1. INTRODUCTION

"Infection Control Precautions" is a two-tiered system of practices aimed at reducing the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in the hospital. It is based on two fundamental principles.

- The first maintains that any patient may be the carrier of an infection that may be transmitted from blood or body fluids, secretions, excretions, mucous membranes and non-intact skin (biological substances). This is the first and most important principle for the successful prevention of hospital-acquired infections. Consequently, basic "Routine Practices" are to be used in the care of all patients, regardless of their diagnoses or presumed infection status, and are determined by the patient care tasks to be performed.
- The second principle maintains that certain infections cannot be contained by Routine Practices alone and warrant additional measures, based on specific routes of transmission and expected levels of contamination of the environment. For these infections, "Additional Precautions" (Contact, Droplet or Airborne) are instituted.

As we strive to create a safer environment by limiting the transmission of infections, it is important not to lose sight of some of the patients' needs: to feel secure, to be informed, to participate in their care, to be treated with dignity. To this end, patients must be given explanations as to why and when protective equipment is used, why they may have to be separated from other patients, and how they can help protect themselves and/or others from hospital-acquired infections.

2. RATIONALE

- It is impossible to identify all persons harboring blood borne viruses (Hepatitis B & C, HIV), enteric pathogens (e.g. C. difficile, rotavirus, noroviruses, Hepatitis A), respiratory pathogens (influenza, respiratory syncytial virus, tuberculosis), multiresistant organisms (MRSA, VRE) or other potential pathogens. Many patients are asymptomatic carriers; other infections are communicable before the appearance of clinical signs and symptoms or after these have resolved.
- Where Additional Precautions are indicated, these must be instituted immediately, based on clinical findings as waiting for laboratory confirmation of infection allows transmission to occur.

3. GOALS

- To prevent the transmission of infection between patients.
- To prevent transmission of infection to and from Health Care Workers (HCW).
- To prevent acquisition of infection associated with invasive procedures.
- To respect the confidentiality of the patient and maintain his/her dignity at all times.

4. POLICIES

4.1. HCW are expected to perform hand hygiene before and after direct contact with any patient.

4.2. The blood, body fluids, secretions, excretions, mucous membranes and non-intact skin of all patients are considered to be potentially infectious.
4.3. HCW are expected to use the appropriate barr

5.1. Hand Hygiene

Hand hygiene is the single most important procedure for preventing the transmission of microorganisms.

Hands hygiene must be performed:

- Immediately before and immediately after patient contact
- After contact with mucous membranes, blood, body fluids, secretions or excretions, non-intact skin
- After touching known, suspected, or potentially contaminated objects or surfaces
- After removing gloves
- Remove watch and other jewelry hand / wrist jewelry before performing hand hygiene

Keep nails trimmed; long nails (natural or artificial) impede hand hygiene and have been associated with transmission of infection.

Waterless, alcohol-based hand rinse

- Use of waterless alcohol-based hand rinses is now considered to be the optimal method to achieve hand hygiene in the healthcare setting**,** unless hands are visibly soiled or after contact with C. difficile (alcohol will not inactivate C. difficile spores)
-

- Reduce the risk of hand contamination from patients or from contaminated

Safe handling of needles and sharps is the single most important practice in preventing accidental exposure of health care workers to blood borne pathogens (e.g. Hepatitis B & C, HIV).

- **Needles must <u>not</u> be recapped** as this is the predominant cause of accidental needle sticks. In special circumstances (e.g., no sharps disposal container nearby), one-hand recapping may be done if this technique has been properly learned by the individual.
- Needles and sharps should always be discarded promptly in the appropriate rigid containers. It is important to remember that needles and sharps that are not safely discarded also put other employees - housekeepers, laundry and medical device reprocessing (MDR) personnel -, as well as patients, visitors, etc. at risk of accidental exposure.
- Sharps disposal containers should be located close to the point at which sharps are used, and placed where they are easily seen and reached. They should never be overfilled. Do not use a sharps container if it is more than 2/3 filled; call the appropriate department to replace the container.
- Replacement of **reusable** sharps by **single-use disposables** will aid in the reduction of injuries. If reusable sharps are used, they should be placed in rigid containers before being sent back to MDR unit. This serves to prevent the possibility of sharps injury during transit and also protects the MDR personnel from injury when unwrapping used instrument trays.

5.4. <u>Careful Handling of used Patient-Care Equipment/Instruments</u>

All reusable patient-care equipment that has been in direct contact with a patient should be disinfected before use with another patient.

- Items in contact only with intact skin require cleaning with a low or intermediate level disinfectant such as alcohol, a disinfectant wipe, or a hospital detergent-disinfectant.
- Items in contact with mucous membranes or non-intact skin require high level disinfection.
- Items that enter sterile body spaces or tissue require sterilization.
- Patient-care equipment contaminated with blood or body fluids should be handled in a manner that prevents unnecessary contamination of the HCW or the environment. (i.e., avoid carrying against clothing, placing on clean surfaces, etc.).
- Gloves should be worn when handling soiled equipment and instruments.
- High-level disinfection or sterilization of reusable instruments and medical equipment are generally done in the MDR unit ; however, some visibly soiled equipment or instruments contaminated with biological substances and fluids may need to be rinsed prior to transport to MDR especially if there will be a long delay in transport. Please refer to the Policies and Procedures of your specific institution.
- Equipment such as urinals, bedpans, etc. should be emptied of stool and urine before being returned to the MDR unit. This should always be done in a manner which minimizes splashing or aerosol generation.

5.5. <u>Careful Handling of Soiled Linen</u>

Although soiled linen is considered to be a possible source of pathogenic microorganisms, it poses a negligible risk of disease transmission. Consequently, handling of linen requires simple common sense hygienic practices.

- Soiled linen should be held away from the body to avoid contamination of the clothing of the HCW. It should also be handled as little as possible and with minimal agitation so as to prevent dispersion of microorganisms into the air and contamination of the person handling the linen.
- Laundry hampers should be brought close to the location where soiled linen is removed and should not be sorted at the bedside.
- Linen heavily soiled with blood or blood products which may leak from a cloth bag should first be placed in a regular plastic bag.
- Laundry personnel and others who handle or sort soiled linen should wear masks, gloves and protective apparel. Puncture- and cut-proof gloves are strongly recommended for laundry sorters and handlers.

5.6. Cleaning of Biological Spills

Minor blood and body fluid spills (less than 100mL) should be decontaminated immediately with 5% javex (i.e. “household bleach”) in a dilution of 1 part bleach to 10 parts water (see below).

Larger spills should be managed according to

- Aseptic technique should be used for assembly or handling of components of intravenous delivery systems. A syringe, needle or cannula used to enter a patient's intravenous infusion bag or administration set should not be reused.
- Single patient multi-use devices (e.g., glucose sampling devices) should not be used for more than one patient.

Surgical procedures, central vascular catheters, mechanical ventilation, and urinary tract catheters are important risk factors for infection. Aseptic technique is essential in prevention of these infections, but other practices are also important, including using the least invasive procedure when possible and removing invasive devices promptly when no longer essential for care. Many hospitals have now implemented "bundles" (straightforward sets of evidence-based practices — generally three to five — that, when performed collectively and reliably, have been proven to improve patient outcomes) for prevention of these infections. Monitoring of compliance with these practices, surveillance for associated infections, and comparison of infection rates with established internal and external benchmarks are essential components of these bundles. Details are beyond the scope of this document. Further information is available at Safer Healthcare Now (Canada) http://www.saferhealthcarenow.ca and The Institute for Healthcare Improvement (USA) http://www.ihi.org/IHI.

5.10 Respiratory Etiquette

The concept of "respiratory etiquette" or source control was introduced after the outbreak

These strategies may be used individually or in combination, depending on whether the pathogen is transmitted via a single or multiple routes of transmission. **In all cases, Routine Practices also apply.**

Appendix A shows the Additional Precautions usually recommended for the more common infectious conditions. Most hospitals will have similar tables available in infection control manuals, electronic patient care protocols, or electronic patient databases. HCW should become familiar with the policies used in the institution in which they are located, as minor variations may occur.

Admission screening for clinical manifestations of infection is essential in identifying patients for whom Additional Precautions are required. Additional Precautions must be initiated as soon as indicated by the clinical condition (diagnosis, signs or symptoms, laboratory information or assessment of risk factors). It is important not to wait for laboratory confirmation before initiating precautions. These may adjusted once a specific etiology is identified or an infectious cause ruled out.

Patient and family teaching

Patients and their families should be provided with sufficient information to enable them to understand the nature of the infection, the reasons for the precautions, and how to prevent transmission to family and visitors during the hospital stay.

Accommodation: Shared rooms

- Ideally, patients requiring Additional Precautions should be placed in single rooms. In practice, some will be housed in shared rooms.
- A patient requiring Additional Precautions who shares a room with other patients should be confined to his / her bed area. There should be no direct contact between the infectious patient and other patients in the room. The patient, the roommates, and their visitors must be able to comply with the precautions required and should not have direct contact with other patients or items in another patient's immediate environment.
- All articles, including equipment, recreational items, toys, personal items, must be for the exclusive use of the patient on precautions and must not be shared with room-mates.

6.1. .Contact Precautions

This strategy involves the use of barrier precautions aimed at reducing the transmission of pathogens that are spread either by direct contact with an infected person or by indirect contact (touching contaminated environmental surfaces or patient-care material).

Contact Precautions are required if:

- The organism has a low infective dose (i.e. highly infectious)
- The organism may be readily transmitted from the patient's intact skin
- There is potential for widespread contamination of the environment

Common indications for Contact Precautions include diarrhea (suspected or known infectious origin), extensive draining skin or wound infections or abscesses if drainage cannot be

contained by dressings, colonization or infection with MRSA, VRE. In addition, Contact Precautions are used for all children with suspected or known viral respiratory tract infections.

Room allocation (Patient Placement)

- A single room is preferred.
- Patients infected with the same microorganism may be cohorted (placed in same room) providing that they do not otherwise pose a risk to each other (not infected with any other transmissible disease; minimal possibility of reinfection with

- Dishes and eating utensils do not require special treatment. Disposable dishes and utensils are not required.
- All horizontal and frequently touched surfaces should be cleaned daily and when soiled.
- Keep the laundry hamper in room and handle laundry as usual.

6.2. Droplet Precautions

This strategy consists of the use of barrier precautions directed at blocking the transmission of pathogens spread by the droplet route. In this mode of transmission the pathogen is transported by large-particle droplets which may land on the mucous membranes of the eyes, nose or mouth of a susceptible host. Droplets are generated when coughing, talking or sneezing and when subjected to procedures such as suctioning or bronchoscopy. Droplets generally travel only short distances (up to 1 meter), but in some patients with forceful coughing, the droplets may travel as far as 2 meters. Infections spread by this route include, but are not restricted to, pertussis, meningococcus, and rubella. In addition, Droplet Precautions are used for all children with suspected or known viral respiratory tract infections.

Room allocation (Patient Placement)

- A single room is preferred. Negative pressure is not required.
- Patients infected with the same microorganism may be cohorted (placed in same room) providing that they do not otherwise pose a risk to each other (not infected with any other transmissible disease; minimal possibility of reinfection with the same organism or with a new strain).
- Under certain circumstances, a patient on Droplet Precautions may be placed in a multiple bedded room with uninfected patients provided that a one meter physical separation can be maintained between patients and that barrier precautions can easily be adhered to by all patients, staff and visitors entering the room.

Personal Protective Equipment (PPE) required

- A surgical or procedure mask is required by HCW coming within one meter of the patient.
- For care of rubella or mumps, a mask is not required if the HCW is immune
- Eye protection (goggles or face shields) may be indicated when caring for patients with suspected or confirmed acute respiratory viral infection if the HCW is within one meter of a coughing patient.

Patient Transport

Transport of the patient outside the room should take place only when absolutely necessary. When transport is unavoidable:

- Personnel in the receiving department should be notified that Droplet Precautions are required. At the time a test, procedure or consultation is booked, personnel in the receiving department should be notified that the patient is on Droplet Precautions, to allow time for any special preparation that may be needed.
- The patient should wear a surgical or procedure mask during transport
-

Patient-Care Equipment

- Equipment must be cleaned and disinfected before reuse with another patient.
- Keep the laundry hamper in room and handle laundry as usual.

6.3. Airborne Precautions

This strategy is designed to prevent the spread of microorganisms transmitted by small droplet nuclei (less than 5 microns in size) which remain suspended in the air and can be transported long distances by air currents, and should be used for patients with known or suspected airborne infections. Control of air flow is required. Tuberculosis, measles and varicella are thought to be transmitted by this route.

Room Allocation (Patient Placement)

- The patient is placed in a negative-pressure room (the institution should have a list of available negative pressure rooms).
- In the event that a negative-pressure room is not available, a portable negative-pressure device may be used as a temporary measure.
- Otherwise the patient should be transferred to an institution with a negative pressure room available.
- The door and windows are kept closed at all times to maintain the negative pressure and to minimize dispersion of pathogens outside the room.
- The number of persons entering the room shoul-

b e r o f p e r s o n s e 4 (. p o r a r y

- Personnel in the receiving department should be notified that Airborne Precautions are required. At the time a test, procedure or consultation is booked, personnel in the receiving department should be notified that the patient is on Airborne Precautions, to allow time for any special preparation that may be needed.
- A surgical or procedure mask should be worn by the patient, if feasible, while outside of a negative pressure room to minimize dissemination of microorganisms into the atmosphere. If a mask cannot be worn, the mouth and nose should be covered with a tissue.
- The test, procedure or consultations should be performed in a negative pressure room if possible. Personnel should wear an "N95" mask, unless the patient has measles or varicella and personnel are immune.
- Unless urgent, the test, procedure or consultation should be reserved for the last of the day, to allow sufficient air exchanges to clear the air in the receiving area before the room is used for another patient. If the patient has measles or varicella, the room may continue to be used providing the subsequent patients and all personnel are immune to the illness.
- Tests, procedures and consultations should be performed with minimal delay in order to ensure the patient's prompt return to his/her room. The patient must not wait in a corridor or waiting room.

Infection / condition	Type of Additional Precautions	Duration of Additional Precautions	Comments
Diphtheria pharyngeal or respiratory	D	Until off antibiotics and 2 cultures, taken 24 hours apart, are negative	Chemoprophylaxis (and possibly immunoprophylaxis) required for close contacts
Enteroviral infection - suspected or confimed including hand, foot and mouth disease, aseptic meningitis, pleurodynia (child)	C	Duioillness or until alternative diagnosis established	For adults: routine precautions.
Epiglottitis (suspected Haemophilus influenzae**b infection)**	D	Until 24 hours after start of appropriate antibiotic therapy.	Chemoprophylaxis may be indicated for exposed contacts
Haemophilus influenzae**b** invasive infection	D	Until 24 hours after start of appropriate antibiotic therapy.	Chemoprophylaxis may be indicated for exposed contacts
Hemorrhagic fevers (i.e. Lassa, Ebola, Marburg)	C+D	Duration if illness	Report promptly to IPC personnel and/or ID physician
Hepatitis A, E (or unknown etiology until hepatitis A, E ruled out)	C	Until 1 week after onset of jaundice.	Immunoprophylaxis may be indicated for close contacts.
Herpes simplex extensive or disseminated mucocutaneous disease	C	Duioillness or until all lesions crusted	
Influenza - suspected or confimed	C+D	Duration of illness	
Lice (pediculosis) - head or body or pubic	C	Until 24 hours after start of appropriate treatment.	Change and wash bedding and clothing and clean headgear, combs, hair ornaments of patient
Measles - suspected or confimed	A	Until 4 days after onset of rash (duration of illness for immunocompromised patient.	Susceptible persons should not enter ro or care for patient. Masks are not necessary for personnel knon to be immune
Measles contact (no-immune with significant exposure)	A	From 5 days after first contact though21 days after last contact.	Immunoprophylaxis is indicated for susceptible contacts Measles vaccine protective if given within 72 hours of first exposure. Immunoglobulin is required for immunocompromised contacts or if >72 hours after first exposure
Meningitis – bacterial	D	Until 24 hours after start of appropriate antibiotic therapy.	Chemoprophylaxis may be indicated for close contacts of H. influenza type B or N. meningitides meningitis
Meningitis - suspected enteroviral (child)	C	Duration of illness	
Meningococcal disease	D	Until 24 hours after start of appropriate therapy.	Chemoprophylaxis may be indicated for close contacts

Infection / condition	Type of Additional Precautions	Duration of Additional Precautions	Comments
Mumps	D	Until 5 days after onset of swelling.	Susceptible persons should not enter room or care for patient. Masks are not necessary for personnel known to be immune.
Mumps contact (non-immune with significant exposure)	D	From 10 days after first contact through 26 days after last contact	Susceptible contacts should receive mumps vaccine, unless contraindicated.
Parvovirus B19 - chronic infection in immunocompromised patient - aplastic crises in patient with			

Infection / condition	Type of Additional Precautions	Duration of Additional Precautions	Comments
VRE (vancomycin-resistant enterococci)	C	Until deemed unnecessary by IPC personnel	Place in VRE cohort unit (if it exists