

EXPOSURE CONTROL PLAN

(Part 2) - Infection Prevention and Control (EPC-IPAC)

(Part 1: Includes Chemical, Radioactive, Nuclear, Explosive Exposure Control)

British Columbia Emergency Health Service

Better Worker Health and Safety Means Better Patient Care

September 2016

FEEDBACK

Your feedback and questions are appreciated

Email Lisa Young, Leader for Infection Prevention and Control – lisa.1.young@bcehs.ca

Please be as specific as possible with your comments and questions; include the section or page number where possible/appropriate. It is also helpful to receive your suggestions for improvements.

Education sessions can also be arranged with Lisa Young as availability allows

SUMMARY OF MAJOR REVISIONS

New materials [in the most recent dated version] will be shaded within the text and listed below

Page	Details	Date
104	Regardless of whether hot or cold water is used for washing, the temperatures reached during drying and especially during ironing provide additional significant microbiocidal action	2017-06-07
95	Plastic backed paper sheet must be used on a stretcher when there is the potential for excessive bleeding or fluids. As it is difficult to predict when such a scenario will occur, crews may wish to use a paper sheet on the stretcher as a standard.	2017-06-07
2	Addition of feedback page	2017-02-12
3	Addition of major revisions summary page	2017-02-12
26	IVs must not be inserted and medications must not be administered using a needle while the ambulance is in motion	2017-02-12
27	Routine cleaning and disinfection of vehicle and patient care equipment section edited as information is available in the Cleaning and Disinfection Toolkit and Standard Operating Procedures	2017-02-12
	Appendix E – Removed “Cleaning and Disinfection Principles” section – replaced information with Cleaning and Disinfection Toolkit	2017-02-12
	Appendix E – Removed “How to Clean-up Spills That May Contain Infectious Material” section – replaced with Standard Operating Procedures	2017-02-12
	Removed “Cleaning and Disinfection of Patient Care Equipment and Transport Vehicle” section – replaced with Cleaning and Disinfection Toolkit and Standard Operating Procedures	2017-02-12
38	Ventolin changed to medication	2017-02-12
38	CPAP added to list of aerosol generating procedures	2017-02-12

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INTRODUCTION

EXPOSURE CONTROL PLAN - INFECTION PREVENTION AND CONTROL

In the course of their work, paramedics are often the first point of contact with patients entering the health care system. As a result, paramedics may unknowingly come in contact with micro-organisms (infectious diseases). They have a significant role in recognizing situations where infectious diseases exist, and in reducing the risk of transmitting these diseases to themselves or others by adhering to infection prevention and control principles and practices.

BCEHS is required to have an Exposure Control Plan, based on this precautionary principle. It is also required to have an Infection Prevention and Control Manual. As there are many commonalities in the material presented for both purposes, a combined document has been developed, and has been titled: Exposure Control Plan – Infection Prevention and Control

It has been designed to provide the information necessary to prevent exposure and transmission of infectious organisms. In specific situations where there is an epidemic situation BCEHS may also develop an Exposure Control Plan for a **specific** infectious disease, similar to the exposure control plan and training for H1N1 and the 2009 BCEHS *Pandemic Influenza Management Plan*.

CONSULTATION

This ECP-IPAC has been developed in consultation with knowledgeable and qualified workers, from Operations, Infection Prevention and Control, District Occupational Safety and Health (DOSH) Committees, Workplace Health, Emergency Management Branch, Medical Programs and Provincial Joint Occupational Health and Safety Committee.

STATEMENT OF PURPOSE

The purpose of this ECP-IPAC is to provide BCEHS staff with information on infectious diseases, how they are transmitted, and what practices can be put in place to protect staff and their patients.

Definitions of terms used throughout this document have been included in **Appendix A**.

TECHNICAL ADVISOR PROGRAM

The BCEHS Technical Advisor (TA) program provides real-time technical information to onsite supervisors and crews regarding hazardous substances and Chemical Biological Radioactive Nuclear and Explosive (CBRNE) responses throughout the province. In conjunction with each Regional Dispatch Centre, TAs and supervisors provide a solid 'first line of defence' towards protecting personnel and first receiver sites. The TAs gather information from the Paramedic, such as patient symptoms and event type. They provide advice and instructions through dispatch, supervisors, or directly to crews via radio or cell phone. This includes techniques for appropriate crew safety, personal protective equipment, treatment and/or decontamination if required.

Technical Advisor Team Goal and Objectives

- Keep BCEHS staff, allied first responders, and our patients safe from further harm
- Maintain and improve upon the health care status of all who encounter the team
- Protect all first receiver sites (e.g., Hospital Emergency Departments) from contamination
- Be leaders in national standards and competency for providing safety for all first responders in CBRNE and hazardous material events.

Crews can access the services of a TA by either contacting dispatch who will patch them through or by calling directly to the TA by dialing **604-660-6557**.

INFECTION PREVENTION AND CONTROL PROGRAM

The Infection Prevention and Control Program (IPAC) provides information to all British Columbia Emergency Health Services (BCEHS) staff on the principles of infection prevention and control, which when followed correctly help to protect staff, patients and others from exposures to microorganisms. It works in close collaboration with Workplace Health to provide information on infection-related issues, such as new emerging infectious organisms and interventions needed to prevent transmission.

Infection Prevention and Control Program Goals and Objectives

- Support staff in reducing the risk of cross infection.
- Provide information pertaining to the risks of infection and cross infection

- Develop education and training materials for staff that inform on infection prevention and control principles and practices
- Provide timely and relevant direction for actions and precautions to be taken for infectious events such as pandemic influenza or community outbreaks of infectious diseases (i.e., measles, pertussis, norovirus).

ANNUAL REVIEW

The ECP-IPAC is subject to annual review by the Provincial Occupational Safety and Health Committee and Infection Prevention and Control Committee. The review process will include consultation with the Provincial Occupational Safety and Health Committee (POSH) and District Occupational Safety and Health (DOSH) Committees as appropriate. Any recommendations for changes will be incorporated on completion of the annual review.

RESPONSIBILITIES

Protecting workers from exposure to infectious diseases is a shared responsibility between the employer, supervisors, workers and JOSH Committees. In meeting these responsibilities BCEHS will also be providing a safe and clean environment for the patients needing its service. The following is the list of responsibilities for these different stakeholders:

Employer – Management

BCEHS is considered an employer for the purposes of the *Workers' Compensation Act (The Act)*. The BCEHS management team represents BCEHS as the employer. The management team includes the Executive Vice President, Chief Operating Officer, Executive Directors, Operation Directors, Directors, and Managers. Under section 115 of the Act, the management team is responsible for ensuring:

- The provision and maintenance of facilities and equipment which are safe and do not pose a risk to health;
- The safety and absence of risks to health in connection with the provision of services to patients;
- That the resources (for example, Standard Operating Procedures, worker training, and Personal Protective Equipment (PPE) required to implement and maintain the exposure control plan are readily available where and when they are required;

- The purchase of safety-engineered medical devices, where appropriate;
- The selection, implementation and documentation of the appropriate site-specific control measures;
- Supervisors and workers are educated and trained to an acceptable level of competency;
- The education, training and supervision of all employees on standard operating procedures, including routine practices, hand washing and the proper use of PPE;
- The maintenance of training and inspection records;
- That workers use appropriate PPE (for example, gloves, gowns, eye protection, and respirators) determined through regular monitoring of practices ;
- The identification of infectious diseases that are, or may be, in the workplace; and informing workers of these including how they may be exposed and controls to take for protection, through the development and implementation of disease/biological agent specific exposure control plans;
- The maintenance of a health protection and vaccination program;
- Those workers who are at risk of occupational exposure may be offered vaccinations as recommended by the health care sector for health care workers, without cost to workers;
- That there is a list of all jobs where there may be exposure to infectious diseases;
- That a copy of the ECP-IPAC is available to workers;
- Periodic reviews of the ECP-IPAC's effectiveness. This includes a review of the available control technologies to ensure that these are selected and used when practical.

Supervisors

A supervisor is any person who instructs, directs or controls workers in the performance of their work. In BCEHS, supervisors include Superintendents, Field Supervisors, Station Chiefs and Charge Dispatchers. Supervisors are responsible to ensure that workers:

- Are adequately instructed on the controls for the hazards at the location.
- Have adequate training in standard operating procedures, and know the importance of following safe work practices.
- Conduct operations in a manner consistent with the ECP-IPAC.

- Are directed in a manner that eliminates or minimizes the risk of exposure to workers.
- Have access to and use appropriate PPE.
- Who may be required to use a respirator have been fit tested in accordance with WSBC regulations and CSA Standard Z94.4-02, and the results are recorded and maintained.
- Know when and how to report an exposure incident.
- Are aware and know how to access resources such as the TA Program, EPC-IPAC, and BCEHS Workplace Health Call Centre (WHCC).

Workers

Workers have a responsibility in ensuring their own personal safety. The worker has a key role in preventing exposures to infectious diseases in both themselves and the patients they serve.

Workers are responsible for:

- Attending any education and training sessions associated with this plan;
- Working in a manner which protects their own health and safety by following procedures laid out in this document and supplementary policies;
- Protecting the health and safety of any other person who may be affected by their activities;.
- Reporting unsafe conditions, acts and hazards to their supervisor;
- Knowing the hazards of the workplace;
- Following established standard operating procedures as directed by the employer or supervisor;
- Using Routine Practices and Additional Precautions, inclusive of hand hygiene and PPE as instructed and outlined in the ECP-IPAC;
- Knowing how, when and to whom to report exposure incidents;
- Seeking immediate first aid and medical attention after an occupational exposure;
- Refusing work that they have reasonable cause to believe will put themselves or others at risk.
- Compliance with the PHSA Baseline Immunity Assessment

All workers should be immunized according to BCEHS policies as well as recommendations from Public Health.

Joint Occupational Safety and Health (JOSH) Committees

JOSH Committees are responsible to:

- Monitor compliance with the WorkSafeBC regulation and requirements.
- Support and monitor compliance with the ECP-IPAC.
- Identify issues, concerns and trends, and make recommendations to BCEHS.
- Endorse, support, promote and make recommendations for changes to this plan.
- Ensure the confidentiality of the worker is maintained when reviewing or investigating an accidental exposure incident.
- Ensure that workplace inspections and incident investigations occur, and identified unsafe conditions are corrected.
- Review the ECP-IPAC at least annually in consultation with BCEHS.

Infection Prevention and Control Committee

- Making recommendations on the development, implementation and evaluation of a comprehensive Infection Prevention and Control (IPC) Program;
- Reviewing and approving the annual goals of the IPC Program, and evaluating the results of the activities implemented to meet the goals;
- Formulating IPC policies that support good practices in providing a safe environment from the transmission of infectious organisms;
- Reviewing and approving systems for reporting, evaluation and recording infection statistics developed by the IPC Program;
- Ensuring that IPC recommendations and standards of the Ministry of Health, Accreditation Canada, Public Health Agency of Canada, Canadian Standards Association, and other recognized organizations are being followed;
- Keeping apprised of changing legislation and best practice guidelines, so issues of compliance can be brought to the attention of senior administration proactively;

- Reviewing and recommending implementation of patient safety/risk management/ quality improvement initiatives relating to healthcare acquired infections;
- Cooperating with PHSA Agency committees and external health care agencies in relation to IPC-related situations and concerns.

WHAT IS AN INFECTION AND INFECTIOUS DISEASE?

Infection is defined as an invasion and multiplication of microorganisms in or on body tissue causing cellular damage through the production of toxins, multiplication or competition with host metabolism.¹ Agents capable of causing disease include:

- **Viruses:** the smallest of the infectious agents and only visible with an electronic microscope. Viruses attack only certain parts of the body, by attaching to surface points on the host cells known as receptors. As the host cell replicates itself, it increases the viral load in the body. Antibiotics are not effective against viruses. There are antiviral medications that may be used against some infections.
- **Bacteria:** larger than viruses, but still only visible with a microscope. Bacteria do not require host cells for reproduction, and reproduce by splitting in two. Some species of bacteria form a protective coat to become a spore that protects them from many disinfectants and antibiotics. Bacterial infections are treated with antibiotics.
- **Fungi:** larger and more complex than bacteria. Fungi are found in soil, on plants, trees, and other vegetation, as well as on our skin, mucous membranes, and intestinal tracts. Infection occurs through inhalation, ingestion, or introduction through invasive procedures. People who have compromised immune systems are the most at risk from fungal infections.
- **Parasites:** largest of the infectious agents. Mites, lice, flea, bed bugs, scabies and ticks belong to this category. Parasites that cause dysentery or giardiasis, enter the body by drinking or eating contaminated food. Others, like lice and scabies live on humans and are spread predominantly from person to person through direct skin contact, with an increasing risk with prolonged contact.

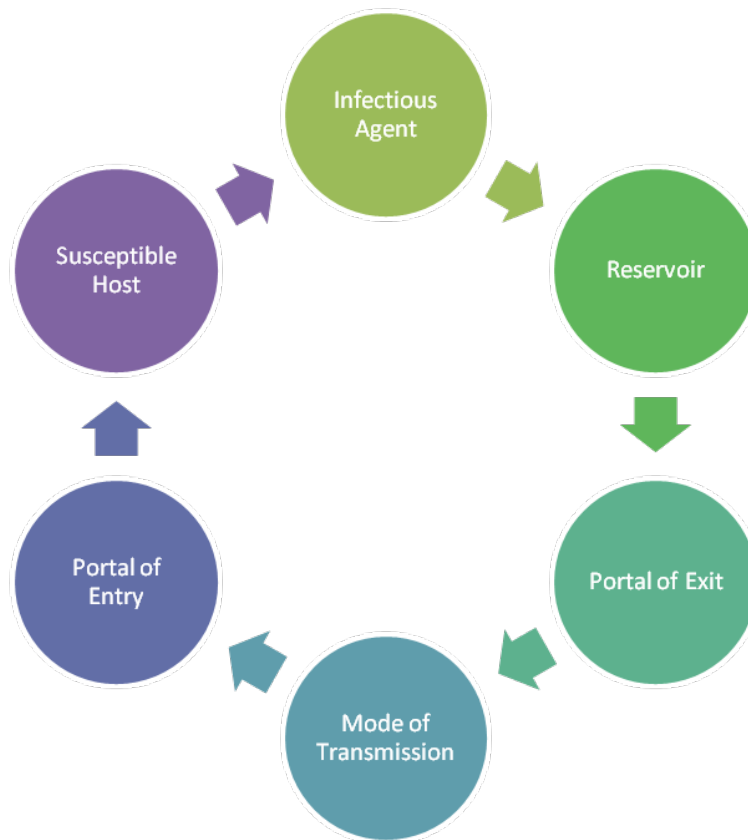
¹ Association for Professionals in Infection Control and epidemiology, APIC Text (2009)

- **Prions:** are a form of infectious protein believed to be the cause of transmissible spongiform encephalopathies; a rare progressive degenerative diseases that affect both humans and animals, such as Creutzfeldt-Jakob (mad cow) disease, Fatal Familial Insomnia, and Kuru. These agents have a long incubation period, followed by a rapid progression of symptoms, and always result in death. They are acquired when a human eats an infected animal, or is operated on with surgical instruments contaminated with prions. These diseases are extremely rare and **are not considered an occupational hazard for health care workers.**

An infectious disease occurs when one of these agents causes an adverse health effect in a person.

CHAIN OF CROSS INFECTION

The Chain of Cross Infection is a model which shows how an infectious disease can be transmitted. Each circle (or link) represents a factor related to the spread of disease. An infection can be prevented by breaking the chain of cross infection



From: <http://faculty.ccc.edu/tr-infectioncontrol/chain.htm#>

UNDERSTANDING THE COMPONENTS

Infectious Agent

- microorganism capable of causing disease

This is the first link in the chain. Some infectious agents are more successful in causing infection. The greater the organism's virulence (ability to grow and multiply), invasiveness (ability to enter tissue) and pathogenicity (ability to cause disease), the greater the possibility that the organism will cause an infection.

Reservoir

- place within which microorganisms can thrive and reproduce

The three most common reservoirs are: humans, animals, and the environment, which can include objects (equipment, medical devices, squad bench, stretcher) or contaminated food or water.

Portal of Exit

- path taken by the infectious agent to leave the reservoir

In humans, these would include:

- Respiratory tract, when a person coughs or sneezes;
- Genitourinary tract, via urine or sexual secretions;
- Gastrointestinal tract, either through the mouth or rectum in the form of saliva, spit, vomit, faeces, or other drainage;
- Non-intact skin, through blood or drainage of fluid or pus;
- Mucous membrane of the eyes, nose, mouth, and genitals, or trans-placental from the mother to her fetus;
- Blood, when starting an intravenous.

Controlling or confining the excretions of a patient, is an effective way of breaking the chain of transmission.

Mode of Transmission

- Method by which the organism moves or is carried from one person or place to a susceptible host

The different modes of transmission are listed below, and are described fully later on in this document:

- Contact transmission (includes direct and indirect); with a section on bloodborne illnesses
- Droplet transmission
- Airborne transmission
- Common vehicle transmission
- Vector transmission (zoonotic diseases)

Common vehicle transmission and vector transmission do not pose a significant risk in the healthcare setting, and can be easily controlled through routine practices.

Portal of Entry

- opening allowing the microorganism to enter the host

Portals include absorption through unprotected mucous membranes (eyes, nose, mouth, and respiratory tract), introduction through breaks in the skin, and inhalation into the lungs. Portals also result from tubes placed in body cavities, such as urinary catheters, or from punctures caused by invasive procedures such as intravenous fluid replacement. The portal of entry can also occur by ingestion where it can be absorbed into the gastrointestinal tract.

Susceptible Host

- person who lacks the immunity or physical resistance to prevent the invasion and multiplication of an infectious agent within their body

Many factors affect a person's susceptibility to a disease and also the severity and duration of the illness. These include:

- Age, sex, ethnic background and genetics
- Occupation based on risk factors
- Socio-economic status

- Stress
- Sleep patterns
- Lifestyle, including sexual activity
- Nutritional status
- Pregnancy
- Recent trauma, including surgery
- Vaccination status

Healthy adults are much less susceptible to disease than those with underlying diseases or those taking certain medications or treatment (e.g., chemotherapy). Young children and older adults are more susceptible to disease.

BREAKING THE CHAIN OF CROSS INFECTION

Cross infection can be controlled by breaking the chain of infection. The risk of cross infection can be reduced through the implementation of Routine Practices. The key elements of routine practices are:

- Hazard identification
- Risk assessment
- Risk reduction/control
- Education

Paramedics can reduce their personal risk by taking a number of measures to protect themselves: keeping immunizations current, ensuring adequate nutrition and rest, having regular exercise, reducing stress level, and maintaining intact and healthy skin.

ROUTINE PRACTICES

Routine Practices describes the regular steps taken at all times when providing care. Routine Practices is the term commonly used in Canada.

The use of Routine Practices does not depend on having a diagnosis. It relies on the recognition of signs and symptoms and the knowledge of how diseases are spread. Early recognition and appropriate actions will reduce the potential for acquiring and transmitting infectious organisms.

Routine Practices assumes that all patients are potential reservoirs for microorganisms that can present a risk to paramedics and patients. Routine Practices **MUST** be used for all care, with every patient.

Routine practices include the following:

- Patient assessment
- Hand hygiene
- Personal protective equipment
- Sharps safety
- Patient accommodation and transport considerations
- Routine cleaning and disinfection of equipment
- Environmental control – routine vehicle cleaning and disinfection

PATIENT ASSESSMENT

The risk of exposure to an infectious disease is often not perceived as an environmental hazard like downed hydro wires, confined spaces, or leaking fuel, but must be considered prior to providing care to the patient. Assessment begins with the information received from dispatch, with attention to any information suggestive of an infection. Further information is gathered by doing a risk assessment prior to getting into close proximity of the patient (within 2 metres).

This should include whether:

- there is any potential for blood or body fluid exposure,
- patient has any obvious symptoms of infection (i.e., fever, chills, coughing, pain, redness, diarrhea), and

- patient is cooperative, not shouting or spitting, and will respond to questions and follow directions given.

Observe and/or ask:

Symptom	Question	Risk
Cough	Is it new or has worsened in the last few days?	Determining if chronic or acute condition. "New" or "worsening" may indicate an acute condition (rather than chronic) and a higher risk for the existence of infection
Shortness of breath	Is it new or has worsened in the last few days?	Determining if chronic or acute condition. "New" or "worsening" may indicate an acute condition (rather than chronic) and a higher risk for the existence of infection
Diarrhea and/or vomiting	Are these symptoms present? Is there a known cause (e.g., vomiting due to pregnancy)?	Determining if there is a known cause, or if this is new condition which may indicate a higher risk for the existence of infection. The risk of cross infection from exposure to body fluids must be considered high even when there is a known cause, and therefore additional infection control precautions must be put in place
Flushed and rapid respirations	Does the person have a fever (>38°C)? Have they felt hot, had shakes or chills in the last 24 hours?	Determining if these sign and symptoms are present; and if yes, would indicate a higher risk for existence of infection
Wounds	Is there any purulent drainage? Is the wound(s) covered and contained?	Determining if there is an infection and the degree of potential exposure to the drainage. If drainage cannot be contained, there is a greater risk for environmental contamination and subsequent exposure to staff and patients
Rash	Does the patient have a rash that is new to them?	Determining if chronic or acute condition. "New" would indicate an acute condition (rather than chronic) and a higher risk for existence of infection

Consider the following, but remember that there are always exceptions:

- age of the patient (some diseases are more common in children - measles, others in adults – *Clostridium difficile*)
- time of the year (is it November-March when there is a high incidence of influenza and Norovirus)

Based on this initial visual scan and rapid patient history, determine what personal protective equipment and administrative controls you need before you touch the patient to do further assessment or provide direct care.

What are you looking for?

Observations	Possible Diseases (examples only)	PPE to use
Respiratory illness signs and symptoms Fever New/worsening cough New/worsening shortness of breath Muscle aches Expectorating blood Weight loss Exposure history	May indicate: Rhinitis (common cold) Influenza Tuberculosis	N95 respirator Eye protection Gloves Gown (if patient is unable to wear a mask, and there is a risk of spray from sneezing, coughing, or spitting)
Rash	May indicate: Scabies Meningitis Chickenpox It could also indicate an allergy, for which precautions are not required.	N95 respirator Eye protection Gloves Gown (if sores or vesicles are draining, and cannot be covered or contained)

Diarrhea	May indicate: Norovirus Clostridium difficile	Gloves Gown (if vomiting, or diarrhea)
Draining Wounds	May indicate: Group A streptococcus <i>Staphylococcus aureus</i>	Gloves Gown (if wound drainage cannot be contained)

HAND HYGIENE

Hand hygiene is the easiest and one of the most important actions in breaking the Chain of Cross Infection². Research has shown that contaminated hands play a significant role in the transfer of infectious organisms between persons (direct) and between persons to surfaces back to persons (indirect).

Hand hygiene kills or removes microorganisms on the skin. This is accomplished through the mechanical friction of rubbing the hands in combination with:

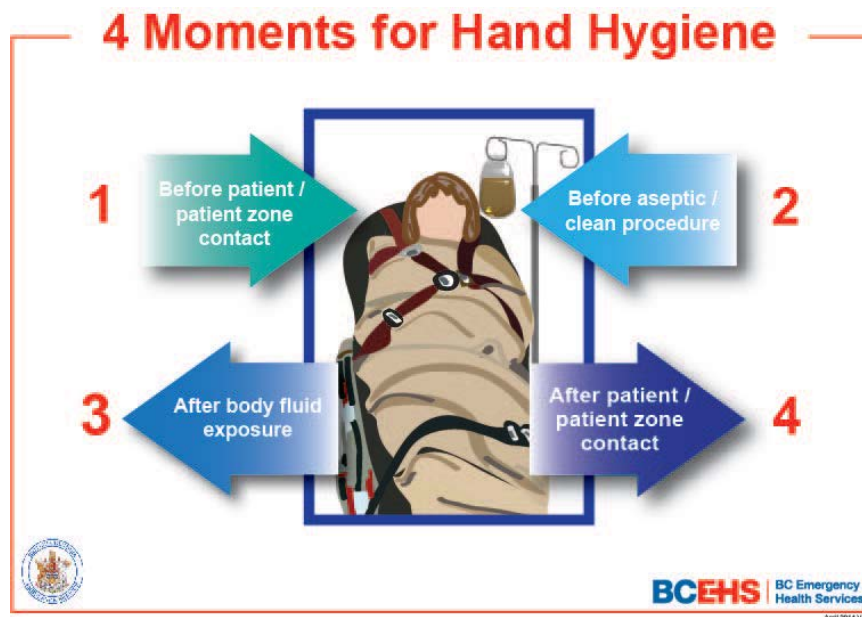
- Sanitizing with a 70-90% alcohol-based hand rub (ABHR). This is the preferred method when hands are not visibly soiled. It takes less time than washing with soap and water, and provides a rapid kill of most transient microorganisms.
- Washing hands with soap and running water. This must be performed when the hands are visibly soiled, because the effectiveness of alcohol in the ABHR is inhibited by the presence of organic material.

ABHRs have been shown to cause less skin breakdown than using soap and water. Moisturizers will help prevent the skin from becoming excessively dry and cracked. Care must be taken to ensure non-intact skin, especially on the hands as a result of cuts, scrapes or dermatitis is adequately covered while performing patient care. Healthy intact skin is a barrier to infection.

² British Columbia Ministry of Health's *Best Practices for Hand Hygiene in all Healthcare Settings and Programs*, available at: <http://www.health.gov.bc.ca/library/publications/year/2012/best-practice-handhygiene.pdf>

Routine hand hygiene can prevent potential infections from spreading. Proper hand hygiene helps prevent the transfer of infectious material from the hands to other parts of the body — particularly the eyes, nose, and mouth — or to other surfaces that are touched. The application of an ABHR or soap and water, combined with the creation of friction while rubbing the hands is the best way a Paramedic can protect the patient, themselves, their families and their colleagues from infectious diseases.

Hand hygiene must be performed at 4 distinct moments:



(based on WHO poster “Your 5 moments for hand hygiene”)

EXAMPLES OF THE 4 MOMENTS FOR HAND HYGIENE

1. Before patient contact
 - Before contact with a patient or their environment (at scene, in home, in vehicle, at hospital). Performed while doing quick risk assessment for environmental and infectious risks.
 - Before putting on gloves or other PPE, such as respirator or eye protection
2. Before a clean/aseptic procedure
 - Before invasive procedures on a patient, such as intubation or starting an IV
3. After body fluid exposure risk
 - After cleaning up patient who is vomiting

- After care provided to a patient who is bleeding
 - After handling materials/linens or clothing that might be contaminated
 - Any time hands are visibly soiled
4. After patient contact or contact with the patient's surroundings
- After securing stretcher in ambulance as you're leaving scene or patient's home
 - Before entering cab of ambulance
 - On your way out of a patient's hospital room/cubicle after transfer of care
 - During and after removing of personal protective equipment e.g. respirators, gowns, gloves
 - After cleaning and disinfecting equipment used for the patient and high touch areas in the ambulance

Other times when hand hygiene must be performed:

- at the beginning and end of shift
- upon re-entry to the station
- before and after handling food
- before and after smoking
- following an injury where the skin is broken
- after using the bathroom, or other personal body functions (sneezing, coughing)
- before and after handling personal care products or contact lenses

It is necessary to clean hands after removing gloves as gloves may not provide complete protection against hand contamination. The use of gloves does not replace the need for hand hygiene.

For proper hand hygiene techniques and additional information on hand hygiene, see **Appendix B**.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) refers to equipment worn or used as a barrier between the paramedic and potential risks of contamination (for example microorganisms or body fluids).

It comprises the following, all of which are stored in stations and must be carried in the ambulance:

- N95 respirators (requires annual fit-testing)
- surgical masks (for patients)
- medical gloves
- eye protection (protective glasses, goggles, face shields)
- gowns, disposable coveralls, Tyvek™ suits

PPE specific to the task should always be worn when:

- interacting, treating, and/or transporting patients with a known or suspected infectious disease
- preparing chemical solutions used for cleaning and disinfection (i.e., detergents, disinfectants)
- cleaning and disinfecting any equipment used for a patient, and cleaning the vehicle after transport

Choice of what PPE should be used is dependent on the information obtained prior to contact with the patient, the signs and symptoms that the patient is presenting, the potential risk of splash or spray. It is explained in the section “Modes of Disease Transmission”, **see page 27**.

PPE must never be worn in the driver’s compartment of a vehicle, as this may cause contamination of surfaces and equipment in this area.

For more information on PPE, including consideration when using, and donning and doffing appropriately, see **Appendix C**.

SHARPS SAFETY

Any healthcare worker handling sharp devices (e.g., IV catheters, scalpels, needles, auto-injectors) is at risk of occupational exposure to bloodborne infectious diseases. The risk is low,

but nonetheless, it is imperative to have a sharps safety system for handling all sharps to prevent injuries. Unless you have just removed a sharp from an unopened sterile container, it must be treated as contaminated.

Safe handling of sharps includes:

- IVs must not be inserted while the ambulance is in motion
- Medications administered using a needle should not be given while the ambulance is in motion
- Communication with other personnel when you are using sharps
- Ensure that you have a disposable sharps container with you on scene
- Immediate disposal of sharps in an appropriate sharps container
- Take responsibility for the sharps that you are using
- Never carry uncapped sharps
- Never pass exposed sharps to another person
- Remain clear of the person utilizing the sharp
- Do not recap needles
- Never bend or break a needle purposely
- Use needle-less systems, safety IV catheters and needles where possible and available
- Dispose of sharps containers in an appropriate biohazard container when the $\frac{3}{4}$ full line is reached, the interior is visibly soiled, and at minimum every 6 months.

For more information on Sharps Safety, see Sections on Bloodborne Diseases, **Page 31** and Blood and Body Fluid Exposure, **Page 42**.

TRANSPORT CONSIDERATIONS

When transporting a patient with a known or suspected infectious disease, the back of the ambulance becomes the isolation area. This is described in **Appendix D**.

ROUTINE CLEANING AND DISINFECTION OF VEHICLE AND PATIENT CARE EQUIPMENT

Cleaning and disinfection is the process used to remove foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms) from a surface. Cleaning removes rather than kills microorganisms. This is achieved with water, detergents and firm mechanical action (“elbow grease”). Cleaning must be performed consistently and well in order for disinfection to be effective.

Although there are 3 levels of disinfection used in health care, low-level disinfection is predominantly used in pre-hospital care. The introduction and use of single-use devices has decreased the need for high-level disinfection and sterilization. High level disinfection and sterilization must be performed in areas set up for reprocessing, and performed by staff who are specifically trained in these processes.

Areas touched (by either the patient or paramedic) in the patient area of the vehicle must be cleaned between each patient. Consider what kits were used, which cupboards were opened to access supplies, and what the patient touched or contaminated (i.e., through coughing, sneezing, or spitting) in the environment.

Sharps and bio-hazardous waste (dressings, bandage, sheets saturated with blood, etc.) need to be disposed of in appropriate receptacles following established procedures.

Cleaning of reusable equipment used during the provision of care must occur between patients. It is achieved with mechanical action, water, detergents and disinfectants, or products that provide both cleaning and disinfecting properties, such as Precept , Accel TB.

For more information on Routine Equipment Cleaning and Disinfection see **Cleaning and Disinfection Toolkit**.

MODES OF DISEASE TRANSMISSION

Infectious Diseases can be categorized into 5 main categories based on their mode of transmission:

- Contact (including Bloodborne Diseases)

- Droplet
- Airborne
- Common Vehicle
- Vector (including Zoonotic Diseases)

In this section we will look at each category and provide examples of specific diseases, what the risks are, how they are transmitted, and how to protect oneself from exposure. When it comes to protecting oneself from exposure to infectious diseases, the key is to break one or more of the links in the chain of infection. There are a number of different control measures that can be used to do this which include engineering, administrative and PPE controls. The administrative controls include standard operating procedures.

It is likely that a combination of the different types of control measures will be needed to effectively prevent exposures to infectious diseases. The combination of control measures will depend on the situational risk assessment that takes into consideration all the risk factors that may be present.

All blood and body fluids are considered potential reservoirs for infectious agents. In addition, patients may have an infectious disease and not have any symptoms; therefore, it is important to use Routine Practices at all times to protect both staff and patients. Additional Precautions, which are further measures of infection prevention and control based on the method of transmission of the known or suspected organism, may also be required. The patient history completed by the paramedic may lead to the conclusion that the patient has an infectious disease. This will drive the decision to use Additional Precautions while treating and transporting the patient.

Additional Precautions encompass the actions and PPE used for the prevention of diseases based on how they are transmitted:

- Contact
- Droplet
- Airborne

CONTACT TRANSMISSION

Contact transmission occurs when you touch a person or object that is contaminated with an infectious organism, and then transfer the microorganism to another person or surface.

Contact transmission is the most common means of transmission in health care.

Some examples are:

- Methicillin resistant *staphylococcus aureus* (MRSA)
- Vancomycin resistant *enterococcus* (VRE)
- *Clostridium Difficile* (C. Diff)
- Hepatitis A

Diseases transmitted through blood are also acquired through contact transmission, and include:

- Hepatitis B
- Hepatitis C
- Human Immunodeficiency Virus (HIV)

As these bloodborne diseases are a high risk for paramedics, specific consideration for these diseases has been included in the section Bloodborne Diseases, see **Page 31**.

How are they spread?

Contact transmission includes direct contact or indirect contact with an infected person or contaminated object.

- **Direct contact transmission** occurs when transfer of microorganisms results from direct physical contact between an infected or colonized individual and a susceptible host (body surface to body surface). This includes contact with blood and body fluids.

Transmission, depending on the organism, may occur through biting, kissing, touching, or sexual contact.

- **Indirect contact transmission** involves passive transfer of microorganisms to a susceptible host via an intermediate object. Indirect contact involves touching something in the environment that has been contaminated by microorganisms, usually an object or surface area. The contaminated hands then deposit the bacteria or virus on the next object or person that they touch. Transmission can also occur when eating, if the person has not

washed their hands after coming in contact with the surface contamination, and their hands touch their food, mouth or eyes.

What to look for during risk assessment for infectious diseases?

- Nausea, vomiting, diarrhea
- Wounds/cuts/incisions leaking or draining fluid or pus
- Bleeding or presence of blood
- Coughing that produces phlegm
- Used tissues when patient coughing or sneezing
- Injection paraphernalia

What to do to protect yourself and others?

In most situations, Routine Practices reduce the risk of transmission by this route. The need for additional precautions will depend on the organism encountered, the manner in which the organism is spread, whether the infecting blood or body fluids can be contained (e.g. draining wound covered by a dressing), and the compliance of the patient with hygienic practices (e.g. cough and sneeze etiquette).

Contact Precaution Basics:

- Gloves if close contact with the client is expected.
- Gowns if close contact with the client is expected and blood or body fluids are present.
- Excellent hand hygiene performed after gloves and other PPE used are removed.
- Cleaning and disinfection of all equipment and kits used, and all surfaces touched in the vehicle by patient and crew.

Other considerations:

- If patient is vomiting, use respirator and eye protection (safety glasses or face shield) in addition to gowns and gloves – implement Droplet Precautions
- If possible, have one paramedic access items required from kits and pass to the paramedic providing care

- Change gloves and perform hand hygiene after contact with potentially infected materials prior to touching clean kits/equipment
- If possible, use the practice of cocooning patient with stretcher linen to decrease patient touch to surfaces within the ambulance/transport vehicle
- Where possible, limit transport to 1 patient only
- Notify receiving hospital of Additional Precautions and reasons for these precautions
- Ensure cleaning and disinfection of all equipment used and surfaces touched
- Use ABHR or wash hands with soap and water after discharge of patient from your care and after cleaning patient care items, equipment and high touch surfaces.

If there is a known outbreak at one or a number of facilities in a geographic area, ensure that dispatch requests information regarding the precaution status of the patient.

Bloodborne Diseases

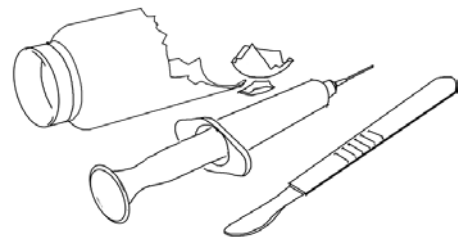
Bloodborne diseases pose a risk to paramedics due to the health consequences they present if acquired.

Some examples are:

- Human Immuno-deficiency Virus,
- Hepatitis B virus
- Hepatitis C virus.

How are they spread?

All can be spread by direct contact with infected blood and certain other infected body fluids. To cause infection, the blood or body fluids containing the virus must gain entry into the bloodstream. The highest-risk exposures are from sharps injuries (puncture wounds from needles or cuts from scalpels) or splashes to a worker's mucous membranes (especially the eyes and mouth). Splashes of blood on intact skin are considered extremely low risk for infection because intact skin is an effective barrier that prevents the virus from gaining entry.



Who is at risk?

Fortunately, it is rare to contract a disease from occupational exposure to bloodborne pathogens. However, contracting one of these diseases has significant consequences and long-lasting health implications, and could result in serious illness or even death.

Any paramedic who comes in contact with blood or body fluids is at risk. Exposures can occur through needle sticks or other sharps injuries, or blood splashes. Paramedics may have higher risks than other health care providers due to the client population, uncontrolled environmental conditions where care is provided, and the types of procedures being performed at times in a moving vehicle.

Paramedics may be exposed to these pathogens in two ways:

- ***Percutaneous exposure:*** when blood or body fluid from one person enters the bloodstream of another person through punctured skin (needle stick or other sharps injuries) or non-intact skin (cut, chapped, or abraded skin or a healing wound that is less than three days old).
- ***Per mucosal exposure:*** when blood or body fluid from one person enters another person's body through mucous membranes (in particular those that line body cavities exposed to the air, including the eyes, nose, mouth, and the uncommon route for paramedics at work via the vagina, rectum, and urethra).

What to look for during risk assessment?

- Bleeding or presence of blood
- Presence of sharps in the environment (i.e., needles, broken glass, jagged metal edges)
- Uncapped syringes or sharps used for blood glucose testing
- Risky lifestyles
- Injection paraphernalia

What to do to protect yourself and others?

Many people who are carriers of bloodborne diseases such as HIV, Hepatitis B, and Hepatitis C have no symptoms and may not know that they are infected. Paramedics also may not be aware that the patient is infected. In order to protect yourself from possible exposure to bloodborne pathogens, consider all blood and body fluids to be potentially infectious, and use appropriate precautions for all contact with blood and body fluids. These precautions include:

- Follow the proper hand hygiene procedure.

- Follow routine practices whenever there is any possibility of exposure to blood or other body fluids.
- Use sharps with needleless systems or devices that have safety-engineered features (for example, retractable needles)
- Do not recap sharps, use “hands-free” (or neutral zone) methods of passing instruments.
- Immediately dispose used sharps into an appropriate sharps containers
- Immediately dispose of waste into appropriate containers
- Wear gown and gloves when handling laundry soiled with blood or body fluids
- Use general cleaning and blood-spill cleanup procedures that include cleaning and disinfection of surfaces contaminated by blood, see Spill Clean-up, **Appendix E**.
- Perform hand hygiene after gloves and other PPE are removed
- Ensure cleaning and disinfection of all equipment used and surfaces touched
- Use ABHR or wash hands with soap and water after discharge of patient from your care and after cleaning patient care items, equipment and touched surfaces.

DROPLET TRANSMISSION

Droplet transmission refers to the large droplets (greater than 5 microns) that are generated from the respiratory tract of an infected person when they cough or sneeze, or during procedures such as intubation or suctioning. These droplets land on mucous membranes or are transferred there by contaminated hands or gloves.

Some examples are:

- Rhinovirus
- Influenza, including H1N1
- Respiratory syncytival virus (RSV)
- Severe acute respiratory syndroms (SARS)
- Meningitis
- Mumps

- Pertussis (Whooping Cough)

How are they transmitted?

Droplets are generated from the respiratory tract of the patient during coughing or sneezing, or during procedures such as suctioning or intubation. Because of the size of the droplets, they do not remain in the air but fall by gravity to surfaces in the surrounding area. Transmission can occur in the following ways:

- Droplets are propelled a short distance, less than 2 metres, through the air and deposited on the mucous membrane (conjunctiva, nose, mouth) of a susceptible person.
- Inhalation of droplets directly into the lungs. For this to occur, the susceptible person must be within 2 metres of the infected host, and be breathing in when the person coughs or sneezes.
- Touching objects that have been contaminated by the droplets falling onto the surface when the person coughs or sneezes (usually within 2 metres); and then touching their conjunctiva, nose, mouth with contaminated hands or gloves.
- Transmission can also occur when eating, if the person has not washed their hands after coming in contact with the surface contamination, and their hands touch their food or mouth.

What to look for during risk assessment?

Diseases spread by the droplet route are easily identifiable by the patient's visible symptoms.

- Fever (flushing, perspiration, shakes, chills)
- New or worsening cough
- Productive cough with secretions from the nose and/or mouth
- Vomiting

What to do to protect yourself and others?

PPE used in the pre-hospital environment will differ from that used in the hospital setting. It is important for paramedics to always wear the highest level of respiratory protection available when dealing with a patient with symptoms of respiratory illness. This is because diseases such as tuberculosis and measles will present with many of the same symptoms as influenza, and in many cases you will not know what you are dealing with.

Droplet Precaution Basics:

- Gloves if within 2 metres of patient.
- Gowns if within 2 metres of patient who is coughing and not able to wear a surgical mask.
- Eye protection and N95 respirator when within 2 metres of patient.
- Excellent hand hygiene performed after gloves and other PPE used are removed.
- Cleaning and disinfection of all used equipment and all touched surfaces in vehicle.

Other considerations

- If possible, promote sneeze and cough etiquette, by having tissues readily available for the patient and having them cough/sneeze into the tissue or their sleeve. Place a surgical mask on the patient if they are able to tolerate it.
- Due to the risk of transmission of viral particles through the droplet route when a patient with Norovirus vomits, Droplet Precautions must always be put in place with a vomiting patient.
- If possible, have one paramedic access items required from kits and pass to the paramedic providing care
- Change gloves and perform hand hygiene after contact with potentially infected materials and prior to touching clean kits/equipment
- Ensure cleaning and disinfection of all equipment used and surfaces touched or contaminated by droplets if patient is not wearing a surgical mask (droplets can be dispersed up to 2 metres).
- Perform hand hygiene after PPE is removed
- To degree possible, limit transport to 1 patient only
- Limit the number involved in the treatment and transportation of a patient who is known to be infected. Do not hand off this patient to a second crew unless the first crew will exceed the safe scheduling parameters. In the event that an infected patient requires air evacuation, where possible the only crew in direct contact with the patient or the patient compartment should be the Airevac paramedics. Ground support crews should not assist with patient care and should be in the vehicle cab during transportation.

- Notify receiving hospital of Additional Precautions and reasons for these precautions
- Use ABHR or wash hands with soap and water after discharge of patient from your care and after cleaning patient care items, equipment and touched surfaces.

If there is a known outbreak at one or a number of facilities in a geographic area, ensure that dispatch requests information regarding the precaution status of the patient.

AIRBORNE TRANSMISSION

Airborne transmission requires that the organism must be inhaled in order to cause infection. The infectious organisms are small enough (less than 5 microns) and light enough to remain suspended in the air for prolonged periods of time. They can be dispersed widely by air currents.

Some examples are:

- Tuberculosis (TB)
- Chicken pox (Varicella) – Note: can also be transmitted through contact with skin lesions (vesicles)
- Measles (Rubeola)

Less common:

- Varicella Zoster (that are widespread and cannot be covered by dressings – disseminated)

How are they spread?

Organisms are contained in droplet nuclei (less than 5 microns) that result from evaporation of large droplets or in dust particles containing skin squames and other debris that remain suspended in the air for long periods of time. Aerosolized airborne droplet nuclei are extremely light, and therefore can travel considerable distances via air currents. They are inhaled by susceptible hosts who may be some distance away from the source patient.

A person becomes infected by breathing in air contaminated with the virus or bacteria. The degree of risk is determined by the virulence of the organism and duration of time in close proximity to the patient.

What to look for during risk assessment?

- New or worsening cough
- Possible sputum production or nasal secretions
- Loss of weight
- Night sweats
- New rash, skin blisters or lesions

What to do to protect yourself and others?

Control of airborne transmission is the most difficult, as it requires control of air flow through special ventilation systems. The transmission of diseases that are spread through the air must be managed through a combination of engineering controls, administrative controls (including safe work practices), and personal protective equipment.

Airborne Precaution Basics:

- Wear N95 respirator.
- Have patient cover their nose and mouth with their sleeve or tissue when coughing, sneezing, or speaking.
- Have patient wear a surgical mask.
- Wear gloves and gown if there is potential for contamination from respiratory secretions or drainage from skin blisters or lesions.
- Ensure proper ventilation in vehicles.
- Excellent hand hygiene performed after gloves and other PPE used are removed.
- Let patient compartment vent for 20 minutes after patient transport.
- Cleaning and disinfection of all used equipment and touched surfaces in vehicle.

Other considerations:

- If possible, have one paramedic access items required from kits and pass to the paramedic providing care
- Change gloves and perform hand hygiene after contact with potentially infected materials and prior to touching clean kits/equipment

- Use a face shield with N95 respirator when performing Aerosol Generating Medical Procedure (AGMP), especially when working with airborne disease transmission risks. AGMP includes, nebulized medication, suctioning, bag valve mask, CPAP and endotracheal intubation.
- Create a negative pressure environment in the patient compartment of ambulance and set the rear exhaust fans in the patient compartment to HIGH in order to maximize air extraction (engineering control).
- Transport must be limited to 1 patient only; unless both patients have same organism.
- Limit the number of people in the patient area of the vehicle. The number of paramedics involved in the treatment and transportation of a patient who is known to be infected, must be kept to a minimum. Do not hand off this patient to a second crew unless the first crew will exceed the safe scheduling parameters. In the event that an infected patient requires air evacuation, where possible the only crew in direct contact with the patient or the patient compartment should be the Airevac paramedics. Pilots must be notified of need to wear an N95 respirator. Ground support crews should not assist with patient care and should be in the vehicle cab during transportation.
- Leave exhaust fans on after transport of patient, to provide time for patient compartment to vent prior to cleaning.
- Ensure cleaning/disinfection of patient care items, equipment, and high touch surfaces.
- Notify receiving hospital of additional precautions.
- Perform hand hygiene after PPE is removed
- Ensure cleaning and disinfection of all equipment used and surfaces touched
- Use ABHR or wash hands with soap and water after discharge of patient from your care and after cleaning patient care items, equipment and touched surfaces.

COMMON VEHICLE TRANSMISSION

This refers to the spread of organisms through a common source such as food or water. Food sources may become contaminated after being handled by unwashed hands or processed by unclean equipment. Water may become contaminated by infected feces, urine or other body fluids, and diseases can occur in susceptible persons by drinking or bathing in this

contaminated water. This can result in large outbreak situations in a defined or common geographical area. Examples include:

- Salmonella (from contaminated food)
- E. Coli (from contaminated water sources)
- Cholera (from drinking water contaminated with infected fecal matter).

Transmission can occur person to person, through touch of contaminated surfaces and touching mouth with contaminated gloves or hands. Follow Contact Precautions.

VECTORBORNE TRANSMISSION

This refers to the spread of organisms by means of an infected insect or animal.

Some examples are:

- West Nile virus or Malaria (via mosquitos)
- Bubonic Plague (via rat fleas)
- Rabies (via saliva of infected animal)
- Lyme Disease (via ticks)
- Hantavirus (via inhalation of tiny particles of saliva, urine, droppings of infected deer mouse)
- Brucellosis (via direct contact with tissues/fluids of infected animals)

How are they spread?

Transmission varies depending on the organism. The potential for vectorborne transmission between patients and paramedics is extremely low risk.

What to look for during risk assessment?

Consideration must be given to the environment in which the paramedic is working to determine the risk of transmission.

- Is there stagnant water and is this an area where West Nile is known to be present?
- Is this an area where there could be rodent droppings?
- Is there knowledge of the patient's livestock or family pet being ill? Can contact with the animal be avoided?

What to do to protect yourself and others?

Prevention measures include safe work practices, routine practices, and PPE. Consider the control measures:

- Wash hands with soap and water after handling animals, animal feces, or soil that might be contaminated. Follow proper hand washing procedure. Ensure nails are clean. If running water is not available, use a wipe for any visible soil then use an alcohol-based hand rub.
- Wear respiratory protection if there is a potential for exposure to an airborne organism (for example, exposure to hantavirus while working in an area where you might encounter rodent droppings).
- Wear face protection (for example, safety glasses or face shield) if there is a potential for exposure to sprays or splashes of blood or body fluids.
- Check for and remove ticks from your body.

Need More Information?

For more information on vectorborne or zoonotic diseases, see the following:

- US Centers for Disease Control and Prevention (www.cdc.gov/az/a.html)
- BC Centre for Disease Control (www.bccdc.org/topic_index.php)
- British Columbia Veterinary Medical Association (www.bcvma.org)

IMMUNIZATION PROGRAM

WHY IS IMMUNIZATION IMPORTANT?

Many diseases can be prevented with vaccination. Getting vaccinated helps protect your health and prevents disease transmission between you, your colleagues, your family, and your patients. Immunization is important because, as a health care worker, paramedics are more at risk of exposure to communicable disease in the workplace than the general public.

RECOMMENDED IMMUNIZATIONS

In BC, the vaccines recommended for healthcare workers are:

- Hepatitis B

- Influenza
- Measles, Mumps, Rubella (MMR)
- Tetanus/Diphtheria/Pertussis
- Varicella (Chickenpox)

For more information on these vaccines, see **Appendix F**.

All new employees must comply with the PHSA Baseline Immunity Assessment and the requirement to call the Workplace Health Call Centre (WHCC) (1-877-587-4080) for an immunity assessment no later than 2 weeks following commencement of employment. The baseline immunity assessment is intended as an opportunity to review an employee's immune status related to their occupational health hazards.

All employees should discuss the need for immunization with the occupational health nurse, infection control practitioner, public health nurse or family doctor. Taking the recommended vaccines is not mandatory; however, the BCEHS strongly encourages its employees to be vaccinated. If you choose to decline any of the vaccinations, you can change your mind at any time.

Effective December 1, 2012, all staff must either be immunized against influenza or wear a surgical mask while in patient care areas or providing patient care.

IMMUNIZATION CLINICS

New employees should call the WHCC at 1-877-587-4080 and speak to an Occupational Health Nurse (OHN) to determine if their immunizations are current and receive updates on their vaccinations if required. All other employees can either email or call the Occupational Health Nurse at PHSA (occupationalhealthnursing@phsa.ca or 604-875-7244)

RECORD OF IMMUNIZATIONS

All new employees are required to register their baseline immunizations with BCEHS at time of hire. This can be done by calling the WHCC.

WHCC will keep a confidential record of all your immunizations and laboratory tests in the WHITE database and workers should keep a copy as well.

If you receive any vaccination or blood test in the community, or at a Health Authority outside the Lower Mainland or Vancouver Island, report your immunization/results by emailing occupationalhealthnursing@phsa.ca

During flu season, all influenza vaccines must be recorded to comply with the policy. Please report your immunization or choice to decline by emailing occupationalhealthnursing@phsa.ca with the date and where you obtained the vaccine.

VACCINE NON-RESPONDERS

A small percentage of healthy individuals are hypo- or non-responders, following the recommended Hepatitis B vaccination schedule of 0, 1 and 6 month. Vaccinations for other viral infections, such as Rubella, Polio and Mumps have similar failure rates.

Non-responders should:

- consult their local health unit or physician for possible revaccination,
- have their immune status documented, and
- receive HBIG in the event of exposure (see Volume 2, Chapter 3, re: [Hepatitis B post-exposure management for procedures](#))

BLOOD AND BODY FLUID EXPOSURE

First Aid Measures

Immediately implement the following first aid measures if you are exposed to blood or body fluids:

- For eyes or mucous membrane contact, rinse/flush well with water or normal saline for a minimum of 3 to 5 minutes.

- For skin contact, wash well with soap and water. DO NOT promote bleeding of percutaneous injuries by cutting, scratching or puncturing the skin.
- For needle stick injuries:
 - Wash wound with soap and water.
 - Disinfect with alcohol.
 - Apply sterile dressing, if necessary.
 - Seek medical attention if needle is contaminated with blood or body fluids.

High Risk Exposures

High risk exposures are those that involve blood or body fluid contact with eye or mucous membranes, “dirty” needle stick injuries and skin contact where the blood or body fluid has come in contact with an open wound. If the exposure is only to intact skin, the risk is negligible and not considered high risk.

Seek Medical Attention

It is recommended that you immediately seek medical attention for all high risk exposures. Most paramedics will consult the emergency room physician at the hospital they are attending.

Blood and Body Fluid Exposure Kit

If you seek or are referred to medical attention, take the Blood and Body Fluid Exposure Kit with you when you visit your doctor or Emergency Room physician as soon as possible. Each ambulance is equipped with a Blood and Body Fluid Exposure Kit. Each kit contains six copies of each of the following:

- Letter – Management of Blood and Body Fluid Exposure
- Form – Management of Percutaneous or Permucosal Exposure to Blood and Body Fluid/Laboratory Requisition (Form – HLTH 2339, Rev. 2011/11/24)

Post Exposure Reporting

All high risk exposures to blood or body fluids, needle sticks and human bites must be reported to the WHCC as soon as possible. If you have not already sought medical attention, the OHN at the Call Center will do a risk assessment of your exposure and provide advice on any further medical attention that may be needed. If you have sought medical attention make sure you still report your exposure to the Call Center. If you have any doubt whether you were exposed or not call the Call Centre and speak to an OHN or visit your doctor.

Blood and Body Fluid Exposure – Frequently Asked Questions

A Blood and Body Fluid FAQ sheet is available to help workers with frequently asked questions about blood and body fluid exposure, see **Appendix G**.

EXPOSURE TO OTHER INFECTIOUS DISEASES

There are times when a paramedic may have unknowingly treated a patient with an infectious disease which they are at risk of acquiring. The use of Routine Practices reduces that risk.

Notification Received by Worker

As soon as the paramedic becomes informed that they treated a patient with an infectious disease and they are not sure if they were adequately protected they should call the WHCC immediately. The worker may be asked for the response # so other paramedics can be tracked down by the Call Center for notification.

Notification Received by Supervisor

Supervisors may receive a report from the Call Center that one or more of their workers was exposed to a patient with an infectious disease. If a supervisor learns of worker exposure to a patient with an infectious disease from a source other than the Call Center, the supervisor must call the Call Center immediately.

Notification Received by Workplace Health

If Workplace Health receives notification they will contact the supervisor.

Identifying Workers Affected

Supervisors should work with the Call Center to identify all the workers affected. Supervisors can assist by providing information that may help track down other paramedics and first responders who have been exposed.

Contacting Workers

Once the workers have been identified, the Call Center will make contact with the BCEHS workers by phone.

Post Exposure Risk Assessment

Infectious disease exposures will be investigated by the WHCC, who may contact the supervisor if information for contact tracing is required. The OHN will do a risk assessment of the worker's exposure situation and advise worker if they need to seek further medical attention.

The OHN will take into consideration the risk associated with the patient and the level of protection taken by the paramedic or exposed worker.

POST EXPOSURE INFORMATION

Post Exposure Investigation

All blood or body fluid exposures must be reported to the WHCC as an incident or injury and will be investigated as such by the OHN. The WHCC will contact the employee's supervisor with a request to investigate the incident using the Incident Investigation Tool.

Health Monitoring

The purpose of health monitoring is to protect workers from developing occupational disease by detecting biological indicators or adverse health effects at an early stage. Action can then be taken to prevent, reverse the severity, or arrest the progression of the adverse health effect or disease.

BCEHS uses post exposure health monitoring which may include worker referral to a physician if there is an exposure to an infectious disease. The nature of the post-exposure health monitoring will vary depending of the infectious disease of concern. Workers will receive follow-up from the Call Center OHN as needed.

Critical Incident Stress Management (CISM) and Employee and Family Assistance Program (EAP) Services

Exposure to blood or body fluids or to persons with an infectious disease can be a traumatic experience for a worker. BCEHS has free CISM and EAP services available to workers who need assistance with dealing with the impacts of exposures. For assistance, contact Homewood Human Solutions at 1-800-663-1142.

WORK RESTRICTIONS FOR EXPOSED OR ILL WORKERS

In the event of an outbreak of an infectious disease and possible exposure to workers, work restrictions may be needed to prevent the infection from spreading to others. When required, restrictions (and if required, quarantine precautions) will follow the protocols advocated by the BC Ministry of Health, the BC Centre for Disease Control, and the Medical Health Officer.

RETURN TO WORK

BCEHS will rely on the advice of the worker's physician about the worker's fitness to work, along with any work restrictions or recommended health and safety precautions, providing it meets standard Infection Prevention and Control Program protocols when in relation to infectious diseases.

Contact your Disability Case Advisor (DCA) for more information on return to work.

EDUCATION AND TRAINING

All workers with a risk of occupational exposure will be provided with adequate education, training and supervision to work safely with, and in proximity to, infectious diseases. This education and training will primarily be provided through the OSH training program for new hires.

REFRESHER EDUCATION AND TRAINING

BCEHS will provide additional education when changes, such as modifications of tasks, changes in procedures, institution of new tasks or procedures affect the employees' occupational exposure. The additional education may be limited to addressing the new exposures created.

Objectives

The objectives of the education and training will be to ensure that workers are able to demonstrate standard operating procedures including the proper choice and safe use of PPE.

Content

The education and training materials will include the following content:

- A copy of applicable sections of the *Regulation* - applicable sections include section [3.19\(1\)](#); sections [5.2](#), [5.54](#), and [5.55](#); sections [6.33](#), [6.34](#), [6.36](#) (1.11-1.16), [6.37](#), [6.39](#), and [6.40](#); sections [8.2](#) and [8.3](#); sections [12.157](#) and [12.158](#).
- A copy of applicable sections of the *Workers Compensation Act* - including section [173](#) on incidents that must be investigated
- Definition of a biological agent designated as a hazardous substance in section [5.1.1](#)
- A general explanation of the epidemiology and symptoms of occupational diseases and infections.

- Occupational exposure
 - How it occurs, such as modes of transmission
 - How to identify tasks and other activities, such as routine and emergency spills, that may involve worker exposure to infectious diseases.
 - Effects of exposure
 - What to do in the event of exposure, such as emergency procedures to be followed, and post-exposure treatment
- Use and limitations of control measures to prevent or minimize exposure
 - Engineering controls
 - Work practice, or administrative, controls
 - Personal protective equipment (PPE). This element should address selection, care, use, storage, limitations, maintenance, inspection, decontamination, and availability of PPE
- How to access the ECP-IPAC.
- How to access on-line training and resource materials.
- Required labels and identification for a biological agent designated as a hazardous substance in section [5.1.1](#). An explanation of the biohazard signs and labels and/or colour coding required by the legislation.
- Information on the vaccines required under section [6.39](#) of the *Regulation*. Information about the BCEHS recommended immunizations.
- Information on the appropriate actions to take in an emergency involving blood or other potentially infectious materials;
- An explanation of the procedure to follow if an exposure occurs, including the method of reporting the incident, post-exposure evaluation, management and follow-up; and
- Opportunity for an interactive question and answer period.

TESTS FOR ADEQUATE EDUCATION AND TRAINING

To evaluate the effectiveness of the education and training, employees should be able to answer the following questions:

- Does your work involve potential exposure to infectious diseases? If so, what are they?
- What precautions are required for preventing exposure?
- What do you do in case of an exposure?
- Where would you go for further information?

TRAINER QUALIFICATIONS

The person providing the education and training:

- will be knowledgeable about biological agents designated as hazardous substances under section 5.1.1 of the OHS Regulation, particularly in the context of workplace exposure and control.
- may be medical or non-medical professionals. Medical professionals may include infection control practitioners. Non-medical professions could include individuals with specialized training in the area of biological agents designated as hazardous substances.

RECORDS AND DOCUMENTATION

TYPES OF RECORDS KEPT

The following documentation will be maintained by BCEHS:

- **Standard Operating Procedures** – Record of written standard operating procedures that have been prepared and implemented to eliminate or minimize a risk of exposure to a biological agent by any route that could cause adverse health effects, including emergency and cleanup procedures in the event of a spill or release of a biological agent.
- **Education and training** — Records of education and training to inform workers about the contents of the ECP-IPAC and how to work safely with, and in proximity to, a biological agent designated as a hazardous biological substance. Record of training for supervisors and workers who are trained in and follow the measures for the safe handling, use, storage and disposal of biological agents, including emergency and spill cleanup procedures. Keep track of who was trained, when the training took place, and what it included. A record of education and training to inform workers about the contents of the ECP-IPAC and the rest of the Biological Agents Safety Program.
- **Exposure Records** – Record of all workers who have occupational exposure to a designated hazardous biological substance. These exposures will be documented in the

WHITE database. A record of all workers who have been exposed, while performing work activities, to a designated hazardous biological substance.

- **Post Exposure Information** – Record of the identity of the biological agent and its possible effects on worker health and safety clearly communicated to the worker exposed.
- **Immunization records** – These records will be kept in the WHITE database.
- **Health monitoring** records
- **Workplace inspections**
- **Investigations** that take place after exposure incidents
- **JOSH Committee meeting minutes**

EDUCATION AND TRAINING RECORDS

A record will be kept, by Clinical Education, of all education and training provided to workers in the content of the ECP-IPAC. The record will contain the following information:

- Date(s) of training
- Content or a summary of the training sessions
- Type of education and training (for example classroom, video, interactive, or on-the-job)
- Names and qualifications of those conducting the training
- Names, job titles, and work locations of workers attending the sessions.

Education and training records will be kept for at least **3 years** after the training session. Unlike medical records, training records are not confidential and can be inspected and provided to a WorkSafeBC prevention officer, if requested.

RECORD RETENTION

All records of exposures will be kept electronically in the WHITE Database system. Records of vaccination and other exposure records will be kept for the period of employment plus at least 10 years. Please note that first aid records related to an occupation exposure to a hazardous biological substance must be kept for 10 years.

CONFIDENTIALITY

Employee medical records maintained under this program are confidential and are not to be disclosed or reported without the worker's written consent to any person within or outside the BCEHS except as required by law. Each employee has the right to access his or her personal medical records.

INSPECTION OF RECORDS

WorkSafeBC prevention officers have the authority to inspect exposure records. These records must be provided to the officer if requested. Because all results are confidential, a WorkSafeBC prevention officer must respect the confidentiality of any information received in this regard from any source.

ACCESS TO MORE INFORMATION

For more information on preventing workplace exposures to infectious diseases or their treatment, talk to your family doctor, contact your local public health unit (see the blue pages of the telephone directory), contact the Technical Advisor Program, WorkSafeBC or BCCDC.

Technical Advisor Program

The Technical Advisor Program is available through dispatch to assist crew in the identification of occupational diseases and environmental hazards and provide guidance and direction related to the appropriate controls.

WorkSafeBC Prevention Information Line

Phone: 604 276-3100 in the Lower Mainland

Toll-free: 1 888 621-7233 (621-SAFE) in B.C.

Web site: WorkSafeBC.com

WorkSafeBC publications and multimedia resources

Visit WorkSafeBC.com and click "Publications" to find health and safety publications, slide shows, and videos that you can view online or download free of charge.

BC Centre for Disease Control

Phone: 604 660-0584

Web site: www.bccdc.org

APPENDIX A - GLOSSARY

This section describes some common terms that are used in this exposure control plan.

adverse health effects – an acute or chronic injury or disease, or death.

airborne transmission – transmission of pathogens by inhaling infectious aerosols (solid or liquid particles in the air) that are floating in the air. This can occur from evaporation of large droplets that occur when an infected person coughs, sneezes, or talks; or during some medical procedures that generate aerosols; or through dust particles containing skin squames and other debris.

alcohol-based hand rub – a liquid, gel or foam formulation of alcohol, (e.g., ethanol, isopropanol) with a minimum of 70% alcohol, which is used to reduce the number of microorganisms on hands in clinical situations when the hands are not visibly soiled. ABHRs contain emollients to reduce skin irritation and are less time-consuming to use than washing with soap and water.

bacteria – single celled organisms, some of which can cause disease.

biohazardous materials – substances that contain pathogenic organisms which cause disease in human beings, or any material that is contaminated with such organisms.

biological agent (also “hazardous biological substances” and “risk groups”) – for the purposes of sections 5.2 and 6.33 to 6.40 and Part 30 of the WorkSafeBC OHS Regulation the following biological agents are designated as hazardous substances:

- A liquid or solid material that is contaminated with a prion, virus, bacterium, fungus or other biological agent that has a classification given by the Public Health Agency of Canada as a Risk Group 2, 3, or 4 human pathogen that causes an adverse health effect;
- A biological toxin that causes an adverse health effect.

bloodborne pathogens – a subset of biohazardous materials. Pathogenic organisms that are present in human blood, blood components (e.g. plasma, platelets).

carrier – a person or animal who is infected and capable of transmitting an infection to others, but who does not have symptoms of the disease.

clean needle – a sterile needle, one which has been taken out of the sterile case and has not been used.

communicable disease – a disease due to an infectious biological agent or toxic product produced by an infectious biological agent, that may be transmitted directly or indirectly from one individual to another.

contact transmission (direct and indirect) –

- **Direct contact** transmission occurs when transfer of microorganisms results from direct physical contact between an infected or colonized individual and a susceptible host (body surface to body surface). This includes contact with blood and body fluids.
- **Indirect contact** transmission involves the passive transfer of pathogens from a contaminated intermediate source (for example, a door handle, table surface, or tray), contaminated instruments, or hands. Some bacteria and viruses can survive on surfaces for several hours or days.

contaminated – the presence, or the reasonably anticipated presence, of blood or other potentially infectious material on an item or surface.

contaminated laundry – uniforms or linen which has been soiled with blood or other potentially infectious materials, or which may contain a sharp.

contaminated sharps – sharps contaminated or reasonably anticipated to be contaminated with blood or other potentially infectious materials.

contamination – the presence of an infectious agent on a person's body, clothes, or inanimate objects.

cross contamination – the transfer of blood or other potentially infectious material from an individual or object to other individuals or objects.

dirty needle – a needle which has been, or is suspected to have been, contaminated with blood and body fluids.

droplet nuclei – particles that are formed by the evaporation of airborne droplets (see airborne transmission).

droplet transmission – transmission that occurs when droplets containing a pathogen are propelled a short distance through the air and deposited on mucous membranes such as the eyes, nose, or mouth; or onto surfaces and then transmitted to a person through contact with this contaminated surface.

epidemic – the rapid spread of a disease through a community, infecting more people than usual.

exposure - the condition of being subjected to an infectious disease through contact with an infected person or a contaminated environment. An exposure is contact involving blood or other potentially infectious materials and a worker's eye, mouth, other mucous membranes or non-intact skin or punctured skin. This may involve:

- **airborne droplet agents:** any agent that can be transmitted from one person to another via the air and cause disease. Such agents are transmissible by the evaporation and inhalation of respiratory secretions from the source person coughing, sneezing or talking. In certain circumstances microscopic droplets can adhere to very small dust particles and can remain suspended in the air for long periods of time.
- **bloodborne agents:** any agent that can be transmitted from one person to another via blood. Such agents may also be transmittable by other body fluids, and this varies depending on the agents.
- **blood or body fluid exposure:** an event where blood or other potentially infectious body fluids come into contact non intact skin, mucus membranes, or subcutaneous tissue (via percutaneous injury)
- **non-intact skin exposure:** cut, chapped, or abraded skin, healing wound less than three days old.

- **percutaneous exposure:** blood or body fluid from one person is introduced to the bloodstream of another person through the skin, via needle stick or other “sharps” injury.
- **permucosal exposure:** blood or body fluid of one person comes into contact with the mucous membranes of another person (membranes lining the cavities exposed to the air, including the eyes, nose, mouth, vagina, rectum and urethra).

faecal-oral route – often a “hand-to-mouth” means of transmitting infectious disease organisms. The germs are shed through feces and spread by hands, flies, or other means to food, water, or objects that may come in contact with a person’s mouth and are ingested.

Fungi – prevalent throughout the world, but only a few cause disease in humans. They tend to predominantly affect the skin, nails and subcutaneous tissue. Some common yeasts, such as *Candida albicans* are normal human flora that can cause chronic or severe infections. Fungal infections can be life threatening in critically ill or immunocompromised patients.

hazardous biological substances (see “biological agents” and “risk groups”) – the following biological agents are designated as hazardous biological substances according to section 5.1.1 of the OHS Regulation:

- A liquid or solid material that is contaminated with a prion, virus, bacterium, fungus or other biological agent that has a classification given by the Public Health Agency of Canada as a Risk Group 2, 3 or 4 human pathogen that causes an adverse health effect;
- A biological toxin that causes an adverse health effect.

high risk contact – when a worker is required to work in close proximity with a person (patient or otherwise) with one or more of the following histories:

- Has signs/symptoms of infection (e.g. new or worsening cough, vomiting, diarrhea, purulent drainage, fever, rash)
- Has had Hepatitis, jaundice, liver problems, or multiple transfusions;
- Engages in intravenous drug use;
- Has been or is a renal dialysis patient, cancer patient, haemophiliac or received blood transfusions prior to 1985;

- Is known to be infected with Hepatitis B virus (HBV), Hepatitis C virus (HCV), or human immunodeficiency virus (HIV)

immunity – the ability of the immune system to fight off infectious diseases.

immunization – a process in which a vaccine is given to provide protection against a specific disease.

incubation period – the interval between initial exposure to infection and the appearance of the first signs or symptoms of disease.

infectious – caused by a pathogenic microorganism or agent, is capable of causing infection and is caused by or is capable of being transmitted.

infectious agent – pathogenic organism that can cause disease in human beings and is capable of producing infection and of being transmitted.

infectious phase/communicable period – the stage in an illness during which an infection is capable of being transmitted.

medical sharp – means a needled device, scalpel, lancet or any other medical device that can reasonably be expected to make parenteral contact (puncture or cut the skin).

mode of transmission – the mode of transmission is the mechanism by which an agent is spread from the reservoir to the portal of entry of the susceptible host. The modes of transmission of infectious agents are contact, droplet, airborne, vector or zoonotic transmission.

mucous membrane – a moist layer of tissue that lines body cavities or passages that have an opening to the outside world. The mucous membranes referred to in this ECP-IPAC include eyes, nose and mouth.

non-intact skin - skin that has been compromised by a cut or abrasion, including a healing wound less than three days old or a skin lesion causing disruption of the outer layer of skin, for example, acute dermatitis, a hangnail or chapped skin.

occupational exposure – contact with biological agent resulting from the performance of a worker's duties, for example harmful contact with bloodborne pathogens, including needle-stick injuries or splashes or blood to the eyes, nose or mouth. It does not include blood splashing on intact skin.

pandemic – an epidemic that occurs worldwide (see epidemic).

parasites – a parasite is an organism that lives on or in a host organism and gets its food from or at the expense of its host. There are three main classes of parasites that can cause disease in humans; protozoa, helminthes and ectoparasites.

- **protozoa** – are microscopic, one-celled organisms that can be free living or parasitic in nature often, often infecting a person through the faecal oral route.
- **heminths** – roundworms, tapeworms and flukes are heninths, and they infect people principally through ingestion of fertilized eggs or by the larvae penetrating the skin or mucous membrane
- **ectoparasites** – infestation of lice and scabies (ectoparasites) occurs by direct contact with the arthropod or its eggs.

parenteral contact – means piercing of mucous membranes or the skin.

pathogen – a microorganism that can cause disease.

personal protective equipment (PPE) – barriers worn to protect mucous membranes, skin and clothing from contact with infectious agents. PPE includes gloves, mask, respirator, goggles, face shields, aprons and gowns.

prions – a form of infectious protein believed to be the cause of Creutzfeldt Jakob disease (CJD)

protozoa – single or multi-celled microorganisms that are larger than bacteria, for example amoebas or giardia which cause diarrhea. they may be transmitted via direct or indirect contact or bite.

respirator – a personal protective device that fits tightly around the nose and mouth and reduces the risk of inhaling airborne particles and aerosols.

risk of occupational exposure – reasonably anticipated contact with a biological agent, that is designated as a hazardous substance in section [5.1.1](#) of the OHS Regulation, resulting from the performance of a worker's duties;

route of transmission – see definition for mode of transmission

routine practices – principles and practices of infection prevention and control that apply to all patients, regardless of suspected or confirmed diagnosis. Routine practices include hand hygiene and depending on the anticipated exposure, the use of gloves, gowns, masks/respirators and eye/face protection.

safety-engineered medical sharp (SEMS) – a medical sharp with a built-in safety feature or mechanism that eliminates or minimizes the risk of accidental parenteral contact while or after the sharp is used.

safety-engineered needle – includes a self sheathing needle device and a retractable needle system.

serologic status and seroconversion – diagnosis of antibodies in serum, usually associated with Hepatitis B, Hepatitis C or HIV. A positive serologic status means the person has measurable blood levels of virus, a negative serologic status means the individual does not have measurable blood levels of antibodies or antigens to the virus. Seroconversion indicates a change from negative to positive status.

sharps – a sharp is any object that can readily penetrate the skin, including but not limited to broken glass, needles, scalpels and broken capillary tubes.

surgical mask – a protective barrier that is worn on the face, covers the nose and mouth and is used to contain large droplets generated during coughing and sneezing in order to minimize the spread of disease between persons.

viruses – the smallest of the infectious agents and only visible with an electronic microscope. Viruses attack only certain parts of the body, by attaching to surface points on the host cells known as receptors. As the host cell replicates itself, it increases the viral load in the body. Antibiotics are not effective against viruses.

APPENDIX B - HAND HYGIENE

HAND HYGIENE CONSIDERATIONS AND TECHNIQUES

Considerations

Paramedics shall consider the following points in relation to hand hygiene:

- Hand and wrist jewellery should be removed and wrist watches must be pushed up above the wrist by HCWs caring for patients before performing hand hygiene (clip on watches should be considered). Stoned and etched rings and expandable watch bands are difficult to clean adequately if soiled.
- Do not wear artificial nails, nail polish or nail enhancements/decorations, as organisms will accumulate on these items.
- If washing hands, use warm water. Too cold or too hot will compromise the integrity of the skin.
- Use an adequate amount of alcohol-based hand rub or soap to cover all surfaces of the hands and wrists.
- Refrain from habits such as nail biting, as this provides open areas or jagged edges where organisms will accumulate.
- Avoid hand contact with mucous membranes and conjunctiva.

Choice of methods

- Alcohol-based Hand Rub is the preferred method for cleaning hands because:
 - It takes less time than washing with soap and water
 - It provides a rapid kill of most transient microorganisms
 - It is not as hard on skin as soap and water
 - It is easy to transport and readily available in the field
- If hands are visibly soiled or have been in contact with organic matter, wash hands using soap and water. The alcohol in ABHR cannot penetrate the soil or contamination which could allow microorganisms under the soil to survive.

- If hands are visibly soiled and you are in the field with no running water, and you have an adequate supply of IV fluid solutions, use IV fluid as water with a paper towel to remove soil. Use ABHR. Wash hands with soap and water as soon as possible.
- if hands are visibly soiled and you are in the field and have no running water and a limited supply of IV fluid solutions, use ABHR and wash hands with soap and water as soon as possible

Using Alcohol Based Hand Rub

ABHRs are liquid, gel or foam products containing a form of ethanol or isopropyl alcohol mixed with water. Proper use of ABHR will kill 99.9% of all pathogens on the surface of the hands within 15 seconds. Health Canada recommends ABHR containing 70-90% alcohol, as 70% is the minimum concentration required to kill norovirus. Concentrations greater than 90% are very hard on the skin.

Cleaning hands with ABHR:

- Ensure any jewellery; watches and clothing are pushed out of the way so that hand hygiene can be appropriately performed.
- Ensure hands are free of visible soil or contamination.
- Put enough ABHR into your palm to completely cover both your hands (generally about the size of a quarter or loonie or about 2 pumps).
- Spread ABHR over the entire surface of both hands, paying special attention to between the fingers, backs of hands, wrists and base of thumbs.
- Clean under fingernails by rubbing nails against the palm of the other hand, which forces the ABHR under the nails.
- Clean nail beds by swirling the backs of the fingernails against the other palm .
- Continue rubbing ABHR all over surface of hands until it is completely dry. This takes approximately 15-20 seconds.
- Ensure hands are dry before manipulating any open flame or doing any activities that could potentially create a spark. ABHR is potentially flammable when wet.

- Do not use ABHR immediately after washing hands with soap and water as it could increase skin drying and irritation.

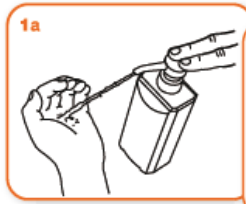
Alcohol in ABHR is not absorbed through the skin. The Muslim Scholar Board of the World Muslim League has stated that alcohol may be used externally to kill pathogens.

How to handrub?

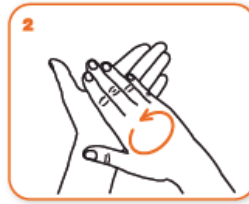
Droste / iStockphoto.com

RUB HANDS FOR HAND HYGIENE! WASH HANDS ONLY WHEN VISIBLY SOILED!

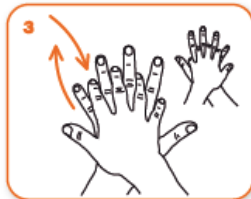
 Duration of the entire procedure: **20-30 sec.**



Apply a palmful of the product in a cupped hand and cover all surfaces.



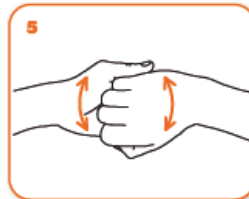
Rub hands palm to palm



right palm over left dorsum with interlaced fingers and vice versa



palm to palm with fingers interlaced



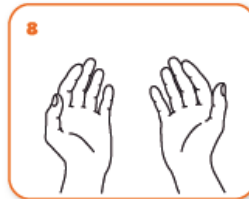
backs of fingers to opposing palms with fingers interlocked



rotational rubbing of left thumb clasped in right palm and vice versa



rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa



...once dry, your hands are safe.



WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.



October 2006, version 1.

WASHING HANDS WITH SOAP AND WATER

Hand washing with soap and water must be performed when there is visible soil or contamination on your hands, or hands have been in contact with organic matter.

Soap and water cleans hands by breaking up the fats and oils naturally present on the skin. This causes the bacteria and viruses that have stuck to these oils, to lift off the surface of the hands and be washed away while rinsing. Because soap and water removes the natural oils on your skin, it is more drying and potentially more irritating to skin than ABHR. Liquid and foam soaps from non-refillable containers are recommended. Bar soap and containers that are topped up or refilled can easily become breeding grounds for bacteria, causing our hands to become contaminated.

Soaps used should be unscented, non-drying, non-irritating and compatible with the gloves used by the organization. Antimicrobial/antibacterial soaps are not recommended for routine practice as:

- They are harsher on skin resulting in skin breakdown
- They require at least 30 seconds of washing for the antimicrobial agent to kill the bacteria and viruses.
- Using antimicrobial soaps for less than 30 seconds per wash can actually encourage antimicrobial resistance.

Washing hands with soap and water:

- Ensure any jewelry; watches and clothing are pushed out of the way so that washing can be appropriately performed.
- Turn on taps to a temperature that is warm. Water that is too cold or too hot may be irritating and drying to the skin. Water should be left running for the entire time the hands are being washed.
- Wet hands, and then put enough soap onto palm to completely cover both hands. This amount is about the size of a quarter or loonie.
- Vigorously lather all surfaces of both hands, paying special attention to between fingers, backs of hands, wrists and bases of thumbs.

- Clean under fingernails by rubbing nails against the palm of the other hand, which forces the lather under the nails.
- Clean nail beds by swirling the backs of the fingernails against the palm of the other hand.
- Continue lathering both hands for at least 15 seconds.
- Rinse hands thoroughly under running water. Soap that is left on hands can be drying and irritating to skin.
- Dry hands gently with paper towel. Cloth towels should never be used by more than one person in the work environment and should be laundered after every use. Wet towels are an excellent breeding ground for bacteria.
- Turn off taps with paper towel.
- If you must exit through a doorway, use paper towel to open the door to prevent your hands from being re-contaminated.
- Throw paper towel into garbage.

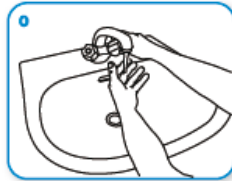
How to handwash?

Image: makingthechange.com

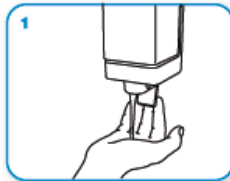
WASH HANDS ONLY WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB!



Duration of the entire procedure: **40-60 sec.**



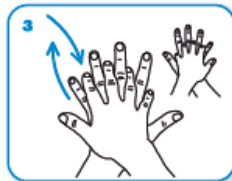
Wet hands with water



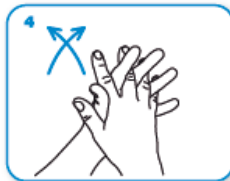
apply enough soap to cover all hand surfaces.



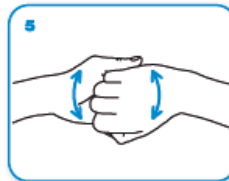
Rub hands palm to palm



right palm over left dorsum with interlaced fingers and vice versa



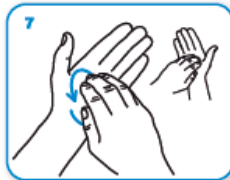
palm to palm with fingers interlaced



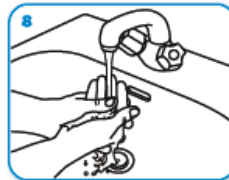
backs of fingers to opposing palms with fingers interlocked



rotational rubbing of left thumb clasped in right palm and vice versa



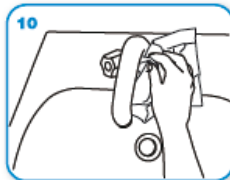
rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.



Rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



...and your hands are safe.



WHO acknowledges the Hôpitaux Universitaires de Genève (HUG), in particular the members of the Infection Control Programme, for their active participation in developing this material.



October 2006, version 1.

SKIN CARE

Healthy intact skin provides a barrier to infection. Frequent hand hygiene, colder weather, and prolonged use of gloves may result in increased dryness, chapping, cracking or irritation of the skin. Non-intact skin increases your risk for exposure. You should, therefore, protect your skin by applying a moisturizer throughout the day. Moisturizers should be unscented, non-irritating and compatible with the ABHR product and gloves used by the organization.

Barrier creams are not recommended, as they penetrate the skin via the pores and are not removed by standard hand rubs or washing. Barrier creams may actually trap infectious organisms beneath them, increasing the risk for contact dermatitis.

Hands should be routinely inspected for any non-intact skin, such as cuts, sores, scrapes, scratches or abrasions. If any are present, water-resistant dressings should be applied prior to starting work.

SKIN AND OTHER CONDITIONS THAT IMPEDE HAND HYGIENE

Occupational hand dermatitis is most often caused by washing with soap and water, and work where skin pores are covered by gloves for long periods of time. ABHRs are less irritating to skin than soap and water. Pre-irritated skin is often found to be the reason when staff identify a burning sensation following the application of an ABHR.

As noted in the BC Best Practices for Hand Hygiene in All Health Care Settings and Programs (2012): “Allergic contact dermatitis associated with ABHRs is uncommon”. It further states that, “It is estimated that approximately 30% of healthcare providers report symptoms or signs of dermatitis involving their hands, and as many as 85% have a history of having skin problems.” The use of good hygiene products (soap, ABHR, moisturizer) and teaching the correct techniques for hand hygiene is critical for the safety of the worker and patients.

Paramedics, who need support devices such as casts, splints, or complex bandages on their forearms, wrists, or hands may have difficulty in performing hand hygiene appropriately. Any person who has skin or other conditions that prevent appropriate hand hygiene, must report this to their supervisor. The supervisor must investigate in collaboration with Occupational Health and Safety and Infection Prevention and Control to determine if they can continue to provide direct patient care.

Hand Hygiene Education Modules and Video

Provincial hand hygiene module at: <http://picnetbc.ca/education-training/128/hand-hygiene-module>

The following hand hygiene video clip on the VIHA website illustrates good hand hygiene and hand washing techniques:

http://www.viha.ca/quality/care/clinical/hand_hygiene/handwashing.htm

APPENDIX C - PERSONAL PROTECTIVE EQUIPMENT

WHEN TO USE

Personal protective equipment places a physical barrier between danger in the environment, such as microorganisms, and the paramedic. The choice of PPE is dependent on an on-scene risk assessment of the situation and patient, and determination of what involvement the paramedic will have with the patient based on proximity, interaction, and location. It should be used in addition to other environmental, engineering and administrative controls.

TYPES OF PPE

Personal Protective Equipment controls identified in this ECP-IPAC include, but are not limited to:

- gloves,
- eye protection (goggles, glasses, face shields),
- gowns, coveralls or aprons,
- disposable covers for boots,
- surgical masks, and
- N95 respirators.



Selection and Use

Workers must use the appropriate PPE to prevent occupational exposure. PPE must be selected and used in accordance with the manufacturer's instructions, recognized standards, and training received to provide effective protection.

Sizes of PPE

Personal Protective Equipment (PPE) in appropriate sizes is supplied by BCEHS and is readily available to employees. Workers will also be trained in its proper use and supervisors will ensure that it is used when necessary. The proper use, fit checking, and disposal of PPE must also be considered. Each paramedic should ensure at the beginning of their shift that they have PPE in the ambulance and ready-kits that meets their particular needs (i.e size, appropriate N95 respirator according to your fit testing).

Actions on Concerns Related to Use of PPE

Where the use of PPE creates a hazard to safety for a worker, causes allergenic or other adverse health effects, it must be reported to the supervisor. The supervisor must investigate in collaboration with Occupational Health and Safety and Infection Prevention and Control, and take the necessary corrective measures.

GLOVES

Gloves are used to protect the hands from diseases spread through contact transmission. In most contact with patients and their environment medical gloves (nitrile, polychloroprene or latex) are used but are only necessary where there is a risk of contact with blood or body fluids. Gloves need to be appropriate to the task. Thicker medical gloves may provide more protection, but they also make it harder to handle objects and to perform some assessments.

Hands must be cleaned before gloves are put on and immediately after they are taken off. Medical gloves are single-use and must be discarded after contact with the patient or their environment. After loading the patient into the patient compartment, the driver should remove and dispose of their gloves (and any other disposable PPE they are wearing) and perform hand hygiene before entering the driver's compartment. The driver will put on gloves (and any other necessary PPE) before assisting to unload the patient at the destination.

Indications for use:

Gloves should be used for the following:

- when there is a risk of contact with blood or body fluids;
- when touching the patient's mucous membranes or non-intact skin;
- when the patient's skin is soiled;
- when performing invasive procedures, such as IV insertion or intubation;
- when treating and transporting a patient with a known or suspected infectious disease;
- when handling dirty laundry, soiled personal items, or garbage
- when disinfecting equipment used for the patient and touched areas in the vehicle following patient transport in accordance with directions provided by the disinfectant manufacturer

Considerations when using gloves:

- Do not clean your hands with gloves on. Soap and water and ABHR will break down the glove material.
- If a glove becomes torn or ripped, immediately remove it, wash your hands, and put on new gloves.
- Be aware of what is touched with gloved hands and be sure to clean and disinfect those surfaces, as well as pens, stethoscopes, pagers, radios, and vehicle door handles.
- Avoid writing notes on gloves as this will damage the material and limits their effectiveness. In addition, used gloves taken into the documentation room in order to complete paperwork can result in contaminating the surfaces in that work area.
- Avoid touching your face or hair with gloved hands.
- When using gloves, hold hands together. This will decrease potential for self and cross-contamination.
- Discard gloves in a waste receptacle immediately after removal to prevent self-contamination or contamination to others.
- Hands must be considered contaminated after removing gloves. Always perform hand hygiene as soon as gloves are removed.

ALLERGIES TO LATEX:

Some workers may be allergic to natural rubber latex gloves. The WorkSafeBC pamphlet, [*Dealing with Latex Allergies at Work*](#), should be consulted for more information and used as a resource by workers exposed to natural rubber latex products. If a worker has a documented allergy to latex, other latex products in the environment must also be dealt with. Nitrile is considered to be the recommended alternative to latex in the clinical setting.

SURGICAL MASKS

In most health care settings, fluid resistant surgical masks are considered adequate to prevent transmission of respiratory diseases



spread by large droplets. They are not appropriate if the infection is an airborne disease. As it is difficult to ascertain in the pre-hospital setting whether a patient who has respiratory symptoms has an airborne or droplet disease, paramedics are directed to use a respirator which provides them protection for both situations.

A surgical mask is NOT a respirator. Surgical masks are not designed to seal to the user's face, and do not provide respiratory protection against small inhalable particles.

Fluid resistant surgical masks are, however, placed on patients who are coughing and sneezing to add an additional barrier in protecting the paramedic from exposure to the patient's respiratory secretions.

RESPIRATORS

Respirators are used to create a sealed barrier that prevents infectious microorganisms from being inhaled into the lungs. For diseases caused by airborne transmission, they are the barrier that prevents droplets from landing on the mucous membranes of the nose and mouth. As identified above, due to the difficulty in ascertaining the underlying cause of a patient's respiratory condition, the higher level of barrier is recommended, even for droplet transmission.



Health Canada, the US Centre for Disease Control in Atlanta and other expert authorities have determined that an N95 respirator is the appropriate respirator to protect health care workers from airborne diseases. Specifically in BC, the WorkSafeBC requires that the N95 respirators be "NIOSH-approved" (OHS Regulation Section 8.33).

Mandatory Use:

BCEHS requires workers to wear a NIOSH approved, fit tested N95 particulate respirator:

- for any suspected or known airborne disease, such as tuberculosis, chickenpox, or measles;
- for any aerosolized occupational exposure, including any aerosol generating medical procedures, such as suctioning, intubation, nebulising therapies, patients on oxygen therapies of 50% or higher;

Other indications for use:

- when caring for a patient with signs and symptoms of a fever and respiratory illness;
- when patient has signs and symptoms of a respiratory illness and a surgical mask is not available, or the patient is unable or unwilling to cover their nose and mouth when they sneeze or cough or wear a mask;
- when blood or body fluid splash is likely or expected, such as when a person has nausea and vomiting;
- when performing any invasive procedure on the airway, such as an emergency tracheostomy;
- when cleaning the equipment and vehicle following the transport of a patient with a known or suspected infectious disease transmitted by either the airborne or droplet route.

Considerations for Use:

- Once fit tested, paramedics should be aware of the make and size of the respirator required for their protection.
- N95 respirators must remain dry for maximum effectiveness. If the respirator becomes wet, either from the normal breathing of the paramedic or because of splash, exchange it for a new one in a dry area as soon as possible.
- If an N95 respirator is worn during the treatment of a patient, the used N95 must be removed, hand hygiene performed, and a new unused N95 respirator put on before going into the cab of the ambulance.
- Do not carry the respirator around your arm to “store it”, as a proper seal cannot be maintained if it is bent or crushed.
- Never put an N95 respirator on the patient, anticipating that this will provide the paramedic adequate protection from inhaling or being exposed to droplets.
- N95 respirators must be used and changed according to manufacturer’s recommendations.
- N95 respirators are designed for single use only and must be discarded following use.

- Even if worn with no resulting patient contact or apparent soiling, the outer surface should always be considered contaminated and placed directly into the waste receptacle when removed.
- Do not place the respirator around your neck or on top of your head when you are finished using it, as this can lead to self-contamination. Place it directly in a waste receptacle as soon as possible after removal.

FIT TESTING PROGRAM

A respirator won't be effective unless it forms a seal against the worker's face. The only way to confirm if a respirator forms a seal is to do a fit test. The N95 respirator requires a fit test because a face seal is critical to its function.

BCEHS has a respirator fit test program designed to:

- Help protect the health of workers, and prevent illnesses related to breathing hazards in the workplace
- Promote more effective use of respirators

The following are the requirements for the fit tests:

- All BCEHS paramedics must complete a successful fit test of their N95 respirator when first employed and then once a year afterwards.
- All fit tests will be done following a protocol acceptable to WorkSafeBC as described in CSA Standard Z94.4-02.
- Records will be kept of all fit tests.

Fit testing should also be conducted:

- Anytime a paramedic experiences a significant weight gain or loss;
- If reconstructive or cosmetic surgery of the facial area has been performed;
- If major dental work that may alter the facial shape has been performed;
- If significant scarring of the facial seal area has occurred.

Facial hair can interfere with a proper seal. Paramedics who are required to wear a respirator that requires an effective seal with the face for proper functioning (N95 Respirator) must be clean shaven where the respirator seals with the face. (See OHSR 8.39). A trimmed moustache and/or goatee are permissible provided that they do not interfere with the respirator-to-face seal.

EYE PROTECTION

Eye protection, such as protective eye glasses (not prescription or sun glasses) or goggles, is useful during procedures that are likely to generate splashes or sprays of blood and body fluids. A face shield is especially useful because it covers the nose and mouth as well as the eyes. Eye protection or face shields are required until it is reasonably assured that the eyes and/or face will not be splashed with blood or a body substance.

Indications for use:

- When there is potential for blood or body fluid splash while providing care.
- When treating or transporting a patient with a known or suspected infectious disease transmitted by the droplet route, such as influenza.
- When treating or transporting a patient who is vomiting.
- When performing procedures such as:
 - Wound irrigation
 - Delivery of newborns
 - Endotracheal extubation
- A face shield is used in addition to an N95 respirator when performing Aerosol Generating Medical Procedures (AGMP), such as:
 - nebulized ventolin
 - endotracheal intubation
 - respiratory and airway suctioning
 - non-invasive positive pressure ventilation - bag valve mask

Considerations when using eye protection:

- Prescription eye glasses do not provide adequate protection against splashes or sprays. There is eye protection that is designed to be worn over prescription glasses.
- Eye protection should not impair vision, resulting in safety issues for the paramedic and interfere with care being provided to the patient.
- Paramedics should not touch their eyes or face while providing care to the patient or while they have gloves on in order to prevent self-contamination.
- Eye protection must be removed properly to prevent self-contamination.
- Reusable eye protection must be thoroughly cleaned and disinfected following every use.
- Disposable single-use goggles and shields must be discarded in an appropriate waste container after use.
- Hand hygiene must be performed following the removal of eye protection.

GOWNS, COVERALLS, BOOT COVERS, HAIR COVERS

Long sleeved gowns and/or disposable Tyvek™ coveralls are used to protect uncovered forearms and prevent soiling of uniforms at times when there is the potential for splashes, sprays or contact with blood or any body fluids. Impervious, fluid resistant gowns or coveralls are recommended when there are copious amounts of blood and/or body fluids sufficient to soak through regular disposable coverings.

If there's a chance that infectious material may contaminate footwear, waterproof covers over shoes or boots are also available and should be worn.

Indications for use:

- When blood or body fluid splash is likely or expected;
- When caring for a patient with draining wounds that cannot be contained, large areas of non-intact skin, or experiencing nausea, vomiting and diarrhea;
- If there is a high risk of paramedic's forearms or uniforms coming in direct contact with surfaces and objects that likely have been contaminated with vomit, diarrhea or drainage from wounds;

- When delivering a baby or dealing with a hemorrhage.

Considerations when using gowns, coveralls, boot covers, hair covers:

- Gowns must cover the user's front and back;
- Tyvek™ coveralls afford the best protection and allow the paramedic to be more manoeuvrable;
- Gowns, disposable coveralls, and boot covers must be removed immediately following use, and discarded in a waste receptacle;
- Gowns, disposable coveralls, and boot covers must not be worn in the cab of the ambulance;
- If soiling of a paramedic's uniform occurs, the uniform is removed and bagged in a clear garbage bag, and Tyvek™ suit it put on.

DONNING PERSONAL PROTECTIVE EQUIPMENT – OVERVIEW

If the task you are performing requires the use of PPE put it on in the following order (ignore the steps for any PPE that is not applicable):

1. Wash your hands or use an alcohol-based hand rub.
2. Put on a gown or Tyvek™ suit (see procedure below).
3. Put on foot covers if required.
4. Put on a hair cover (if needed).
5. Put on a respirator – N95 Respirator (see procedure below).
6. Put on eye and face protection (such as goggles or a face shield).
7. Put on hood top (if required and if tyvek suit has one)
8. Put on gloves (see procedure below).

If necessary, utilize your partner to help don PPE.

Donning Gowns

If the task requires donning a gown:

Take all action belts off first, pager, etc.

Continue to carry your radio sealed in a zip lock bag for safety reasons. Dispose of bag later.

1. Select the appropriate type of gown or suit for the task in the right size for you.
2. Make sure the opening of the gown is in the back, and secure the gown at the neck and waist. (Note: different models may have varying ways to properly tie up the gowns).
3. If the gown is too small to cover your torso fully, use two gowns. Put on the first gown with the opening in front and the second gown over the first one with the opening in the back.
4. Gown cuff should go under the glove. Some gown models have thumb hooks to secure the cuff in place.

Donning a Tyvek Suit

Take all action belts off first, pager, etc.

Continue to carry your radio sealed in a zip lock bag for safety reasons. Dispose of bag later.

1. Select the appropriate type of gown or suit for the task in the right size for you.
2. Unfasten ties and unzip zipper.
3. Scrunch up the legs of the suit, making a space to put your foot through.
4. Step into the suit one leg at a time.
5. Gently pull the suit over your legs and to your waist.
6. Put on the upper portion of the suit, one arm at a time.
7. Zip the zipper.
8. If the situation requires that the suit be sealed, tape each wrists and ankles tightly.

Donning an N95 respirator – 3M Model 1870 or 9211



1. Remove the respirator from its packaging and hold with straps facing upward. Place the bottom strap under the centre flaps next to the “WARNING” statement.



2. Fully open the top and bottom panels bending the nosepiece around your thumb at centre of the foam. Straps should separate when panels are opened. Make certain the bottom panel is unfolded and completely opened.



3. Place the respirator on your face over your nose, mouth and chin so that the foam rests on your nose and the bottom panel is securely under your chin.



4. Pull the top strap over your head and position it high on the back of the head above the ears. Then, pull the bottom strap over your head and position it around your neck and below your ears.



5. Adjust for a comfortable fit by pulling the top panel toward the bridge of your nose and positioning the bottom panel under your chin.



6. Mould the flexible nose piece over the bridge of your nose by placing fingertips from both hands at the top of your nose and mould the nosepiece around your nose to achieve a secure seal.



7. Perform a fit check. Check the seal of your N95 respirator each time. Place one or both hands completely over the middle panel (in flat fold respirators only). Inhale and exhale sharply. If air leaks around your nose, readjust the nosepiece. If air leaks between the face and face seal of the respirator, reposition it by adjusting the panels and straps.

Donning an N95 respirator – 1860, 1860s, 8210



1. Cup the respirator in your hand with the nosepiece at fingertips, allowing the head straps to hang freely below the hand



2. Position the respirator under your chin with the nosepiece up



3. While holding the respirator in place, pull the top strap over your head so it rests high on the back of your head



4. While continuing to hold the respirator firmly in place, pull the bottom strap over your head and position it around your neck, below your ears. Untwist the straps if needed. Position the respirator low on your nose.



5. Using both hands, mould the nosepiece to the shape of your nose by pushing inward while moving your fingertips down both sides of the nosepiece. Pinching with one hand may result in improper fit and less effective respirator performance.



6. Perform a fit check. Check the seal of your N95 respirator each time. Place both hands completely over the respirator, being careful not to disturb the position. Exhale sharply. If air leaks around your nose, adjust the nosepiece as described in step 5. If air leaks at the edges, adjust the straps back along the sides of your head. Perform a fit test again if any adjustment is made.

Only use a respirator for which you have been fit tested, and fit check the device as instructed before using it.

Donning Gloves

Gloves should always be the last piece of PPE that you put on. Follow these steps:

1. Select the appropriate type of gloves for the task in the right size for you.
2. Insert your hands into the gloves, and adjust as necessary.
3. If you are wearing a gown or suit, ensure gloves are pulled up over the gown cuffs.
4. Make sure the gloves overlap the sleeves of the gown. There should be no gaps with visible skin. Taping of sleeves is not necessary.

DOFFING PERSONAL PROTECTIVE EQUIPMENT – OVERVIEW

It is important to doff PPE in such a manner that prevents self-contamination or cross-contamination of other persons and surfaces. All used PPE must be considered contaminated so must be kept away from your skin and mucous membranes when being removed.

All disposable PPE is placed directly into a waste receptacle as soon as it is removed. Type of waste receptacle will be dependent on type of exposure. For infectious organisms, this is a regular waste receptacle.

1. Remove footwear covers and dispose.
2. Remove gloves and dispose. Perform hand hygiene.
3. Remove the gown or Tyvek suit and dispose. Perform hand hygiene.
4. Remove eye and face protection. If re-usable place in sink or designated area for cleaning/disinfecting later (e.g. Accel TB wipes). If single-use, dispose into waste receptacle.
5. Remove and discard the respirator.
6. Remove and discard the hair/head cover and discard.
7. Wash your hands or use an alcohol-based hand rub.

Removing Gloves

Remember: Glove to Glove, Skin to Skin

- After completing a task that required gloves
- Before leaving the work area

- As soon as possible if the gloves become damaged or contaminated

1. With both hands gloved, grasp the outside of one glove near your wrist with the other hand.

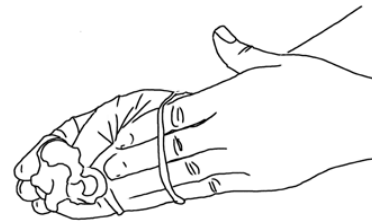


2. Peel off this first glove, peeling away from your body and from wrist to fingertips, turning the glove inside out.



3. Hold the glove you just removed in your gloved hand.

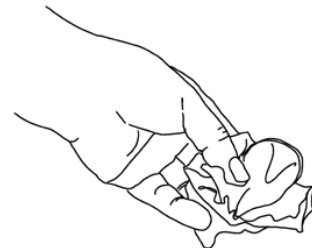
4. With your ungloved hand, peel off the second glove by inserting your fingers inside the glove at the top of your wrist.



5. Turn the second glove inside out while tilting it away from your body, leaving the first glove inside the second.



6. Dispose of the entire bundle promptly in a waterproof garbage bag. Do not reuse the gloves.



7. If a gown is not worn, wash your hands thoroughly with

soap and water or ABHR as soon as possible after removing the gloves and before touching any objects or surfaces.

8. If gown is also worn, proceed to removal of gown.

Removing Gowns

- Remember: Clean to Clean, Dirty to Dirty; Front = contaminated
- Use the following procedure when removing gowns:
- Untie or tear waist strings and then neck strings, being careful that hands do not contact front of gown and that it is done gently to prevent aerosolization of particles from the front of the gown.
- Pull the gown inside out by grasping the back corners where the neck ties are, and pulling down off shoulders and down arms.
- Place a forefinger under the cuff of the sleeve and pull down over hand.
- With hand inside first sleeve, draw second sleeve down over hand.
- Roll the gown away from body so outer surface of the gown is on the inside of the roll.
- Discard the gown into waste receptacle.
- Perform hand hygiene.

Removing Tyvek Suit

- Remember: Clean to Clean, Dirty to Dirty; Front = contaminated
- Peel the hood back inside out starting from the crown of head.
- Remove the tape from your wrists (if applicable).
- Unzip the suit.
- Peel back the entire top portion of the suit rolling it inside out all the way down to the knees.
- Remove tape at your ankles (if applicable).
- Step out of suit, and discard.
- Remove the booties peeling back inside out and discard.

- Perform hand hygiene.

Removing face or eye protection

- Remember: Front = contaminated
- Face Shield: Hold the bottom of the face shield with one hand, then with the other hand pull the strap over your head. Pull the shield away from the face and discard.
- Goggles: Place one hand on front of the goggles, then with the other hand pull the strap over your head. Pull the goggles away from the face and place in sink or designated area for cleaning/disinfection.
- Protective eye glasses: Using both hands, grasp by ear pieces and take off pulling away from face. Put in sink or designated area for cleaning/disinfection, or discard if disposable.

Removing respirators

- Remember: Front = contaminated
- Grab the bottom strap and pull it over your head. Do not touch front of the respirator.
- Grab the top strap and pull it over your head and remove respirator away from face while exhaling.
- Discard the respirator into waste receptacle, handling it by the straps.
- Perform hand hygiene.

CLEANING RE-USABLE PERSONAL PROTECTIVE EQUIPMENT

- Put on clean gloves
- If any visible soil, wash with soap and water, rinse well, and towel dry.
- Disinfect with Accel wipes.
- Discard wipes, remove and discard gloves.
- Perform hand hygiene.
- Store PPE in manner that will prevent re-contamination

LONG HAIR

Although not a part of PPE, if you have long bangs/fringes or hair, consideration must be given to the risk of contamination.

If your hair is long enough to get in your eyes or fall over your shoulders when you lean forward to assess or provide care to a patient, there is a high possibility that at some point you will brush your hair away with contaminated gloves. There is also the potential for your hair to come in contact with blood, body fluids, and open wounds. After you remove your PPE and perform hand hygiene, you may re-contaminate your hands by then touching your hair. Hair is also a source of cross contamination.

Long hair should always be tied back and long bangs/ fringes, pinned back to prevent accidental self-contamination and cross-contamination to the patient.

PERSONAL PROTECTIVE EQUIPMENT EDUCATION MODULES

Infection Control Basics (developed by PHSA, OHSA, UBC, VCH) online module at:

<http://www.picnetbc.ca/education-training/53/infection-control-basics>

APPENDIX D - ENGINEERING CONTROLS

ENGINEERING CONTROLS

Part 1 of the OHS Regulation defines Engineering controls as the physical arrangement, design or alteration of workstations, equipment, materials, production facilities or other aspects of the physical environment, for the purpose of controlling risk.

Selection, Use and Maintenance

Engineering controls must be properly selected, used, inspected, maintained, and replaced as needed to ensure their effectiveness. Each tool must be selected, used, and operated in accordance with the manufacturer's instructions (where applicable), standard operating procedures, and the requirements of the OHS Regulation.

Evaluation and Selection of Safety Engineered Medical Sharps (SEMS)

Safety-Engineered Medical Sharps (SEMS) is a specific control measure identified in the Exposure Control Plan. The *OHS Regulation 6.36* requires that SEMS have to undergo an objective evaluation before they are selected. BCEHS has an objective evaluation procedure for selecting SEMS. See the document, **PPC Guidelines for Evaluation of Safety Engineered Medical Sharps (SEMS)**, for information on how the selection process works. The Product Procurement Committee (PPC) will use these guidelines for evaluation and selection of SEMS that will be recommended to BCEHS.

List of Engineering Controls

The following is a list and description of the specific engineering controls available to paramedics. This is not an all inclusive list.

- Medical Sharps
- Safety Engineered Needles
- Needleless Devices
- Sharps Containers
- Patient Isolation

- Ventilation in Ambulance – Negative Pressure Isolation

MEDICAL SHARPS

Medical sharps used to care for or treat a person will be safety engineered medical sharps. The only exceptions to the above are when the use of the required device, needle or sharp is ***not clinically appropriate*** in the particular circumstance or is not available in commercial markets.

Specially designed medical sharps (for example, hollow-bore needles, suture needles, and scalpels) reduce the risk of needle-stick injuries and other puncture wounds from contaminated sharps. Self-sheathing needles have a built-in sheath or sleeve that extends to cover the needle. Retractable syringes are designed so the needle can be pulled up inside the syringe. Needleless systems use threaded ports on IV tubing, so healthcare workers can remove the needle from the syringe after drawing up medication, and then simply screw the syringe directly into the port. Disposable safety scalpels have a built-in sheath that covers the blade between use and disposal, and suture needles for sewing tissues other than skin are available with blunted tips.

Safety Engineered Needles

These are syringes that include a needle retraction mechanism or other type of integral needle guard mechanism. A needleless device or safety-engineered hollow bore needle will be used for the following procedures performed to care for or treat a person:

- Withdrawal of body fluids,
- Accessing a vein or artery,
- Administration of medications or fluids, and
- Any other procedure involving the potential for an exposure to accidental parenteral contact for which a needleless system or safety-engineered hollow bore needle system is available.

Standard operating procedures and practices relating to the use of safety-engineered hollow bore needles have been developed and implemented to support the safe use of these devices. See the Standard Operating Procedure section of this ECP-IPAC for more information.

Needleless Devices

Devices that do not use a needle for the collection of body fluids, administration of medication or fluids, or any other procedures with potential exposure to a bloodborne pathogen; e.g. needleless intravenous connectors.

SHARPS CONTAINERS

Sharps include anything that might produce a puncture wound that would expose a worker to blood or other potentially infectious material. Some examples are needles, broken glass, scalpels, contaminated ends of orthodontia wire, and suture needles.

Workers should dispose of sharps in rigid, puncture-resistant, leak-proof containers that have a closable lid. In situations where containers have not been installed, workers can use portable sharps containers. Containers should be replaced when they become three-quarters full, are visibly soiled on the inside, and at minimum every six months.

Workers can also carry single-use containers — small, leak-proof, puncture-resistant units that are designed to hold one needle. They are not meant to replace sharps containers, but are useful to carry around in case workers come across unexpected needles. Single-use sharps containers are designed to be thrown into the garbage once the recovered needle is safely contained.

PATIENT ISOLATION

A surgical mask should be placed on the patient if they are coughing. Placing a mask on a patient suffering from tuberculosis will reduce the exposure hazard and the potential for cross contamination to paramedics and others, and to environments (e.g., ambulances, emergency departments). If the patient requires oxygen, a nasal cannula can be accommodated under the surgical mask.



A surgical mask is a protective barrier that is worn on the face, covers at least the nose and mouth, and is used to prevent the spread of droplets and droplet nuclei generated by the person wearing the mask. Surgical masks can be used as an administrative control measure for patient isolation.

When there is excessive respiratory secretion production (e.g., violent coughing, sneezing) or tuberculosis is suspected, BCEHS personnel are

also required to use an N95 respirator as well as other personal protective equipment.

If you have a patient on airborne precautions requiring suction, use endotracheal tube suction equipment with bag-valve-masks for oxygen delivery, and other biological /viral filters.

REVERSE ISOLATION

Reverse isolation is the protection of immune-compromised patients from the environment and higher risk health care personnel. A surgical mask should be placed on the patient. BCEHS personnel can decrease the potential for transmitting organisms to their patients through immunization, and use of personal protective equipment and performance of hand hygiene.

VENTILATION IN AMBULANCE – NEGATIVE PRESSURE ISOLATION

This involves isolating infectious patients in the patient compartment of the ambulance under negative pressure through an independent air supply and exhaust system for this area. It is used for patients who are known or suspected of having a disease that is transmitted by the airborne route, so pose an inhalation hazard. It is also used for any patient requiring an aerosol generating medical procedure. The same procedure is implemented when Entonox is used.

Use the ventilation system in the ambulance to create negative pressure in the patient compartment. This is done by keeping the exhaust fan on in the patient compartment, the front windows closed, and the front fan on low. As the cab is at a higher pressure (positive) to the patient compartment, organisms will be maintained in the patient area and should exit out the back door when it is open.

Maintain this negative pressure after patient is discharged from your care and prior to cleaning the ambulance.

APPENDIX E - ADMINISTRATIVE CONTROLS

DEFINITION

Part 1 of the OHS Regulation defines Administrative controls as the provision, use and scheduling of work activities and resources in the workplace, including planning, organizing, staffing and coordinating, changes to the way tasks are performed , job rotation, adequate supervision, purchasing standards, or work procedures for the purposes of controlling risk.

LIST OF ADMINISTRATIVE CONTROLS

The following is a list of Administrative Controls, including Standard Operating Procedures, contained in this section of the ECP-IPAC. Standard operating procedures, where applicable, bring together engineering, administrative and personal protective equipment controls to prevent worker exposure to infectious diseases.

General Work Practices

- Preventing Cross Contamination
- Cough/Sneeze Etiquette
- Staying Home When Sick

Equipment Procedures

- Main Stretcher Make-up
- Stretcher Linen
- Portable Stretchers

Waste Disposal

- Disposing of Used Sharps
- Disposal of Medical Waste

Cleaning and Disinfection of Vehicles and Equipment

- Spill Clean-up

- Cleaning and Disinfection of Transport Vehicles
- Cleaning and Disinfection of Patient Care Equipment

Cleaning Contaminated Uniforms

- Handling Contaminated Uniforms
- Washing Contaminated Uniforms at Home
- Decontamination of Washing Machine

GENERAL WORK PRACTICES

Work practice controls can reduce the likelihood of occupational exposure to biohazardous materials. Some have been described previously:

- Performance of hand hygiene, see **Appendix B**
- Use of PPE appropriate to the transmission route of the organism, see **Appendix C**
- Implementation of environmental controls, see **Appendix D**
 - identify appropriate practices for the use and disposal of sharps
 - provide methods and means to isolate the patient

PREVENTING CROSS-CONTAMINATION

- Provision, use, and disposal of single-use supplies and devices.
- To eliminate the need for emergency mouth-to-mouth resuscitation, masks with one-way valves, resuscitation bags, and other ventilation devices are available for use.
- Ensure protective gowns and coveralls cover all regular clothing that would come into contact with infectious organisms or contaminated surfaces.
- Prior to getting into the driver compartment, the driver must doff PPE, perform hand hygiene, and re-don new PPE prior to assisting with patient on arrival at hospital.

- If you need to access the driver compartment of ambulance after your uniform and/or boots has become contaminated, remove uniform and place in clear garbage bags, don a tyvek gown and/or put on boot covers if necessary.
- Keep extra PCR's and clipboards in the front of the ambulance, in the clean zone.
- After each call out, clean and disinfect all surfaces, equipment, and personal items (e.g., pen, stethoscope) that were touched during the provision of care and transport.
- Note and communicate with partner about what was touched, so that it can be cleaned and disinfected later.
- The application of personal care products (cosmetics) or the handling of contact lenses must not be undertaken in areas where exposure to biohazards, bloodborne pathogens or body material may occur.
- Food and drink must not be stored or consumed in the patient compartment of the ambulance or any other area where exposure to biohazards may occur.

COUGH/SNEEZE ETIQUETTE

All workers are expected to follow cough/sneeze etiquette, which is a combination of measures that minimizes the transmission of diseases via droplet or airborne routes. Cough/sneeze etiquette includes the following components:

- Educate workers in control measures, including hand hygiene.
- Post signs at entry points to instruct everyone about control measures.
- Cover your mouth and nose with a sleeve or tissue when coughing or sneezing.
- Use tissues to contain secretions, and dispose of them promptly in a waste container, and perform hand hygiene.
- Turn your head away from others when coughing or sneezing.
- Stand to the side or upwind of coughing patients or others, not immediately in front.
- Position yourself 2 metres away from person who is coughing or sneezing, if possible.
- Offer surgical masks to people who are coughing.
- Wash hands regularly.

STAYING HOME WHEN SICK

Sometimes the risk is from co-workers who may bring disease in with them to work. In the best interest of co-worker and patient safety it is best to stay at home if you have vomiting and/or diarrhea, or a cold or influenza. Seek advice on duration to remain away from work from the WHCC.

Employees who have weeping lesions or weeping dermatitis should refrain from all direct contact with patients and from handling patient care equipment until the condition resolves.

BCEHS will follow the recommendations of the employee's medical practitioner and established infection prevention and control protocols and standards, for when the person can return to work.

EQUIPMENT PROCEDURES

Main stretcher make up

- After the stretcher has been used for a patient, it is cleaned/disinfected, and made up ready for use.
- The patient will be wrapped cocoon-style with the linen and blankets. This ensures the safety and comfort of the patient during transport and provides a means of decreasing the surfaces the patient may touch in the patient compartment.
- The cocoon is constructed by draping the thermal layers over the stretcher, followed by the patient linen. The overhang is then folded onto the top. When opened for use the patient layer is uppermost.
- It is recommended that the layer next to the patient be a linen or flannel sheet for patient comfort.
- Washable flannel blankets should be used for the protective thermal layers and are applied as needed for patient comfort. The use of wool blankets is discouraged due to the inability to wash and dry wool items at a temperature sufficient to kill organisms.
- In cases where sterile sheets are used, they would be applied between the patient and the first layer of linen.

- In cases where there is the potential for excessive bleeding or fluids, a plastic backed paper sheet must be applied with an additional linen layer placed over it. This will decrease the potential for contamination during transport. As it is difficult to predict when such a scenario will occur, crews may wish to use a paper sheet on the stretcher as a standard.
- A disposable moisture proof pillowcase is to be used over the pillow. A washable head towel can assist in protecting the patient's head from the elements, and serve to separate the patient from the shoulder straps.

Portable Stretchers

The portable stretcher is made up with a "cocoon sheet pack" and a pillow with a disposable moisture proof pillow case, in the same configuration as the stretcher.

WASTE DISPOSAL

Disposing of Used Sharps

Immediately after use, contaminated needles or other sharps shall be placed in disposal containers that are designed for this purpose, i.e. containers that are puncture-resistant, labelled or colour coded, leak proof on the sides and bottom and closable. A number of sharps containers of various sizes are available, including the single use sharps shuttle that can be disposed of in the larger sharps container with the ambulance. The puncture resistant sharps container should be located as close as practical to the use area, included in the kits, and identified as biohazardous.

Before using a sharps container:

- Visually inspect it to determine if it is overfilled
- Make sure the sharps container is large enough and has space to accommodate the entire device
- Never place your hands or fingers into the container to dispose a device or to push it further into the container
- Keep your hands behind the sharp tip when disposing of the device
- Adhere to all warning labelling on container (i.e. if container should not be stored on side).

Containers used for waste containment must be large enough to hold all contents and must prevent leakage of fluids during handling, storage, transport or shipping. These containers must be maintained upright throughout use and attached to a wall or other structure or retained in a holder. Containers must be routinely replaced and not be allowed to overfill. Containers must be replaced when they are $\frac{3}{4}$ full (by volume) or reach the full line. Stations with lower call volumes need to replace their sharps containers before they are full. Do not leave used sharps containers lying around the station.

Disposal of sharps containers shall be carried out by:

- Visually inspecting the container to ensure it is not overfilled or that sharps are not protruding from the top or sides of the container. If this is found, notify your supervisor for assistance. A larger secondary container will be required.
- Sealing prior to removal or replacement to prevent spillage or protrusion of contents. Ensure that the lid is properly closed and taped; and
- Placing in a secondary container if leakage is possible or if the outside of the container is contaminated by blood or body fluids. The second container shall be:
 - Closable;
 - Constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping; and
 - Labelled with a biohazard label.
- Keeping sealed sharps containers awaiting final disposal in a secure area.

All sharps and sharps containers are single-use items, so must be discarded after use and not be re-used. All sharps containers must be properly disposed of as per WorkSafeBC Regulation 5.80, 6.36, and 6.57.

Disposal of Medical Waste

Biohazardous waste is contaminated, infectious waste from health care settings that requires treatment prior to disposal in landfill sites or sanitary sewer systems. Biohazardous waste includes human body parts (anatomical waste); human and animal cultures or specimens (excluding urine and faeces); blood and blood products; items grossly contaminated with blood or blood products

that are dripping with fluid; and body fluids visibly contaminated with blood. It requires placement in yellow or red biohazardous waste bags, large sharps disposal bins or containers.

Placing regular waste that does not require special disposal (i.e., treatment prior to disposal or incineration) into yellow or red bags will result in increased cost and may incur penalties from collection agencies.

Waste from different categories should not be mixed in one bag. Follow the direction of the hospital in your area, if you are disposing biomedical waste products through them.

Bag Colour	Use
Red	Tissues, organs, body parts
Yellow	Suction container contents; dressings, bandages or linens saturated with blood or body fluids
Black or green	All other dressings and sponges, personal protective equipment following use and isolation waste from patients on contact, droplet, or airborne precautions; diapers, incontinent pads, empty IV bags and tubing, catheters.

Follow these guidelines for handling and disposing of medical waste:

- Dispose of waste at the point of care into either a plastic bag or rigid container with a non-removable lid.
- Waste bags should be of a thickness that will resist puncture, leaking and breaking, and should be waterproof.
- Handle garbage as little as possible.
- Never reach into garbage or disposal containers with your bare hands.
- Watch for sharps sticking out of bags or containers, and listen for broken glass.
- Don't overfill or try to compress garbage bags. Leave enough free space at the top so the bag is light and easy to grab, and easy to close and tie in a manner that prevents its contents from escaping.
- Put on clean gloves before tying the bag.
- Don't use bare hands to pick up bags or to support them from underneath.

- Hold bags by their tops. Do not hold them against your body.
- Double-bagging should only be necessary when the first bag becomes stretched or damaged, or when waste has spilled on the exterior.

DECONTAMINATION – CLEANING AND DISINFECTION

Cleaning

The physical removal of dust, dirt, grease, and organic material (e.g., blood, secretions, body fluids) from a surface. Cleaning physically removes rather than kills microorganisms. It is accomplished with water, detergents, and the mechanical action used in cleaning the surface.

Disinfection

The process used on surfaces and equipment to kill microorganisms. It is accomplished through the use of disinfectants, sufficient contact times, and mechanical action used in cleaning the surface.

Products Available and When to Use

Disinfectant	Uses/ Comments	Advantages/ Comments	Disadvantages/ Comments
Alcohols (70-90%) <i>Intermediate Level Disinfectant</i>	<ul style="list-style-type: none"> ○ External surfaces of some equipment (e.g., stethoscopes) ○ Noncritical equipment used for home health care ○ Disinfection is achieved after 10 minutes of contact. ○ Used as a skin antiseptic ○ Observe fire code restrictions for storage of alcohol. 	<ul style="list-style-type: none"> ○ Non-toxic ○ Low cost ○ Rapid action ○ Non-staining ○ No residue ○ Effective on clean equipment/ devices that can be immersed 	<ul style="list-style-type: none"> ○ Evaporates quickly - not a good surface disinfectant ○ Evaporation may diminish concentration ○ Flammable - store in a cool well ventilated area; refer to Fire Code restrictions for storage of large volumes of alcohol ○ Coagulates protein; a poor cleaner ○ May dissolve lens mountings ○ Hardens and swells plastic tubing ○ Harmful to silicone; causes brittleness ○ May harden rubber or cause deterioration of glues ○ Inactivated by organic material

Disinfectant	Uses/ Comments	Advantages/ Comments	Disadvantages/ Comments
Chlorines (e.g., sodium hypochlorite or bleach) <i>Intermediate Level Disinfectant</i>	<ul style="list-style-type: none"> ○ Exterior surfaces of dialysis equipment, cardiopulmonary training mannequin, environmental surfaces ○ Noncritical equipment used for home health care ○ Decontamination of blood spills, and disinfection following the cleanup of the blood; Blood spills (use 0.05% sodium hypochlorite for a minor blood spill and 0.5% for a major blood spill) ○ Disinfection contact time ranges from 10-30 minutes depending on the concentration ○ Undiluted bleach can be used as a high level disinfectant. 	<ul style="list-style-type: none"> ○ Low cost ○ Rapid action ○ Readily available in non hospital settings ○ Sporocidal at higher concentrations 	<ul style="list-style-type: none"> ○ Corrosive to metals ○ Inactivated by organic material; for blood spills, blood must be removed prior to disinfection ○ Irritant to skin and mucous membranes ○ Shelf life shortens when diluted; should be used immediately once diluted ○ Use in well-ventilated areas ○ Must be stored in closed containers away from ultraviolet light & heat to prevent deterioration
Hydrogen peroxide 3% <i>Low Level Disinfectant</i>	<ul style="list-style-type: none"> ○ Floors, walls, furnishings, non-critical equipment in home health care ○ 30 minutes of contact time 	<ul style="list-style-type: none"> ○ Rapid action ○ Safe for the environment ○ Non-toxic 	<ul style="list-style-type: none"> ○ Contraindicated for use on copper, zinc, brass, aluminum ○ Store in cool place, protect from light
Hydrogen peroxide enhanced action formulation (HP-EAF) 0.5% (7% solution diluted 1:16) <i>Low Level Disinfectant</i>	<ul style="list-style-type: none"> ○ Isolation room surfaces ○ Clinic and procedure room surfaces ○ Low-level disinfection is achieved after 5 minutes of contact at 20°C. ○ Monitoring not required, however test kits are available from the manufacturer 	<ul style="list-style-type: none"> ○ Safe for environment ○ Non-toxic ○ Rapid action ○ Available in a wipe ○ Active in the presence of organic materials ○ Excellent cleaning ability due to detergent properties 	<ul style="list-style-type: none"> ○ Contraindicated for use on copper, brass, carbon-tipped devices and anodised aluminum ○ expensive
Hydrogen peroxide enhanced action formulation (HP-EAF) 4.5% <i>High Level Disinfectant</i>	<ul style="list-style-type: none"> ○ Disinfection of toilet bowls, sinks, basins and commodes of <i>C. difficile</i> patients ○ Following cleaning, sterility is achieved after 10 minutes of contact. ○ Do not use on medical devices or equipment or as a general environmental surface cleaner or disinfectant 	<ul style="list-style-type: none"> ○ Sporocidal ○ Available in a gel format to ensure vertical surface adhesion during required contact time ○ Safe for environment ○ Non-toxic 	<ul style="list-style-type: none"> ○ Expensive ○ Contraindicated for use on copper, brass, carbon-tipped devices and anodised aluminum, rubber, plastics ○ Do not use on monitors
Iodophors (Non-antiseptic)	<ul style="list-style-type: none"> ○ Hard surfaces and equipment that do not touch mucous membranes (e.g., IV poles, stair chairs, stretchers) 	<ul style="list-style-type: none"> ○ Rapid action ○ Non-toxic 	<ul style="list-style-type: none"> ○ Corrosive to metal unless combined with inhibitors ○ Inactivated by organic materials ○ May stain fabrics and

Disinfectant	Uses/ Comments	Advantages/ Comments	Disadvantages/ Comments
formulations) <i>Low Level Disinfectant</i>	<ul style="list-style-type: none"> ○ DO NOT use antiseptic iodophors as hard surface disinfectants 		synthetic materials
Phenolics <i>Low/Intermediate Level Disinfectant</i>	<ul style="list-style-type: none"> ○ Floors, walls and furnishings ○ Hard surfaces and equipment that do not touch mucous membranes (e.g., IV poles, stair chairs, stretchers) ○ DO NOT use phenolics in nurseries 	<ul style="list-style-type: none"> ○ Leaves residual film on environmental surfaces ○ Commercially available with added detergents to provide one-step cleaning and disinfecting ○ Slightly broader spectrum of activity than QUATS 	<ul style="list-style-type: none"> ○ Do not use in nurseries or on equipment contacting infants (e.g., baby scales) ○ Not recommended for use on food contact surfaces ○ May be absorbed through skin or by rubber ○ Some synthetic flooring may become sticky with repetitive use
Quaternary ammonium compounds (QUATS) <i>Low Level Disinfectant</i>	<ul style="list-style-type: none"> ○ Floors, walls and furnishings ○ Cleaning blood spills prior to disinfection 	<ul style="list-style-type: none"> ○ Non-corrosive, non-toxic, low irritant ○ Good cleaning ability, usually have detergent properties ○ May be used on food surfaces 	<ul style="list-style-type: none"> ○ Do not use to disinfect instruments ○ Limited use as a disinfectant because of narrow microbicidal spectrum ○ Diluted solutions may support the growth of microorganisms ○ May be neutralized by various materials (e.g., gauze, cotton)

Instructions for Using Disinfectants

- Workers must ensure the recommended disinfectant is used according to the manufacturer's instructions. Read and follow manufacturer's handling instructions.
- Ensure the disinfectant can be safely used on the equipment being cleaned.
- Surface must be cleaned before disinfectant is used, unless the solution used is a combined detergent/disinfectant (e.g., areas/equipment must be cleaned first when being disinfected with bleach solution).
- Use all cleaning solutions in a well ventilated area.
- Caution should be taken not to overlap cleaners as the combination may produce noxious gas.
- Due to the risk of contamination during cleaning, proper PPE must be worn. This consists of gloves at all times; and facial protection inclusive of mask and eye protection or face shield and gown if splash and spray is possible or expected.

Chemical Compatibility

Ensure that you are familiar with the Material Safety Data Sheets for each product before its use. For example, vomitus and urine contain varying amounts of acids that can react with bleach to produce chlorine gas. For these situations, use of a coagulant (GreenZ™) first and then scoop congealed waste into a suitable container. Clean the area for surface soil and then disinfection can be done.

First Aid for Exposure to Disinfectants

In the event of an accidental exposure (splash) to the eyes or skin, flush immediately with water for at least 20 minutes. Use the shower if necessary to decontaminate a large area. Eyewash stations are provided and should be used for splashes involving the eyes. Refer to the MSDS for the material exposed to and take that MSDS to the physician if assessment or treatment is necessary. If in transit, use litre container of normal saline IV solution.

SPILL CLEAN-UP

All spills must be cleaned up as soon as possible after they occur. Workers need to be careful when dealing with spills of blood or body fluids, or any other materials that may be infectious. If a person has been exposed to blood and body fluids, attend to them first before cleaning up a spill. Clean up must only be performed by persons properly equipped and trained in the correct procedures. If the spill cannot be cleaned up immediately, i.e., no equipment or trained personnel, then the area needs to be closed off.

Personal Protective Equipment

Persons who clean blood and body fluid spills should wear disposable gloves of sufficient strength to prevent tearing during cleaning activities. If the gloves become perforated, remove them, wash hands immediately, and put on fresh gloves. Disposable gloves must never be washed or reused. Place disposable gloves directly into waste bag. If sufficient blood has been spilled to expect splashing during the cleaning operation additional protective equipment may be required for example - face-shield, gown and footwear protectors. Eye protection, as well as, gloves must be worn whenever mixing solutions or cleaning with bleach.

Cleaning and Disinfection of Transport Aircraft

In general, the cleaning of aircraft should follow the same processes and frequencies as land transport vehicles. Cleaning and disinfection products used, must however, be determined and approved by the company providing Airevac services based on what can safely be used on the aircraft.

CLEANING CONTAMINATED UNIFORMS

Contaminated uniforms should not be worn into the station or home from work. If your clothing becomes contaminated due to an accidental exposure, remove clothing and put in garbage bag, wear a Tyvek™ suit until you can access clean clothes, and if necessary have a shower.

It is important to remove your contaminated uniform and other soiled clothing, including under garments if required, the first opportunity you get. Use the following procedure when removing your contaminated uniform:

- Take gloves and 1-2 large plastic bags into location where you will be changing.
- Put on gloves. Use mask and goggles if gross soiling and there is the potential for splash.
- Remove your shoes/boots.
- If shoes/boots are contaminated, put them in a separate bag for cleaning and decontamination at a later time.
- Take uniform off starting with the shirt and then the pants, turning them inside out as you remove them and put **directly** in a plastic bag. Never pull clothes over your head. In these situations, clothes will need to be cut to remove.
- If soiled remove under garments, turning them inside out as you remove them and put **directly** in the plastic bag.
- Do not allow contaminated uniform or under garments to touch any other surfaces during doffing.
- Remove gloves, do hand hygiene. Remove goggles and mask. Tie bag to contain the soiled uniform and clothes.

- Wash soiled areas of the skin with soap and water (normal saline if in the field).
- If there has been exposure to an excessive amount of blood or body fluid, a shower will be required.
- Extensive skin soiling requires immediate assessment of the skin for areas that are non-intact. If non-intact skin is found to have been in contact with blood or body fluids, follow the blood and body fluid exposure directions.
- Put on a clean uniform.
- Place plastic bag in secure area until it can be removed for cleaning.

Washing Contaminated Uniforms at Home

The Centre on Disease Control identifies that home laundering on normal washing and drying cycles or dry cleaning will render the uniform free of risk of disease transmission.

- Transport the bag containing the contaminated uniform home or to a commercial laundry facility where it should go directly into the washing machine.
- If transporting to a commercial laundry facility, identify to commercial laundry facility that the uniform and other clothes in the bag are soiled, and what precautions need to be taken when handling the laundry.

When washing your contaminated uniform at home, follow these instructions:

- Plan to wash the uniform as soon as you get home.
- If this is not possible, place the bag containing the contaminated uniform in a place where it will not be accessible to children, pets, or others who may open it inadvertently.
- Wash your uniform as a separate load to your regular household laundry.
- When you are ready to wash the contaminated uniform, don disposable gloves.
- Open the bag and remove the contaminated uniform from the bag and place directly in the washing machine.
- Remove your disposable gloves and throw them into the contaminated laundry bag.
- Place the contaminated bag in another disposable bag, tie it closed, and dispose in the garbage.

- Wash hands with soap and water and then set dials and start machine.
- Wash contaminated uniform separately from your family's laundry.
- Wash the uniform in hot water (minimum 70°C) with detergent for 25 minutes. If using lower water temperatures, use cold water or low temperature detergents for a full wash cycle.
- Regardless of whether hot or cold water is used for washing, the temperatures reached during drying and especially during ironing provide additional significant microbiocidal action
- For front load/low water volume washers refer to the manufacturer's instruction regarding pre-soaking, sanitary cycles, and extra rinse options.
- Bleach at 100 ppm (1 part bleach to 99 parts water or max level on the machine bleach dispenser) can be added to cycle if preferred.

Decontamination of Washing Machine

There should be no concern of contamination of your laundry machine from washing your contaminated uniform. However, if you have any concerns the following procedure will help ensure the machine has been sufficiently cleaned and decontaminated:

- Mix a diluted bleach mixture (1 part bleach / 9 parts water) and while wearing gloves, wet a cloth and wipe the interior and exterior of the washing machine.
- Consult your washing machine manufacturer's directions for sanitary cycles or extra rinse cycles that could also be used.

APPENDIX F - RECOMMENDED IMMUNIZATIONS FOR HEALTH CARE PROVIDERS

RECOMMENDED IMMUNIZATIONS FOR HEALTH CARE PROVIDERS

The following immunizations are recommended by the British Columbia Centre for Disease Control for all healthcare providers in BC:

Hepatitis B

Health care providers are considered immune to Hepatitis B if they have completed a series of Hepatitis B vaccine and have a lab test result indicating immunity. To check for immunity, testing for antibodies should be done one to six months after completion of the series. People who do not develop immunity to an initial series will be offered a second series of vaccine.

Recommendation: Hepatitis B vaccine is recommended for health care providers who may be exposed to blood or body fluids through needle stick or other similar injuries, bites, splashes or non-intact skin. All health care providers who experience a potential exposure should contact the WHCC to ensure testing and screening is completed through their local Emergency Department.

Influenza

Please don't risk your health or that of your family, patients or residents by getting and passing on the influenza virus. It is important to prevent disease transmission to persons at high risk of influenza related complications, such as those with cardiac or pulmonary disorders, weakened immune systems, other chronic medical conditions and the elderly.

Recommendations: Every November, all health care workers are encouraged to get an influenza shot. Influenza vaccination has been shown to help reduce the illness and death of patients under their care. Employees can receive a free influenza vaccine through on-site clinics, from their GP, pharmacist or Public Health Unit.

Measles, Mumps, Rubella (MMR)

Measles – Measles is a highly contagious disease and leading cause for vaccine-preventable deaths in children. Children under the age of five and adults over the age of 20 are the most likely to acquire serious complications. The most serious complications include severe diarrhea, ear infections, pneumonia, blindness, and encephalitis (infection and swelling of the brain) which may lead to death.

Recommendation: Healthcare providers are considered immune if born prior to 1957 or if they have documentation of two doses of measles vaccine if born after 1957.

Mumps – Mumps is a disease caused by the mumps virus. It can cause serious illness, such as inflammation of the brain (encephalitis), which can lead to convulsions or brain damage. Mumps can also cause temporary deafness.

Recommendation: Health care providers are considered immune to mumps if they have had one dose of mumps vaccine if born 1957-1969 or two doses of mumps vaccine if born after 1970. Those born before 1957 have likely had the disease and are considered immune.

Rubella – Rubella infection in adults may cause swelling and pain in the joints. Infections in the first three months of pregnancy have an 85 percent risk of causing severe damage to the developing baby. Rubella outbreaks in health care facilities are of particular concern due to the potential spread to pregnant health care providers and patients.

Recommendation: Health care providers are considered immune if they have documentation of one dose of rubella vaccine or a lab test indicating immunity.

Tetanus/Diphtheria/Pertussis

Tetanus – Tetanus is an acute and often fatal disease. While rare in Canada, cases have been reported that are associated with contaminated injection drug use, animal bites and wounds.

Diphtheria – Diphtheria is a serious communicable disease, causing death in five to 10 percent of cases, with the highest rates among the very young and the elderly.

Pertussis – Pertussis or whooping cough, is a serious infection of the lungs and throat. People of any age can get pertussis. Outbreaks of pertussis are of particular concern as health care workers can spread this disease to infants and young children for whom this disease can be fatal.

Recommendation: Immunization against tetanus, diphtheria and pertussis is recommended for all adults in Canada. Booster doses are recommended every ten years or sooner.

Varicella (Chickenpox)

Varicella (chickenpox) infection tends to be more severe in adults. During early pregnancy the virus can cause problems for the developing baby. The virus stays in your body and may become active again causing shingles, a painful viral infection of the nervous tissue.

Recommendation: Evidence of immunity to varicella includes a self reported definite positive history or physician diagnosed varicella disease or herpes zoster (shingles), a lab test indicating immunity, or documentation of two doses of varicella vaccine given at least one month apart.

Tuberculosis

Tuberculosis (TB) is an infection caused by slow-growing bacteria that grow best in areas of the body that have lots of blood and oxygen. All cases of TB are reported to the local or provincial ministry of health because the disease can spread to others and cause outbreaks. Major health authorities keep track of TB outbreaks and encourage early testing for people who are at risk for developing the disease.

Recommendation: WHCC works closely with Infection Control and TB Control to identify employees who may have been exposed to TB. Assessments will be done on an individual basis and referrals to TB Control if required.

If you have any questions, please call the WHCC at - **1-877 587 4080**

<http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap2.htm>

APPENDIX G - BLOOD AND BODY FLUID EXPOSURE FREQUENTLY ASKED QUESTIONS

BLOOD AND BODY FLUID EXPOSURE FREQUENTLY ASKED QUESTIONS

Now what?

- Ensure you receive the appropriate first aid and attention and notify your supervisor or the duty supervisor.
- Immediately report your exposure to the WHCC at **1-877-587-4080**, select “Incident”, to report your exposure to the Call Centre agent. After your information is taken, you will be transferred to an Occupational Health Nurse.

What happens next?

- When you call the Call Centre, your call will be directed to an Occupational Health Nurse who will ask you to describe your exposure, ask question if necessary to help you to assess the level of risk associated with the incident, provide guidance on next steps and document the incident.
- If the incident occurred outside of Call Centre hours (7am-5pm) and you feel you have had a high risk exposure (BBF splash in mouth/eye or on non-intact skin or dirty sharp pierced skin) then discuss with a doctor as soon as possible.
- The Call Centre will forward an Incident Investigation Report onto your Supervisor, Superintendent and Workplace Health Safety Team to ensure an investigation is underway.

When should I go to the Emergency Department?

- As soon as possible, because depending on the nature and source of the blood and body fluid (BBF) exposure, you may need to start prophylactic treatment and start in a timely manner.
- Tell the Emergency Department that you have had a BBF exposure so that you can be prioritized accordingly.
- Provide the physician with BCEHS Post Exposure kit, which is located in each ambulance. The kit contains the following:

- Letter – Management of Blood and Body Fluid Exposure
- Form – Management of Percutaneous or Permucosal Exposure to Blood and Body Fluid/Laboratory Requisition (Form – HLTH 2339, Rev. 2011/11/24)
- Report the incident and actions of the physician to the Call Centre as soon as possible.

What is the HLTH 2339 form?

This is the *Management of Percutaneous or Permucosal Exposure to Blood and Body Fluid/Laboratory Requisition* form from the Ministry of Health. It is a lab requisition form for the blood testing required after a BBF exposure; blood samples accompanied by this form are prioritized and processed more quickly. The HLTH 2339 serves several purposes:

- Flags the specimen as important and bypasses the need for special STAT approval processing
- Ensures the specimen is stored afterwards for several years for retesting (if required)
- Is a legal document as well as a lab requisition

You should use the HLTH 2339 form so that your blood sample and the source person's blood sample are prioritized and processed more quickly at the lab.

Which sections of the HLTH 2339 form do I fill out?

- Exposed Person Copy - the exposed person's copy should have the *Exposed Person Information*, *Exposure Information*, and *Source Person* sections filled out as much as possible. Take this copy to the Emergency Department with you.
- Source Copy - the source person's form should have the *Source Person* section filled out; the *Exposed Person Information* should NOT be filled out on the Source Person's copy.

What happens to the HLTH 2339 forms?

For both the exposed person and source person, the white copy will accompany the blood samples as the lab requisition, and the other three copies must be forwarded to the Occupational Health Nurse.

What can I expect from the Occupational Health Nurse?

- After your exposure, you and the source person, if known, will be tested for Hepatitis B, Hepatitis C and HIV antibodies. The Occupational Health Nurse will phone you with the test results when they are received. Any information given to you regarding the source person's blood tests is to be treated confidentially.
- When the source is positive for a blood borne virus or in a high risk group you will be sent laboratory requisitions for follow-up blood work.
- If you need to be revaccinated for Hepatitis B, you will be advised by the nurse when she reports your blood test results.
- You may have to receive Hepatitis B Immune Globulin (HBIG), Hepatitis B, Tetanus booster and/or anti-retrovirals in Emergency Department at the time of injury. Please inform the Occupational Health nurse of the medication/immunizations you received.
- If the anti-retroviral medication starter kit is ordered by the physician in the Emergency Department, and you decide to take it, you must contact your personal physician within two days to have the rest of the medication ordered and to have baseline blood tests done.

How does the supervisor get the source person's consent for serology screening tests?

The supervisor/designate should make every effort to contact the source person's health care facility to arrange for BBF serology. Timely follow up is essential especially for outpatients or high turnover units. Guidelines for informed consent are listed on the back of the HLTH 2339 form. If you are unsure what to do, the Occupational Health Nurse can help with contacting the appropriate person.

What happens if the source person does not consent to having their blood-work taken or the source person cannot be found?

Unfortunately, it is not always possible to have the source person's bloodwork done. In these situations the source person is marked as unknown and your physician will still make a decision on the course of treatment you may need.

I had a BBF exposure and the source already has bloodwork drawn for other medical tests. Can we just add on tests to the samples?

Blood collected for medical tests are done under informed consent as per your agency's protocol. Blood collected for the purposes of BBF Exposure follow up does not fall under this consent and separate consent is required.

I had a BBF exposure from a baby. Can we get blood-work from the baby?

It takes approximately 6 months for seroconversion to occur for most of the pathogens tested in a BBF exposure. A baby under 6 months of age may not have seroconverted for the same pathogens and serology may be inaccurate. In this case the baby's mother would be considered the source and should be approached for testing. Therefore:

- If the baby is **0-6 months**, blood-work should come *from the mother*
- If the baby is **older than 6 months**, blood-work should come *from the baby*

What precautions should I take until I am informed that the source person's tests are negative or I have been tested for 9 months and all results are negative?

- Inform your personal physician, dentist and other health care providers that you are being tested for Hepatitis and HIV. Remember, as well, to inform them when testing is finished and you have the final results.
- Do not donate blood, body fluids, breast milk, tissue, sperm or organs for 9 months after the injury.
- Practice safe sex – use latex condoms with a water-based lubricant for all acts of sexual intercourse.
- Do not become pregnant.
- Discontinue breast feeding or express and discard milk.
- Do not share toothbrushes, dental floss, razors, needles or other implements that may be contaminated with blood or body fluids.

If you sought medical attention or experienced time loss due to this incident, you need to report it to WorkSafeBC Tele-claim at 1-888-967-5377.

If you have any further questions, contact the Occupational Health Nurse at 1-877-587-4080.

For general information, please refer to the HealthlinkBC file titled – Contact with Blood and Body Fluids: Protecting Against Infection:

<http://www.healthlinkbc.ca/healthfiles/hfile97.stm>

APPENDIX H - RISK ASSESSMENT CHART FOR COMMON DISEASES

RISK ASSESSMENT CHART FOR COMMON DISEASES

The following is a table of risks for transmission of infectious agents in health care settings and the corresponding risk controls for employee to patient and patient to employee transmission.

Infection	Modes of Transmission	Estimated transmission risk to a susceptible host		Primary risk reduction strategies
		Staff to Patient	Patient to Staff	
Chickenpox Disseminated zoster	Contact with vesicles and airborne spread from respiratory tract of acute cases of chickenpox and possibly from disseminated zoster	High	High	Varicella vaccine for susceptible individuals. Varicella zoster immune-globulin (VZIG) for immuno-compromised contacts of cases. Major risk – adults and immuno-compromised hosts; bone marrow transplant patients are at greater risk
Localized varicella zoster (shingles)	Contact with vesicles (possible airborne spread from disseminated zoster)	Moderate	Moderate	
<i>Clostridium difficile</i> (c. diff)	Contact transmission through direct person to person, or indirect transmission via contaminated hands, gloves, equipment or the environment.	Moderate	Low	Wear PPE – gloves, gown or coveralls. Respirator and eye protection are required if there is potential for direct contact on the face to diarrhea. Risk of transmission while the patient has symptoms of diarrhea.
Conjunctivitis, viral (e.g. adenovirus)	Contact with eye secretions and contaminated objects.	High	High	Identify and eliminate environmental reservoirs Restrict infected personnel at work Hand hygiene and cleaning/disinfection of equipment. Multi-patient

				use ophthalmic equipment a high risk for transmission.
Cytomegalovirus (CMV)	Body fluid contact with urine, saliva, breast milk, cervical secretions and semen from infected person who is actively shedding virus	Rare	Rare	Use appropriate gloves and hand hygiene in handling diapers and oral secretions. CMV is very common in young children, organ-transplant patients and patients with HIV/AIDs; undiagnosed cases are far more common than diagnosed cases.
Hemorrhagic fever (extremely rare)	Bloodborne ; some question of contact transmission	Low	Moderate (risk from puncture unknown)	
Hepatitis A	Person-to-person spread by faecal-oral route; rarely via blood transfusion; infected food handlers with poor personal hygiene can contaminate food	Low	Low	Use care in handling diapers and faecal materials. Use gloves and hand hygiene appropriately. Use immunoglobulin prophylaxis for significant exposures. Hepatitis A vaccine when appropriate.
Hepatitis B	Blood and body fluid contact via percutaneous, mucosal and non-intact skin contact with blood, semen, vaginal secretions and bloody fluids	Low	Moderate (risk from puncture 6-35%)	Hepatitis B vaccine for all personnel at risk for blood exposure Emphasis on safe handling of needles and sharps Use gloves, other barriers and hand hygiene appropriately Use high titre Hepatitis B immunoglobulin (HBIG) prophylaxis for significant exposures in susceptible personnel

Hepatitis C	As Hepatitis B	Rare	Low (risk from puncture 1-7%)	Emphasis on safe handling of needles and sharps Use gloves and other barriers and hand hygiene appropriately
Herpes simplex	Contact with virus in saliva of carriers Contact with vesicle fluid	Rare	Low	Use PPE (gloves) for contact with oral secretions, mouth care and vesicles Employees should cover lesions with dressings or gloves. May need to be restricted from work
Human immunodeficiency virus (HIV)	Primarily via percutaneous contact with blood, through mucosal and nonintact skin. Semen, vaginal secretions and bloody body fluids less likely to transmit	Very rare	Rare (risk from puncture 0.03%)	Emphasis on safe sharps practice, use of PPE and hand hygiene Manage post-exposure prophylaxis in accordance with current guidelines Healthcare workers who know or suspect themselves to be HIV or Hepatitis B e-antigen positive should seek advice, it may not be appropriate to perform exposure-prone procedures
Influenza	Droplet or contact with respiratory secretions	Moderate	Moderate	Seasonal influenza vaccine for healthcare workers and patients Appropriate use of PPE Hand hygiene
Measles	Airborne (direct or droplet contact with nasal or throat secretions of infected person)	High	High	Natural immunity or measles vaccine for health care workers Vaccine for patients as appropriate
Meningococcal	Direct contact with oral secretions	None reported	Rare	Appropriate use of respirators and hand

infection				hygiene Antibiotic prophylaxis indicated only for personnel following direct contact mucosal contact with oral secretions
Mumps	Droplet or direct contact with oral secretions	Moderate	Moderate	Mumps vaccine is effective for personnel and patients Adults may have complications form illness
Pertussis	Droplet or contact with respiratory secretions	Moderate	Moderate	Appropriate use of PPE and hand hygiene Antibiotic prophylaxis of exposed healthcare workers
Respiratory syncytial virus	Droplet or contact with respiratory secretions	Moderate	Moderate	Appropriate use of PPE
Rotavirus	Person-person via faecal-oral route	Moderate	Moderate	Appropriate use of PPE and hand hygiene
Rubella	Droplet or contact with respiratory secretions (airborne transmission not demonstrated)	Moderate	Moderate	Natural immunity or rubella vaccine for healthcare workers and vaccine for patients as appropriate.
Salmonella or shigella	Person-to-person via faecal-oral route Contaminated food or water Food handlers with poor personal hygiene can contaminate food	Low	Low	Hand hygiene, especially after using the toilet and before preparing food Appropriate use of PPE, especially when caring for patients with diarrhea
Scabies	Prolonged direct skin-to-skin contact with infested person (it takes approximately 1 hour for mites to burrow into skin)	Low	Low	Index of suspicion for scabies with any undiagnosed rash Use of scabicide promptly to eradicate infestation PPE and hygiene

<i>Staphylococcus aureus</i> (including MRSA)	Direct and indirect contact	Rare	No data (although patient to patient spread is common)	Appropriate use of PPE and hand hygiene
Streptococcus, Group A	Droplet or direct contact with oral secretions or drainage from infected wounds	Rare	No data	Appropriate use of PPE and hand hygiene Antibiotic treatment for symptomatic persons or those identified as shedders
Syphilis	Direct contact with lesions of primary or secondary syphilis	No data	Rare	Appropriate use of PPE; gloves for contact with lesions
Tuberculosis (TB), pulmonary	Airborne transmission from sources with active pulmonary or laryngeal tuberculosis Susceptible person must inhale airborne droplet nuclei to become infected	Low to high	Low to high	Index of suspicion for a TB case – appropriate ventilation of locations where TB patients receive care Airborne precautions for identified cases Exposure management and treatment of individuals with new infections Fit tested N95 respirators

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