containers that are $\frac{3}{4}$ full will be sealed and disposed of by placing into designated biohazard waste bins.

1.4 Medical Equipment & Devices Cleaning Instructions

- a) Following patient care damp wipe all equipment and devices that was used or that may be potentially contaminated due to exposure. This includes, but is not limited to, the blood pressure cuff, cardiac monitor and cables.
- b) Medical equipment must be damp wiped on the outside, with detail attention to the handles, shoulder strap, zippers tabs, and bottom.
- c) Pay particular attention to airway bags that have the suction unit stored inside. Following suctioning, gross soiling can occur; which requires removal of all contents; examination of supplies to ensure packaging is intact and not contaminated. The inside of the bag requires wet wiping and allow to air dry before restocking.
- d) The blood glucose meter will be cleaned and disinfected after each patient use utilizing 70% isopropyl alcohol or 10% Bleach-Wipe. Do not use wipes containing hydrogen peroxide E.g. Virox™ or Accel TB wipes™.
- e) The Entonox Demand Valve Regulators are semi-critical devices that must receive high-level disinfection after each patient use unless an appropriate bacterial/viral filter is used. The preferred method is to reprocess the regulator after use.
- f) Medical devices that come into contact with a sterile body site must be cleaned and sterilized between uses. The preferred method is to use sterile **single-use/disposable items**.
- g) Medical devices that come into contact with a mucus membrane must be cleaned and receive high-level disinfected between uses. The preferred method is to use sterile single-use disposable items.
- h) Re-useable laryngoscope blades are semi-critical devices that must be cleaned and minimally high-level disinfected after use. The preferred method is to use single-use disposable blades.

- i) The stretcher must be wet wiped on all high-touch surfaces including, but not limited to, the mattress, pillow, grab handles, seat belts, and IV poles. Pay particular attention to areas that may have been contaminated with BBF and not easily seen. When the stretcher is grossly contaminated, it is to be removed from service and sent to a designated area where it will be reprocessed by a trained staff member. The practitioner will make every attempt to clean the stretcher before exchange.

1.5 Information Technology Devices Cleaning Instructions

- a) In between EMS events, the ePCR computer and mobile data terminal computer will be damp wiped with a disposable disinfectant cloth (e.g. Cavi-wipe). The small surfaces of the device will be cleaned using alcohol swabs.
- b) Do not wear gloves when using an IT device, while responding to an event, or when completing documentation.
- c) Cellular phones, pagers, portable radios, are to be cleaned by the practitioner. These must be cleaned daily and when visibly soiled or potentially contaminated.
- d) IT devices requiring service work will be cleaned and disinfected by practitioners, before sending for service.
- e) Cleaning of IT devices will be done by referring to Infection Prevention and Control: *Cleaning and Disinfection of Information Technology and Telephone Equipment and Devices Best Practice Guideline*.

1.6 Linen, Mattresses and Pillows Cleaning Instructions

- a) The linen used when applying patient care will be changed after every patient.
- b) Bag linen in specifically designed linen bags at the point of care, and double bagged if moist.
- c) Linen will be handled using minimal agitation.
- d) Ensure that no sharps are present prior to bagging linen.
- e) The stretcher mattress and pillows must be covered with a sealed, moisture impervious cover. The mattress must be damp wiped on all sides between EMS events. When cleaning the mattress, One Step Cleaning is acceptable unless visible soil is present. When visible soil is present, Two Step Clean is required.
- f) Practitioners will inspect the mattress and pillow surfaces, covers, seams and zippers for wear, tears, cracks, and stains. If the cover is stained or

soiled, inspect the internal components for signs of visible contamination and if contaminated, replace the item. Report all incidents to the Supervisor, who will assist with replacement of the mattress or pillow.

- g) When cleaning the mattress and pillows, the Infection Prevention and Control; Best Practice Guideline: Use and Maintenance of Mattresses and Pillows, Aug 2010 will be referenced.

2. General Restocking Instructions

- 2.1 Supplies that are unopened and are in their original packaging can be reused.
- 2.2 Supplies which have been opened or for which there is any concern regarding the integrity of packaging, must be discarded.
- 2.3 **Hand hygiene** must be performed before accessing and restocking new supplies; gloves are not to be worn.

3. Deep Cleaning Instructions

- 3.1 **Deep Cleaning** (semi annual) must be performed by trained staff members every 6 months or preferably more often as local conditions allow.
- 3.2 Deep cleaning is a systematic process that cleans and disinfects all surfaces in the front cab, the rear patient compartment, inside cabinets, outside lockers and equipment bags.
- 3.3 Front cab Deep Cleaning Instructions
- a) All loose items will be removed and inspected for damage and replace or repair if unserviceable.
 - b) All surfaces will be cleaned and disinfected.
 - c) All inside glass will be cleaned.
 - d) Cloth seats will be vacuumed using a HEPA vacuum, followed by shampooing (e.g. steam cleaner).
 - e) Leather or Naugahyde seats will be wet wiped.
- 3.4 Patient Compartment Cleaning Instructions
- a) Contents from cupboards, shelves and squad bench will be removed.
 - b) All surfaces including walls, ceiling, cupboards, chair, bench seat, seat belts and floor will be cleaned and disinfected.

- c) All medical supplies will be inspected for damaged packaging and expiry dates. Medical supplies will be replaced if sterile items packaging is damaged or opened.
 - d) Following cleaning, disinfecting and drying shelves return medical supplies to cupboards as per vehicle check list.
 - e) Contents from outside lockers will be removed.
 - f) All medical equipment from outside lockers will be cleaned and disinfected.
 - g) Equipment will be inspected for defects. All parts will be inspected to ensure are entirely intact and part will be replaced as needed. Items will be returned to lockers as per the vehicle check list.
 - h) The stretcher will be removed from the vehicle. It will be cleaned and disinfected including the mattress and belts. All components will be checked to ensure functionality. Following cleaning, the stretcher will be returned to the rear compartment.
 - i) The wall suction will be removed, cleaned and disinfected. Proper functionality will be ensured. The wall suction will be returned to the rear compartment.
 - j) All windows will be cleaned.
 - k) Waste bins will be emptied.
 - l) Sharps containers will be checked and replaced when $\frac{3}{4}$ full.
 - m) All contents will be removed from medical equipment bags; examine supplies to ensure packaging is intact and not contaminated. If damage is found, discard and replace the item. The bag will be wet wiped inside and outside and allowed to air dry. All supplies are to be restocked supplies and ensure equipment is in good working order. Bags that can withstand laundering should be laundered on a regular basis or when visibly soiled.
 - n) Each service provider shall document and maintain a record of deep cleaning.
- 3.5 Enhanced Cleaning and Disinfecting of Ambulance and Support Vehicles Instructions
- a) Occasionally an ambulance or a support vehicle will experience a significant amount of gross soiling, which cannot be effectively cleaned in the field but does not require a full deep (semi-annual) clean.
 - b) Enhanced cleaning should be performed when:

- (i) The vehicle is contaminated with blood or body fluids and/or chemicals or hazardous substances are present in locations that are difficult to access or require disassembly to clean.
 - (ii) The volume of contamination is more than two litres.
 - (iii) The estimated time to clean the area will be one hour or more.
- c) Practitioners must notify their supervisor, team lead or designate to request relocation to their designated cleaning area to perform the enhanced cleaning or obtain a replacement vehicle.

3.6 Parasites Cleaning Instructions

- a) Lice, scabies and bed bugs are the most common parasites encountered. No special cleaning procedures are recommended. Parasites will be handled like other form of contamination.

4. Blood and Body Fluid Spill Cleaning Instructions

4.1 Blood and body fluid spills will be cleaned as soon as is practically possible to prevent spreading or drying of biological material. Dried blood and body fluids can be difficult to remove. Use the following instructions for cleaning these spills:

- a) Assemble materials required to decontaminate the spill prior to putting on PPE. For large spills, eye protection, gown, and gloves must be worn.
- b) Inspect the area around the spill thoroughly for splatters or splashes. Work from least soiled area to most soiled area.
- c) Blot with absorbent cloth or paper towel and discard.
- d) Clean area using a damp wipe towel and firm pressure.
- e) Disinfect area with a new damp wipe towel.
- f) Wait for surface to dry; it must remain wet for five minutes.
- g) Remove PPE and perform hand hygiene.
- h) Change the existing mop head and cleaning solution when a mop is used to clean the area.

5. Sterilization Instructions

5.1 Make every attempt to use sterile, single-use items and therefore avoiding **sterilization**.

5.2 After use, all reusable **critical medical equipment and devices** must be cleaned and sterilized in a location specifically designed to perform those duties.

Sterilization will be only be done by staff that have specific training in medical device sterilization.

6. Infectious Disease Outbreaks Cleaning Instructions

6.1 When there has been an infectious disease outbreak, following patient transport from facilities:

- a) From a facility in which there is a respiratory illness outbreak: normal terminal cleaning and disinfection must be done by the practitioner.
- b) From a facility in which there is a gastrointestinal illness outbreak: a hypochlorite solution (10% solution) must be used in place of the standard disinfectant for terminal cleaning. This is due to the presence of clostridium difficile.

6.2 Patient Transport not associated with specific facilities

- a) When a patient is known or suspected to have a routine infection like influenza- like-illness, meningitis, group A streptococcus or methicillin-resistant Staphylococcus aureus, terminal cleaning and disinfection must be done by the practitioner.
- b) When a patient is known or suspected of having infectious tuberculosis, terminal cleaning and disinfection must be done by the practitioner. Park the vehicle outside and open the rear compartment doors for 30 minutes. Ensure no one enters the ambulance unless wearing an **N-95** respirator.
- c) When a patient is known or suspected of having a novel, rare or exotic infection such as pandemic influenza, Severe Acute Respiratory Syndrome (SARS), or hemorrhagic fever special cleaning and disinfection instructions will be developed as necessary.

7. Chemical and Radioactive Contamination Cleaning Instructions

7.1 These unique and infrequent events require special handling, processing or disposal that will be managed on a case by case basis. Consult Emergency Management group for advice.

8. Uniforms Cleaning Instructions

- 8.1 Staff are expected to wear a freshly laundered uniform at the start of every shift.
- 8.2 Accessory equipment such as belts, pouches, holders and foot wear must be cleaned and damp wiped with a disinfectant towel once per shift or when contaminated.
- 8.3 The pouches that are used to carry medical gloves must be damp wiped with a disinfectant towel after every use.

- 8.4 All warm weather clothing such as jackets will be laundered once per month and when visibly soiled or suspected of being contaminated.
- 8.5 Grossly contaminated uniforms will be changed between patients and the following steps will be followed:
- a) Seal soiled uniform in a bag to transport.
 - b) If home laundering, wash and dry separately from other personal or household items using hot water, bleach based detergent and a hot dryer cycle.
 - c) If a commercial dry cleaning service is used, advise personnel of contamination.
 - d) Personal issued items that are unserviceable after cleaning or repair must be replaced.

DEFINITIONS

Cleaning means the physical removal of foreign material (e.g. dust, soil) and organic material (e.g. blood, secretions, excretions, microorganisms) through the use of water, detergents and mechanical action. Cleaning physically removes, rather than kills microorganisms.

Critical medical equipment/devices means medical equipment/devices that enter sterile tissues, including the vascular system (e.g. forceps). Reprocessing critical equipment/devices involves meticulous cleaning followed by sterilization.

Damp wiped means a pre-packaged cleaner or cleaner/disinfectant wipe used to clean and disinfect areas that are visibly soiled or suspected of being contaminated. These are generally used for low touch areas.

Deep cleaning means a thorough cleaning process that involves cleaning and inspecting all equipment and supplies and systematically cleaning and disinfecting all surfaces in the front cab, rear patient compartment, inside cabinets and outside lockers.

Disinfectant means a product that is used on surfaces or medical equipment/devices that kill most disease-producing microorganisms but not spores. Disinfectants are applied only to inanimate objects. Some products combine a cleaner with a disinfectant.

Disinfection means the inactivation of disease-producing microorganisms. Disinfection does not destroy bacterial spores. Medical equipment/devices must be cleaned thoroughly before effective disinfection can take place.

Gross (Excessive) Soiling means blood or body fluids (BBF) or non-organic material in locations that require dismantling or special skills to access, involves a significant volume, or is estimated to require more than one hour to clean and disinfect.

Hand hygiene means a general term referring to practices which remove microorganisms, with or without soil, from the hands. Hand hygiene may be accomplished using soap and running water or an alcohol-based hand rub (ABHR).

High-level disinfection (HLD) means a level of disinfection required when processing semi-critical medical equipment/devices. HLD kills most microorganisms but not spores.

High-touch surfaces means areas that have frequent contact with hands. (E.g. door handles, equipment bag handles, light switches).

Low-level disinfection (LLD) means a level of disinfection required when processing non-critical equipment and some environmental surfaces.

Low-Touch Surfaces means areas that have a minimal contact with hands. (E.g. floors, walls and ceilings)

N95 means a particulate filtering face piece respirator.

Non-critical item means equipment/device that touches intact skin but not mucous membranes or does not directly touch the client/patient/resident (E.g. blood pressure cuffs, stethoscopes). Normally only requires low-level disinfection.

One Step Cleaning means the process of wiping a surface once with a disinfectant towel. This process is only permitted if surface is not visibly soiled.

Personal Protective Equipment (PPE) means specialized clothing or equipment worn by employees for protection against health and safety hazards. Personal protective equipment is designed to protect many parts of the body, i.e., eyes, head, face, hands, feet, and ears.

Reprocessing means the steps performed to prepare used medical equipment/devices for reuse (cleaning, disinfection, and sterilization).

Semi-critical items means medical equipment/device that comes in contact with non-intact skin or mucous membranes but ordinarily does not penetrate them (E.g. Entonox demand valves, laryngoscope blades). Reprocessing semi-critical equipment/devices involves meticulous cleaning followed by, at a minimum, high-level disinfection.

Spaulding Classification System means a strategy for sterilization or disinfection of inanimate objects and surfaces based on the degree of risk involved in their use. The three categories are critical, semi critical, or noncritical. The system also established three levels of germicidal activity for disinfection (high, intermediate, and low).

Sterilization means a level of disinfection required when processing critical medical equipment/devices. This destroys all forms of microbial life including bacteria, viruses, spores and fungi.

Single patient use means refers to medical equipment/devices that are used on a single patient and may be re-used on the same patient, but must not be used on other patients.

Single-use/disposable item means refers to medical equipment/devices designated by the manufacturer for single-use only. Single-use equipment/devices must not be reprocessed or reused.

Two Step Clean means a two step, or 'wipe twice" process is used to clean and then disinfect surfaces. First wipe surfaces thoroughly to clean the surfaces of visible organic material (dirt you can see) and then wipe again with a clean cloth saturated with disinfectant to remove invisible microorganisms (things you cannot see).

Organic materials that are not properly removed during the first step may inactivate the disinfectant used in the second step, therefore both steps are essential.

REFERENCES

- Appendix 1: *Cleaning and Disinfecting Classification*
- Non-Alberta Health Services Documents:
 - Standards for Cleaning, Disinfection and Sterilization of Reusable Medical Devices for all Health Care Facilities and Settings. Alberta Health and Wellness January 16, 2008.
 - Standards for Single-Use Medical devices, Alberta Health and Wellness, February, 2011.
 - Health Canada, Laboratory centre for disease Control. Hand washing, Cleaning Disinfection and Sterilization in Health Care. Canada Communicable disease Report. 24S8, December 1998.
 - Ontario Ministry of Health and Long Term Care. Provincial Infectious Diseases Advisory Committee. Best Practices for environmental Cleaning in All Health Care Settings. Dec 8, 2009.
 - Ontario Ministry of Health and Long Term Care. Provincial Infectious Diseases Advisory Committee. Best Practices for cleaning and Disinfection and Sterilization of Medical Devices in All Health Care Settings. Feb 2010.
 - Safer Practice Notice, Discontinue use of hydrogen peroxide to clean SureStep® brand glucose meters, AHS, Mar 10 2011.


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APPENDIX 1

Cleaning and Disinfecting Classification

Categories	Reprocessing Level	Definition	Procedure
Clean Items	Standard cleaning (C)	Non medical item	Wash area with soap and water. Can use a disinfectant towel to clean.
Non-critical Items	Low-level disinfection (LLD)	Item that touches intact skin but not a mucus membrane. Item may be handled near to or prior to patient care.	Clean visible soil before disinfecting. If disinfectant towel is used to clean, a second towel must be used to disinfect the item. This can normally be done in the field. Grossly contaminated items must be sent to the reprocessing area.
Semi-critical Items	High-level disinfection (HLD)	Item that touches non-intact skin or mucus membrane	Clean visible soil off item. Cannot be disinfected in the field, must be sent to the reprocessing area.
Single Use Items	Dispose of item into appropriate waste receptacle or sharps container after use (SU)	Item used on a single patient only. Identified by  or labelled as single use	Item to remain in packaging until just prior to use. Item not to be used if packaging is soiled, wet or damaged.
Non-critical Items	Low-level disinfection (LLD)	Item that touches intact skin but not a mucus membrane. Item may be handled near to or prior to patient care.	Clean visible soil before disinfecting. If disinfectant towel is used to clean, a second towel must be used to disinfect the item. This can normally be done in the field. Grossly contaminated items must be sent to the reprocessing area.