SECTION 1 - INTRODUCTION

Infectious diseases are caused by microorganisms. Microorganisms constantly try to invade the body while the body defends against them. For an infection to occur, an imbalance must occur which allows the microorganism to gain entry into the body. Routine practices are measures to prevent the above from happening.

While every effort has been made to ensure this guideline contains the most current information, EMS agencies and EMS personnel are encouraged to refer to established reference sources (Health Canada, Manitoba Health) for updated information.

EMS services must operate according to their respective regions infection control polices, which must be consistent with established provincial and Health Canada guidelines. This document provides a resource to help ensure consistency in infection control throughout EMS in Manitoba. Where regional infection control policies do not exist, this document addresses the responsibilities of the employer, and the employee in ensuring the maximum protection of health care workers, their families, and their patients from the inadvertent spread of communicable diseases.

Routine Practices

- "Routine Practices" were developed by Health Canada to protect health care workers from the transmission of infectious diseases

- "Universal Precautions" and "Standard Precautions" are terms formerly used to describe aspects of Routine Practices, and are no longer the current terms used in Canada

Responsibilities

- this Infection Control Guideline was designed to prevent transmission of infectious diseases to EMS personnel, their families and the patients they care for
- this program will only be successful if everyone involved in prehospital care understands their responsibilities and strives to make them a part of everyday practice

Responsibilities of the Employing Agency

- Occupational Health and Safety Regulations requires all employers to take all "practical" steps to prevent harmful worker exposure to all infectious organisms. This includes:
    - employee notification and exposure follow-up
    - employee education
    - employee vaccination
    - safer work practices
    - ensuring that medical waste, chemicals, soiled laundry and laboratory samples are handled according to accepted standards and government regulations
    - a system for infectious waste collection that minimizes the risk of exposure to their workers as well as to the waste transportation and disposal workers

Responsibilities of the Infection Control Officer (or other designated individual)

- each prehospital care agency should designate an Infection Control Officer to support and enforce compliance with the Infection Control Guidelines
- this individual (or designate) will be responsible for:
    - ensuring the Infection Control Guidelines are instituted
    - ensuring adequate personal protective equipment (PPE) that meets all current requirements for each base and responding vehicle

- coordinating communication between the EMS personnel, and appropriate medical support regarding exposure to an infectious disease that represents a risk to the provider
- conducting spot checks of on scene and base operations to ensure compliance with the Infection Control Program
- coordinating the immunization program as recommended in Appendix 1

Responsibilities of Individual EMS Personnel

- each EMS personnel will assume responsibility for his/her health by:
  - maintaining up to date immunizations
  - using personal protective equipment (PPE) as mandated by the employing agency as recommended by the Public Health Agency of Canada and Manitoba Health guidelines
  - reporting any suspected exposure to a bloodborne pathogen or other infectious disease to the Infection Control Officer
  - reporting any communicable diseases which pose a risk for transmission (occupational or non occupational) to the Infection Control Officer (or designate)
  - following all other aspects of the Infection Control Program

Responsibilities of Referring Health Care Facilities

- when carrying out an interfacility transfer, it is the responsibility of the referring health care facility to inform the EMS personnel, as well as the receiving facility, of the presence or possible presence of a communicable disease, in so far as it relates to the medical care being provided or is deemed to be a serious and immediate threat, and the measures that are required to prevent the spread of the disease (ie: PPE to be used)

All EMS services shall have a policy regarding management of occupational exposure to blood borne pathogens

- **this policy should be the same (or similar) to the current "Integrated Post-Exposure Protocol: Guidelines for Managing Exposures to Blood / Body Fluids" published by the Public Health Branch of Manitoba Health (www.gov.mb.ca/health/publichealth/cdc/fs/ipep.pdf)**
- **this policy shall be readily available to all EMS personnel**
- **the services provided for in this policy shall be readily accessible to all EMS personnel at any time**

SECTION 2 – HEALTH MAINTENANCE POLICY

- EMS personnel shall not be assigned to emergency response duties until an entrance physical assessment has been performed by a physician and the person has been certified as fit for duty

  - personnel should be evaluated for their susceptibility to Rubella (German Measles) and Varicella Zoster (Chickenpox), and Hepatitis B

  - all EMS personnel will be offered Hepatitis B vaccination (unless known to be immune) after an explanation of the risks and benefits of this vaccine. Boosters are no longer recommended by the Canadian National Advisory Committee on Immunization

  - EMS personnel who decline Hepatitis B vaccination will be required to sign a "Declination of Hepatitis B Vaccination Form". Providers who initially refuse vaccination may receive this vaccination on request at a later date

  - EMS personnel will be advised to maintain an up-to-date immunization status as described in Appendix 1

  - tuberculin skin testing should be carried out prior to employment, on an annual basis (recommended), and after any high risk exposure (eg. close unprotected contact - mandatory)

  - tuberculin skin testing (1-step) will be done immediately after exposure and repeated at 2-3 months

  - chest x-rays will be done
    - if the skin test is positive after 48 hours
    - if the skin test is positive after 2-3 months
    - as recommended by Public Health
    - as recommended by the physician

  - it is recommended that all prehospital care providers who are tuberculin skin test (Mantoux) negative undergo yearly testing for tuberculosis (unless advised otherwise), as described in Appendix 2

  - work restrictions may be required by a physician when the provider is at risk of contacting or exposing others to an infectious disease (ie. infection of exposed skin such as impetigo).

  - any provider returning to work after a communicable disease, other than a minor upper respiratory tract infection, (occupational or non-occupational) must be cleared for fitness to work by a physician, Public Health Nurse or Infection Control Officer prior to resuming emergency response duties

  - the following information will be documented on the employee provider's record by the Infection Control Officer:
    - immunization screening records
    - circumstances of exposure to communicable diseases
    - management of exposures

  - communication between physicians and management of employing agencies will focus on the fitness to work (with recommended restrictions if indicated) rather than upon specific medical information, including diagnosis

Infection Control/Occupational Health Training

- all employees providing emergency services shall complete
    - initial infection control/occupational health training prior to assignment to tasks where occupational exposure may occur
        - employees presently assigned to such tasks who have not already received such training will complete initial training within six months of the implementation of this guideline
    - refresher infection control/occupational health training on a regular basis thereafter
        - frequency to be determined based on policies set by the Regional Health Authority

- infection control/occupational health training shall include
    - an explanation of Routine Practices and Additional Precautions
    - an explanation of respiratory hygiene and cough etiquette
    - a general explanation of the epidemiology and symptoms of bloodborne diseases
    - an explanation of the modes of transmission of bloodborne pathogens
    - an explanation of the department infection control plan
    - an explanation of any engineering and administrative controls that are implemented to eliminate or reduce hazards to the employee
    - information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment (PPE)
    - an explanation of the basis for selection of PPE
    - information on Hepatitis B vaccine, including information on its efficacy, safety and the benefits of being vaccinated
    - information on chickenpox,
    - MMR, Td, varicella and influenza immunizations will be provided as required
    - information on the appropriate actions to take and persons to contact in an emergency involving bloodborne or airborne pathogens and possibly some droplet spread pathogens
    - an explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available
    - an explanation of the signs and labels or color coding required for biohazardous materials
    - information on the proper storage and disposal of biohazardous material
    - opportunity for interactive questions and answers

- infection control officers shall be knowledgeable in all of the program elements listed above, particularly as they relate to emergency services

SECTION 3 – BASE ENVIRONMENT AND INFECTION CONTROL

EMS Station

- each EMS station shall have available to them designated separate areas for
    - equipment decontamination and disinfection
    - storage of clean patient care equipment and personal protective equipment (PPE) used for infection control purposes
    - storage of biomedical waste (e.g. sharps)
    - if the above facilities are not available in station, contaminated equipment must be stored in a separate area, and must then be decontaminated and disinfected in an appropriate facility (e.g. hospital). In this circumstance the EMS service must have an ongoing arrangement with the appropriate facility for equipment decontamination and disinfection.

NOTE
Under no circumstances will kitchens, bathrooms, or living areas be used for decontamination or storage of patient care equipment or infectious waste.

- decontamination areas will be marked with biohazard signs which conform to WHMIS standards and should be properly equipped. See section entitled storage, decontamination, and disposal areas for detail

- biological waste storage areas will be marked with biohazard signs that conform and are maintained according to government regulations

- contaminated sharps will be stored in closed puncture resistant containers (sharps boxes) with appropriate biohazard markings. The choice of containers should be made after consultation with the local health care facility(s) and Regional Health Authority

- other contaminated materials will be stored in leak proof bags and disposed of with regular garbage

- if outside contamination of a storage or disposal bag is visible, a second bag with identical markings will be placed over the first. (Note: This is the only circumstance where double bagging is required)

- reusable bins and containers used to store biological waste will be inspected, cleaned and disinfected weekly (if in use) with recommended disinfecting solutions. If the bin or container is contaminated on its outside, it should be disinfected immediately

- all biohazard waste will be disposed of in accordance with provincial and local regulations and will be performed by an approved licensed contractor designated by the service or by agreement with a local health care facility(s)

Laundry Area

- all linen used for patient transport and all uniforms **showing visible contamination with body fluids** are considered potentially contaminated and must be contained and washed appropriately. These must be laundered separately from other laundry
- disposable gloves should be worn when handling contaminated linen
- store clean laundry in an area that is separate from the soiled or contaminated laundry

- all personnel should be encouraged to maintain an extra clean work uniform at the work site so contaminated uniforms can be exchanged upon return to base

- if uniform laundry facilities are not readily available, EMS staff may launder their uniforms at home

- structural firefighting protective clothing, gloves and protective footwear worn while on EMS related calls shall be cleaned and dried according to the manufacturer's instructions as needed and at least every six months

Storage, Decontamination, and Disposal Areas

- each EMS service shall designate a primary decontamination and disinfecting area within each station, or readily accessible to each station (e.g. contaminated equipment storage area with decontamination at a designated facility)

- the decontamination area, if in station, will be marked with biohazard signs and will be equipped with:
    - a sink large enough to wash all required medical equipment, constructed of stainless steel or similar material (plastic not acceptable)
    - proper lighting and adequate ventilation
    - adequate counter areas constructed of stainless steel
    - adequate rack space to allow air-drying of equipment
    - appropriate containers for disposal of biohazard waste
    - facilities for the safe storage, use and disposal of cleansing and disinfecting solutions
    - appropriate PPE for the use of disinfecting solutions
    - material safety data sheets (MSDS) for cleansing and disinfecting solutions
        - all personnel using these solutions will be familiar with the MSDS and will use the recommended PPE

- in addition to containers for biomedical waste, the following items must be kept at each base
    - disinfectant solutions which conform to WHMIS standards
    - household chlorine bleach
    - dedicated use buckets for disinfection
    - dedicated floor mops, or other cleaning tools

Infection Control Supplies for Emergency Vehicles

- the following must be kept in each ambulance vehicle
    - disposable gloves of various sizes (patient care)
    - utility gloves (for cleaning)
    - alcohol-based handrub (minimum 60% alcohol)
    - disposable face masks of the following types:
        - tight-fitting facial seal masks for protection against airborne pathogens (N95)
        - surgical or procedure masks for droplet protection
    - goggles and/or face shields
    - pocket masks with one way valves
    - fluid resistant gowns (i.e. OR gowns)
    - sharps containers
    - waterproof bags for waste (i.e. linen and other contaminated material)
    - bags for normal waste
    - disinfectant solutions
    - fluid spill clean up kits

SECTION 4 – ROUTINE PRACTICES AND ADDITIONAL PRECAUTIONS

Emergency response often is unpredictable and uncontrollable. All body fluids are considered infectious. **Therefore, routine practices should be used for all patients regardless of their condition.** PPE is chosen to provide barrier protection against all body fluids.

- each responding agency is responsible for the supply, repair, replacement and safe disposal of PPE
- Infection Control Officer or designate, will determine proper stock supply levels of PPE both for bases and for response vehicles and will ensure the base stock of PPE is adequate
- available PPE will include disposable gloves, utility gloves for disinfection purposes, face masks, eye protectors, fluid resistant gowns, sharps containers, leak proof disposal bags
  - full face shields are optional

ROUTINE PRACTICES

Hand Hygiene (Hand Washing)

Hands must be washed

- immediately before contact with a patient
- after any direct contact with a patient,.
- direct contact refers to hand contact with the patient's skin, mucous membranes, or any bodily fuids
- plain soap and water may be used for routine hand washing
- alcohol-based handrub (waterless handwash) may be used as a substitute for soap and water
- where there is visible soiling, hands should be washed with soap and water prior to using waterless handwash. Where soap and water are unavailable, cleanse hands first with water and wipe clean with a towel prior to using waterless handwash, then wash with soap and water when they are available (e.g. at the receiving hospital)
- fingernails should be kept short to facilitate hygiene. Artificial nails, gel nails and nail extenders can harbour microorganisms, and must not be worn while on duty

Gloves

- proper fitting disposable gloves will be worn during any patient contact when potential exists for contact with blood, body fluids, secretions/excretions, non intact skin (open skin lesions, exudative rash, draining wounds), or mucous membranes (i.e. inside the mouth)
- **it is not necessary to wear gloves for every patient encounter. Wearing gloves for every patient contact decreases compliance with hand hygiene protocols as it is often used as a substitute for hand washing**.
- cover all areas of abraded, lacerated, chapped, irritated, or otherwise damaged skin with waterproof adhesive dressings before putting on gloves **Note: personnel with damaged skin may be restricted from patient care duties**

- **do not touch steering wheel, radio, eyes, nose, mouth or personal items such as glasses, pens, etc. with gloves on**
- sterile gloves will be worn when aseptic technique is required
- all personnel are encouraged to carry extra pairs of disposable gloves on their person (ie: in belt pouch, pocket, etc.)
- hypoallergenic gloves and other such alternatives should be provided for those who cannot wear conventional gloves due to latex sensitivity. If any staff have a severe latex allergy, then all latex may need to be replaced.
- gloves should be checked after inserting hands to make sure a tear did not occur during this procedure
- gloves will be replaced as soon as possible after every patient contact, or sooner if soiled, torn or punctured
- perform hand hygiene as soon as possible after glove removal
- disposable gloves will not be reused
- gloves must be discarded into an appropriate container
- disposable gloves should be worn under the heavy duty gloves that are used for extrication
- heavy latex or plastic gloves should be used for the handling, cleaning, decontamination or disinfection of contaminated patient care equipment
- **THERE IS NO ADVANTAGE TO DOUBLE GLOVING**
- **gloves do not prevent penetrating injuries due to needles and other sharp instruments**

Sharps Containers

- sharps containers must be puncture proof and spill proof
- sharps containers must be readily accessible for use
- sharps must be disposed of as biohazard waste

ADDITIONAL PRECAUTIONS

Face Protection

- facial protection will be used in any situation where splash contact with the face is possible (ie. projectile vomiting) or a suspected respiratory tract infection is present (ie. cough)
- facial protection may be achieved by using both a face mask and eye protection (ie. goggles)
- if a face shield is used, a mask must still be worn if the disease is known or suspected to be transmitted by the airborne route
- side shields should be present on all glasses to prevent splashes from the side
- avoid touching the mask
- change the mask when wet
- do not allow masks to dangle from the neck
- drop all masks into an appropriate waste disposal container when finished with them

- wash hands after removing the mask

Other PPE

- fluid resistant gowns are designed to protect clothing from splashes such as during emergency childbirth or vigorous bleeding (disposable gowns are useful for this purpose)
- contaminated gowns should be handled as soiled laundry if they are reusable - otherwise, place them in an appropriate container for disposal
- use a gown, apron or coveralls when cleaning contaminated equipment or the interior of an emergency response vehicle
- if a patient has a productive cough, EMS personnel should wear a mask to prevent inhalation of potentially infectious material

- the public should be reassured that infection control PPE is used for prevention and protection for all EMS personnel and the patients they treat
    - use of PPE does not imply that a given patient has a communicable disease

REMEMBER

- if it's wet, use gloves
- if it could splash on your face, use full face shields and mask
- if it's airborne, wear an appropriate mask (see table)
- if it could splash on your clothes, use a water repellant gown

Clinical Scenarios Requiring Additional Precautions

Precautions:

Routine: see above
Airborne: tight-fitting respirator/mask (N95)
Droplet: surgical/procedure mask, eye protection
Contact: gown, gloves

	Routine	Airborne	Droplet	Contact
abscess (skin intact)	**X**			
abscess (with major drainage)	**X**			**X**
cellulitis/erysipelas (red, warm, firm, intact skin)	**X**			
desquamation (major)	**X**			**X**
petechial rash with fever	**X**		**X**	
maculopapular rash with fever	**X**	**X**		
jaundice	**X**			
common cold symptoms (coryza, fever)	**X**			
cough with known TB or risk of (e.g. crowded/unsanitary living conditions)	**X**	**X**		
vomiting/diarrhea	**X**			
diarrhea with external soiling	**X**			**X**
Headache and fever	**X**		**X**	
Trauma	**X** Consider glove use unless certain there is no bleeding			

SECTION 5 – SCENE OPERATIONS

- blood, body fluids, and tissues of all patients are considered potentially infectious and Routine Practices will be used for all patient contact
- on arrival, quickly assess the situation to see what PPE is required based on the situation (ie. presence of blood, other body fluids or a possible infectious disease)
- an infectious disease should always be suspected if one of the following is present
    - fever
    - rash
    - weeping skin lesions
    - cough
    - diarrhea
    - jaundice

- the choice of personal protective equipment is specified in Section 4
- if it does not interfere with patient care, minimize as much as possible the number of personnel coming into contact with patients where the possibility of contact with an infectious disease, blood or other body fluids is present
- while complete control of the emergency scene is not possible, scene operations should attempt to limit splashing, spraying or aerosolization of body fluids as much as possible
- eating, drinking, smoking, handling contact lenses, or applying cosmetics or lip balm is prohibited at the scene of operations
- personnel who have draining lesions of the hands or face, or weeping dermatitis on their hands should refrain from all direct patient care and from handling patient care equipment until the condition resolves

Sharps Containers

- **DO NOT RECAP NEEDLES**
    - **the most common occupational blood exposure occurs when needles are recapped**
    - EMS services should work to phase in safety-engineered needles as per Manitoba regulation
    - used needles and other sharps will be disposed of in puncture proof sharps containers
    - needles will not be recapped, resheathed, bent, broken, or separated from disposable syringes

NOTE

In the unusual circumstance where a sharps container is not readily available, use one hand to recap the needle or use a recapping device. The free hand is kept away from the needle sheath or recapping device and well behind the exposed needle

- sharps containers must be easily accessible on scene (carry in jump box, etc., as well as in the vehicle)
- account for all sharps used so that none are misplaced or lost
- do not force needles or other sharps into a sharps container - if force is required place the sharps into a different container
- never insert fingers into a sharps container for any reason
- dispose of sharps containers when three quarters full
- never pour a disinfectant solution into a sharps container because
    - the solution rarely achieves the degree of decontamination intended
    - the solution in the container becomes a hazard if spilled

CPR Equipment

- disposable resuscitation equipment will be used whenever possible
- for CPR, the order of preference is:
  - disposable bag valve mask
  - disposable pocket mask with one way valve

NOTE

Demand valve resuscitator devices are not permitted in Manitoba

- mouth to mouth resuscitation should never be performed
  - all personnel will have access to pocket masks with one way valves to eliminate the need for mouth to mouth resuscitation
  - disposable resuscitation equipment will be kept readily available during on scene operations
  - if mouth to mouth resuscitation is performed for any reason, it should be reported to your supervisor as an Incident Report (or similar)
- personnel should use the same precautions to protect themselves when handling a dead body as they would use if the patient were still alive
- masks are usually not required unless aerosols are expected to be generated
- at conclusion of on scene operations, all potentially contaminated patient care equipment will be removed and placed in leak-proof bags for appropriate disposal or decontamination and reuse

Human Bite Protocol

- seek appropriate medical and surgical therapy
- notify the Infection Control Officer and your Supervisor
- tetanus immunization status must be reviewed
- complete an Incident Report (or similar)
  - the Infection Control Officer will fill out an Infection Control Incident Assessment Form
- follow the Provincial Integrated Post-Exposure Protocol

SECTION 6 – POST-RESPONSE INFECTION CONTROL

- upon return to base, contaminated equipment will be removed and placed in an appropriate container

- contaminated equipment will only be stored in the decontamination area
  - cleaning and decontamination will be performed as soon as practical

NOTE

- **this area should be separated from the area(s) where clean or sterile supplies and equipment are stored**
- **under no circumstances shall contaminated equipment be returned to service without cleaning, disinfecting or sterilization as appropriate based on the "Levels of Decontamination Section" of this document**

- disposable equipment and other waste generated during on scene operation will be stored in the disposal area in appropriate leak proof containers
  - sharps containers, when three quarters full, will be closed and placed in the biohazardous disposal area
  - biohazardous waste should be bagged appropriately and disposed of according to local regulations
  - **it is recommended that an agreement be made with a local health care facility for disposal of biohazard waste, including sharps containers**

- gloves and gown (or apron) will be worn for all contact with contaminated equipment or materials
  - other PPE will be used depending on splash or spill potential
  - heavy-duty utility gloves may be used for cleaning, disinfection or decontamination of equipment
  - if a gown is used, it must be water repellant

- eating, drinking, smoking, handling contact lenses or applying cosmetics or lip balm will not be done during cleaning or decontamination procedures

- disinfection will be performed with a commercially available chemical germicide

- any damaged equipment will be cleaned and disinfected before being sent out for repair
- the manufacturer's guidelines will be used for the cleaning and decontamination of all equipment unless otherwise specified
  - durable equipment (backboards, splints,) will be washed with hot soapy water, rinsed with clean water and disinfected with an approved disinfectant
    - equipment will be allowed to air dry
  - delicate equipment (radios, cardiac monitors, etc.) will be wiped with disinfectant
    - equipment will be allowed to air dry
  - suction
    all suction equipment must be disposable
  - suction bottles should either be disposable or have a disposable liner
  - contaminated boots and shoes will be scrubbed with a hot solution of soapy water, rinsed with clean water, and allowed to air dry
  - contaminated work clothes (jump suits, t-shirts, uniform pants) will be removed and exchanged for clean clothes
    - personnel will shower if body fluids were in contact with skin under work clothes
  - contaminated work clothes will be laundered using hot water

- **cleaning should be done in a suitable decontamination area, specifically designated for this purpose**

- liquid waste containers containing urine, oral secretions, etc. can be emptied by carefully pouring into a utility toilet
  - this is preferably done at the receiving health care facility
  - if containers are reusable, place them with other equipment to be disinfected; otherwise dispose of them as contaminated waste
- all soiled wet linen and clothing must be contained in leak proof bags
  - double bagging is not required unless the bag is visibly soiled on the outside
  - all laundry staff sorting soiled linen must wear protective gloves and waterproof gowns
- because there is a vast array of commercially available disinfectants available, it is recommended that prehospital agencies utilize the same disinfectants as a local health care facility

- ideally, there should be a designated person trained to do cleaning and decontamination
  - this person should be trained to use appropriate protective barriers, including water repellant aprons or gowns, gloves, masks and goggles, glasses or a face shield, and in the safe cleaning and handling of supplies and equipment
    - → if there is not a designated person to do cleaning and decontamination, all workers must be trained in these duties
  - employees should understand that protective barriers do not guard against all accidents or protect from careless handling of equipment
  - employees should know the appropriate steps to take if accidental exposure occurs, including appropriate reporting procedures
  - if an employee has a weeping dermatitis, they should refrain from working in areas where cleaning and decontamination are carried out
  - cuts and scrapes should be covered with a dressing at work
- linen should be washed with detergent in water of at least 71° C (160° F) for 25 minutes and dried in a hot dryer
  - if temperatures lower than this are used, chemicals approved for low temperatures must be used (in the proper concentrations)

Cleaning up Spills of Blood, Body Fluids, or other Infectious Materials

- EMS personnel are often required to clean up potentially infectious materials
  - if this is not done by another agency as part of their cleanup, EMS personnel should ensure they are adequately protected to perform this task (see note below)

    - wear gloves and a gown if clothing contamination is likely
      - if the spill contains broken glass or other objects, these should be removed and discarded without contact with the hands
        - rigid sheets of cardboard used as a “pusher” and “receiver” may be used to handle such objects and discarded with the objects into an appropriate biohazard container
    - absorb the spill
      - since most disinfectants are less active, or even ineffective, in the presence of blood, the spilled liquid should be absorbed with disposable absorbent material (ie. paper towels, gauze pads, or tissue paper wipes)
      - if the spill is large, granular absorbent beads or gels can be used
      - after absorption of the liquid, all contaminated materials should be discarded in the waste container
    - disinfect spill site using a commercial disinfectant or liquid household bleach
  - rinse spill site with water
  - place all disposable materials used to decontaminate the spill into a suitable disposal container
    - handle the material in the same manner as other contaminated waste
    - any reusable materials should be decontaminated prior to storage

NOTE
This section may not be applicable to EMS operations because the responsibility for clean-up is typically that of another public service agency

Cleaning an Ambulance or Emergency Response Vehicle

- EMS personnel must ensure their response vehicle is suitably cleaned in preparation for an emergency response
  - the vehicle must be cleaned after each call
  - the vehicle must be cleaned on a regular basis, regardless of whether or not a response was undertaken
    - the schedule for routine vehicle cleaning must be at a minimum of once every two weeks if a call was not done during that period
    - appropriate PPE should be used when cleaning a response vehicle
    - all equipment shall be removed from the vehicle storage locations prior to cleaning
    - as part of routine cleaning remove all visible contaminants on surfaces by scrubbing with soap and hot water
    - after precleaning with soap and water, wipe or spray with a disinfectant solution followed by air drying
    - place all equipment used in cleaning the vehicle (i.e. cloths, brushes, mops, etc.) into fresh decontamination solution and allow to soak for 30 minutes or launder
      - remove and rinse with water and allow to air dry
      - any disposable PPE should be placed in bags for that purpose
    - dispose of all soapy water as liquid waste after use by carefully pouring into a utility toilet or appropriate drain
    - after cleaning vehicle and washing hands, ensure that there are adequate infection control supplies and equipment to respond to multiple calls before returning to base
      - these supplies and equipment must be inspected to ensure that they are intact

- each agency must have a written policy on the following:
  - location of designated areas for decontamination
  - a cleaning schedule for each base
  - who will be doing the cleaning
  - what method will be used (i.e. types of tools and disinfectants)
  - disposal of sharps containers
    infectious waste (for disposal)
    infectious instruments (for disinfection)
    infectious linens (for disinfection)
  - location of MSDS

Table 6-1 - Levels of Disinfection

	Uses	Methods
Sterilization	For instruments or devices that penetrate the skin or contact normally sterile areas of the body during invasive procedures. Rare in EMS.	▪ To be performed in hospital or designated facility (not to be performed by EMS staff)
High level Disinfection	For reusable equipment that comes into contact with mucous membranes, including: ▪ BVM's ▪ Laryngoscope blades ▪ Suction bottles ▪ Magill forceps	▪ To be performed in hospital or designated facility (not to be performed by EMS staff)
Intermediate Level Disinfection	For surfaces that only contact intact skin and have been visibly contaminated with body fluids. Surfaces must be precleaned of visible material before disinfection. Equipment requiring intermediate level disinfection includes: ▪ backboards and splints contaminated with blood	▪ Wiping with a hospital disinfectant/chemical germicide. ▪ Wiping with a commercially available hard surface germicide or with a 1:100 chlorine bleach.
Low Level Disinfection	For routine housekeeping or removal of soiling when no body fluids are visible. Equipment requiring low level disinfection includes: ▪ backboards and splints not contaminated with blood ▪ blood pressure cuffs/stethoscope ▪ drug box ▪ monitoring equipment ▪ ambulance stretcher	▪ Wiping with a hospital disinfectant.

* **All equipment labeled as single use and / or disposable must be promptly disposed of after use.**

Table 6-2 – Recommended Procedures for Equipment Decontamination

EQUIPMENT	DECONTAMINATION PROCEDURE
Airway bag (Ambu-bag, BVM)	High level disinfection (disposal if single-use item)
Airways ▪ Nasopharyngeal ▪ Oropharyngeal ▪ Double Lumen	 Disposal Disposal Disposal
Bedpans	Intermediate level disinfection
Blood pressure cuffs	Low level disinfection
Bulb syringe	Disposal
Cold packs	Disposal
Dressing --- open or wet	Disposal
Drug box	Low level disinfection
Drug containers	Low level disinfection
Endotracheal tubes, stylettes	Disposal
Head blocks	Low level disinfection
Hot packs	Disposal
Intravenous poles	Low level disinfection
K-basins	Disposal
Laryngoscopes ▪ Blades ▪ Handle	 High level disinfection Low level disinfection
Magill forceps	High level disinfection
Monitor, defibrillator paddles, includes patient cables and nondisposable lead wires	Low level disinfection
Needles and syringes	Disposal in an impermeable container, do not break, bend, cut or recap needles prior to disposing
Nitrous oxide delivery equipment ▪ Masks ▪ Valve	 Intermediate level disinfection Low level disinfection
Other electronic equipment ie. CO_2 monitors, glucometers, pulse oximeters	Intermediate to low level disinfection
Oxygen delivery equipment ▪ nasal cannula ▪ mask, non-rebreathe ▪ nebulizers ▪ extension tubing	 Disposal Disposal Disposal Disposal
Oxygen flow meter	Low level disinfection
Oxygen regulators	Low level disinfection
Oxygen tanks	Low level disinfection
Personal equipment i.e. pen lights, scissor pouches, flashlights, watches, etc.	Low level disinfection

Table 6-2 – Recommended Procedures for Equipment Decontamination (continued)

EQUIPMENT	DECONTAMINATION PROCEDURE
Pillows	Disposal or washing and low level disinfection
Pocket masks	Disposal
Restraints – cloth	Washing and low level disinfection
Scissors	Intermediate or low level disinfection
Spineboards	Low level disinfection
Splints ▪ metal ▪ cardboard ▪ wood	 Low level disinfection Disposal Low level disinfection (intermediate if visibly soiled with blood or body fluids)
Stethoscope	Intermediate or low level disinfection
Stiff neck cervical collars	Disposal or intermediate level disinfection
Stretcher ▪ straps ▪ mattress ▪ metal frame	 Washing and low level disinfection Intermediate level disinfection or disposal if mattress is worn Intermediate level disinfection
Suction devices - battery operated or electric ▪ liner ▪ bottle ▪ tubing from patient to collection unit ▪ tubing from collection unit to power source (on board suction) ▪ portable suction unit exterior	 Disposal Low level disinfection Disposal High level disinfection Low level disinfection
Suction device – portable ▪ handle ▪ bottle	 Low level disinfection Disposable
Tongue blades	Disposal
Trauma box	Low level disinfection
Triangulars	Disposal
Urinals	Intermediate level disinfection
NOTE: In all cases, manufacturers should be consulted to ensure that products will not be adversely affected by the decontamination process. Items visibly contaminated with dirt and blood require cleaning before disinfection can take place. Items labelled as “single use only” by manufacturers should not be reused.	

SECTION 7 – POST-EXPOSURE PROTOCOL

Routine Post-Exposure Protocol

- the routine post-exposure protocol relates to the transmission of blood-borne infection agents (e.g. HIV, Hepatitis B, C)
- immediate post-exposure management includes administration of the appropriate first aid, removing blood-contaminated clothes if blood has soaked through the fabric and cleaning the affected area with soap and water or with an antiseptic solution
  - if the exposure was percutaneous (e.g. needlestick injury, cut, scratch) rinse and wash with water and soap or with an antiseptic solution
  - there is no evidence supporting the practice of forcing the wound to bleed
  - following a mucosal exposure, rinse the exposed area thoroughly with water
  - following cutaneous exposure wash the exposed area with soap or with an antiseptic solution

- personnel having an occupational exposure will immediately report the exposure to his or her supervisor
  - needlestick injuries will be reported to the infection control officer as soon as possible

- **in all situations, the current version of the Integrated Post-Exposure Protocol for blood borne pathogens developed by the Public Health Branch, Manitoba Health should be followed**

- personnel will fill out an Exposure Report Form for any of the following **significant exposures**
  - **needlestick injury**
  - **break in skin caused by a potentially contaminated object**
  - **splash of blood or other potentially infectious material onto or into eyes, mucous membranes, or non intact skin**
  - **mouth to mouth resuscitation without a one way valve pocket mask**

- a significant exposure includes significant exposure to the following body fluids
  - **blood**
  - **cerebrospinal fluid (CSF)**
  - **synovial fluid**
  - **pleural fluid**
  - **pericardial fluid**
  - **amniotic fluid**
  - **peritoneal fluid**
  - **semen or vaginal secretions**
  - **or any body fluid that contains visible blood**

  - if a significant exposure to a significant body fluid has occurred, the employee will
    - verbally notify the supervisor immediately
      - the supervisor will assess the situation to verify if a significant exposure occurred
      - the supervisor will advise the worker involved what steps to take
      - if a significant exposure occurred, medical evaluation will be done by a physician at a Hospital's Emergency Department

- the report will include details of the task being performed, the means of transmission, the portal of entry, and the type of PPE in use at the time, and other information as requested in the Exposure Report Form

- the supervisor will review the communicable disease exposure report and forward it to the Infection Control Officer or other individual designated to manage occupational health

- the Infection Control Officer (or designate) will evaluate the report for exposure hazards
  - the Infection Control Officer (or designate) will complete the communicable disease exposure report and initiate the appropriate follow-up for the exposure, based on guidelines established by Manitoba Health
- the Infection Control Officer (or designate) will refer personnel for infection control retraining or for stress management counseling if indicated
  - spousal counseling should also be available

- the source patient will be traced to the receiving medical facility (if possible)
  - a request can be made of the source patient (either by staff at the receiving medical facility or occupational/staff health, depending on regional policy) so that the presence of an infectious disease is known or testing carried out and returned as quickly as possible
    - the source patient has the right to refuse testing (including HIV testing) under present regulations

- the provider's occupational health agency or personal physician will provide appropriate diagnostic work up if a communicable disease exposure has occurred
  - services should include long term follow up, and personnel and spousal counseling

- each EMS personnel has an essential role in protecting his/her own health in the execution of all duties

- EMS personnel should
  - comply with the occupational health and safety program, and infection control program
  - maintain and update immunizations as recommended, and participate in screening programs for TB
  - participate in educational and training sessions on the prevention of transmission of infectious diseases
  - wear PPE and use the protective procedures outlined e.g. standard precautions
  - initiate procedures outlined after an occupational exposure to an airborne pathogen or blood or body fluids
  - obtain medical care and treatment following an occupational exposure to tuberculosis or any airborne pathogen or blood or bloody body fluids, including counseling pre- and post- HIV, HBV or HCV testing
  - report all occupational exposures and initiate the appropriate exposure protocol
  - assist in developing protective procedures to address new or difficult situations that present a hazard
  - assist in problem solving exposure situations

- **management of exposure to blood and body fluids changes regularly**
- **refer to the "Integrated Post-Exposure Protocol" produced by the Public Health Branch, Manitoba Health (www.jus.internal/corrections/operations/policies/communicable_disease_control_appC.doc) for current management and follow-up of exposures to blood and body fluids**

Exposure to Non-Blood-Borne Agents

- Medical treatment facilities will notify the Medical Officer of Health (or designate) of any patient transported by EMS personnel with a diagnosis of a transmissible disease (e.g. tuberculosis, Neisseria meningitidis)
- **Note that this is only necessary if mouth to mouth is performed, or if major splashing of oral secretions onto mucous membranes has occurred (as may happen in a difficult resuscitation). Meningococcal and TB transmission risk in an ambulance setting is extremely low.**
- when so notified, the Medical Officer of Health (or designate) will contact the Infection Control Officer for the transporting service who will then contact the providers involved and if necessary, schedule medical evaluation with a physician

Appendix 1 – Recommended Immunization Schedule for EMS Personnel

Tetanus-Diphtheria (TD)

- every ten years if the basic series has been administered

Rubella

- age one in both sexes
- titres should be obtained on all new employees of either sex who do not have documented evidence of vaccine or antibody
- those who have "non immune status" should be referred to their physician for possible immunization (not be done during pregnancy)

Hepatitis B

- immunization should be offered to all employees (three intramuscular injections into the upper arm over six months)
- titres should be done one to six months following the last shot to ensure that an adequate level of antibody is present
- booster doses are not recommended by the Canadian National Advisory Committee on Immunization
- personnel who choose not to be immunized against Hepatitis B should sign a form confirming their understanding of the possible risks associated with not being immunized

Polio

- booster doses are not required if the responder has received the usual course of Polio vaccine as a child and one single dose after 21 years of age

Influenza

- yearly immunization with the influenza vaccine is highly recommended

Measles

- mumps, measles, rubella vaccine or monovalent vaccine should be given to prehospital responders (except those who are pregnant) who were born after 1970 or later and have no documented history of red measles (rubeola) or of immunization with live red measles (rubeola) vaccine
- persons born prior to this date have probably been infected naturally and can be considered immune

Varicella

- titers should be obtained for all new employees who are not known to be immune to varicella; if there is inadequate antibody to varicella, vaccination is optional but highly recommended

Refer to Health Canada's "Guidelines for Immunization of Health Care Workers and Others Providing Personal Care" at (http://www.phac-aspc.gc.ca/publicat/cig-gci/pdf/cdn_immuniz_guide-2002-6.pdf)

Appendix 2 – Recommendations for Tuberculosis Screening

- the most effective method for screening for tuberculosis is by skin testing with a purified, **non-infectious** extract from the tuberculosis bacterium
  - this is known as the "Mantoux Test"
    - it consists of injecting 0.1 ml (also known as 5 TU) of this extract into the skin on the undersurface of the forearm
    - the forearm is then examined 48-72 hours later by measuring the area of "hardness" that can be palpated around the injection site, known as "induration"
      - the area of redness around the injection site is not important, and is therefore not measured
    - in a 2-step procedure, the test is repeated in one or two weeks to establish a baseline

  - if the area of induration is 10 mm or greater the individual is classified as "Tuberculin Reactor".
    - this indicates that the individual has been previously infected with tuberculosis although it is impossible to know when this occurred (may have been years previous)
    - therefore, a positive reaction does not distinguish between active, inactive or previously treated disease
      - a recent BCG immunization may also cause this type of reaction
      - BCG does not contraindicate tuberculin testing unless the individual has a previous history of a positive tuberculin skin test

    - active infection is suggested in those who have had an initial skin test
      - less than 5 mm and within two years changes to 10 mm or greater of induration

      or
      - less than 5 mm which increases to greater than 14 mm within two months of contact with a case of infectious tuberculosis

    - if the area of induration is between 5 mm and 10 mm the test is considered "indefinite"
      - in the 2-step procedure, the skin test will be repeated in one week at a different site on the forearm with the result that the area of induration is now greater than 10 mm
        - this is known as the booster effect and occurs because the body's immune system does not recognize the initial skin test but is "reawakened" by the repeat test one week later

    - if the area of induration is less than 5 mm the individual is considered a "non-reactor"
      - this usually indicates that there has been no previous infection with tuberculosis

- skin testing is recommended for providers with a previous skin test less than 10 mm who have breathed the same air for four hours as a patient with infectious tuberculosis (ie. inside an ambulance)
  - in these cases skin testing is not useful until at least three months after the exposure has occurred
  - nevertheless, a test shortly after the exposure is useful to determine the provider's baseline status

- complications of skin testing are usually minor and consist of
  - pain or itching at the injection site
  - swelling of the arm

- recommended frequency of skin testing for EMS personnel is as follows
    - annually for non reactors
    - within 30 days of employment if there is no previous record of skin testing or if the skin test measured less than 10 mm on a previous occasion
    - reactors do not require any further skin testing but require follow up with a physician
    - three months after exposure to a patient with active tuberculosis

- chest x-ray, sputum examination and sputum cultures **may be** indicated in providers who have experienced a cough or sputum production lasting longer than one month regardless of the results of skin testing