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INFECTION PREVENTION AND CONTROL GUIDANCE FOR EMS PROVIDERS



This document was developed by the Metropolitan Chicago Healthcare Council, Clinical Services Department, Infection Prevention and Control Forum.

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INFECTION PREVENTION AND CONTROL GUIDANCE FOR EMS PROVIDERS

This guidance document was developed by the Clinical Services Infection Prevention and Control Forum. These guidelines are meant to assist Emergency Medical Services provider organizations in developing policies and/or procedures related to infection prevention and control in the prehospital environment. Each individual organization may wish to consider the points contained in this document when developing or revising their agency-specific policies and procedures.

INTRODUCTION

Emergency Medical Services (EMS) providers play an important role in the prevention and control of infections. EMS providers are at the front line of medical care and have a high risk of exposure to patients with known or unknown infectious diseases or germs. The emergence of antimicrobial-resistant bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococcus (VRE), along with growing concerns regarding the spread of *Clostridium difficile* (*C. diff*) and viruses, are major problems facing all healthcare providers, including EMS providers (Fleming, 2009).

This document is a resource designed to help EMS providers understand the importance of infection prevention and control in their daily routines and work environment. The objectives of this document are: (1) supply EMS providers with best practices and recommendations on infection prevention and control and (2) protect patients and EMS providers from potential infections. This guidance document includes:

1. Recommendations for Ambulance Cleaning and Disinfection
2. EMS Provider Vaccination and Testing Recommendations
3. Infection Prevention and Control Recommendations for EMS Patient Hand-Offs

This resource is targeted at individuals with a role in preventing the transmission of infections in the pre-hospital environment, including Paramedics, EMTs, and EMS provider administrative staff.

Recommendations are based on the following assumptions and principles:

1. Basic guidelines to prevent and control the spread of infectious diseases are routinely implemented by the EMS provider.
 - a. Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens," available at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10051
 - b. Centers for Disease Control and Prevention (CDC), "Bloodborne Infectious Diseases: HIV/AIDS, Hepatitis B, Hepatitis C," available at <http://www.cdc.gov/niosh/topics/bbp/>
 - c. CDC, "Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Healthcare Settings," available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr5417a1_e
 - d. World Health Organization (WHO), "Standard Precautions in Healthcare," available at http://www.who.int/csr/resources/publications/EPR_AM2_E7.pdf

2. EPA-registered disinfectants are routinely used for the disinfection of patient transport vehicles. A list of EPA-registered disinfectants is available at <http://www.epa.gov/oppad001/chemregindex.htm>
3. Programs that promote good hand hygiene practices are in place.
 - a. CDC, "*Handwashing: Clean Hands Save Lives*," available at <http://www.cdc.gov/handwashing/>
4. Education, including orientation and annual continuing education, and support to help staff consistently implement appropriate infection prevention and control practices is provided by the employer. Effective education programs should emphasize (Provincial Infectious Diseases Advisory Committee [PIDAC], 2009):
 - a. The risks associated with infectious diseases, including acute respiratory illness and gastroenteritis.
 - b. Hand hygiene, including the use of alcohol-based hand rubs and hand washing.
 - c. Principles and components of routine standard precautions, as well as additional transmission-based precautions.
 - d. The risk of infection transmission and the appropriate use of personal protective equipment (PPE), including safe application, removal, and disposal.
 - e. Individual staff responsibility for personal, patient, and coworker safety.
 - f. The importance of vaccinations and tuberculosis (TB) screening for EMS providers.
 - g. Collaboration between infection prevention and control professionals and EMS providers to implement and maintain appropriate infection prevention and control standards that protect EMS providers and patients.

AMBULANCE CLEANING AND DISINFECTION

AMBULANCE CLEANING AND DISINFECTION

In a recent study published in the American Journal of Infection Control, several Chicago-area ambulances tested positive for *Staphylococcus aureus*, a bacteria that causes serious infections and is resistant to certain types of antibiotics. At least one *Staphylococcus aureus* sample was found in 69% of the ambulances tested. Of samples detected, 77% showed resistance to at least one commonly used antibiotic, and 12% of samples were identified as one of the 'superbugs' known as methicillin-resistant *S. aureus* (MRSA). This study found that the meticulous application of existing cleaning techniques in ambulances is necessary to prevent the further spread of these harmful pathogens (disease causing germs) in the prehospital environment (Rago et al., 2012).

Compliance with best practices for cleaning and disinfecting EMS vehicles and patient care equipment is an important factor in preventing the spread of infections. EMS providers and their patients have an increased risk for spreading infections without clear policies and an understanding of these procedures (Fleming, 2009).

Items or surfaces that have been exposed to the patient's skin, blood, or body fluids are considered contaminated. Disease causing microorganisms or germs can live on objects for extended periods of time. Contaminated objects can cause disease and spread infection (Siegel et al., 2007). In order to prevent the spread of infections in the prehospital environment, it is essential that patient care items (i.e. items that come in contact with skin and/or mucous membranes) and environmental surfaces are cleaned and disinfected after each patient (Fleming, 2009).

Patient care items and surfaces that can contribute to the spread of infection include:

- Stethoscopes
- Blood pressure cuffs
- Monitors
- Stretchers, backboards, and immobilization devices
- Laryngoscope blades
- Radios
- Shelves
- Door handles
- Other items and surfaces in the ambulance or transport vehicle

Ambulance Cleaning & Disinfection

Cleaning is defined as the physical removal of foreign and organic materials such as blood, body fluids, and disease causing microorganisms or germs from a surface or object. **Cleaning physically removes, but does not kill, germs.** Cleaning is accomplished by using water, detergents, and a scrubbing action. The key to cleaning is the use of friction to remove debris and reduce presence of germs (PIDAC, 2009).

Disinfection is the process used to kill and prevent the growth of germs on objects and surfaces. Disinfection is accomplished through the use of chemical products regulated by the U.S. Environmental Protection Agency (EPA). Disinfectants should only be used after items have been thoroughly cleaned.

Cleaning and disinfection is a two-step process. Following cleaning, the disinfectant should be applied or reapplied and allowed to remain on the surface for the full contact time (PIDAC, 2009). Contact time, or kill time, is the length of time that the disinfectant must remain on the surface or object, as specified by the manufacturer (Rutala et al., 2008).

Recommendations for Ambulance Cleaning & Disinfection

Objects and surfaces must be cleaned thoroughly before effective disinfection can take place (PIDAC, 2009). The following routine cleaning and disinfection methods should be employed throughout the vehicle (Hill, 2009):

1. Visible soil, blood, and other items should be removed from the item or surface before the disinfectant is applied.
2. Cleaning and disinfection should be done as soon as possible after the items and surfaces have been used. Disinfectants should be used according to the manufacturer's instructions. Adhere to any safety precautions or other recommendations as directed (e.g., allowing adequate ventilation in confined areas and proper disposal). Gloves must be worn while using disinfectants. Immediately perform hand hygiene per CDC guidelines after removing gloves.
3. Contaminated **reusable** patient care devices and equipment should be placed in clearly marked biohazard bags for appropriate cleaning and disinfection.
4. **Disposable equipment and contaminated linens** should be appropriately bagged and disposed of at the receiving hospital, per the hospital policies.
5. **Frequently touched surfaces in patient-care compartments** (including stretchers, railings, medical equipment control panels, adjacent flooring, walls, ceilings and work surfaces, door handles, radios, keyboards, and cell phones) that become directly contaminated with respiratory secretions and other body fluids during patient care, or indirectly by touching the surfaces with gloved hands, should be first cleaned and then disinfected using an EPA-approved disinfectant in accordance with the manufacturer's instructions. Ensure that the disinfectant is applied to the surface for the full contact time, or kill time, as specified by the manufacturer.
6. **Non-patient-care areas of the vehicle**, such as the driver's compartment, may become indirectly contaminated. Personnel should be particularly vigilant to avoid contaminating environmental surfaces not directly related to patient care (e.g., steering wheels, light switches, gear shifts, etc.). If the surfaces in the driver's compartment become contaminated, clean and disinfect according to the vehicle manufacturer's recommendations.

Please see **Appendix A: Checklist for the Cleaning and Disinfection of an Ambulance**, for more information on these procedures.

Recommendations for the Frequency of Cleaning in Ambulances

1. High-risk Surfaces

Surfaces that are frequently touched with hands (both gloved and ungloved) require cleaning and disinfection between every patient encounter (PIDAC, 2009).

Stretchers/Railings	Stethoscopes	Work surfaces
Door handles	Monitoring equipment and control panels	Radios
Computer keyboards	Steering wheels	Light Switches

2. Low-risk Surfaces

Surfaces that have minimal contact with hands require cleaning on a regular basis or when contamination occurs (PIDAC, 2009).

Floors	Ceilings	Cabinets
Walls	Windows	

Providers should always wipe down equipment, carefully focusing on items used for patient care and items in contact with the patient during care (McCallion, 2012). Please see **Appendix B – Cleaning Standards for Ambulance Equipment**.

Special Precautions and Recommendations

Routine cleaning and disinfection may not be adequate to remove some germs, particularly *Clostridium difficile* and Norovirus, from contaminated surfaces.

1. *Clostridium difficile* – Specialized cleaning and disinfection practices are required to remove *C. difficile* from surfaces and patient care items. *C. difficile* is a spore-forming bacteria that causes severe diarrhea. This bacteria is resistant to germicidal chemicals and can persist in the environment for months.

Ambulance companies that frequently transport patients to and from nursing homes and long-term care facilities are at an increased risk for exposure to *C. difficile* (Sehulster et al., 2003).

2. Norovirus – Noroviruses are a group of viruses that cause acute gastroenteritis in humans. Noroviruses are extremely contagious and easily transmitted by direct person-to-person contact; by transfer of the virus after touching contaminated materials and surfaces; or via droplets from vomitus. Noroviruses can survive in the environment for at least 12 days (PIDAC, 2009).

It is recommended that only standard bleach, normal dilution 1:10 with water, is used to disinfect objects and surfaces contaminated by *C. difficile* and the Norovirus. Standard bleach is available in ready to use wipes or sprays (Sehulster et al., 2003; PIDAC, 2009).

Recommended Ambulance Cleaning and Disinfection Products

Product	Uses	Advantages	Disadvantages
Alcohols (70-95%)	<ul style="list-style-type: none"> - External surfaces of some equipment (e.g., stethoscopes, pulse oximeters) 	<ul style="list-style-type: none"> - Non-toxic - Low cost - Rapid action - No residue 	<ul style="list-style-type: none"> - Evaporates quickly, not an ideal surface disinfectant - Highly flammable - Harmful to plastic, silicone, and rubber - Deactivated by organic material (surface must be cleaned prior to use)
Standard Bleach (Normal dilution 1:10)	<ul style="list-style-type: none"> - External surfaces - Blood spills 	<ul style="list-style-type: none"> - Low cost - Rapid action - Readily available - Available in ready to use wipes and sprays - Sporicidal and Virucidal (effective against <i>C. difficile</i> and <i>Norovirus</i>) 	<ul style="list-style-type: none"> - Harmful to metals - Deactivated by organic material (surface must be cleaned prior to use) - Irritant to skin and mucous membranes - Once diluted, it must be used within 24 hours - Stains clothing
Hydrogen Peroxide (0.5%)	<ul style="list-style-type: none"> - External surfaces of some equipment - Floors, walls, and furnishings 	<ul style="list-style-type: none"> - Safe for the environment - Non-toxic - Rapid action - Active in the presence of organic materials - Available in wipes and liquid - Excellent cleaning ability due to its detergent properties 	<ul style="list-style-type: none"> - Harmful to copper, zinc, brass, acrylics, and aluminum - Leaves visible residue
Quaternary ammonium compounds (Quats)	<ul style="list-style-type: none"> - Floors, walls, and furnishings - Blood spills, prior to disinfection 	<ul style="list-style-type: none"> - Non-toxic - Non-corrosive - Good cleaning ability due its detergent properties 	<ul style="list-style-type: none"> - Cannot be used to disinfect medical instruments - Limited use as a disinfectant because of its narrow microbial spectrum

Adapted from Provincial Infectious Disease Advisory Committee's 'Best Practices for Environmental Cleaning for Prevention and Control of Infections.'

EMS PROVIDER VACCINATION AND TESTING
RECOMMENDATIONS

EMS PROVIDER VACCINATION AND TESTING RECOMMENDATIONS

According to the CDC, healthcare personnel are defined as individuals working in healthcare settings with the potential for exposure to patients and/or to infectious materials including blood and body fluids, contaminated medical supplies and equipment, contaminated environmental surfaces, or contaminated air. Healthcare personnel include (but are not limited to) physicians, nurses, nursing assistants, therapists, technicians, **emergency medical service personnel**, etc. (Shefer et al., 2011).

Due to frequent contact with many patients, EMS providers are at a risk for exposure to, and possible spread of, vaccine-preventable diseases. Employers and healthcare personnel have a shared responsibility to prevent occupationally acquired infections and avoid causing harm to patients, themselves, and their families by taking reasonable precautions to prevent the spread of vaccine-preventable diseases (CDC, 2011).

Based on recommendations from the CDC and the Advisory Committee on Immunization Practices (ACIP) **healthcare personnel, including EMS providers, are considered to be at substantial risk for and should be vaccinated against hepatitis B, seasonal influenza, measles, mumps, rubella, pertussis, and varicella.** The Occupational Safety and Health Administration (OSHA) and the National Fire Protection Association (NFPA) also support these recommendations (West, 2009).

Understanding the Importance of Vaccines

In the U.S. vaccines have reduced or eliminated many infectious diseases that routinely killed or harmed infants, children, and adults. However, the viruses and bacteria that cause vaccine-preventable disease and death still exist and can be passed on to people who are not protected by vaccines. Vaccine-preventable diseases have many social and economic costs such as sick children missing school, parents losing time from work, doctor's visits, hospitalizations, and even death (CDC, 2011).

Vaccines are continually monitored for safety, and like any medication, vaccines can cause side effects. Most side effects are minor (i.e., a sore arm or low-grade fever) and resolve within a few days (CDC, 2010).

Due to contact with patients, EMS providers are at an increased risk for exposure and transmission of vaccine-preventable diseases. Therefore, it is imperative that EMS providers participate in a comprehensive immunization and TB screening regimen. The decision to not receive the recommended vaccinations place the EMS provider, and others who come into contact with him or her, at an increased risk of contracting a potentially deadly disease.

For more information and resources on this topic, please visit:

- CDC, Vaccines & Immunizations - <http://www.cdc.gov/vaccines/>
- Immunization Action Coalition - <http://www.vaccineinformation.org/benefits.asp>

Recommended Vaccinations for EMS Providers

Disease	Disease and Transmission Information	Immunization Schedule	Additional Information
Hepatitis B	Highly infectious virus, transmitted through exposure to infected blood or body fluids	Series of three doses	EMS personnel are at a high risk for exposure to this virus. OSHA mandates that this vaccine be offered to all healthcare personnel at the employer's expense.
Influenza	Influenza can cause outbreaks of severe respiratory illness and death Transmitted by respiratory droplets and airborne spread	Annually <i>(usually in the fall months)</i>	EMS personnel have the ability to transmit this virus to populations with a high risk for complications due to influenza. <i>(e.g., individuals with chronic medical conditions, infants, young children, seniors, and pregnant women)</i>
Measles, Mumps, and Rubella (MMR)	<u>Measles</u> : Highly contagious rash illness transmitted by respiratory droplets and airborne spread <u>Mumps</u> : Acute viral infection characterized by fever and inflammation of the salivary glands <u>Rubella</u> : A viral disease characterized by a rash and a low-grade fever	Series of two doses	All three vaccines are combined into one product, which is referred to as the MMR vaccination. Due to an increased opportunity for exposure, EMS personnel are at a higher risk than the general population for becoming infected with measles, mumps, and rubella. One primary concern is the effect the Rubella virus can have on an unborn fetus.
Pertussis	<u>Pertussis (Whooping Cough)</u> : Highly contagious bacterial infection transmitted by direct contact with respiratory droplets and airborne spread	Every adult should receive one dose and a booster every 10 years	The Pertussis vaccine is typically combined with the Diphtheria and Tetanus vaccines into one product, which is referred to as the Tdap vaccination. Due to an increased opportunity for exposure, EMS personnel are at a higher risk than the general population for becoming infected with Pertussis. Infants and children have the greatest risk for complications due to Pertussis.
Varicella	Highly infectious disease transmitted by direct contact and airborne spread Commonly known as the <i>Chickenpox</i>	Series of two doses	Due to an increased opportunity for exposure, EMS personnel are at a higher risk than the general population for becoming infected with the Varicella virus.

Adapted from the Centers for Disease Control and Prevention (CDC)'s 'Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP).'

Tuberculosis Screening Guidelines for EMS Providers

Tuberculosis (TB) is caused by a bacteria that primarily attacks the lungs. TB is spread through the air from one person to another. TB bacteria are put into the air when a person with active TB coughs, sneezes, or speaks. People nearby can breathe in this bacteria and become infected. TB can be fatal without proper treatment. TB is the second most common cause of death from infectious disease in the world after HIV/AIDS (CDC, 2012).

EMS personnel are at increased risk for exposure to TB. Participation in a comprehensive TB screening program is recommended. Since EMS personnel will, or possibly will be, exposed to individuals with TB, the following screening and education procedures should be applied (Jensen et al., 2005):

1. EMS personnel should receive a baseline TB screening and respirator fit testing upon hire.
2. After the baseline screening for TB, EMS personnel should receive TB screening annually* AND when exposed to a person with active TB (at the time of exposure and 10-12 weeks after exposure).

* If the employer has completed a TB risk assessment, the frequency of screenings should be based upon this assessment. TB risk assessments not only help the employer determine the level of risk to the provider, but aid in the design of an effective TB infection prevention and control program. The TB risk assessment must be conducted by a qualified individual, using epidemiologic surveillance data obtained from the local or state health TB-control programs.

For additional information about TB risk assessments, please visit:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm>

3. At the time of their annual TB screening, EMS personnel should receive education about the symptoms and reporting requirements of TB exposure.

INFECTION PREVENTION AND CONTROL
RECOMMENDATIONS FOR EMS PATIENT HAND-OFFS

INFECTION PREVENTION AND CONTROL RECOMMENDATIONS FOR EMS PATIENT HAND-OFFS

Patient hand-off, or the transfer of patient care from one healthcare provider to another, is one of the most important elements of successful care for patients with serious injuries or illnesses (Koenig & Galvagno, 2012). The primary objective of a hand-off is to provide accurate information about a patient's care, treatment, and current conditions (MCHC, 2007). EMS providers play an important role in the patient hand-off process when they transport patients to a hospital for emergency care, between hospitals, or to other healthcare facilities, such as nursing homes or assisted living facilities.

Often times, information regarding a patient's isolation status is not adequately conveyed during patient hand-off procedures between EMS providers and facility staff. Lack of communication creates a barrier to effective infection prevention and control and results in a potential increase in the transmission of germs. Timely and effective communication between EMS and facility staff is necessary to prevent the spread of infections and to ensure the safety of the patient and the EMS provider (National Occupation Research Agenda, 2009; National Transitions of Care Coalition, 2010).

In terms of infection prevention and control, the following barriers to effective communication have been observed:

- Lack of, or incomplete, communication regarding the patient's isolation status
- Lack of knowledge about the proper infection prevention and control procedures
- Infection control signage that is blocked, removed, or not easily identifiable

The guidelines below have been developed to minimize the risk of infection to patients and EMS providers during patient transfers between hospitals and other healthcare facilities.

Communication Between EMS Providers and Hospital Staff

The safe and effective transport of patients with isolation precautions begins with identification and communication of these precautions to all healthcare providers involved in the transfer of the patient, including EMS providers (The Health Care Improvement Foundation, 2010). With every patient transport, EMS providers should determine if a patient is on isolation precautions, prior to patient contact. This may require requesting additional information from facility staff. If a patient is on isolation precautions, EMS providers are encouraged to request as much information as possible related to the patient's isolation status, including information related to:

- The presence of the following symptoms:
 - Cough
 - Vomiting
 - Open wounds
 - Diarrhea
 - Rashes
 - Fever
- Special isolation precautions and the recommended personal protective equipment (PPE)
- Additional information related to the condition of the patient

When transporting a patient with a suspected or confirmed infection, EMS providers should ALWAYS convey the above information to the receiving facility immediately upon arrival.

Transport of Patients on Isolation Precautions

In order to reduce the spread of infection, it is recommended that EMS providers use Standard Precautions for all patients, at all times, regardless of their isolation status (Wisconsin Department of Health Services, 2009). Standard Precautions involve:

- Practicing good hand and respiratory hygiene (cover cough and sneeze)
- Wearing a standard procedure mask when a patient is coughing or vomiting
- Applying gowns, gloves, masks, and eye shields when in contact with body secretions
- Cleaning and disinfecting reusable patient care equipment between patients

In some cases, Isolation Precautions are required in addition to the Standard Precautions detailed above. Isolation precautions are used for patients likely to have germs that can be spread through contact with skin, contaminated surfaces, or airborne droplets (WSHA, 2009). Isolation Precautions include (see **Appendix C**):

- Contact Precautions
- Droplet Precautions
- Airborne Contact Precautions

A patient may be on more than one type of isolation precaution. Isolation precautions are usually posted outside of the patient's room and/or indicated in the patient's medical record. **Please note that isolation precaution signage varies among hospitals and healthcare facilities. EMS personnel should always contact facility staff or the Infection Prevention and Control Department with questions regarding infection prevention and control signage.**

Prior to patient transport, EMS providers are encouraged to request information regarding isolation precautions. Please see **Appendix C – Patient Isolation Guide for EMS Transport**.

Infection Prevention and Control Transport Tools

A standardized approach and efforts to reduce variation in hand-off communication is a key method in the successful transition of patient care (Arora & Johnson, 2006; Evans, 2011). Infection prevention and control transport tools may promote effective communication between the facility and the EMS providers. Transport tools provide guidelines for the identification of patients on isolation precautions and the appropriate personal protective equipment (PPE) needed for patient transport. **Please see Appendix D – Sample Infection Prevention and Control Transport Tool** for an example of infection prevention and control communication tool. EMS providers can request that a nurse or other patient care provider complete this tool prior to patient contact. This tool can then be provided to the receiving facility upon arrival. Transport tools can be modified to meet the needs of your organization.

Efforts aimed at increasing timely and accurate communication related to infection prevention and control will promote increased safety among EMS providers, facility staff, and patients. In addition, promoting a culture of safety in infection prevention and control will help decrease the spread of infections in the prehospital environment.

EMS providers that wish to learn more about infection prevention and control procedures or that have questions related to specific infections or germs, isolation precautions, infection prevention and control signage, or vaccinations are encouraged to contact their employer, their EMS System Coordinator, or the facility's Infection Prevention and Control Department.

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APPENDIX A

CHECKLIST FOR THE CLEANING AND DISINFECTION OF AN AMBULANCE

CHECKLIST FOR THE CLEANING AND DISINFECTION OF AN AMBULANCE

Cleaning Following Each Patient Transport	
Completed	Action
<input type="checkbox"/>	Place potential infected medical waste in a clearly marked biohazard waste receptacle or bag per OSHA standards.
<input type="checkbox"/>	Carefully dispose of sharps into a sharps container.
<input type="checkbox"/>	Clean and disinfect all equipment used during the patient encounter following your agency's policies (<i>See Appendix B – Cleaning Standards for Ambulance Equipment</i>).
<input type="checkbox"/>	Clean and disinfect the cab and patient compartment, as required.
<input type="checkbox"/>	Restock vehicle as required.
<input type="checkbox"/>	If the vehicle is heavily contaminated, it should be taken out of service and cleaned following your agency's policies.
Routine Scheduled Cleaning	
Completed	Action – Patient Compartment
<input type="checkbox"/>	Remove all equipment and sweep out the compartment; clean and disinfect.
<input type="checkbox"/>	Remove stretchers; clean and disinfect all components including mattress and belts.
<input type="checkbox"/>	Remove wall suction; clean and disinfect.
<input type="checkbox"/>	Remove the contents of cabinets and shelves; clean and disinfect all surfaces.
<input type="checkbox"/>	Clean, disinfect, and dry all hard surface items before returning them to the cabinet or shelf; inspect for damage and expiration dates; repair/replace as needed.
<input type="checkbox"/>	Sweep, vacuum, clean, and disinfect floor.
<input type="checkbox"/>	Clean and disinfect all chairs, bench seats, and seat belts.
<input type="checkbox"/>	Clean and disinfect all interior surfaces, including ceiling and walls.
<input type="checkbox"/>	Empty, clean, and disinfect waste containers.
<input type="checkbox"/>	Clean interior windows.
Completed	Action – Driver's Compartment
<input type="checkbox"/>	Remove all equipment from the front of the vehicle.
<input type="checkbox"/>	Clean and vacuum floor.
<input type="checkbox"/>	Clean and disinfect all interior surfaces, including walls, doors, radio equipment, windows, and the dashboard.

Adapted from Provincial Infectious Disease Advisory Committee's 'Best Practices for Environmental Cleaning for Prevention and Control of Infections.'

APPENDIX B

CLEANING STANDARDS FOR AMBULANCE EQUIPMENT

CLEANING STANDARDS FOR AMBULANCE EQUIPMENT

According to OSHA standards, every EMS agency is required to have an exposure control plan for their EMS providers. This plan must clearly state how the EMS vehicle and each piece of equipment is to be cleaned, including the brand name of the cleaning products to be used, and how often it is to be cleaned (McCallion, 2012).

Vehicle Equipment – Patient Contact			
Equipment	Standard	Cleaning Frequency	Additional Considerations
Stretchers	All parts should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
Spinal Boards/ Head Blocks	All parts should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
Transport Chair and Other Manual Transfer Equipment	All parts should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
All Reusable Medical Equipment (<i>e.g., cardiac monitor, defibrillator, resuscitation equipment, etc.</i>)	All parts should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
Stretcher Mattresses	Should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
Pillows	Should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
Linens	Should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	After every patient use	
Passenger Seat - Upholstered	All parts, including seatbelts and the underneath, should be visibly clean with no blood, body substances, dust, dirt, stains, or spillages	After every use	Replace seatbelts if heavily contaminated with blood or body fluids Torn or damaged seat covers should be replaced Vacuum and/or shampoo if necessary

Passenger Seat - Vinyl	Cover should be damage free All parts, including seatbelts and the underneath, should be visibly clean with no blood, body substances, dust, dirt, stains, or spillages	After every use	Replace seatbelts if heavily contaminated with blood or body fluids Torn or damaged seat covers should be replaced
Medical Gas Equipment	All parts, including the valve and cylinder, should be visibly clean with no blood, body substances, dust, dirt, stains, or spillages	After every use	Replace single-use items after each use
Computer Equipment	All parts should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	Daily and after every use, especially if used while treating the patient	

Vehicle Equipment – Non-Patient Contact

Equipment	Standard	Cleaning Frequency	Additional Considerations
Response Kits and Bags	All surfaces, including the underside, should be visibly clean with no blood, body substances, dust or dirt	Bags regularly taken into patient care areas must be wiped clean after every use, with special attention given if contaminated with blood or body fluid Heavily used bags should be laundered weekly or monthly Lesser used bags should be cleaned every other month	All bags placed on ambulances should be made of wipeable material Any bag heavily contaminated with blood or body fluids should be disposed
Hand Sets <i>(e.g., radios and mobile phones)</i>	All parts should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	Daily and when contaminated	
Sharps Container	The external surfaces should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	Weekly or when contaminated	

Vehicle – Internal and External Fixed Features

Equipment	Standard	Cleaning Frequency	Additional Considerations
Overall Appearance - Exterior	The vehicle exterior should be clean at all times. Any presence of blood or body substances is unacceptable	Routine cleaning should be performed weekly, or as necessary due to weather conditions	If operational pressures prevent thorough cleaning of the exterior, the minimum cleaning standards to comply with health and safety laws should be met (<i>i.e. windows, lights, reflectors, mirrors, and license plates</i>)
Overall Appearance - Interior	The area should be tidy, ordered, and uncluttered, with well-maintained furniture appropriate for the area being used Any presence of blood or body substances is unacceptable	Clean between patients, daily, and deep-clean weekly	Clean all surfaces in contact with the patient and that may have been contaminated Crews should routinely clean the vehicle floor Remove all detachable equipment and consumables
Ceiling	All surfaces should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	Weekly	If contaminated, clean as soon as possible
Cabinets, Drawers, and Shelves	All parts, including the interior, should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	Weekly	If contaminated, clean as soon as possible
Product Dispensers	All parts of the dispenser, including the underside, should be visibly clean with no blood, body substances, dust, dirt, debris, or spillages	Daily or as soon as possible, if contaminated	Liquid dispenser nozzles should be free of product build-up, and the surrounding areas should be free from splashes of the product
Electrical Switches, Sockets, and Thermostats	All surfaces, including the undersides, should be visibly clean with no blood, body substances, dust, dirt, or adhesive tape	Weekly or as soon as possible, if contaminated	
Equipment Brackets	All parts of the bracket, including the undersides, should be visibly clean with no blood, body substances, dust, or dirt	Weekly or as soon as possible, if contaminated	

Fire Extinguisher	All surfaces, including the underside, should be visibly clean with no blood, body substances, dust or dirt	Weekly or as soon as possible, if contaminated	
Floor	The entire floor, including all edges, corners, and main floor spaces, should be visibly clean with no blood, body substances, dust, dirt, debris, stains or spillages	Daily and when heavily soiled or contaminated with blood and/or body fluids.	
Floor Mounted Stretcher Locking Device/Chair Mounting	All surfaces, including the undersides, should be visibly clean with no blood, body substances, dust, dirt, or debris	Weekly or as soon as possible, if contaminated	
Hand Rails	All parts of the rail, including the underside, should be visibly clean with no blood, body substances, dust, dirt, stains, or spillages	Clean rails that have been touched after every patient Clean all rails weekly	
Heating/Ventilation Grills	The external part of the grill should be visibly clean with no blood, body substances, dust, dirt, or debris	Weekly or as soon as possible, if contaminated	
Walls	All wall surface should be visibly clean with no blood, body substances, dust, dirt, adhesive tape, or spillages	Weekly or as soon as possible, if contaminated	
Windows	All interior glazed surfaces should be visibly clean and smear free with no blood, body substances, dust, dirt, debris, or adhesive tape A uniform clean appearance should be maintained	Weekly or as soon as possible, if contaminated	
Work Surfaces	All surfaces should be visibly clean with no blood, body substances, dust, dirt, stains, or spillages	After every patient	
Waste Receptacles	The waste receptacle, including the lid, should be visibly clean and smear free with no blood, body substances, dust, dirt, stains, or spillages	Daily or as soon as possible, if contaminated	

Adapted from the National Patient Safety Agency's 'A Framework for Setting and Measuring Performance Outcomes in Ambulance Trusts.'

APPENDIX C

PATIENT ISOLATION GUIDE FOR EMS TRANSPORT

PATIENT ISOLATION GUIDE FOR EMS TRANSPORT

Actions to Take	Contact Precautions	Droplet Precautions	Airborne Precautions
All persons Entering Room <i>(healthcare workers and parents/visitors)</i>	Hand Hygiene Gown Gloves	Hand Hygiene Mask	Hand Hygiene N95 respirator
Patient <i>In preparation for transport and during transport</i>	CLEAN patient gown Clean sheet <i>(not the sheet off the bed)</i>	CLEAN patient gown Clean sheet <i>(not the sheet off the bed)</i> Mask <i>(cover patient's nose/mouth with sheet if unable to wear a mask; can be removed in the ambulance)</i>	CLEAN patient gown Clean sheet <i>(not the sheet off the bed)</i> Mask <i>(procedural mask, not N95, or cover patient's nose/mouth with sheet if unable to wear a mask; can be removed in the ambulance)</i>
Healthcare Worker <i>During transport</i>	Hand Hygiene Use Gloves for patient contact	Hand Hygiene Wear Mask if patient unmasked	Hand Hygiene Wear appropriate mask or respirator if patient unmasked
Family	Ask to wash or gel hands; no need to wear any equipment		
All persons Entering Room at Destination <i>(healthcare workers and parents/visitors)</i>	Hand Hygiene Gown Gloves	Hand Hygiene Mask	Hand Hygiene N95 respirator

- Contact Isolation for *C.difficile* or Norovirus = Infection Prevention and Control staff will assist with directions
- Droplet Isolation for Pertussis = Infection Prevention and Control staff will assist with directions
- Airborne Isolation and Airborne/Contact Isolation = Infection Prevention and Control staff will assist with directions
- Call Infection Prevention and Control with any questions.

Adapted from 'The Patient Isolation Guide for EMS Transport', by A. Rupp, 2012.

APPENDIX D

SAMPLE INFECTION PREVENTION AND CONTROL TRANSPORT TOOL

Infection Prevention & Control **Transport Tool**

Patient Name (*please print*): _____ Date: _____

ISOLATION PRECAUTIONS

- | | |
|---|---|
| <input type="checkbox"/> Contact (gown/glove) | <input type="checkbox"/> Airborne (N95 Mask) |
| <input type="checkbox"/> Droplet (Procedure mask) | <input type="checkbox"/> No Isolation Precautions |
-

Infection Prevention & Control **Transport Tool**

Patient Name (*please print*): _____ Date: _____

ISOLATION PRECAUTIONS

- | | |
|---|---|
| <input type="checkbox"/> Contact (gown/glove) | <input type="checkbox"/> Airborne (N95 Mask) |
| <input type="checkbox"/> Droplet (Procedure mask) | <input type="checkbox"/> No Isolation Precautions |
-

Infection Prevention & Control **Transport Tool**

Patient Name (*please print*): _____ Date: _____

ISOLATION PRECAUTIONS

- | | |
|---|---|
| <input type="checkbox"/> Contact (gown/glove) | <input type="checkbox"/> Airborne (N95 Mask) |
| <input type="checkbox"/> Droplet (Procedure mask) | <input type="checkbox"/> No Isolation Precautions |