Routine Practices and Additional Precautions

In All Health Care Settings, 3rd edition

Provincial Infectious Diseases Advisory Committee (PIDAC)

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Public Health Ontario
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The Ontario Agency for Health Protection and Promotion (Public Health Ontario) is a Crown corporation dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. As a hub organization, Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world. Public Health Ontario provides expert scientific and technical support relating to communicable and infectious diseases; surveillance and epidemiology; health promotion, chronic disease and injury prevention; environmental and occupational health; health emergency preparedness; and public health laboratory services to support health providers, the public health system and partner ministries in making informed decisions and taking informed action to improve the health and security of Ontarians.

The Provincial Infectious Diseases Advisory Committee on Infection Prevention and Control (PIDAC-IPC) is a multidisciplinary committee of health care professionals with expertise and experience in Infection Prevention and Control. The committee advises Public Health Ontario on the prevention and control of health care associated infections, considering the entire health care system for protection of both clients/patients/residents and health care providers. PIDAC-IPC produces "best practice" knowledge products that are evidence-based, to the largest extent possible, to assist health care organizations in improving quality of care and client/patient/resident safety.

Disclaimer for Best Practice Documents

This document was developed by the Provincial Infectious Diseases Advisory Committee on Infection Prevention and Control (PIDAC-IPC). PIDAC-IPC is a multidisciplinary scientific advisory body that provides evidence-based advice to the Ontario Agency for Health Protection and Promotion (Public Health Ontario) regarding multiple aspects of infectious disease identification, prevention and control. PIDAC-IPC's work is guided by the best available evidence and updated as required. Best Practice documents and tools produced by PIDAC-IPC reflect consensus positions on what the committee deems prudent practice and are made available as a resource to public health and health care providers.

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NOTES

This document is intended to provide best practices only. Health care settings are encouraged to work towards these best practices in an effort to improve quality of care.

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This document is current to November 2012.

November, 2012 revision:

New material in this revision is highlighted in mauve in the text.

Summary of Major Revisions:

Page	Revision
ALL	Replaced the term “barrier equipment” with “personal protective equipment”
ALL	Replaced the term “environmental controls” with “control of the environment”
vii-xii	Added definitions
6	Added Physical Barriers as an engineering control
14-15	Added requirement for mask and eye protection for wound irrigation
16	Clarification of procedures that generate droplets / aerosols and procedures with documented transmission (Box 6)
19	Added requirements for food preparation and dispensing
20	Added legislated requirements for sharps handling
21	Added information on physical barriers
21	Added information on hand hygiene equipment
21	Added information on HVAC systems
23	Added requirements for meningococcal, tetanus and diphtheria vaccines
30	New Table 2 showing clinical syndromes and type of Additional Precautions that should be used
31	Added new information on impact of Additional Precautions on quality of care
32	Added more evidence for using Contact Precautions
38	Added new information on N95 respirator failure
39	Added more guidance for visitors to airborne infection isolation rooms
44	Added information on protective environments
47-48	Added information and new recommendation on staff not eating in care areas
72	Enhanced recommendation for wearing latex gloves around those with latex allergy

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Table of Contents

Abbreviations

ABHR	Alcohol-Based Hand Rub
AIIR	Airborne Infection Isolation Room
AP	Additional Precautions
ARI	Acute Respiratory Infection
ARO	Antibiotic-Resistant Organism
CCC	Complex Continuing Care
CDI	*Clostridium difficile* Infection
CPE	Carbapenemase-Producing *Enterobacteriaceae*
CSA	Canadian Standards Association
DIN	Drug Identification Number (Health Canada)
EMS	Emergency Medical Services
HAI	Health Care-Associated Infection
HEPA	High Efficiency Particulate Air
HSCT	Haematopoietic Stem-cell Transplant
HVAC	Heating, Ventilation and Air Conditioning
ICP	Infection Prevention and Control Professional
LTC	Long-Term Care
MMR	Measles/Mumps/Rubella Vaccine
MOHLTC	Ministry of Health and Long-Term Care (Ontario)
MRSA	Methicillin-Resistant *Staphylococcus aureus*
NIOSH	National Institute for Occupational Safety and Health (U.S.)
OHA	Ontario Hospital Association
OHSA	*Occupational Health and Safety Act*
OMA	Ontario Medical Association
PHAC	Public Health Agency of Canada
PHO	Public Health Ontario
PIDAC	Provincial Infectious Diseases Advisory Committee
PPE	Personal Protective Equipment
RICN	Regional Infection Control Networks
RP	Routine Practices
RP/AP	Routine Practices/Additional Precautions
RSV	Respiratory Syncytial Virus
TB	Tuberculosis
VRE	Vancomycin-Resistant Enterococci

Glossary of Terms

Acute Respiratory Infection (ARI): Any new onset acute respiratory infection that could potentially be spread by the droplet route (either upper or lower respiratory tract), which presents with symptoms of a fever greater than 38°C and a new or worsening cough or shortness of breath (previously known as febrile respiratory illness, or FRI). It should be noted that elderly people and people who are immunocompromised may not have a febrile response to a respiratory infection.

Additional Precautions (AP): Precautions (i.e., Contact Precautions, Droplet Precautions and Airborne Precautions) that are necessary in addition to Routine Practices for certain pathogens or clinical presentations. These precautions are based on the method of transmission (e.g., contact, droplet, airborne).

Administrative Controls: Measures put in place to reduce the risk of infection to staff or to patients (e.g., infection prevention and control policies/ procedures, education/ training).

Aerosol: Small droplet of moisture that may carry microorganisms. Aerosols may be light enough to remain suspended in the air for short periods of time, allowing inhalation of the microorganism.

Airborne Infection Isolation Room (AIIR): A room that is designed, constructed and ventilated to limit the spread of airborne microorganisms from an infected occupant to the surrounding areas of the health care setting. This is also known as a negative pressure room. NOTE: The Canadian Standards Association uses the term *Airborne Isolation Room*, abbreviated *AIR*.

Airborne Precautions: Used in addition to Routine Practices for clients/patients/residents known or suspected of having an illness transmitted by the airborne route (i.e., by small droplet nuclei that remain suspended in the air and may be inhaled by others).

Alcohol-Based Hand Rub (ABHR): A liquid, gel or foam formulation of alcohol (e.g., ethanol, isopropanol) 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.

Antibiotic-Resistant Organism (ARO): A microorganism that has developed resistance to the action of several antimicrobial agents and that is of special clinical or epidemiological significance.

Barriers: Equipment or objects used to prevent exposure of skin, mucous membranes or clothing of staff to splashes or sprays of potentially infectious materials.

Carbapenemase: A class of enzymes that inactivate carbapenem antibiotics by hydrolysing them. In almost all instances, these enzymes hydrolyse not only carbapenem antimicrobials but also first- , second- and third-generation cephalosporins and penicillins (e.g., piperacillin-tazobactam). The genetic information to produce carbapenemases is often located on a mobile genetic element (e.g., plasmid, transposon), which frequently also carries resistance to other classes of antimicrobials, such as fluoroquinolones and aminoglycosides.

Carbapenemase-Producing *Enterobacteriaceae* (CPE): For the purposes of this document, these are *Enterobacteriaceae* that are resistant to carbapenem antimicrobials (e.g., imipenem, meropenem, ertapenem) through the production of carbapenemase.

Chain of Transmission: A model used to understand the infection process.

CHICA-Canada: The Community and Hospital Infection Control Association of Canada, a professional organization of persons engaged in infection prevention and control activities in health care settings. CHICA-Canada members include infection prevention and control professionals from a number of

related specialties including nurses, epidemiologists, physicians, microbiology technologists, public health and industry. The CHICA-Canada website is located at: http://www.chica.org.

Cleaning: The physical removal of foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms). Cleaning physically removes rather than kills microorganisms. It is accomplished with water, detergents and mechanical action.

Client/Patient/Resident: Any person receiving care within a health care setting.

Cohorting: The assignment of a geographic area such as a room or a patient care area to two or more clients/patients/residents who are either colonized or infected with the same microorganism, with staffing assignments restricted to the cohorted group of patients. See also, *Staff Cohorting*.

Colonization: The presence and growth of a microorganism in or on a body with growth and multiplication but without tissue invasion or cellular injury or symptoms.

Complex Continuing Care (CCC): Continuing, medically complex and specialized services provided to both young and old, sometimes over extended periods of time. Such care also includes support to families who have palliative or respite care needs.

Contact Precautions: Used in addition to Routine Practices to reduce the risk of transmitting infectious agents via contact with an infectious person.

Contamination: The presence of an infectious agent on hands or on a surface, such as clothing, gowns, gloves, bedding, toys, surgical instruments, care equipment, dressings or other inanimate objects.

Continuum of Care: Across all health care sectors, including settings where emergency (including pre-hospital) care is provided, hospitals, complex continuing care, rehabilitation hospitals, long-term care homes, outpatient clinics, community health centres and clinics, physician offices, dental offices, offices of other health professionals, public health and home health care.

Direct Care: Providing hands-on care (e.g., bathing, washing, turning client/patient/resident, changing clothes, continence care, dressing changes, care of open wounds/lesions, toileting).

Disinfectant: A product that is used on surfaces or medical equipment/devices which results in disinfection of the surface or equipment/device. Disinfectants are applied only to inanimate objects. Some products combine a cleaner with a disinfectant.

Disinfection: The inactivation of disease-producing microorganisms. Disinfection does not destroy bacterial spores. Medical equipment/devices must be cleaned thoroughly before effective disinfection can take place. See also, *Disinfectant*.

Droplet Precautions: Used in addition to Routine Practices for clients/patients/residents known or suspected of having an infection that can be transmitted by large infectious droplets.

Engineering Controls: Physical or mechanical measures put in place to reduce the risk of infection to staff or patients (e.g., heating, ventilation and air conditioning systems, room design, placement of hand washing sinks).

Environment of the Client/Patient/Resident: The immediate space around a client/patient/resident that may be touched by the client/patient/resident and may also be touched by the health care provider when providing care. In a single room, the client/patient/resident environment is the room. In a multi-bed room, the client/patient/resident environment is the area inside the individual's curtain. In an ambulatory setting, the client/patient/resident environment is the area that may come into contact with the client/patient/resident within their cubicle. In a nursery/neonatal setting, the patient environment includes the inside of the bassinette or incubator, as well as the equipment outside the bassinette or incubator used for that infant (e.g., ventilator, monitor). See also, *Health Care Environment*.

Extended Spectrum Beta-Lactamase (ESBL): Enzymes that may be produced by some strains of *Enterobacteriaceae* that hydrolyse all cephalosporins, including third-generation cephalosporins such as cefotaxime, ceftriaxone and ceftazidime, as well as aztreonam.

Eye Protection: A device that covers the eyes and is used by health care providers to protect the eyes when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions or excretions, or within two metres of a coughing client/patient/resident. Eye protection includes safety glasses, safety goggles, face shields and visors.

Facial Protection: Personal protective equipment that protect the mucous membranes of the eyes, nose and mouth from splashes or sprays of blood, body fluids, secretions or excretions. Facial protection may include a mask or respirator in conjunction with eye protection, or a face shield that covers eyes, nose and mouth.

Fit-Check: See *Seal-Check*

Fit-Test: A qualitative or quantitative method to evaluate the fit of a specific make, model and size of respirator on an individual. Fit-testing must be done periodically, at least every two years and whenever there is a change in respirator face piece or the user's physical condition which could affect the respirator fit.[6]

Hand Care Program: A hand care program for staff is a key component of hand hygiene and includes hand care assessment, staff education, Occupational Health assessment if skin integrity is an issue, provision of hand moisturizing products and provision of alcohol-based hand rub that contains an emollient. For more information about implementing a hand care program, refer to PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*, available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/hand-hygiene.html.

Hand Hygiene: A general term referring to any action of hand cleaning. Hand hygiene relates to the removal of visible soil and removal or killing of transient microorganisms from the hands. Hand hygiene may be accomplished using soap and running water or an alcohol-based hand rub. Hand hygiene includes surgical hand antisepsis.

Hand Washing: The physical removal of microorganisms from the hands using soap (plain or antimicrobial) and running water.

Health Care-Associated Infection (HAI): A term relating to an infection that is acquired during the delivery of health care (also known as *nosocomial infection*).

Health Care Environment: People and items which make up the care environment (e.g., objects, medical equipment, staff, clients/patients/residents) of a hospital, clinic or ambulatory setting, outside the immediate environment of the client/patient/resident. See also, *Environment of the Client/Patient/Resident*.

Health Care Facility: A set of physical infrastructure elements supporting the delivery of health-related services. A health care facility does not include a client/patient/resident's home or physician/dentist/other health offices where health care may be provided.

Health Care Provider: Any person delivering care to a client/patient/resident. This includes, but is not limited to, the following: emergency service workers, physicians, dentists, nurses, respiratory therapists and other health professionals, personal support workers, clinical instructors, students and home health care workers. In some non-acute settings, volunteers might provide care and would be included as health care providers. See also, *Staff*.

Health Care Setting: Any location where health care is provided, including settings where emergency care is provided, hospitals, complex continuing care, rehabilitation hospitals, long-term care homes,

mental health facilities, outpatient clinics, community health centres and clinics, physician offices, dental offices, offices of other health professionals and home health care.

HEPA Filter: High efficiency particulate air filter with an efficiency of 99.97% in the removal of airborne particles 0.3 microns or larger in diameter.[7]

Hospital-Grade Disinfectant: A low-level disinfectant that has a drug identification number (DIN) from Health Canada, indicating its approval for use in Canadian hospitals.

Infection: The entry and multiplication of an infectious agent in the tissues of the host. Asymptomatic or sub-clinical infection is an infectious process running a course similar to that of clinical disease but below the threshold of clinical symptoms. Symptomatic or clinical infection is one resulting in clinical signs and symptoms (disease).

Infection Prevention and Control (IPAC): Evidence-based practices and procedures that, when applied consistently in health care settings, can prevent or reduce the risk of transmission of microorganisms to health care providers, other clients/patients/residents and visitors.

Infection Prevention and Control Professional(s) (ICPs): Trained individual(s) responsible for a health care setting's IPAC activities. In Ontario an ICP must receive a minimum of 80 hours of instruction in a CHICA-Canada endorsed infection control program within six months of entering the role and must acquire and maintain Certification in Infection Control (CIC®), when eligible.

Infectious Agent: A microorganism, i.e., a bacterium, fungus, parasite, virus or prion, which is capable of invading body tissues and multiplying.

Long-Term Care (LTC): A broad range of personal care, support and health services provided to people who have limitations that prevent them from full participation in the activities of daily living. The people who use long-term care services are usually the elderly, people with disabilities and people who have a chronic or prolonged illness.

Mask: A device that covers the nose and mouth, is secured in the back and is used by health care providers to protect the mucous membranes of the nose and mouth.

Methicillin-Resistant *Staphylococcus aureus* (MRSA): A strain of *Staphylococcus aureus* that has a minimal inhibitory concentration (MIC) to oxacillin of ≥ 4 mcg/ml and contains the *mecA* gene coding for penicillin-binding protein 2a (PBP 2a). MRSA is resistant to all of the beta-lactam classes of antibiotics, such as penicillins, penicillinase-resistant penicillins (e.g., cloxacillin) and cephalosporins.

Mode of Transmission: The method by which infectious agents spread from one person to another (e.g., contact, droplet or airborne routes).

N95 Respirator: A personal protective device that is worn on the face and covers the nose and mouth to reduce the wearer's risk of inhaling airborne particles. A NIOSH-certified N95 respirator filters particles one micron in size, has 95% filter efficiency and provides a tight facial seal with less than 10% leak.[8, 9]

Occupational Health and Safety (OHS): Preventive and therapeutic health services in the workplace provided by trained occupational health professionals, e.g., nurses, hygienists, physicians.

Organizational Risk Assessment: An evaluation done by the organization or facility in order to implement controls to mitigate identified hazards.

Personal Protective Equipment (PPE): Clothing or equipment worn for protection against hazards.
Point-of-Care: The place where three elements occur together: the client/patient/resident, the health care provider and care or treatment involving client/patient/resident contact.

Portal of Entry: The anatomic site at which microorganisms get into the body, i.e., mucous membranes of nose, mouth and broken skin.
Portal of Exit: The anatomic site at which microorganisms leave the body, i.e., secretions and excretions that exit the respiratory tract, GI tract or broken skin.

Pre-Hospital Care: Acute emergency client/patient/resident assessment and care delivered in an uncontrolled environment by designated practitioners, performing delegated medical acts at the entry to the health care continuum.

Provincial Infectious Diseases Advisory Committee (PIDAC): A multidisciplinary scientific advisory body that provides to the Chief Medical Officer of Health evidence-based advice regarding multiple aspects of infectious disease identification, prevention and control. More information is available at: http://www.pidac.ca.

Public Health Agency of Canada (PHAC): A national agency which promotes improvement in the health status of Canadians through public health action and the development of national guidelines. The PHAC website is located at: http://www.phac-aspc.gc.ca/new_e.html.

Public Health Ontario (PHO): Public Health Ontario is the operating name for OAHPP. The PHO website is located at: http://www.oahpp.ca.

Regional Infection Control Networks (RICN): The RICN of Ontario coordinate and integrate resources related to the prevention, surveillance and control of infectious diseases across all health care sectors and for all health care providers, promoting a common approach to infection prevention and control and utilization of best-practices within the region. There are 14 regional networks in Ontario. More information is available at: http://www.ricn.on.ca.

Reservoir: An animate or inanimate source where microorganisms can survive and multiply (e.g., water, food, people).

Respirator: See *N95 respirator*.

Respiratory Etiquette: Personal practices that help prevent the spread of bacteria and viruses that cause acute respiratory infections (e.g., covering the mouth when coughing, care when disposing of tissues).

Risk Assessment: An evaluation of the interaction of the health care provider, the client/patient/resident and the client/patient/resident environment to assess and analyze the potential for exposure to infectious disease.

Routine Practices (RP): The system of infection prevention and control practices recommended by the Public Health Agency of Canada to be used with all clients/patients/residents during all care to prevent and control transmission of microorganisms in all health care settings.

Safety-Engineered Medical Device: A non-needle sharp or a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with a built-in safety feature or mechanism that effectively reduces exposure incident risk. Safety-engineered devices are licensed by Health Canada.

Seal-Check: A procedure that the health care provider must perform each time an N95 respirator is worn to ensure it fits the wearer's face correctly to provide adequate respiratory protection. The health care provider must receive training on how to perform a seal-check correctly.[6]

Sharps: Objects capable of causing punctures or cuts (e.g., needles, syringes, blades, clinical glass).

Staff: Anyone conducting activities in settings where health care is provided, including but not limited to, health care providers. See also, *Health Care Providers*.

Staff Cohorting: The practice of assigning specified health care providers to care only for clients/patients/residents known to be colonized or infected with the same microorganism. These health care providers would not participate in the care of clients/patients/residents who are not colonized or infected with that microorganism. See also, *Cohorting*.

Susceptible Host: An individual who is at risk for infection.

Terminal Cleaning: The thorough cleaning of a client/patient/resident room or bed space following discharge, death or transfer of the client/patient/resident, in order to remove contaminating microorganisms that might be acquired by subsequent occupants and/or staff. In some instances, terminal cleaning might be used once some types of Additional Precautions have been discontinued. Refer to PIDAC's *Best Practices for Environmental Cleaning in All Health Care Settings*[10] for more information about terminal cleaning. Available at: http://www.oahpp.ca/resources/documents/pidac/Environmental%20Cleaning%20BP_ENGLISH_FINAL_2012-07-15.pdf.

Vancomycin-Resistant Enterococci (VRE): Strains of *Enterococcus faecium* or *Enterococcus faecalis* that have a minimal inhibitory concentration (MIC) to vancomycin of ≥ 32 mcg/ml. and/or contain the resistance genes *vanA* or *vanB*.

Preamble

About This Document

This document outlines the practice of Routine Practices and Additional Precautions (RP/AP) in health care settings across the continuum of care (see below) including, but not limited to, pre-hospital care, acute care, complex continuing care, rehabilitation facilities, long-term care, chronic care, ambulatory care and home health care.

The goal of Routine Practices and Additional Precautions is to reduce the risk of transmission of microorganisms in health care settings through:

- understanding the concepts of the chain of transmission
- understanding the concepts and application of Routine Practices (RP)
- understanding barriers and enablers that affect compliance with Routine Practices
- knowing why and when to use Additional Precautions (AP)
- using, applying and removing personal protective equipment correctly when indicated for the protection of the client/patient/resident or the staff member.

For recommendations in this document:

- **Shall** indicates mandatory requirements based on legislated requirements or national standards (e.g., Canadian Standards Association – CSA).
- **Must** indicates best practice, i.e., the minimum standard based on current recommendations in the medical literature.
- **Should** indicates a recommendation or that which is advised but not mandatory.
- **May** indicates an advisory or optional statement.

Evidence for Recommendations

The best practices in this document reflect the best evidence and expert opinion available at the time of writing. As new information becomes available, this document will be reviewed and updated.

- Refer to Appendix A, *Ranking System for Recommendations*, for grading system used for recommendations.

How and When to Use This Document

The Routine Practices and Additional Precautions set out in this document must be practiced in all settings where health care is provided, across the continuum of health care. This includes settings where emergency (including pre-hospital) care is provided, hospitals, complex continuing care facilities, rehabilitation facilities, long-term care homes, outpatient clinics, community health centres and clinics, physician offices, dental offices, offices of other health professionals, public health and home health care.

Assumptions and Best Practices for Infection Prevention and Control

The best practices in this document are based on the assumption that health care settings in Ontario already have basic infection prevention and control (IPAC) systems in place.[11] These settings should work with organizations that have IPAC expertise, such as academic health science centres, regional infection control networks (RICN), public health units that have professional staff certified in IPAC and local IPAC associations (e.g., Community and Hospital Infection Control Association (CHICA) – Canada chapters), to develop evidence-based programs.

In addition to the above general assumption about basic IPAC, these best practices are based on the following additional assumptions and principles:

1. Adequate resources are devoted to IPAC in all health care settings. See PIDAC's *Best Practices for Infection Prevention and Control Programs in Ontario*,[11] available from the Public Health Ontario (PHO) website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/infection-prevention-and-control-programs-in-ontario.html.

2. Programs are in place in all health care settings that promote good hand hygiene practices and ensure adherence to standards for hand hygiene. See:

   a) PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*,[12] available from the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/hand-hygiene.html.
   b) Ontario's hand hygiene improvement program, *Just Clean Your Hands*, available at: http://www.oahpp.ca/services/jcyh/.

3. Adequate resources are devoted to Environmental Services/Housekeeping in all health care settings that include written procedures for cleaning and disinfection of client/patient/resident rooms and equipment; education of new cleaning staff and continuing education of all cleaning staff; and ongoing review of procedures. See *Best Practices for Environmental Cleaning in All Health Care Settings*,[10] available from the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/environmental-cleaning-for-prevention-and-control-of-infections.html.

4. Programs are in place in all health care settings that ensure effective disinfection and sterilization of used medical equipment according to *Best Practices for Cleaning, Disinfection and Sterilization in All Health Care Settings*,[13] available from the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/cleaning-disinfection-and-sterilization.html.

5. Regular education (including orientation and continuing education) and support is provided in all health care settings to help staff consistently implement appropriate IPAC practices. Effective education programs emphasize:

   - the risks associated with infectious diseases, including acute respiratory illness and gastroenteritis
   - hand hygiene, including the use of alcohol-based hand rubs and hand washing
   - principles and components of Routine Practices as well as additional transmission-based precautions (Additional Precautions)
   - assessment of the risk of infection transmission and the appropriate use of personal protective equipment (PPE), including safe application, removal and disposal

- appropriate cleaning and/or disinfection of health care equipment, supplies and surfaces or items in the health care environment
- individual staff responsibility for keeping clients/patients/residents, themselves and co-workers safe
- collaboration between professionals involved in occupational health and IPAC.

NOTE: Education programs should be flexible enough to meet the diverse needs of the range of health care providers and other staff who work in the health care setting. The local public health unit and regional infection control networks may be a resource and can provide assistance in developing and providing education programs for community settings.

6. Collaboration between professionals involved in occupational health and IPAC is promoted in all health care settings, to implement and maintain appropriate IPAC standards that protect workers.

7. There are effective working relationships between the health care setting and local public health. Clear lines of communication are maintained and public health is contacted for information and advice as required. The obligations (under the *Health Protection and Promotion Act*, R.S.O. 1990, c.H.7[14]) to report reportable and communicable diseases is fulfilled. Public health provides regular aggregate reports of outbreaks of reportable diseases in facilities and/or in the community to all health care settings.

8. Access to ongoing IPAC advice and guidance to support staff and resolve differences is available to the health care setting.

9. There are established procedures for receiving and responding appropriately to all international, national, regional and local health advisories in all health care settings. Health advisories are communicated promptly to all affected staff and regular updates are provided. Current advisories are available from local public health units, the Ministry of Health and Long-Term Care (MOHLTC), Health Canada and Public Health Agency of Canada (PHAC)websites and local RICN.

10. Where applicable, there is a process for evaluating PPE in the health care setting, to ensure it meets quality standards.

11. There is regular assessment of the effectiveness of the IPAC program and its impact on practices in the health care setting. The information is used to further refine the program.[11]

Occupational Health and Safety requirements shall be met:

- Health care facilities are required to comply with applicable provisions of the *Occupational Health and Safety Act* (OHSA), R.S.O. 1990, c.0.1 and its Regulations.[15] Employers, supervisors and workers have rights, duties and obligations under the OHSA. Specific requirements under the OHSA and its regulations are available at:

  - *Occupational Health and Safety Act*: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o01_e.htm
  - *Ontario Regulation 67/93 Health care and Residential Facilities*: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_930067_e.htm

- The *Occupational Health and Safety Act* places duties on many different categories of individuals associated with workplaces, such as employers, constructors, supervisors, owners, suppliers,

licensees, officers of a corporation and workers. A guide to the requirements of the *Occupational Health and Safety Act* may be found at: http://www.labour.gov.on.ca/english/hs/pubs/ohsa/index.php.

- The OHSA section 25(2)(h), the '*general duty clause'*, requires an employer to take every precaution reasonable in the circumstances for the protection of a worker.

- Specific requirements for certain health care and residential facilities may be found in the *Regulation for Health Care and Residential Facilities*, available at: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_930067_e.htm. Under that regulation there are a number of requirements, including:

  - Requirements for an employer to establish written measures and procedures for the health and safety of workers, in consultation with the joint health and safety committee or health and safety representative, if any. Such measures and procedures may include, but are not limited to, the following:
    - safe work practices
    - safe working conditions
    - proper hygiene practices and the use of hygiene facilities
    - the control of infections
    - immunization and inoculation against infectious diseases.

  - The requirement that at least once a year the measures and procedures for the health and safety of workers shall be reviewed and revised in the light of current knowledge and practice.

  - A requirement that the employer, in consultation with the joint health and safety committee or health and safety representative, if any, shall develop, establish and provide training and educational programs in health and safety measures and procedures for workers that are relevant to the workers' work.

  - A worker who is required by his or her employer or by the *Regulation for Health Care and Residential Facilities* to wear or use any protective clothing, equipment or device shall be instructed and trained in its care, use and limitations before wearing or using it for the first time and at regular intervals thereafter and the worker shall participate in such instruction and training.

  - The employer is reminded of the need to be able to demonstrate training, and is therefore encouraged to document the workers trained, the dates training was conducted, and the information and materials covered during training.

  - Under the *Occupational Health and Safety Act*, a worker must work in compliance with the Act and its regulations, and use or wear any equipment, protective devices or clothing required by the employer.

  - The Needle Safety Regulation (O.Reg 474/07) has requirements related to the use of hollow-bore needles that are safety-engineered needles. The regulation is available at: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_070474_e.htm.

- Additional information is available at the Ministry of Labour Health and Community Care Page: http://www.labour.gov.on.ca/english/hs/topics/healthcare.php

Routine Practices and Additional Precautions in All Health Care Settings

Terms used in this document (see glossary for details and examples)	
Health Care Provider:	Any person delivering care to a client/patient/resident.
Staff:	Anyone conducting activities within a health care setting (includes health care providers).
Health Care Setting:	Any location where health care is provided, including settings where emergency care is provided, hospitals, complex continuing care, rehabilitation hospitals, long-term care homes, mental health facilities, outpatient clinics, community health centres and clinics, physician offices, dental offices, offices of other health professionals and home health care.

1. Basic Principles

A. Mechanisms of Transmission of Microorganisms in Health Care Settings: The 'Chain of Transmission'

The transmission of microorganisms and subsequent infection within a health care setting may be represented by a '*chain*', with each link in the chain representing a factor related to the spread of microorganisms. Transmission does not take place unless all six of the elements in the chain of transmission are present (Figure 1).

Transmission occurs when the agent, in the reservoir, exits the reservoir through a portal of exit, travels via a mode of transmission and gains entry through a portal of entry to a susceptible host.

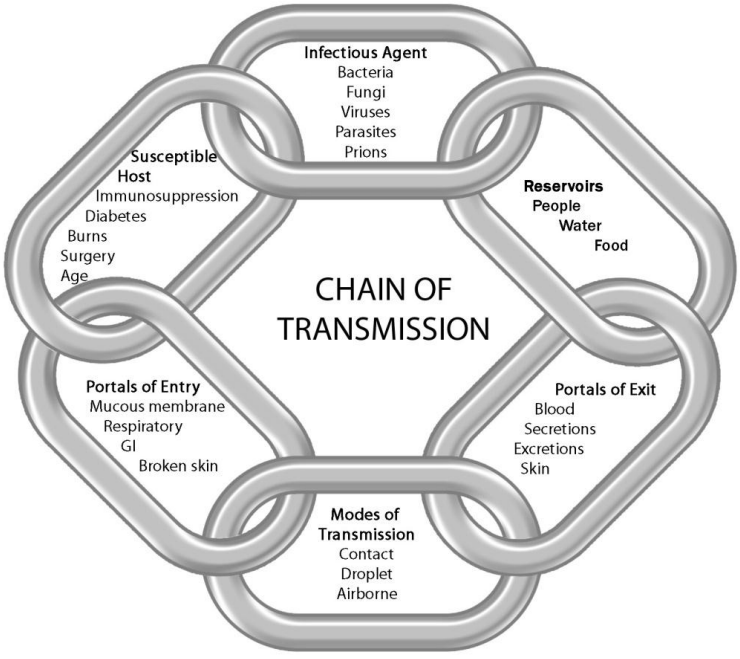


Figure 1: The Chain of Transmission

By eliminating any of the six links through effective infection prevention and control measures, or '*breaking the chain*', transmission does not occur (Figure 2).

Transmission may be interrupted when:

- **the agent is eliminated or inactivated or cannot exit the reservoir**
- **portals of exit are contained through safe practices**
- **transmission between objects or people does not occur due to barriers and/or safe practices**
- **portals of entry are protected**
- **hosts are not susceptible**

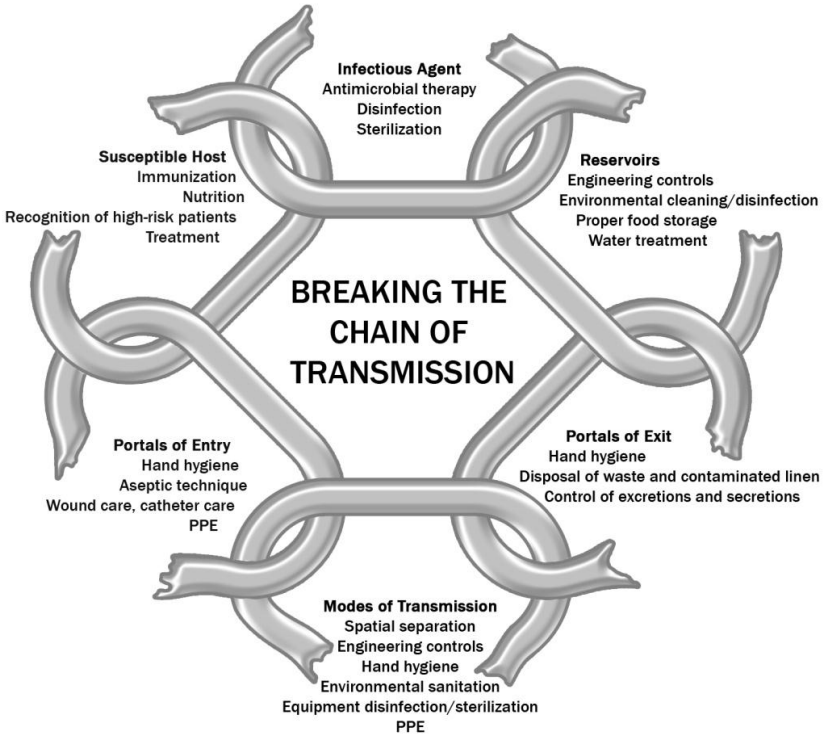


Figure 2: Breaking the Chain of Transmission

B. Principles of Routine Practices and Rationale

Routine Practices are based on the premise that all clients/patients/residents are *potentially* infectious, even when asymptomatic, and that the same safe standards of practice should be used **routinely** with **all** clients/patients/residents to prevent exposure to blood, body fluids, secretions, excretions, mucous membranes, non-intact skin or soiled items and to prevent the spread of microorganisms.

The consistent and appropriate use of Routine Practices by all health care providers with all patient encounters will lessen microbial transmission in the health care setting and reduce the need for Additional Precautions.

The risk of transmission of microorganisms involves factors related to the microbe, the source client/patient/resident, the health care environment and the new host.[8]

Health care providers must assess the risk of exposure to blood, body fluids and non-intact skin and identify the strategies that will decrease exposure risk and prevent the transmission of microorganisms. This risk assessment followed by the implementation of Routine Practices to reduce or remove risk should be incorporated into the culture of each health care setting and into the daily practice of each health care provider. The goals of Routine Practices are listed in Figure 3.

Health care providers must assess the risk of exposure to blood, body fluids and non-intact skin and identify the strategies that will decrease exposure risk and prevent the transmission of microorganisms.

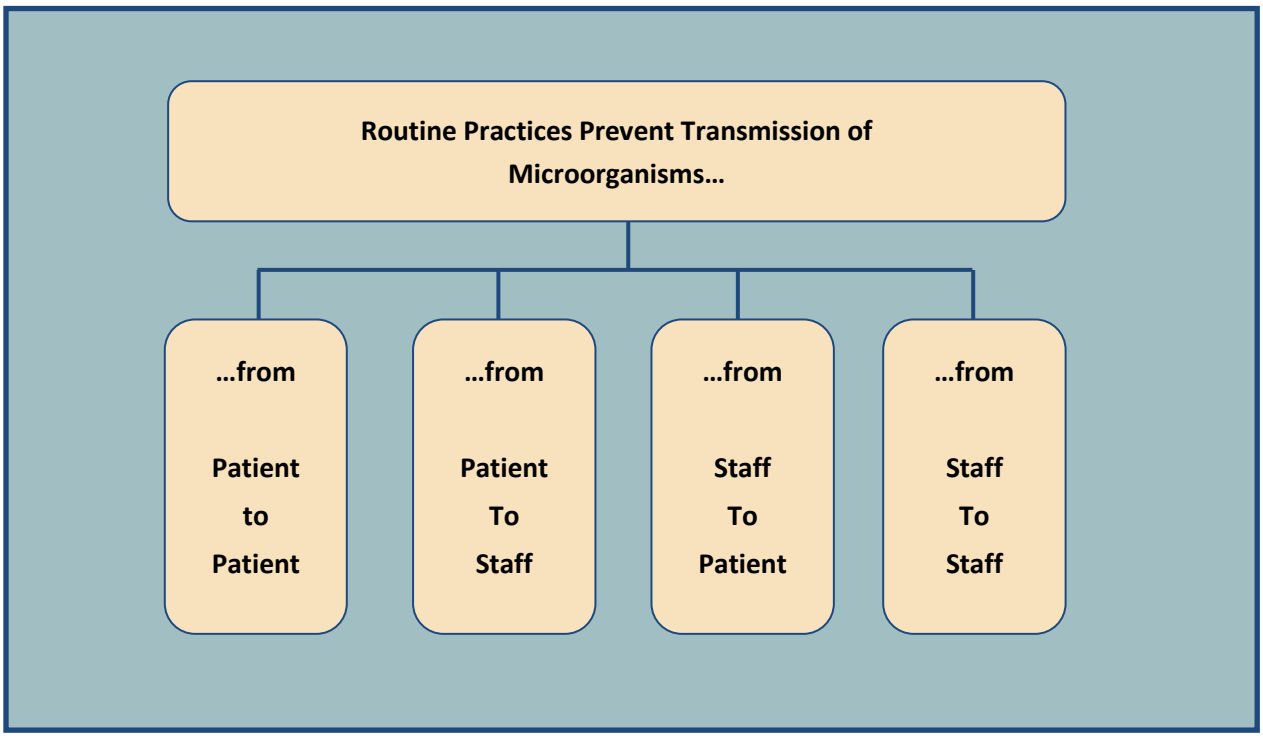


Figure 3: Goals of Routine Practices

C. Principles of Additional Precautions and Rationale

Additional Precautions are used in addition to Routine Practices for clients/patients/residents known or suspected to be infected or colonized with certain microorganisms to interrupt transmission. Refer to Appendix N, *Clinical Syndromes/ Conditions with Required Level of Precautions,* for a list of microorganisms/diseases that require Additional Precautions.

Additional Precautions include the use of barriers, PPE and control of the environment that are put in place for encounters with the client/patient/resident or their immediate environment. In some instances, specialized engineering controls may be required (e.g., airborne infection isolation room for a patient with tuberculosis) or enhanced cleaning protocols for the client/patient/resident environment (e.g., *Clostridium difficile – C. difficile*, vancomycin-resistant enterococci - VRE).

The application of Additional Precautions may differ depending on the health care setting and the needs of the client/patient/resident, particularly in long-term care and the community. More information about Additional Precautions is available in Section 2.B.

Staff in all health care settings must follow Routine Practices and Additional Precautions and facilities must implement a program that includes:

- written policies and procedures that include risk assessment
- staff education and training in indications and techniques for Routine Practices and Additional Precautions, including hand hygiene
- a program to measure compliance with Routine Practices and Additional Precautions, including hand hygiene

- sufficient and easily accessible PPE (e.g., gloves, masks, eye protection, gowns) available for health care providers and other staff who are exposed to blood and body substances, with education and training in their use
- healthy workplace policies including a sharps injury prevention program;[16] staff immunization program; requirement for staff to remain home if ill with an infection which may be transmitted to clients/patients/residents or other staff; and promotion of respiratory etiquette for clients/patients/residents and staff
- control of the environment to reduce the risks of transmission of microorganisms.

Successful implementation of Routine Practices and Additional Precautions (RP/AP) requires the support of senior administration. Figure 4 shows components required for the successful implementation of Routine Practices and Additional Precautions in health care facilities.

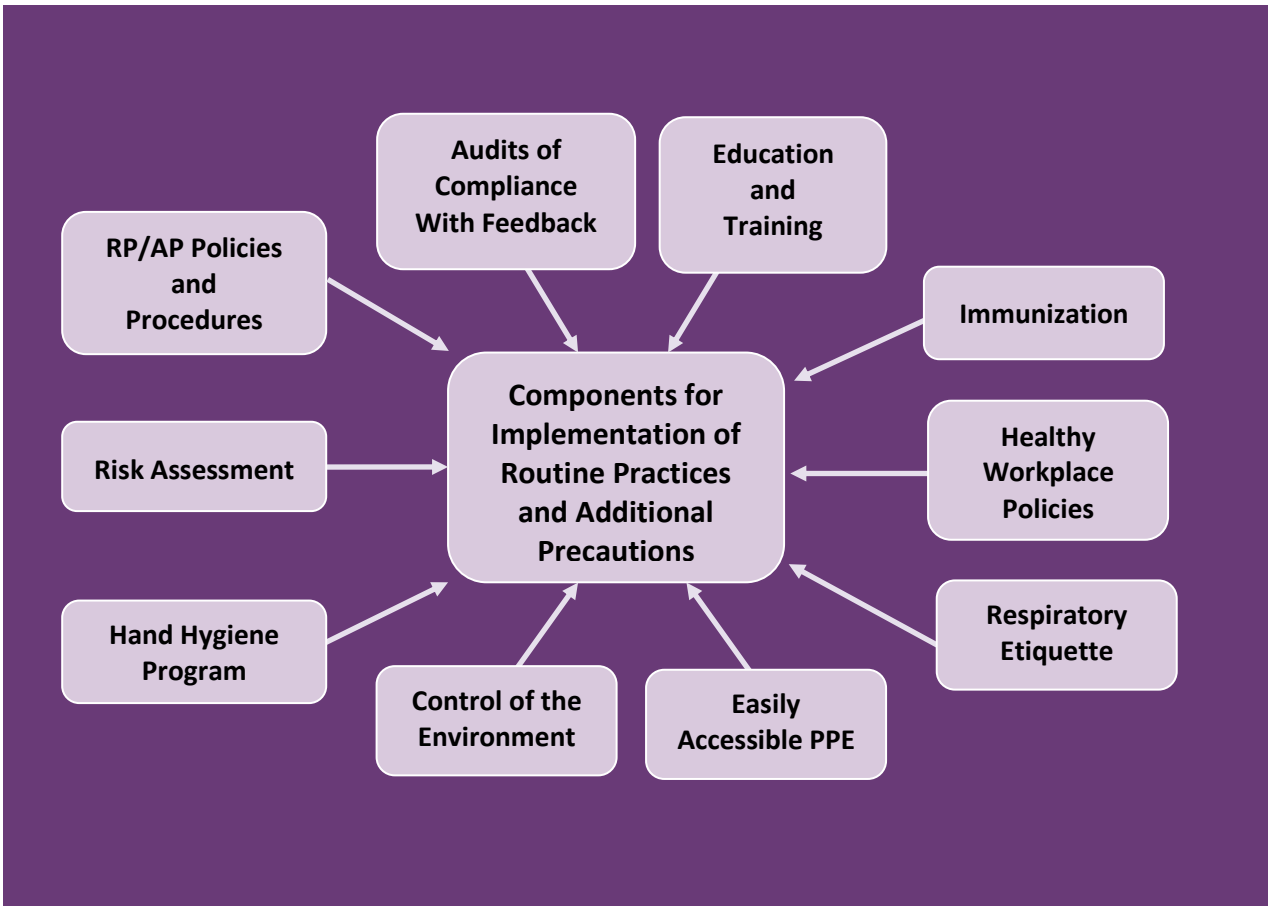


Figure 4: Components Required When Implementing Routine Practices and Additional Precautions

D. Accountability of Health Care Providers and Health Care Organizations

Adherence to recommended IPAC practices decreases transmission of microorganisms in health care settings.[17-21] Despite this, there are numerous studies on the behaviour of health care providers that show poor compliance with hand hygiene[22-24] and the use of protective barriers,[25-27] placing both staff and clients/patients/residents at risk.

Organizations have a responsibility to have systems in place with established procedures that enable compliance with Hand Hygiene, Routine Practices and Additional Precautions. Both the employer and the employee have duties under the *Occupational Health and Safety Act*[15]:

- '*An employer shall ensure that the equipment, materials and protective devices as prescribed are provided'* [S. 25(1)(a)] and '*the equipment, materials and protective devices provided by the employer are maintained in good condition*' [S. 25(1)(b)];
- '*A worker shall use or wear the equipment, protective devices or clothing that his employer requires to be used or worn*' [S. 28(1)(b)] and '*a worker shall report to his or her employer or supervisor the absence of or defect in any equipment or protective device of which the worker is aware and which may endanger himself, herself or another worker*' [S. 28(1)(c)].

Preventing transmission of microorganisms to other clients/patients/residents is a patient safety issue, and preventing transmission to staff is an occupational health and safety issue. Health care providers are accountable to practice safely in a manner that protects clients/patients/residents and themselves by following established organizational IPAC policies and procedures.

The consistent and appropriate use of Routine Practices by all health care providers will lessen microbial transmission in the health care setting and reduce the need for Additional Precautions.

2. Best Practices

A. Routine Practices

Routine Practices refer to infection prevention and control (IPAC) practices to be used with all clients/patients/residents during all care, to prevent and control transmission of microorganisms in all health care settings. Routine Practices must be incorporated into the culture of each health care setting and into the daily practice of each health care provider to protect both the client/patient/resident and health care provider.

Routine Practices must be incorporated into the culture of each health care setting and into the daily practice of each health care provider to protect both clients/patients/residents and providers.

ELEMENTS THAT COMPRISE ROUTINE PRACTICES

The basic elements of Routine Practices are listed in Box 1 and include:

a) **risk assessment** of the client/patient/resident and the health care provider's interaction with the client/patient/resident;
b) **hand hygiene** to be performed with an alcohol-based hand rub or with soap and water before and after contact with a client/patient/resident or their environment, before invasive/aseptic procedures and after body fluid exposure risk;

- Refer to PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*[12], available on the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/hand-hygiene.html.
- Refer to Ontario's evidence-based *Just Clean Your Hands* program for more information about hand hygiene; available at: http://www.oahpp.ca/services/jcyh/.

c) **control of the environment**, including:

- appropriate **placement and bed spacing**, such as single room and private toileting facilities for clients/patients/residents who soil the environment
- **cleaning of equipment** that is used for/on more than one client/patient/resident between uses according to the recommendations found in PIDAC's *Best Practices For Cleaning, Disinfection and Sterilization in All Health Care Settings,*[13] available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/cleaning-disinfection-and-sterilization.html
- **cleaning of the health care environment**, including safe handling of soiled linen and waste (e.g., sharps) to prevent exposure and transmission to others, as detailed in PIDAC's *Best Practices for Environmental Cleaning in All Health Care Settings*, available on the PHO website at:[10] http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/environmental-cleaning-for-prevention-and-control-of-infections.html
- **engineering controls**, such as:
    - well-maintained heating, ventilation and air conditioning (HVAC) systems with **sufficient air changes per hour**
    - **barriers**, such as the use of Plexiglass® screens or curtains
    - **point-of-care** sharps containers and alcohol-based hand rub dispensers
    - adequate **dedicated hand wash sinks**

d) **administrative controls** including:

- **policies and procedures** to ensure that staff are able to deal effectively with transmission risks associated with infectious illnesses
- **staff education** to heighten awareness of infectious diseases, their mode of transmission and prevention of transmission
- **healthy workplace policies** that exclude staff from working when ill with a communicable disease that would put clients/patients/residents and colleagues at risk
- **immunization programs** for staff and for clients/patients/residents where applicable
- **respiratory etiquette** for both staff and clients/patients/residents
- **monitoring of compliance with feedback** is built into the program to measure compliance with Routine Practices, including hand hygiene
- **sufficient staffing levels** to enable health care providers to comply with IPAC policies and procedures

e) **sufficient, easily accessible and appropriate PPE** to prevent health care provider contact with blood, body fluids, secretions, excretions, non-intact skin or mucous membranes.

BOX 1: Elements of Routine Practices

Risk Assessment + **Hand Hygiene** + **Personal Protective Equipment**
+
Control of the Environment
(Placement, Cleaning, Engineering Controls)
+
Administrative Controls
(Policies and Procedures, Staff Education, Healthy Workplace Policies, Respiratory Etiquette, Monitoring of Compliance with Feedback)

ROUTINE PRACTICES FOR VISITORS

Although visitors are less likely to transmit infection in the health care setting than staff, they should receive instruction regarding specific facility control measures before they visit a client/patient/resident, to ensure compliance with established practices:

- Visitors should not enter the health care setting if they are sick or unable to comply with hand hygiene and other precautions that might be required.
- Hand hygiene before and after visiting should be emphasized.
- If PPE is required by the visitor, this should be accompanied by instruction in its correct application, use and disposal.

Instructional materials may be provided to visitors on recommended hand hygiene and respiratory etiquette practices.

RISK ASSESSMENT

The first step in the effective use of Routine Practices is to perform a risk assessment. A risk assessment must be done **before each interaction** with a client/patient/resident or their environment in order to determine which interventions are required to prevent transmission during the interaction,[28] because the client/patient/resident's status can change.

The risk assessment process will be a dynamic one, based on continuing changes in information as care progresses, thus must be done before each interaction with a client/patient/resident.

Assessing Risk of Transmission

The risk of transmission of microorganisms between individuals involves factors related to:

- the client/patient/resident infection status (including colonization)
- the characteristics of the client/patient/resident
- the type of care activities to be performed
- the resources available for control
- the health care provider immune status.[8]

Table 1 lists factors affecting the risk of transmission of microorganisms in health care settings. The health care provider must perform a risk assessment of each task or interaction that includes:

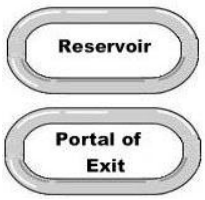
- assessing the risk of:
    - contamination of skin or clothing by microorganisms in the client/patient/resident environment
    - exposure to blood, body fluids, secretions, excretions, tissues
    - exposure to non-intact skin
    - exposure to mucous membranes
    - exposure to contaminated equipment or surfaces
- recognition of symptoms of infection (e.g., syndromic surveillance).[18] See Box 9 for a list of clinical syndromes requiring the use of PPE and other controls pending diagnosis.

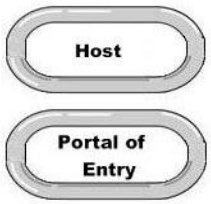
Where there is a risk of transmission of infection based on the risk assessment, appropriate controls must be put into place and appropriate PPE must be used to protect the health care provider, other staff and clients/patients/residents at least until a definitive diagnosis may be made. For example:

- If the client/patient/resident has uncontained diarrhea, PPE such as gloves and a gown should be considered when changing the bed sheets, to prevent contamination of hands and clothing.
- If the client/patient/resident is soiling the environment outside of the immediate bed area, a single room is preferable to limit transmission to other clients/patients/residents.
- Use avoidance procedures that **minimize contact with droplets** (e.g., sitting next to, rather than in front of, a coughing client/patient/resident when taking a history or conducting an examination).

➢ Refer to Appendix B, *Performing a Risk Assessment Related to Routine Practices and Additional Precautions*, for more information related to risk assessment.

Table 1: Factors affecting risk of transmission of microorganisms in a health care setting

Microorganism/Infectious Agent • Presence of a large amount of the infectious agent • Low infective dose required for infection (i.e., high infectivity) • High pathogenicity/virulence • Airborne-spread • Able to survive in the environment • Able to colonize invasive devices • Able to exist in an asymptomatic/carrier state	
Source Client/Patient/Resident • Incontinent of stool and stool not contained by incontinence products • Draining skin lesions or wounds not contained by dressings • Copious uncontrolled respiratory secretions • Inability to comply with hygienic practices and IPAC precautions • Patient in intensive care unit or requiring extensive hands-on care	

Environment • Inadequate cleaning • Shared care equipment without cleaning between clients/patients/residents • Crowded facilities • Shared facilities, such as multi-bed rooms (e.g., toilets, sinks, baths) • High patient-nurse ratio	
Susceptible Host • Patient in intensive care unit or requiring extensive hands-on care • Patient has invasive procedures or devices • Non-intact skin (client/patient/resident or staff) • Debilitated, severe underlying disease • Extremes of age • Recent antibiotic therapy • Immunosuppression • Lack of appropriate immunization • Inadequately educated, trained or non-compliant staff	

Adapted from: *Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care*; Health Canada, CCDR July 1999; Vol. 25 Supplement 4: p.19

HAND HYGIENE

Hand hygiene is considered the most important and effective ipac measure to prevent the spread of health care-associated infections. In order to implement a comprehensive hand hygiene program in a health care facility, refer to:

- Ontario's evidence-based *Just Clean Your Hands* hand hygiene improvement program for hospitals and long-term care,[29] available at: http://www.oahpp.ca/services/jcyh/.
- PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*,[12] available on the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/hand-hygiene.html.
- The World Health Organization's *Clean Care is Safer Care* hand hygiene campaign is available at: http://www.who.int/gpsc/en/.

Hand Hygiene Program

A multifaceted, multidisciplinary, facility-wide hand hygiene program, which includes demonstrable administrative leadership, education, champions and environmental enablers can be effective at reducing the incidence of HAIs.[19, 30]

All health care settings must implement a comprehensive hand hygiene program that incorporates the following elements[11]:

- the program is multifaceted and multidisciplinary to provide leadership and decision-making
- hand hygiene agents are available at point-of-care in all health care settings
- education is given to health care providers about when and how to clean their hands
- there is a hand care program to maintain skin integrity, in collaboration with Occupational Health.

Health care facilities must also include[11]:

- senior and middle management support and commitment to make hand hygiene an organizational priority and address non-compliance
- environmental changes and system supports, including alcohol-based hand rub (ABHR) at the point-of-care and a hand care program
- ongoing auditing and observation of hand hygiene practices, with feedback to health care providers
- client/patient/resident engagement
- opinion leaders and champions modeling the right behaviour.

Alcohol-based Hand Rub (ABHR)

To make it possible for health care providers to clean their hands at the right time, ABHR or a hand hygiene sink must be provided at the point-of-care, where busy health care providers can clean their hands without leaving the client/patient/resident.[31] ABHRs are the preferred method to routinely decontaminate hands in clinical situations when hands are not visibly soiled as they provide for a rapid kill of most transient microorganisms, are less time-consuming than washing with soap and water and are easier on skin.[19, 32-35]

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE is used to prevent transmission of infectious agents from patient-to-staff. The same equipment will also prevent transmission from patient-to-patient, staff-to-patient and staff-to-staff.

PPE is used alone or in combination to prevent exposure, by placing a barrier between the infectious source and one's own mucous membranes, airways, skin and clothing.[8, 18] The selection of PPE is based on the nature of the interaction with the client/patient/resident and/or the likely mode(s) of transmission of infectious agents. Selection of the appropriate PPE is based on the risk assessment (e.g., interaction, status of client/patient/resident) that dictates what is worn to break the chain of transmission. For more information about risk assessment, see Section 2.A., *Risk Assessment*, and Appendix B, *Performing a Risk Assessment Related to Routine Practices and Additional Precautions*. PPE should never be used indiscriminately and overuse may have negative impacts, such as:

- interference with quality of client/patient/resident care[36, 37] (see also Section 2.B, *Impact of Isolation on Quality of Care*)
- waste and increased cost
- staff may be less likely to wash their hands when wearing gloves for routine tasks
- shortages of PPE that result in inappropriate use (e.g., re-use of gloves and gowns), leading to increased transmission of microorganisms[38, 39]
- environmental concerns relating to disposable PPE, washing agents and chemicals.

PPE should be put on just prior to the interaction with the client/patient/resident. When the interaction for which the PPE was used has ended, PPE should be removed immediately and disposed of in the appropriate receptacle. The process of PPE removal requires strict adherence to a formal protocol to prevent recontamination.[40] Refer to Appendix L, *Recommended Steps for Putting On and Taking Off Personal Protective Equipment (PPE)*, for instructions for putting on and taking off PPE.

Health care settings must ensure that staff have sufficient supplies of, and quick, easy access to, the PPE required. Health care settings should have a process for evaluating PPE to ensure it meets quality standards where applicable,[6] including a respiratory protection program compliant with the Ministry of Labour requirements.[6, 11]

Education in the proper use of PPE must be provided by the health care setting to all health care providers and other staff who have the potential to be exposed to blood and body fluids.

Gloves

Gloves must be worn when it is anticipated that the hands will be in contact with mucous membranes, non-intact skin, tissue, blood, body fluids, secretions, excretions, or equipment and environmental surfaces contaminated with the above.[8]

BOX 2: Appropriate Glove Use

- Select glove appropriate to task.
- Wear the correct size of gloves.
- Gloves should be put on immediately before the activity for which they are indicated.
- Clean hands before putting on gloves for a clean/aseptic procedure.
- Gloves must be removed and discarded immediately after the activity for which they were used.
- Hand hygiene must be performed immediately after glove removal.
- Change or remove gloves if moving from a contaminated body site to a clean body site within the same client/patient/resident.
- Change or remove gloves after touching a contaminated site and before touching a clean site or the environment.
- Do not wash or re-use gloves.
- The same pair of gloves must not be used for the care of more than one client/patient/resident.

Gloves are not required for routine health care activities in which contact is limited to intact skin of the client/patient/resident (e.g., taking blood pressure, bathing and dressing the client/patient/resident). Compliance with hand hygiene should always be the first consideration.

Indiscriminate or improper glove use has been linked to transmission of pathogens.[41] Gloves are **task-specific** and **single-use** for the task. Re-use of gloves has been associated with transmission of methicillin-resistant *Staphylococcus aureus* (MRSA) and Gram-negative bacilli.[42, 43]

See Box 2 for the appropriate use of gloves.

Sterile gloves are used in operating theatres and when performing sterile procedures such as central line insertions.

Selection of Gloves

It is important to assess and select the best glove for a given task. Selection of gloves should be based on a risk assessment of [44]:

- the type of setting (e.g., operating room, environmental cleaning, laboratory)
- the task that is to be performed (e.g., invasive or non-invasive)
- the likelihood of exposure to body substances
- the anticipated length of use
- the amount of stress on the glove.

The barrier integrity of gloves varies on the basis of:

- type and quality of glove material
- intensity of use
- length of time used
- manufacturer
- whether gloves were tested before or after use
- method used to detect glove leaks.

It is preferable to provide more than one type of glove to health care providers, because it allows the individual to select the type that best suits his/her care activities[18]. Some additional points to consider:

- good quality vinyl gloves are generally sufficient for most tasks
- latex or synthetic gloves, such as nitrile or neoprene gloves, are preferable for clinical procedures that require manual dexterity and/or will involve more than brief patient contact[18]
- powdered latex gloves have been associated with latex allergy
- new types of latex gloves are being developed which may be safe for those with an allergy to rubber latex[45]
- gloves that fit snugly around the wrist are preferred for use with a gown because they will cover the gown cuff and provide a better barrier for the arms, wrists and hands.[18]

➢ Refer to Appendix M, *Advantages and Disadvantages of PPE*, for advantages and disadvantages of different types of medical gloves.

➢ For more information about standards for gloves, visit the Canadian General Standards Board website at: http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/programme-program/certification/prog/gants-medical-eng.html.

Gloves and Hand Hygiene

Because gloves are not completely free of leaks and hands may become contaminated when removing gloves,[5] hands must be cleaned before putting on gloves for an aseptic/clean procedure and after glove removal.[8] Gloves must be removed immediately and discarded into a waste receptacle after the activity for which they were used and before exiting a client/patient/resident environment.

Gloves may be adversely affected by petroleum-based hand lotions or creams. Verify with the glove manufacturer that the gloves are compatible with the hand hygiene products in use in the health care setting (e.g., lotions).

To reduce hand irritation related to gloves[12]:

- wear gloves for as short a time as possible
- ensure hands are clean and dry before putting on gloves
- ensure gloves are intact and clean and dry inside.

Gowns

A gown is worn when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.[8]

Long-sleeved gowns protect the forearms and clothing of the health care provider from splashing and soiling with blood, body fluids and other potentially infectious material.

➢ See Box 3 for the appropriate use of gowns.

Selection of Gowns

The type of gown selected is based on the nature of the interaction with the client/patient/resident, including[18]:

- anticipated degree of contact with infectious material
- potential for blood and body fluid penetration of the gown (e.g., water-resistant gowns should be used in the operating theatre when soaking is anticipated)
- requirement for sterility (e.g., sterile gowns are worn in operating theatres and when performing sterile procedures such as central line insertions).

Gowns used as PPE should be cuffed and long-sleeved, and offer full coverage of the body front, from neck to mid-thigh or below. Clinical and laboratory coats or jackets are not a substitute for gowns where a gown is indicated. Several gown sizes should be available in a health care setting to ensure appropriate coverage for staff.

BOX 3: Appropriate Gown Use

- Gowns should only be worn when providing care for clients/patients/residents.
- When use of a gown is indicated, the gown should be put on immediately before the task and must be worn properly, i.e., tied at top and around the waist.
- Remove gown immediately after the task for which it has been used in a manner that prevents contamination of clothing or skin and prevents agitation of the gown.
- Discard used gown immediately after removal into appropriate receptacle. Do not hang gowns for later use.
- Do not re-use gown. Do not go from patient-to-patient wearing the same gown.

Masks

A mask is used by a health care provider (in addition to eye protection) to protect the mucous membranes of the nose and mouth when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions or excretions,[8, 46] or within two metres of a coughing client/patient/resident.[18, 47]

- Masks are also required in operating theatres[48] and when performing aseptic procedures (e.g., central line insertions,[49, 50] spinal epidural/myelogram procedures[51-54]).

- A mask should be placed on a coughing client/patient/resident when outside his/her room, if tolerated, to limit dissemination of infectious respiratory secretions.[18, 55, 56, 57]
- A mask should be worn for wound irrigation procedures if there is any risk of sprays or splashes.[58]

➢ See Box 4 for the appropriate use of masks.

Selection of Masks

Mask selection is based on a risk assessment that includes:

- type of procedure/care activity
- length of procedure/care activity
- likelihood of contact with droplets/aerosols generated by the procedure or interaction.

Criteria for selecting masks include:

- mask should securely cover the nose and mouth
- mask should be substantial enough to prevent droplet penetration
- mask should be able to perform for the duration of the activity for which the mask is indicated (e.g., surgery).

BOX 4: Appropriate Mask Use

- Select a mask appropriate to the activity
- Mask should securely cover the nose and mouth
- Change mask if it becomes wet.
- Do not touch mask while wearing it.
- Remove mask correctly immediately after completion of task and discard into an appropriate waste receptacle.
- Do not allow mask to hang or dangle around the neck.
- Clean hands after removing the mask.
- Do not re-use disposable masks.
- Do not fold the mask or put it in a pocket for later use.

N95 Respirators

An N95 respirator is used to prevent inhalation of small particles that may contain infectious agents transmitted via the airborne route.[18]

N95 respirators should also be worn for aerosol-generating procedures that have been shown to expose staff to undiagnosed tuberculosis, including:

- sputum induction
- diagnostic bronchoscopy
- autopsy examination.

➢ See Section 2.B, *Airborne Transmission and Airborne Precautions*, for more information about N95 respirators and their indications.

➢ Refer to Appendix M, *Advantages and Disadvantages of PPE*, for advantages and disadvantages of different types of masks and N95 respirators.

Eye Protection

Eye protection is used by health care providers (in addition to a mask) to protect the mucous membranes of the eyes when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions or excretions,[8, 46, 59] or within two metres of a coughing client/patient/resident.[18, 47, 60] Eye protection should also be worn for wound irrigation procedures if there is any risk of sprays or splashes.[58]

BOX 5: Appropriate Use of Eye Protection

- Eye protection should be used whenever there is a potential for splashes or sprays to the eyes, such as operating room procedures, labour and delivery and wound irrigation.
- Eye protection must be removed immediately after the task for which it was used and discarded into waste or placed in an appropriate receptacle for cleaning.
- Prescription eye glasses are not acceptable as eye protection.

Eye protection includes:

- safety glasses
- safety goggles
- face shields
- visors attached to masks

Prescription eye glasses are not acceptable by themselves as eye protection; they may be worn underneath face shields and some types of protective eyewear.

Eye protection may be disposable or, if reusable, should be cleaned prior to re-use. Due to the risk of contamination, it is recommended that reusable eye protection be sent to a central area for reprocessing after use.

Eye protection should be comfortable, not interfere with visual acuity and fit securely. A health care setting may need to provide several different types, styles and sizes of protective eye equipment.[18]

➢ See Box 5 for the appropriate use of eye protection.

Selection of Eye Protection

The eye protection chosen for specific situations depends on:

- the type of activity and risk of exposure
- the circumstances of exposure (e.g., droplet exposure vs. sprays/splashes of fluid)
- other PPE used
- personal vision needs.

Criteria for selecting eye protection include:

- eye protection must provide a barrier to splashes from the side
- eye protection may be single-use disposable or washable before re-use
- prescription eye glasses are not acceptable as eye protection.

➢ Refer to Appendix M, *Advantages and Disadvantages of PPE*, for advantages and disadvantages of different types of eye protection.

Routine Practices for Procedures that Generate Droplets and/or Aerosols

Certain procedures may generate droplets/aerosols that may expose staff to respiratory pathogens and are considered to be a potential risk for staff and others in the area. PPE (mask and either protective eyewear or face shield) must be used by staff when within two metres of procedures generating droplets/aerosols on any client/patient/resident, with or without symptoms of an acute respiratory infection, to prevent deposition of droplets/aerosols on staff mucous membranes.[2] See Box 6 for a list of procedures that generate droplets/aerosols where transmission has been documented.

There is debate about whether other medical procedures generate droplets/aerosols, leading to transmission of respiratory infection. For these procedures, to date, there is inconclusive or no published literature documenting transmission. Examples of such procedures include:

- nebulized therapies
- high-frequency oscillatory ventilation
- tracheostomy or tracheostomy care
- chest physiotherapy
- collection of nasopharyngeal swabs or nasopharyngeal aspirates
- tube or needle thoracostomy.

For these procedures, use of PPE should be determined by risk assessment. Facial protection is also required routinely for:

- breaches to the integrity of a mechanical ventilation system (e.g., open suctioning, filter changes)
- disposal of filters used in mechanical ventilation and cleaning/disposal of bags and filters.

All units and crash carts should be equipped with:

- a manual resuscitation bag with hydrophobic submicron filter

    - in-line suction catheters
    - non-rebreather mask that allows filtration of exhaled gases
    - PPE (gloves, gowns, masks, eye protection).

BOX 6: Procedures Generating Droplets/Aerosols where Transmission Has Been Documented

- Endotracheal intubation, including during cardio-pulmonary resuscitation[1]
- Cardio-pulmonary resuscitation[2]
- Open airway suctioning
- Bronchoscopy*
- Surgery and autopsy
- Sputum induction*
- Non-invasive positive pressure ventilation for acute respiratory failure (CPAP, BiPAP[3-5])
- High flow oxygen therapy[3]

* For diagnostic (but not therapeutic) bronchoscopy or sputum induction, wear an N95 respirator, due to risk from undiagnosed TB

CONTROL OF THE ENVIRONMENT

Controlling the environment includes measures that are built into the infrastructure of the health care setting that have been shown to reduce the risk of infection to staff and clients/patients/residents. This includes administrative controls, such as:

- appropriate accommodation and placement
- patient care equipment that is in good repair
- effective cleaning practices for equipment and the environment.

Engineering controls, such as dedicated hand washing sinks, point-of-care ABHR and sharps containers, and sufficient air changes per hour appropriate to the care setting, are the preferred controls as they do not depend on individual health care provider compliance.

Accommodation and Placement

Single rooms, with dedicated bathroom and sink, are preferred for placement of all clients/patients/residents.[61] Studies have shown a clear relationship between the use of single rooms and reduced infection.[62-64] However, most health care facilities do not have sufficient single rooms to accommodate all clients/patients/residents, so some might be accommodated in multi-bed rooms, which presents a risk for transmission of microorganisms. Clear protocols must be in place regarding patient placement in order to minimize the transmission risk to others.

In health care settings that do not have sufficient single rooms available for all routine care, decisions must be made regarding room assignments and selection of roommates based on:

- route of transmission of the infectious agent (known or suspected)
- client/patient/resident risk factors for transmission (e.g., hygiene, cognitive status)
- risk factors for acquisition in other clients/patients/residents in the unit (e.g., compromised immunity)
- availability of single rooms.

Decision-making regarding accommodation should include the questions listed in Box 7.[28]

BOX 7: Questions to Ask When Determining Placement of Clients/Patients/Residents and their Roommates

- Is the client/patient/resident soiling his/her environment because of poor hygiene practices, uncontained drainage or incontinence?
- Does the client/patient/resident have an infection that might be transmitted to another client/patient/resident?
- What is the condition of other clients/patients/residents in the unit?
- Does the client/patient/resident have an indwelling device (e.g., urinary catheter, central line, feeding tube)?
- Does the client/patient/resident have non-intact skin?
- What is the susceptibility level of the client/patient/resident with respect to underlying diseases, neutropenia, extremes of age?
- Is the client/patient/resident at risk for an antibiotic-resistant organism?
- Can the client/patient/resident follow directions on hygiene measures?

For clients/patients/residents who have a cough or other symptoms of an acute respiratory infection:

- move out of waiting area to a separate area or room as soon as possible
- if single room accommodation is unavailable, maintain a spatial separation of at least two metres[18] between the coughing client/patient/resident and others in the room and draw the privacy curtain between beds
- if there is a suspicion that the infection is transmitted via the airborne route, the client/patient/resident must be moved into a single room, preferably with negative pressure
- a mask and instruction in hand hygiene and respiratory etiquette should be provided to the client/patient/resident
- symptomatic clients/patients/residents should be assessed as soon as possible.

Environment and Equipment Cleaning

The physical environment of a health care setting can harbour many microorganisms that are capable of causing infection in susceptible individuals. Maintaining a clean and safe health care environment is an essential component of IPAC and is integral to the safety of clients/patients/residents and staff. [65-68] Numerous studies have shown that the inanimate health care environment harbours bacteria and viruses that may be transferred to clients/patients/residents and equipment via the hands of health care providers.[69, 70] Some studies have shown that environmental strains of microorganisms are identical to those of the client/patient/resident occupying the environmental space.[71, 72] In some instances, health care-associated infection outbreaks have been brought under control when the intensity of environmental cleaning was increased.[73, 74]

Health care settings must devote adequate resources to Environmental Services/Housekeeping that include[10, 11, 18, 67]:

- adequate human resources
- availability of appropriate cleaning products
- written policies and procedures for cleaning and disinfection of client/patient/resident rooms and equipment that includes cleaning standards and frequencies
- education and training of cleaning staff
- procedures and increased capacity for outbreak management
- ongoing review and monitoring of practices and procedures.

Policies and procedures should address the environmental aspects of areas when the role of the environment may be a significant factor in the prevention of HAIs, such as:

- cleaning and disinfection of non-critical equipment between clients/patients/residents, including transport equipment[10, 67, 75]
- minimum high-level disinfection of semi-critical and sterilization of critical medical equipment[13, 67]
- daily and terminal cleaning of rooms
- cleaning requirements for rooms that house clients/patients/residents with *C.difficile* or vancomycin-resistant enterococci (VRE)[67]
- management of linen and waste[10, 67]
- cleaning in areas adjacent to construction activities[10, 67] at the end of the day or at other times as required to maintain cleanliness.

Environmental cleaning in the health care facility should be performed on a routine and consistent basis to provide for a safe and sanitary environment.[10, 67] Cleaning staff require education and training that

includes clear messaging regarding their role in the prevention of infections in their health care setting. Cleaning practices in the health care setting must be audited and results reported back appropriately.[11] Frequent audits of practice must be included as part of the organization's responsibility to maintaining a clean environment.[10]

Health care settings must review their cleaning and disinfection methods to ensure that they are adequate for disinfection of contaminated surfaces. Cleaning and disinfecting products used in the health care setting must be approved by IPAC and Occupational Health.[13] Hospital-grade disinfectants must have a drug identification number (DIN) from Health Canada to indicate approval for use in Canada.[44] Manufacturers' recommendations for use and dilution must be followed.[44, 67]

For a detailed discussion regarding the implementation of a cleaning and reprocessing program, refer to:

- PIDAC's *Best Practices for Cleaning, Disinfection and Sterilization in All Health Care Settings*,[13] available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/cleaning-disinfection-and-sterilization.html

- PIDAC's *Best Practices for Environmental Cleaning in All Health Care Settings*,[10] available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/environmental-cleaning-for-prevention-and-control-of-infections.html

Food Preparation, Dishware and Eating Utensils[18]

Dishware and eating utensils are effectively decontaminated in commercial dishwashers with hot water and detergents. Reusable dishware and utensils may be used for all patients/residents including those on Additional Precautions. Disposable dishes are not required.

All areas where food is prepared and dispensed, including kitchenettes on nursing units, must comply with the requirements of the *Health Protection and Promotion Act*, R.R.O. 1990, *Regulation 562*, Food Premises,[76] available at: http://www.search.e-laws.gov.on.ca/en/isysquery/9fc62366-9b1a-4382-8e17-a0b20a399eb8/4/doc/?search=browseStatutes&context=#hit1.

Linen

Policies and procedures should address the collection, transport, handling, washing and drying of soiled linen, including protection of staff and hand hygiene. Laundry regulations should be addressed if the facility does its own laundry.[10]

- For detailed information about the management of laundry, refer to PIDAC's *Best Practices for Environmental Cleaning in All Health Care Settings*,[10] available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/environmental-cleaning-for-prevention-and-control-of-infections.html

Facilities for hand hygiene must be readily available in laundry areas. Laundry staff should protect themselves from potential cross-infection from soiled linen by wearing appropriate protective equipment, such as gloves and gowns or aprons, when handling soiled linens. Staff should clean their hands whenever gloves are changed or removed.

Linen that is soiled with blood, body fluids, secretions or excretions should be handled using the same precautions, regardless of whether the client/patient/resident is on Additional Precautions and regardless of the source or health care setting.[10, 44, 67] In particular:

- bag or otherwise contain contaminated laundry at the site of collection

- use leak-proof containment for laundry contaminated with blood or body substances (water-soluble bags and 'double-bagging' are not recommended)
- laundry carts or hampers used to collect or transport soiled linen need not be covered
- linen bags should be tied securely and not over-filled.

Staff in health care areas need to be aware of sharps when placing soiled linen in bags; laundry staff are at risk from contaminated sharps, instruments or broken glass that may be contained with linen in the laundry bags. Laundry staff should be trained in procedures for safe handling of soiled linen and must be offered immunization against hepatitis B.[10, 44]

Waste

Written policies and procedures for management of contaminated infectious waste from health care settings must be developed based on provincial regulations and local bylaws and should address issues such as the collection, storage, transport, handling and disposal of contaminated waste, including sharps and biomedical waste.[10]

➢ For more information about waste management, refer to PIDAC's *Best Practices for Environmental Cleaning in All Health Care Settings*, available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/environmental-cleaning-for-prevention-and-control-of-infections.html.

Waste handlers should wear protective apparel appropriate to their risk (e.g., gloves, protective footwear). Waste handlers who may be exposed to biomedical waste and/or sharps must be offered hepatitis B immunization.

Engineering Controls

Engineering controls are **physical** or **mechanical** measures put in place to reduce the risk of infection to staff or to clients/patients/residents. Where infection risks cannot be eliminated or substituted, engineering controls are the preferred next choice for controlling the risk, because they are built into the facility infrastructure and do not rely on individuals to implement them correctly.

Handling of Sharps

Sharps are devices that can cause occupational injury to staff. Some examples of sharps include needles, lancets, blades and clinical glass. A sharps injury prevention program must be in place in all health care settings.[11, 16] This should include follow-up for exposure to bloodborne pathogens.[77]

Prevention of sharps injuries may be achieved by:

- the use of safety-engineered needles and medical sharps (a legislated requirement in Ontario[78])
- the provision of puncture-resistant sharps containers at point-of-care (a legislated requirement in Ontario[79])
- staff education regarding the risks associated with unsafe procedures, such as re-capping.

➢ For specific requirements under Ontario's needle safety legislation see the *Occupational Health and Safety Act*, O. Regulation 474/07, Needle Safety,[78] available at: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_070474_e.htm.

Physical Barriers

Physical barriers can help to deflect potentially infectious droplets when an individual coughs or sneezes. Physical barriers include:

- curtains, e.g., between beds
- room dividers, e.g., multibed rooms, reception areas
- glass or Plexiglass® screens and windows, e.g., reception areas, ambulances
- cough/sneeze guards, e.g., food service areas

Hand Hygiene Equipment

ABHR should be available for use at the point-of-care. Hand washing sinks should be dedicated for staff and visitor hand hygiene and placed at convenient locations so that staff do not need to travel a long distance to reach the sink.

See Section 2.A., *Hand Hygiene*, for more information relating to hand hygiene.

- For information about hand hygiene equipment and placement, refer to PIDAC's *Best Practices for Hand Hygiene in All Health Care Settings*, available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/hand-hygiene.html.

Heating, Ventilation and Air- Conditioning Systems (HVAC)

HVAC systems are used and monitored to control air flow and quality in health care settings. Effective HVAC systems regulate:

- the number of air changes i.e., how often the air is removed and replaced
- the direction of air flow i.e., inward away from the door (*negative pressure*, such as bronchoscopy suites, equipment reprocessing areas, airborne infection isolation rooms) or outward toward the door (*positive pressure*, such as operating rooms, sterile supply areas, burn units)
- where the air is exhausted i.e., outside the building (e.g., laundry facilities, bathrooms, waste holding areas, isolation rooms) or inside through filters.

There is a regulatory requirement to inspect the mechanical ventilation system (including airborne infection isolation rooms) every six months to ensure it is in good condition.[79] For more information:

- *Health Care and Residential Facilities Regulation* 67/93 under the *Occupational Health and Safety Act*, available at: http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_930067_e.htm

ADMINISTRATIVE CONTROLS

Administrative controls are measures that the health care setting puts into place to protect staff and clients/patients/residents from infection.

Staff Education and Training

IPAC education should be provided to all staff, especially those providing direct client/patient/resident care, at the initiation of employment as part of their orientation and as ongoing continuing education on a scheduled basis.[11] IPAC education must span the entire health care setting and be directed to all who work in that setting. Health care facilities should ensure that appropriate policies and procedures are in place to ensure attendance at training/education in Routine Practices and Additional Precautions (including hand hygiene) and that attendance is recorded and reported back to the manager to become a part of the employee's performance review.[11, 80]

Effective IPAC education programs should address[11]:

- disease transmission, the risks associated with infectious diseases and basic epidemiology of health care-associated infections specific to the care setting
- hand hygiene, including the use of alcohol-based hand rubs and hand washing[12]
- principles and components of Routine Practices as well as Additional Precautions
- assessment of the risk of exposure and the appropriate use and indications for PPE, including safe application, removal and disposal
- appropriate cleaning and/or disinfection of health care equipment, supplies and surfaces or items in the health care environment[10, 13]
- individual staff responsibility for keeping clients/patients/residents, themselves and co-workers safe
- education in early problem or symptom recognition.

Education of Clients/Patients/Residents

Client/patient/resident teaching should include:

- correct hand hygiene
- basic hygiene practices that prevent the spread of microorganisms, such as respiratory etiquette
- not sharing personal items.

Client/patient/resident education about any precautions that might be required is important, as it involves them in this aspect of their care and leads to increased patient satisfaction.[81] Infection Control Professionals (ICPs) may assist staff in education of clients/patients/residents through developing and/or reviewing informational materials pertaining to Routine Practices.

Respiratory Etiquette

Health care settings should reinforce with staff, clients/patients/residents and visitors the personal practices that help prevent the spread of microorganisms that cause respiratory infections. These personal practices include:

- not visiting in a health care facility when ill with an acute respiratory infection
- avoidance measures that minimize contact with droplets when coughing or sneezing, such as:
    - turning the head away from others
    - maintaining a two-metre separation from others[47]
    - covering the nose and mouth with tissue
- immediate disposal of tissues into waste after use
- immediate hand hygiene after disposal of tissues.

Healthy Workplace Policies

All health care settings should establish a clear expectation that staff do not come into work when ill with symptoms that are of an infectious origin, and support this expectation with appropriate attendance management policies.[68] Staff carrying on activities in a health care setting who develop an infectious illness may be subject to some work restrictions.

The Communicable Disease Surveillance Protocols from the Ontario Hospital Association (OHA)/Ontario Medical Association (OMA)/MOHLTC state: '*Health care workers have a responsibility to their patients and colleagues regarding not working when ill with symptoms that are likely attributable to an infectious*

disease. This includes staff with influenza-like illness, acute respiratory infection, gastroenteritis and conjunctivitis'.[82]

Immunization

Client/Patient/Resident Immunization

One of the most effective preventive measures to protect clients/patients/residents and staff from acquiring communicable diseases is immunization. All health care settings should have an age-appropriate immunization program in place.[11]

Staff Immunization

Immunization programs are highly effective and are a critical component of the occupational health and safety program.[83, 84] Health care providers must be offered appropriate immunizations. Immunizations should be based on requirements such as OHA/OMA/MOHLTC communicable disease surveillance protocols[77, 85-87] and be consistent with recommendations from the National Advisory Committee on Immunization for health care providers.[88] Appropriate vaccine use protects the health care provider, colleagues and the client/patient/resident. Vaccines appropriate for susceptible health care providers include:

- annual influenza vaccine[85]
- measles,[87] mumps,[89] rubella[86] (MMR) vaccine
- varicella[90] vaccine

- hepatitis B[77] vaccine, which should be followed by serology to document immunity
- acellular pertussis[91] vaccine
- meningococcal vaccine for medical laboratory technologists who handle live meningococcal cultures[92]
- tetanus/diphtheria[88]

➢ Information regarding the Communicable Disease Surveillance Protocols is available at: http://www.oha.com/SERVICES/HEALTHSAFETY/Pages/CommunicableDiseasesSurveillanceProtocols.aspx.

Recommendations for Routine Practices

1. ***Incorporate the elements of Routine Practices into the culture of all health care settings and into the daily practice of each health care provider during the care of all clients/patients/residents at all times. [BII]***
2. ***Provide instruction to visitors regarding specific facility control measures before they visit a client/patient/resident, to ensure compliance with established practices. [BII]***
3. ***Perform a risk assessment before each interaction with a client/patient/resident or their environment in order to determine which interventions are required to prevent transmission during the planned interaction. [BIII]***
4. ***Choose client/patient/resident accommodation based on the risk assessment.***
5. ***Choose personal protective equipment (PPE) based on the risk assessment.***
6. ***Implement a comprehensive hand hygiene program that follows recommendations such as those in PIDAC's 'Best Practices for Hand Hygiene in All Health Care Settings'.[AI]***
7. ***Provide sufficient supplies of easily accessible PPE. [AIII]***
8. ***Implement a process for evaluating PPE to ensure it meets quality standards where applicable, including a respiratory protection program compliant with the Ministry of Labour requirements. [AIII]***
9. ***Provide education in the proper use of PPE to all health care providers and other staff who have the potential to be exposed to blood and body fluids. [BII]***
10. ***Wear gloves when it is anticipated that the hands will be in contact with mucous membranes, non-intact skin, tissue, blood, body fluids, secretions, excretions, or equipment and environmental surfaces contaminated with the above. [AII]***
11. ***Do not wear gloves for routine health care activities in which contact is limited to the intact skin of the client/patient/resident. [AIII]***
12. ***Select gloves that fit well and are of sufficient durability for the task. [AII]***
13. ***Put on gloves just before the task or procedure that requires them. [AII]***
14. ***Perform hand hygiene before putting on gloves for aseptic procedures. [AIII]***
15. ***Remove gloves immediately after completion of the task that requires gloves, before touching clean environmental surfaces. [AIII]***
16. ***Clean hands immediately after removing gloves. [AII]***
17. ***Do not re-use or wash single-use disposable gloves. [AII]***
18. ***Wear a gown when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. [BIII]***
19. ***Remove gown immediately after the task for which it has been used in a manner that prevents contamination of clothing or skin and prevents agitation of the gown. [BII]***
20. ***Wear a mask and eye protection to protect the mucous membranes of the eyes, nose and mouth when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions or excretions. [AII]***

21. ***Wear an N95 respirator to prevent inhalation of small particles that may contain infectious agents transmitted via the airborne route. [AII]***
22. ***Single rooms, with dedicated bathroom and sink, are preferred for placement of all clients/patients/residents. [BII]***
23. ***Provide clear protocols for determining options for patient placement and room sharing based on a risk assessment if single rooms are limited. [BII]***
24. ***Place clients/patients/residents who visibly soil the environment or for whom appropriate hygiene cannot be maintained in single rooms with dedicated toileting facilities. [AIII]***
25. ***Implement a sharps injury prevention program in all health care settings. [AII]***
26. ***Implement appropriate policies and procedures to ensure staff attend training/education in Routine Practices (including hand hygiene), with attendance recorded and reported back to the manager to become a part of the employee's performance review. [AII]***
27. ***Implement a program that promotes respiratory etiquette to staff, clients/patients/residents and visitors in the health care setting. [AII]***
28. ***Ensure that there is a clear expectation that staff do not come into work when ill with symptoms that are of an infectious origin, and this expectation is supported with appropriate attendance management policies. [BII]***

B. Additional Precautions

Additional Precautions refer to IPAC interventions (e.g., PPE, accommodation, additional environmental cleaning) to be used **in addition to** Routine Practices to protect staff and clients/patients/residents by interrupting transmission of suspected or identified infectious agents.

- Refer to Appendix N, *Clinical Syndromes / Conditions with Required Level of Precautions*, for infectious diseases and agents that require Additional Precautions.

Additional Precautions are based on the mode of transmission (e.g., direct or indirect contact, airborne or droplet). There are three categories of Additional Precautions: Contact Precautions, Droplet Precautions and Airborne Precautions.

ELEMENTS THAT COMPRISE ADDITIONAL PRECAUTIONS

In addition to Routine Practices, the following elements comprise Additional Precautions:

Specialized Accommodation and Signage

Specialized accommodation and signage for clients/patients/residents on Additional Precautions includes:

- **Accommodation**:
  - In hospitals, a single room[64] with private toileting facilities are highly recommended for clients/patients/residents on Additional Precautions.
  - In some cases where clients/patients/residents are known to be infected with the same microorganism, cohorting is acceptable.
  - In long-term care homes, spatial separation of residents within their bed space, dependant on a risk assessment of the resident, is recommended.
  - Refer to Appendix C, *Decision-Making Related to Accommodation and Additional Precautions*, for accommodation recommendations.
- **Signage** specific to the type(s) of Additional Precautions should be posted:
  - A sign that lists the required precautions should be posted at the entrance to the client/patient/resident's room or bed space.
  - Signage should maintain privacy by indicating only the precautions that are required, not information regarding the patient's condition.
  - Refer to Appendices F-K for sample signage.
- Specialized engineering controls may be required for some types of Additional Precautions, e.g., airborne infection isolation room for Airborne Precautions. See Section 2.B., *Airborne Transmission and Airborne Precautions*, for information regarding engineering controls for airborne infection isolation rooms.

PPE

PPE is standardized and specific to the type(s) of Additional Precautions that are in place, e.g., gloves are required for entry to a Contact Precautions room regardless of the interactions that are to take place. If the health care provider needs to leave the room, the PPE must be removed and discarded. Fresh PPE must be worn if the health care provider re-enters the room.

Dedicated Equipment

Equipment must be dedicated to the client/patient/resident whenever possible. Equipment and supplies that are required for the interaction should be assembled first and brought into the room after PPE has been put on.

Additional Cleaning Measures

Additional cleaning measures may be required for the client/patient/resident environment.

- For more information about environmental cleaning in health care settings, refer to PIDAC's *Best Practices for Environmental Cleaning in All Health Care Settings*[10], available at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/environmental-cleaning-for-prevention-and-control-of-infections.html

Limited Transport Procedures

Transport of clients/patients/residents on Additional Precautions may be limited in some cases. The following points must be considered:

- Normal health care activities must be maintained despite Additional Precautions, to ensure quality of care (e.g., ambulation as part of recovery from hip surgery).
- Clients/patients/residents who are to be transported must be assessed to determine their risk of transmission to others.
- For some conditions, limit transport of the client/patient/resident unless medically necessary (e.g., tuberculosis, influenza, norovirus).

BOX 8: Elements of Additional Precautions

Routine Practices
+
Specialized Accommodation and Signage
+
Personal Protective Equipment
+
Dedicated Equipment and Additional Cleaning Measures
+
Limited Transport
+
Communication

Communication

Effective communication regarding Additional Precautions is essential when a client/patient/resident goes to another department for testing, to another unit or to other health care settings/facilities. This communication must include Emergency Medical Services (EMS) staff and other transport staff.

- See Box 8 for a summary of the elements that comprise Additional Precautions.

COHORTING

Cohorting can be used when single rooms are not available or during outbreak situations. Cohorting has contributed to the control of a number of outbreaks[93, 94] and should be considered when transmission is documented and continues despite alternative interventions, and when available facilities and staffing allow for the establishment of cohorting.[95] Cohorting should never compromise infection control practices and Additional Precautions must be applied individually for each client/patient/resident within the cohort.

Cohorting consists of two components: client/patient/resident cohorting and staff cohorting. Patient cohorting is applicable in acute care settings for control of transmission of microorganisms or outbreaks. In long-term care homes, movement of residents to achieve geographical cohorting is not appropriate because displacement of residents from their own rooms will often cause harm to the resident, e.g., anxiety, disorientation. Staff cohorting is applicable in all health care facilities.

Additional Precautions must be applied individually for each client/patient/resident within the cohort

Client/Patient/Resident Cohorting

Client/patient/resident cohorting refers to:

- the placement and care of individuals who are infected or colonized with the same microorganism in the same room; OR
- placing those who have been exposed together to limit risk of further transmission.

In long-term care homes, resident cohorting does not imply that a resident is moved out of his/her room. Rather, those who already share a room or who share a bathroom and who are infected or colonized with the same microorganism may be treated as a cohort.

Geographical cohorting refers to restricting patients who are infected or colonized with the same microorganism to several rooms along a corridor or an entire clinical unit. Use of this practice can limit transmission by segregating those who are infected or colonized to a specified area away from those who are not.[96]

Care equipment must be dedicated or cleaned between use on patients/residents in the same room. A fresh gown and gloves should be worn for the care of each individual client/patient/resident and should not be worn between patients/residents within the cohort.

Care should be taken to assess patients/residents for the duration of colonization/infection. Because some patients/residents may become free of an ARO over time, care should be taken during cohorting to avoid re-exposure by avoiding placement of newly identified cases together with those who have a longer history of acquisition, who may no longer be infected or colonized with the microorganism.

Staff Cohorting

Staff cohorting is the practice of assigning specified health care providers to care only for clients/patients/residents known to be colonized or infected with the same microorganism. These health care providers should not participate in the care of clients/patients/residents who are not colonized or infected with that microorganism.

Staff cohorting can be used in addition to client/patient/resident and geographical cohorting by assigning dedicated staff to care for either those patients/residents who are infected or colonized, or those who are not. This practice can be used during outbreaks to reduce the potential for cross-infection between clients/patients/residents by limiting the number of staff interacting with clients/patients/residents.[97-99] It can also be used to limit the number of health care providers exposed to infected cases.[97]

ADDITIONAL PRECAUTIONS AND VISITORS

Visitors of clients/patients/residents on Additional Precautions in health care facilities:

- should be kept to a minimum
- must receive education regarding hand hygiene and the appropriate use of PPE as described under Routine Practices
- must wear the same PPE as health care providers if in contact with other clients/patients/residents or providing direct care.

Clients/patients/residents and visitors must be informed about the reason for implementing Additional Precautions and receive instruction regarding how to enter and leave the room safely when the client/patient/resident is on Additional Precautions. This should include demonstration in putting on, taking off and disposing of PPE as required, as well as hand hygiene.

INITIATION AND DISCONTINUATION OF ADDITIONAL PRECAUTIONS

When Additional Precautions are instituted, they are always used in addition to Routine Practices.

Initiation of Additional Precautions

Additional Precautions must be instituted as soon as symptoms suggestive of a transmissible infection are noted, not only when a diagnosis is confirmed (see Table 2 for examples). Instituting Additional Precautions should be initiated for patients known to have, or considered to be at high risk of being colonized or infected with, antibiotic-resistant organisms (AROs) in accordance with the health care setting's policy. Initiation of AP should not wait until laboratory confirmation of status.

Each health care setting should have a policy authorizing any regulated health care professional to initiate the appropriate Additional Precautions at the onset of symptoms and maintain precautions until laboratory results are available to confirm or rule out the diagnosis. The person designated as the Infection Control Professional (ICP) for the health care setting:

- must be informed when Additional Precautions are initiated
- will verify that the precautions are appropriate to the situation
- will be consulted before discontinuation of Additional Precautions or according to health care setting policy.

Table 2: Clinical Syndromes Requiring Additional Precautions Pending Diagnosis

SYNDROME	TYPE OF PRECAUTION*	SINGLE ROOM?
Abscess or draining wound not contained by dressing	**Contact**	Yes
Diarrhea and/or vomiting of suspected acute infectious etiology	**Contact**	Yes
Rash Suggestive of varicella or measles	**Airborne**	Yes, with negative air flow and door closed. Only immune staff to enter.
Undiagnosed, without fever	Routine Practices, gloves for skin contact	No
Respiratory infection Acute, undiagnosed	**Droplet + Contact**	Yes
Risk factors and symptoms suggestive of active tuberculosis	**Airborne + N95 respirator**	Yes, with negative air flow and door closed.
Suspected meningitis and/or sepsis with petechial rash, etiology unknown	**Adult: Droplet** **Pediatric: Droplet + Contact (pediatric)**	Yes

* Contact Precautions: Gloves, gown if skin or clothing will come into direct contact with the client/patient/resident or his/her environment

* Droplet Precautions: Facial protection (mask, eye protection)

* Airborne Precautions: Airborne infection isolation room; fit-tested N95 respirator for suspected tuberculosis

Duration and Discontinuation of Additional Precautions

The health care setting should have a policy that permits **discontinuation of Additional Precautions in consultation with the ICP** or designate. The attending physician should be notified when Additional Precautions are being discontinued. If there is disagreement between the ICP and the attending physician regarding the discontinuation, then the higher level of precautions will remain in effect with daily review until there is a definitive diagnosis or expert consultation.
Additional Precautions should remain in place until there is no longer a risk of transmission of the microorganism or illness. In some instances expert consultation may be required.

Health care settings should have policies that authorize the Infection Prevention and Control Professional to initiate and/or discontinue Additional Precautions.

Where the periods of communicability are known, precautions may be discontinued at the appropriate time.

- Refer to Appendix N, *Clinical Syndromes/ Conditions with Required Level of Precautions*, for recommendations related to the duration of Additional Precautions for specific illnesses.

For recommendations for discontinuation of precautions for MRSA, VRE, extended-spectrum beta lactamase-producing (ESBL) bacteria, carbapenemase-producing *Enterobacteriaceae* (CPE) and *C. difficile*:

- For MRSA VRE, ESBL and CPE, refer to PIDAC's *Annex A: Screening, Testing and Surveillance for Antibiotic-Resistant Organisms (AROs) in All Health Care Settings*, available on the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/screening-testing-and-surveillance-for-antibiotic-resistant-organisms-aros.html.

- For *C.difficile*, refer to PIDAC's *Annex C: Testing, Surveillance and Management of Clostridium difficile in All Health Care Settings*, available on the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/testing-surveillance-and-management-of-clostridium-difficile.html

IMPACT OF ADDITIONAL PRECAUTIONS ON QUALITY OF CARE

Although Additional Precautions, such as wearing gloves and single room accommodation, are necessary to protect both other clients/patients/residents and health care providers, there may also be negative impacts for the client/patient/resident. [36, 37, 100-102]

These include[101]:

- Limited contact with health care providers may result in lack of monitoring processes such as recording of vital signs and physician visits,[102] medication errors and increases in falls.
- Fewer visits from family and friends often resulted in feelings of loneliness and interfered with needed emotional support.
- Psychological problems related to isolation such as anxiety, depression, sleep disturbance, withdrawal, regression and hallucinations have been reported.[103-109]

Recent studies, however, have noted that patients on Contact Precautions did not perceive a negative impact on their care,[81, 110] and often perceived precautions as an improvement in their care.[81] Some patients valued the privacy and solitude afforded by Contact Precautions[107] and the quietness and privacy of single rooms.[108] There is also evidence that single-room accommodation is associated with improved outcomes, including a reduced risk of health care-acquired infection.[61]

Psychological support for the client/patient/resident should include structured recreation programs, steps to prevent time disorientation and psychological support for both clients/patients/residents and their families.[81, 101, 103, 108, 111-113]

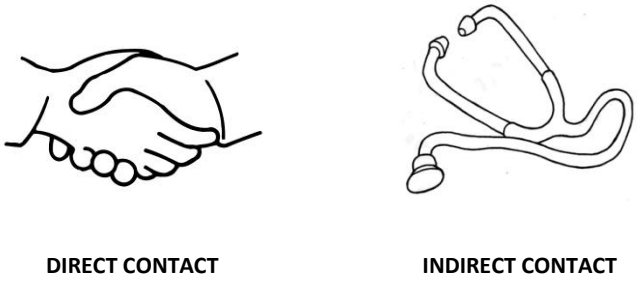
It is important that Additional Precautions not be used any longer than necessary and that frequent assessment of the risks of transmission be carried out by ICPs with the goal being the removal of precautions as soon as it is safe to do so. Modification of precautions may be required for medical purposes (e.g., to permit specialized testing) or on compassionate grounds.

CONTACT TRANSMISSION AND CONTACT PRECAUTIONS

Contact Transmission

Contact transmission is the most common route of transmission of infectious agents. There are two types of contact transmission (Figure 5):

- *Direct contact* occurs through touching; for example, an individual may transmit microorganisms to others by touching them.
- *Indirect contact* occurs when microorganisms are transferred via contaminated objects; for example, *C. difficile* might be transferred between patients, if a commode used by a patient with *C. difficile* is taken to another patient without cleaning and disinfecting the commode in between uses.



DIRECT CONTACT **INDIRECT CONTACT**

Figure 5: Contact transmission from hands (direct) or objects (indirect)

Microorganisms transmitted by contact transmission include many of the epidemiologically significant microorganisms in health care settings (e.g., MRSA, VRE, ESBL, CPE, *Clostridium difficile*, multidrug-resistant *Acinetobacter baumannii*) and the agents of infectious diarrheas.

Contact Precautions

Contact Precautions are used in addition to Routine Practices for microorganisms where contamination of the environment or intact skin is a particular consideration, such as:

- contamination of the client/patient/resident environment
- infectious agents of very low infective dose (e.g., norovirus, rotavirus)
- clients/patients/residents infected or colonized with epidemiologically important microorganisms that may be transmitted by contact with intact skin or with contaminated environmental surfaces (e.g., MRSA, VRE, *C. difficile*).[8]

Rationale for Contact Precautions

Contact Precautions have been shown to control outbreaks and to decrease transmission when Routine Practices alone have failed to limit the spread of microorganisms spread by the contact route.[114-117] Several studies provide evidence that the appropriate use of gloves can help reduce transmission of pathogens in health care settings.[118-120] Gown use has been shown to be effective in the control of epidemiologically important pathogens, such as VRE.[69, 121-124]

Elements that Comprise Contact Precautions

In addition to Routine Practices, the elements that comprise Contact Precautions are summarized in Table 3.

Contact Precautions are always in addition to Routine Practices such as hand hygiene. Ensure **hand hygiene by the patient** on leaving his/her room. Clients/patients/residents should be encouraged to perform hand hygiene on arrival in, and departure from, an ambulatory/clinic setting.

Accommodation

Preferred accommodation in acute care for Contact Precautions is a single room with a dedicated toilet and patient sink.[8, 18] The door may remain open. If single rooms are unavailable, clients/patients/residents may be cohorted with other clients/patients/residents who are infected with the same microorganism.

In long-term care and other residential settings, placement of residents requiring Contact Precautions should be reviewed on a case-by-case basis.[18] Infection risk to other occupants of the room must be considered when selecting roommates.

In ambulatory settings, place patients who require Contact Precautions in an examination room or cubicle as soon as possible.[18]

- Refer to Appendix C, *Decision-Making Related to Accommodation and Additional Precautions*, for a guide to assist with the accommodation and placement of clients/patients/residents requiring Contact Precautions.

PPE

- In acute care, gloves must be worn on entering the patient's room or bed space. Gloves must be removed and hands cleaned on exit from the room or bed space.
- In acute care, a gown must be worn if skin or clothing will come in contact with the patient or the patient's environment. For example:
  - a gown is required:
    - in rooms of children who are incontinent or too immature to comply with hygiene
    - in rooms of non-compliant adults who soil the environment
    - in crowded rooms/bed spaces where there is a likelihood of coming into contact with contaminated furnishings or equipment
    - when providing direct care, such as physical examination,[125] checking vital signs, bathing or turning the patient, changing clothing, continence care, dressing changes, care of open wounds.
  - a gown is not required:
    - when delivering a food tray
    - when doing a visual check of a patient at night
    - when speaking to a patient without touching anything.
  - If a health care provider enters a Contact Precautions room without a gown and is then required to perform an activity that requires a gown, he/she must remove and discard gloves, clean hands, put on a gown and apply fresh gloves before returning to provide care.
- In non-acute settings, gloves and gown are required for activities that involve direct care (see *Glossary*) where the health care provider's skin or clothing may come in direct contact with the resident or items in the resident's room or bed space. Gloves and gown, if worn, must be removed and hands cleaned immediately following the activity for which they were used.

It is never appropriate for clients/patients/residents to wear gloves or isolation gowns while outside their room.

Cleaning and Transport

Routine cleaning practices are acceptable for most rooms on Additional Precautions. Modified or additional environmental cleaning procedures and transportation of clients/patients/residents with AROs are important components of Contact Precautions for VRE and *C. difficile*.

For more information:

- Refer to PIDAC's *Annex A: Screening, Testing and Surveillance for Antibiotic-Resistant Organisms (AROs) in All Health Care Settings, available on the PHO website at:* http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/screening-testing-and-surveillance-for-antibiotic-resistant-organisms-aros.html.

- Refer to PIDAC's *Annex C: Testing, Surveillance and Management of Clostridium difficile in All Health Care Settings*, available on the PHO website at: http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/testing-surveillance-and-management-of-clostridium-difficile.html.

Visitors

Visitors should receive education regarding hand hygiene. PPE is not required unless the visitor is providing direct care.

Table 3: Elements that comprise Contact Precautions

NOTE: Interventions listed in this table are in addition to Routine Practices

<table>
<tr><th>Element</th><th>Acute Care</th><th>Complex Continuing Care/Rehab</th><th>Long-term Care</th><th>Ambulatory/ Clinic Setting</th><th>Home Health Care</th></tr>
<tr><td rowspan="4">Accommodation</td><td colspan="4">Door may be open</td><td rowspan="4">No restrictions on accommodation</td></tr>
<tr><td colspan="2">Single room with dedicated toilet and patient sink</td><td colspan="2">Placement is on a case-by-case basis</td></tr>
<tr><td>Remain in room unless required for diagnostic, therapeutic or ambulation purposes</td><td colspan="2" rowspan="2">Not required to remain in room unless symptomatic</td><td>Identify patients who require precautions</td></tr>
<tr><td>May go, or be taken, outside the facility, but cannot visit other patient rooms</td><td>Encourage client to perform hand hygiene on entering the setting</td></tr>
<tr><td>Signage</td><td colspan="3">Yes</td><td colspan="2">Flag chart</td></tr>
<tr><td>Gloves</td><td colspan="2">For all activities in the room/bed space</td><td colspan="3">For direct care (see Glossary)</td></tr>
<tr><td>Gown</td><td colspan="2">For all activities where skin or clothing will come in contact with the patient or the patient's environment</td><td colspan="3">For direct care (see Glossary)</td></tr>
</table>

<table>
<tr><th>Element</th><th>Acute Care</th><th>Complex Continuing Care/Rehab</th><th>Long-term Care</th><th>Ambulatory/ Clinic Setting</th><th>Home Health Care</th></tr>
<tr><td rowspan="3">Equipment and items in the environment</td><td colspan="3">Dedicate if possible</td><td>As per Routine Practices</td><td rowspan="3">As per Routine Practices</td></tr>
<tr><td colspan="4">Chart (paper or mobile electronic) should not be taken into the patient/resident environment</td></tr>
<tr><td colspan="4">Clean and disinfect shared care items</td></tr>
<tr><td rowspan="2">Environmental Cleaning</td><td colspan="4">VRE and C. difficile rooms require special cleaning
Routine cleaning for all other rooms</td><td rowspan="2">Routine household cleaning</td></tr>
<tr><td colspan="3">Remove and launder all curtains (privacy, shower) when visibly soiled and on discharge/transfer cleaning</td><td></td></tr>
<tr><td rowspan="2">Transport</td><td colspan="2">Staff wear gloves and gown for direct contact with the patient during transport</td><td>Staff wear appropriate PPE for direct contact with the resident during transport</td><td colspan="2">Not applicable</td></tr>
<tr><td colspan="3">Clean and disinfect equipment used for transport after use</td><td colspan="2"></td></tr>
<tr><td>Communication</td><td colspan="5">Effective precautions must be communicated to client/patient/resident, families, other departments, other facilities and transport services prior to transfer</td></tr>
</table>

DROPLET TRANSMISSION AND DROPLET PRECAUTIONS

Droplet Precautions are used in addition to Routine Practices for clients/patients/residents known or suspected of having an infection that can be transmitted by large respiratory droplets.

Droplet Transmission

Droplet transmission occurs when droplets carrying an infectious agent exit the respiratory tract of a person. Droplets can be generated when he or she talks, coughs or sneezes and through some procedures performed on the respiratory tract (e.g., suctioning, bronchoscopy or nebulized therapies). These droplets are propelled a short distance[126] and may enter the host's eyes, nose or mouth or fall onto surfaces. For example, if a person is coughed on by someone who has an acute respiratory infection and the secretions come in contact with mucous membranes, infection may be transmitted. Recent work suggests that droplets forcibly expelled from a cough or sneeze travel for up to two metres or more, depending on the amount of air turbulence in the immediate vicinity.[126, 127] For patients who cannot cough forcibly, the distance that droplets travel will be less, e.g., infants and frail elderly. Droplets do not remain suspended in the air and usually travel less than two metres (Figure 6).[127] Microorganisms contained in these droplets are then deposited on surfaces in the client/patient/resident's immediate environment and some microorganisms remain viable for extended periods of time. Contact transmission can then occur by touching surfaces and objects contaminated with respiratory droplets.[8]

Microorganisms transmitted by this route are of special concern in certain populations, e.g., paediatrics, frail elderly, persons with cardiopulmonary disease.[8] Examples of microorganisms transmitted by droplet transmission include: respiratory tract viruses (e.g., adenovirus, influenza and parainfluenza viruses, rhinovirus, human metapneumovirus, respiratory syncytial virus - RSV), rubella, mumps and *Bordetella pertussis*.

Figure 6: Droplet transmission from coughing or sneezing

Elements that Comprise Droplet Precautions

In addition to Routine Practices, the elements that comprise Droplet Precautions are summarized in Table 4.

Droplet Precautions are always in addition to Routine Practices such as hand hygiene. Ensure **hand hygiene by the patient** on leaving his/her room. Clients/patients/residents must perform hand hygiene on presentation and departure from an ambulatory/clinic setting.

Accommodation

Preferred accommodation for Droplet Precautions in acute care is a single room with a dedicated toilet and patient sink, and door may remain open. In long-term care, residents should remain in their room/bed space, if feasible, with privacy curtains drawn.

- Refer to Appendix C, *Decision-Making Related to Accommodation and Additional Precautions*, for a guide to assist with the accommodation and placement of clients/patients/residents who require Droplet Precautions.

PPE

A mask and eye protection[60] must be worn by any individual who is within two metres of the client/patient/resident on Droplet Precautions.

Transport

In most cases, transport should be limited unless required for diagnostic or therapeutic procedures, such as ambulation. The client/patient/resident must wear a mask during transport, if tolerated.[55] If the client/patient/resident cannot tolerate wearing a mask, transport staff should wear a mask and eye protection.

Visitors

Visitors should receive education regarding hand hygiene. A mask should be worn by visitors within two meters of the client/patient/resident. For paediatrics, household contacts of children on Droplet Precautions do not need to wear PPE, as they will have already been exposed in the household.

Table 4: Elements that comprise Droplet Precautions

NOTE: Interventions listed in this table are in addition to Routine Practices

<table>
<tr><th>Element</th><th>Acute Care</th><th>Complex Continuing Care/Rehab</th><th>Long-term Care</th><th>Ambulatory/ Clinic Setting</th><th>Home Health Care</th></tr>
<tr><td rowspan="4">Accommodation</td><td colspan="4">Door may be open</td><td rowspan="4">Discuss feasibility of spatial separation with client (e.g., when sleeping)</td></tr>
<tr><td>Single room with dedicated toilet and patient sink preferred</td><td colspan="2">Patient/resident to remain in room or bed space if feasible, or wear a mask (if tolerated) if coughing within two metres of other patients, until no longer infectious</td><td>Triage client/patient away from waiting area to a single room as soon as possible, or maintain a two-metre spatial separation</td></tr>
<tr><td>Cohorting of those who are confirmed to have the same infectious agent may be acceptable</td><td colspan="2">Draw privacy curtain</td><td>Patient to wear a mask for duration of visit and perform hand hygiene</td></tr>
<tr><td>Remain in room unless required for diagnostic, therapeutic or ambulation purposes</td><td colspan="3"></td></tr>
<tr><td>Signage</td><td colspan="4">Yes</td><td>Not applicable</td></tr>
<tr><td>Facial Protection</td><td colspan="5">Yes, within two metres of client/patient/resident</td></tr>
<tr><td rowspan="2">Equipment and items in the environment</td><td colspan="5">Dedicate if possible</td></tr>
<tr><td>Chart (paper or mobile electronic) should not be taken into the room</td><td colspan="4"></td></tr>
<tr><td>Environmental Cleaning</td><td colspan="5">Routine cleaning</td></tr>
<tr><td rowspan="2">Transport</td><td colspan="5">Client/patient/resident to wear a mask during transport</td></tr>
<tr><td colspan="3">Limit transport unless required for diagnostic or therapeutic procedures</td><td></td><td>Not applicable</td></tr>
<tr><td>Communication</td><td colspan="5">Effective precautions must be communicated to patient families, other departments, other facilities and transport services prior to transfer</td></tr>
</table>

AIRBORNE TRANSMISSION AND AIRBORNE PRECAUTIONS

Airborne Precautions are used in addition to Routine Practices for clients/patients/residents known or suspected of having an illness transmitted by the airborne route.[8]

Airborne Transmission

Airborne transmission occurs when airborne particles remain suspended in the air, travel on air currents and are then inhaled by others who are nearby or who may be some distance away from the source patient, in a different room or ward (depending on air currents) or in the same room that a patient has left, if there have been insufficient air exchanges.[8] Control of airborne transmission requires control of air flow through special ventilation systems and the use of respirators.[8] Microorganisms transmitted by the airborne route are *Mycobacterium tuberculosis* (TB), varicella virus (chickenpox virus) and measles virus.

Effective control of airborne microorganisms hinges on maintaining a high degree of suspicion for those who present with compatible symptoms of an airborne infection,[128] early isolation in an appropriate environment and rapid diagnosis. For measles and varicella, immunization is the primary means of control.

Controls for preventing the transmission of airborne infections include:

- immunity against measles and varicella
- early identification of potential cases
- prompt isolation in an airborne infection isolation room
- appropriate treatment of client/patient/resident, where applicable
- the use of a fit-tested, seal-checked N95 respirator, when indicated
- identification and follow-up of exposed clients/patients/residents and staff.

Elements that Comprise Airborne Precautions

N95 Respirators

A fit-tested, seal-checked N95 respirator must be worn by all staff when entering the room, transporting[129] or caring for a client/patient/resident with signs and symptoms or a diagnosis of active pulmonary or laryngeal tuberculosis. An N95 respirator must also be worn if non-immune staff are required to enter the room of a client/patient/resident with measles or varicella when there are no qualified immune staff available and patient safety would be compromised if care was not provided.

BOX 10: Appropriate Use of N95 Respirators

- Select respirator for which you have been fit-tested.
- Perform a seal-check each time a respirator is applied.
- Change respirator if wet or soiled.
- Remove the respirator correctly and discard on removal into an appropriate receptacle.
- Perform hand hygiene after removing the respirator.
- NEVER put an N95 respirator on a client/patient/resident.

N95 respirators must[8]:

- filter particles one micron in size
- have a 95% filter efficiency
- provide a tight facial seal with less than 10% leak.

N95 respirator failure is primarily related to poor fit and leakage around the face seal. Assuring a good fit through an approved fit-testing program and performing a seal-check each time a respirator is used are essential for full protection.[130-132] See Box 10 for the appropriate use of N95 respirators.

Health care settings that use respirators must have a respiratory protection program in place. See Section 2.C, *Respiratory Protection Program, Fit-testing and Seal-checking*, for more information.

In health care settings specializing in care for patients with active tuberculosis (e.g., TB hospitals or units), staff may choose to re-use N95 respirators. If re-using a respirator it must be stored in a way that keeps it clean, dry, not crushed or folded and not used by anyone else. If the N95 respirator was used for a client/patient/resident who is also on Droplet or Contact Precautions, it must be discarded on removal and not re-used.

Client/Patient/Resident Controls

Patients on Airborne Precautions should remain in the airborne infection isolation room unless required to leave for medical reasons.
A mask is effective in trapping the large infectious particles expelled by coughing patients.[55, 57] Clients/patients/residents suspected or confirmed to have an airborne infection are to wear a mask at all times, if tolerated, when they must leave an area that has correct engineering controls (i.e., negative pressure ventilation). If the patient is ventilated, a filter must be present on the expiratory circuit. **There is never an indication for a client/patient/resident to wear an N95 respirator**.

Visitors

For TB:

- Household contacts should be assessed for active tuberculosis prior to visiting the facility. A respirator is not required, as they have already been exposed in the household.
- Visitors other than household contacts should be discouraged from visiting. If visiting, they should be counselled about their risk and wear an N95 respirator with good fit characteristics. Instruction should be given on how to perform a seal-check.[130, 131]

For varicella and measles:

- Household contacts of patients with measles or varicella are not required to wear an N95 respirator when visiting, as they will already have been exposed in the household. They should be assessed for active infection prior to visiting.
- Visitors of patients with measles or varicella who are known to be immune do not need to wear an N95 respirator to visit.
- Non-household contacts that are not immune should not visit.

Specialized Accommodation for Airborne Precautions

For clients/patients/residents on Airborne Precautions, single room accommodation in an airborne infection isolation room (AIIR) that has engineering controls in place consistent with standards from the Canadian Standards Association (CSA) is required. If an AIIR is not available, transfer the patient to a facility with appropriate accommodation as soon as medically feasible. See below for engineering controls required for AIIRs.

Recommended Engineering Controls for Reducing Transmission of Microorganisms Spread by the Airborne Route

Engineering controls (e.g., directional negative pressure ventilation) are the most preferred and most effective method of minimizing exposure to airborne infections and should be used in high risk areas. Airborne infection isolation rooms must meet ventilation standards established by the Canadian

Standards Association[133] and should meet the patient placement guidelines published by the Public Health Agency of Canada (PHAC)[8, 129] (see Boxes 11 and 12 for requirements).

At a minimum, the emergency room, bronchoscopy suites, critical care settings and autopsy suites must have rooms with negative pressure capabilities as described above for high risk procedures. In acute settings expected to care for patients with infectious pulmonary tuberculosis, measles, varicella or disseminated zoster, a sufficient number of negative pressure rooms must be available on in-patient units.

An assessment of the risk of exposure to airborne infections will assist in establishing the location and number of airborne infection isolation rooms required in order to decrease the risk of exposure to airborne infections in the health care setting.
If using a portable HEPA-filtration unit, the ventilation requirements for an airborne infection isolation room as listed in Box 11 must be met.

In addition to Routine Practices, the elements that comprise Airborne Precautions are summarized in Table 5.[8, 18]

Table 5: Elements that comprise Airborne Precautions

NOTE: Interventions listed in this table are in addition to Routine Practices

<table>
<tr><th>Element</th><th>Acute Care</th><th>Complex Continuing Care/Rehab</th><th>Long-term Care</th><th>Ambulatory/ Clinic Setting</th><th>Home Health Care</th></tr>
<tr><td>Accommodation</td><td colspan="3">Either airborne infection isolation room or transfer</td><td>Airborne infection isolation room if available or alternate arrangements if necessary</td><td>Not applicable</td></tr>
<tr><td>Signage</td><td colspan="4">Yes</td><td>Not applicable</td></tr>
<tr><td>N95 Respirator
TB</td><td colspan="3">For entry to room</td><td>For duration of visit</td><td>For entry to client’s home</td></tr>
<tr><td>Measles, Varicella</td><td colspan="5">Only immune staff to enter room. N95 respirator not required if immune.</td></tr>
<tr><td>Equipment and items in the environment</td><td colspan="5">As per Routine Practices</td></tr>
<tr><td>Environmental Cleaning</td><td colspan="4">Routine cleaning</td><td>Routine household cleaning</td></tr>
<tr><td>Transport</td><td colspan="4">Client/patient/resident to wear a mask during transport
Transport staff to wear an N95 respirator during transport
Limit transport unless required for diagnostic or therapeutic procedures</td><td>Not applicable</td></tr>
<tr><td>Communication</td><td colspan="5">Effective precautions must be communicated to patient families, other departments, other facilities and transport services prior to transfer</td></tr>
</table>

BOX 11: Standards for Ventilation in Airborne Infection Isolation Rooms

Requirements for airborne infection isolation rooms are:

- ventilation creating inward directional airflow from adjacent spaces to the room (*negative pressure*):
    - monitor room on initiation of use
    - monitor at least daily when in-use
    - monitor monthly between uses
- an alarm indicating that the pressure relationship is not being maintained, provided just outside the room and at the nurse's station or point of supervision
- directional airflow within the room such that clean supply air flows first to parts of the room where staff or visitors are likely to be present, and then flows across the bed area to the exhaust
- nonaspirating diffusers
- low-level exhaust near the head of the bed
- air exhausted to the outdoors via dedicated exhaust:
    - washroom exhausted using the same exhaust system as the room
    - exhaust fan supplied by emergency power
- HEPA filtration of exhaust in cases where exhaust air is not discharged clear of building openings or where a risk of recirculation exists
- minimum 12 air changes per hour (new facilities)
- minimum 3 outdoor air changes per hour
- frequent monitoring of supply and exhaust system function by staff trained in appropriate assessment of the airflow; direction of air flow should be tested with smoke tubes at all four corners of the door

Source: Canadian Standards Association, CAN/CSA Z317.2 *Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities*

BOX 12: Guidelines for Use of Airborne infection isolation Rooms

- In acute and long-term care settings the client/patient/resident is to be placed in an airborne infection isolation room that meets the criteria set out by the Canadian Standards Association (see Box 11).
- Room should have toilet, hand washing sink and bathing facilities. If air is exhausted from the bathroom, leave bathroom door open when not in use.
- Door must be kept closed whether or not client/patient/resident is in the room.
- Windows must remain closed at all times; opening the window may cause reversal of air flow, an effect that can vary according to wind direction and indoor/outdoor temperature differentials.
- Room door must remain closed and negative airflow maintained after client/patient/resident discharge until all air in the room has been replaced; this will vary based on the number of room air changes per hour; consult facility plant engineers to determine the air changes per hour for each airborne infection isolation room (refer to Appendix D, *Time Required for Airborne Infection Isolation Room to Clear M. tuberculosis*).
- A preventative maintenance program must be in place.
- If a **long-term care setting** does not have the appropriate facilities for airborne precautions, the resident is to be transferred to a health care facility equipped to manage airborne infections; if the transfer is delayed or not possible, place the resident in a single room with the door and window closed.
- In **ambulatory settings**, clients with suspected airborne infection should not wait in a common area but be placed directly into an examining room. Preferably this should be a negative pressure room with exhaust vented to the outside or filtered through a high efficiency filter if recirculated. If a well ventilated room is not available, a single room should be used and the client examined and discharged as quickly as possible. The door must be closed.
- In **aerosol-generating procedure rooms** where patients with airborne infections are expected to be seen (e.g., bronchoscopy suite, autopsy suite, rooms used for sputum inductions):
  - there is to be a **minimum** of 12 air changes per hour in new facilities and a minimum of six air changes per hour in existing facilities;
  - the room must have inward directional air flow;
  - the air is to be exhausted directly outside the building and away from intake ducts or through a high efficiency particulate air (HEPA) filter, if recycled; and
  - the Canadian Tuberculosis Standards recommend a minimum of 15 air changes per hour for these rooms.

Source: Health Canada's *Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care*, 1999 [under revision] and the Public Health Agency of Canada's *Canadian Tuberculosis Standards*, 2007

COMBINATIONS OF ADDITIONAL PRECAUTIONS

Where more than one mode of transmission exists for a particular microorganism, the precautions used must take into consideration both modes.

Most infectious agents have a primary mode of transmission but may also have a secondary mode of transmission. Where more than one mode of transmission exists for a particular microorganism, the precautions used must take into consideration both modes. For example, respiratory viruses may remain viable for some time in droplets that have settled on objects in the immediate environment of the client/patient/resident and may be picked up on the hands of patients or staff. These microorganisms may be transmitted by contact as well as by droplet transmission and, therefore, both Contact and Droplet Precautions are required.[8, 18]

If both tuberculosis and a respiratory virus are suspected in a single individual, a combination of Airborne, Droplet and Contact Precautions should be used. In this case, the N95 respirator must be discarded after each use and not re-used, as the outside of the respirator will be contaminated.

PROTECTIVE ENVIRONMENT

There is insufficient evidence to support the use of a protective environment (formerly known as 'reverse isolation') for most immunocompromised patients.[134-136] It is critical that health care providers and others who are acutely ill with a communicable infection do not enter the room of immunocompromised patients.

To prevent invasive fungal infections, some centres recommend that new allogeneic haematopoietic stem cell transplant (HSCT) patients should be accommodated in a single room with positive pressure ventilation relative to the corridor; HEPA filtration of incoming air; sealed rooms to prevent flow of air from the outside; and ventilation to provide ≥ 12 air changes per hour.[18, 137, 138]

Guidelines for protective environments are available from the U.S.:

- Healthcare Infection Control Practices Advisory Committee's *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007*,[18] available at: http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html.

- Center for Disease Control's *Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients*,[137] available at: http://www.cdc.gov/mmwr/PDF/rr/rr4910.pdf.

Recommendations for Additional Precautions

29. ***Incorporate the elements of Additional Precautions into the health care practices of each health care setting. [BII]***
30. ***Ensure appropriate policies and procedures are in place to require staff attendance at training/education in Additional Precautions, with attendance recorded and reported back to the manager to become a part of the employee's performance review. [AII]***
31. ***When single patient rooms are limited, determine the feasibility of cohorting patients who are infected or colonized with the same microorganism. [BIII]***
32. ***Consider the use of geographic cohorting patients and staff to reduce transmission during outbreaks. [AII]***
33. ***When cohorting, apply Additional Precautions individually for each client/patient/resident within the cohort. Do not wear the same gowns and gloves when going from patient-to-patient within the cohort and do not share patient care equipment. [AII]***
34. ***Provide PPE to visitors to clients/patients/residents on Additional Precautions if they will be in direct contact with clients/patients/residents or are providing direct care. [BIII]***
35. ***In all health care settings, implement a policy authorizing any regulated health care professional to initiate the appropriate Additional Precautions at the onset of symptoms. [BII]***
36. ***Continue Additional Precautions until there is no longer a risk of transmission of the microorganism or illness. [AII]***
37. ***Implement a policy that permits discontinuation of Additional Precautions in consultation with the Infection Prevention and Control Professional (ICP) or designate. [BIII]***
38. ***Do not use Additional Precautions any longer than necessary. Ongoing assessment of the risk of transmission should be performed by ICPs.[AII]***
39. ***In acute care, place patients who require Contact Precautions in a single room with dedicated toilet and patient sink when available. [AII]***
40. ***In long-term care and other residential settings, place residents who require Contact Precautions as determined on a case-by-case basis using a risk assessment. [BII]***
41. ***In ambulatory settings, place patients who require Contact Precautions in an examination room or cubicle as soon as possible. [BII]***
42. ***In acute care, for Contact Precautions wear gloves for all activities in the patient's room or bed space. Remove gloves and perform hand hygiene immediately on leaving the room or bed space. [AII]***
43. ***In acute care, for Contact Precautions wear a gown for all activities where skin or clothing will come in contact with the patient or the patient's environment. When indicated, put on gown on entry to the patient's room or bed space. If used, remove gown and perform hand hygiene immediately on leaving the room or bed space. [BIII]***

44. ***In non-acute settings, for Contact Precautions wear gloves and a gown for activities that involve direct care. Remove gloves and gown, if worn, and perform hand hygiene immediately on leaving the room. [AII]***

45. ***Whenever possible, dedicate equipment and items to the client/patient/resident on Contact Precautions. [AII]***

46. ***In acute care, place patients who require Droplet Precautions in a single room with dedicated toilet and patient sink, when available. [AII]***

47. ***In long-term care and other residential settings, ensure residents who require Droplet Precautions remain in their room or bed space, if feasible. [AII]***

48. ***In ambulatory settings, offer mask and hand hygiene to clients/patients at triage. Triage symptomatic client/patient away from waiting area to a single room as soon as possible, or maintain a two-metre spatial separation. [AII]***

49. ***Wear a mask and eye protection within two metres of a client/patient/resident on Droplet Precautions. [BII]***

50. ***Provide a mask to clients/patients/residents on Droplet Precautions for transport or ambulation outside of the room, if tolerated. [BIII]***

51. ***Move clients/patients/residents who require Airborne Precautions to an airborne infection isolation room as soon as possible. [AII]***

52. ***Restrict client/patient/resident on Airborne Precautions to his/her room with the door closed, unless he/she must leave the room for medically necessary procedures. [BII]***

53. ***Wear an N95 respirator when entering an airborne infection isolation room when it is being used for tuberculosis. [AII]***

54. ***Do not enter the room of a patient with measles, varicella or zoster unless immune. [AIII]***

55. ***Provide a mask to clients/patients/residents on Airborne Precautions during transport or activities outside their room, if tolerated. [BIII]***

56. ***Wear an N95 respirator during transport of clients/patients/residents on Airborne Precautions. [CIII]***

C. Occupational Health and Hygiene Issues

Adherence of health care providers to recommended IPAC practices will decrease the transmission of infectious agents in health care settings.[19] All health care providers have a responsibility to know their immunization status (see Section 2.A, *Immunization*); to adhere to Routine Practices and Additional Precautions (including appropriate and correct use of PPE and hand hygiene); to use sharps safely (see Section 2.A, *Handling of Sharps*); and to report exposures and infections that put themselves at risk for transmission of infections.

Staff who consume food or beverages in care areas (client/patient/resident environment, nursing station, charting areas) are at increased risk for acquiring serious foodborne gastrointestinal infections. Institutional outbreaks involving staff have been reported, particularly with hepatitis A,[139-144] cryptosporidiosis[145] and norovirus.[146]

POST-EXPOSURE FOLLOW-UP

The effective management of staff exposures requires the cooperation of both Occupational Health and IPAC staff. Occupational health policies and procedures should address post-exposure follow-up and prophylaxis when indicated.[77] There should be a program to deal with staff exposures that includes[11]:

- identification of exposed staff
- assessment and immunization history
- post-exposure prophylaxis and follow-up including:
  - collection and analysis of exposures
  - a program for prompt response to sharps injuries[16, 77]
- policies to deal with spills and staff exposure to blood or body fluids
- education regarding preventive actions that may be put into place to improve practices and prevent recurrence.

RESPIRATORY PROTECTION PROGRAM, FIT-TESTING AND SEAL-CHECKING

A respiratory protection program is required for staff who will be required to wear an N95 respirator (Ministry of Labour requirement). The program must include:

- a health assessment
- N95 respirator fit-testing
- training – health care providers and other staff required to wear an N95 respirator must be educated regarding the proper way to perform a seal-check; see Box 10 for items that must be included in training.

Fit-testing[6] is the use of a qualitative or quantitative method to evaluate the fit of a specific make, model and size of respirator on an individual. This procedure is to be done periodically, at least every two years and whenever there is a change in respirator face piece or the user's physical condition which could affect the respirator fit.[6, 9, 11]

Seal-checking (also referred to as a 'fit-check') is a procedure that the health care provider must perform each time an N95 respirator is worn to ensure the respirator fits the wearer's face correctly to provide adequate respiratory protection.[130, 131] Health care providers must receive training on how to perform a seal-check correctly in order to obtain a tight facial seal.[8, 129, 131, 132]

Recommendations for Occupational Health and Hygiene

57. Provide instruction in the appropriate and correct use and disposal of PPE for staff who are required to wear PPE. [BII]

58. Staff must not eat or drink in client/patient/resident care areas. [AII]

59. Implement a program to deal with staff exposures, including exposures to blood and body fluids. [AII]

60. Implement a respiratory protection program for staff who will be required to wear an N95 respirator. [Ministry of Labour Requirement]

D. Audits of Compliance with Provision of Feedback

In order to achieve long-term improvement, the health care setting must make infection prevention an institutional priority and integrate IPAC practices into the organization's safety culture.[11, 18, 147] Improving adherence to infection control practices requires a multifaceted approach that incorporates ongoing education and continuous assessment of both the individual and the work environment.[18] Staffing levels should be adequate to allow for compliance.[148]

Non-compliance with Routine Practices and Additional Precautions may be related to several factors[147]:

- perceived value of preventive actions
- job hindrances (e.g., increased workload, interference with job duties, physical discomfort when wearing PPE)
- availability of PPE in the work area
- provision of employee feedback/reinforcement with respect to adherence
- organizational level factors promoting a safety climate in the workplace.

Strategies for the evaluation of application of Routine Practices and Additional Precautions are based on observational audits of compliance and performance feedback with recommendations for improvement.[149] These strategies include:

- knowledge and application of written guidelines
- correct selection and removal of PPE
- compliance with hand hygiene procedures.

Facilities where results of audits and feedback identify issues relating to compliance should provide ongoing educational and motivational activities to encourage long-lasting improvement in IPAC practices.

There should be a plan of action for persistent failure**.** Non-compliance should not be tolerated, as this is a patient and health care provider safety issue. Compliance results should be part of the performance appraisal.

Summary of Recommendations for Routine Practices And Additional Precautions In All Health Care Settings

This summary table is intended to assist with self-assessment internal to the health care setting for quality improvement purposes. See complete text for rationale.

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
ROUTINE PRACTICES						
1.	***Incorporate the elements of Routine Practices into the culture of all health care settings and into the daily practice of each health care provider during the care of all clients/patients/residents at all times. [BII]***					
2.	***Provide instruction to visitors regarding specific facility control measures before they visit a client/patient/resident, to ensure compliance with established practices. [BII]***					
3.	***Perform a risk assessment before each interaction with a client/patient/resident or their environment in order to determine which interventions are required to prevent transmission during the planned interaction. [BIII]***					
4.	***Choose client/patient/resident accommodation based on the risk assessment.***					
5.	***Choose personal protective equipment (PPE) based on the risk assessment.***					
6.	***Implement a comprehensive hand hygiene program that follows recommendations such as those in PIDAC's 'Best Practices for Hand Hygiene in All Health Care Settings'. [AI]***					

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
7.	***Provide sufficient supplies of easily accessible PPE. [AIII]***					
8.	***Implement a process for evaluating PPE to ensure it meets quality standards where applicable, including a respiratory protection program compliant with the Ministry of Labour requirements. [AIII]***					
9.	***Provide education in the proper use of PPE to all health care providers and other staff who have the potential to be exposed to blood and body fluids. [BII]***					
10.	***Wear gloves when it is anticipated that the hands will be in contact with mucous membranes, non-intact skin, tissue, blood, body fluids, secretions, excretions, or equipment and environmental surfaces contaminated with the above. [AII]***					
11.	***Do not wear gloves for routine health care activities in which contact is limited to the intact skin of the client/patient/resident. [AIII]***					
12.	***Select gloves that fit well and are of sufficient durability for the task. [AII]***					
13.	***Put on gloves just before the task or procedure that requires them. [AII]***					
14.	***Perform hand hygiene before putting on gloves for aseptic procedures.***					
15.	***Remove gloves immediately after completion of the task that requires gloves, before touching clean environmental surfaces. [AIII]***					
16.	***Clean hands immediately after removing gloves. [AII]***					
17.	***Do not re-use or wash single-use disposable gloves. [AII]***					
18.	***Wear a gown when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions, or excretions. [BIII]***					

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
19.	***Remove gown immediately after the task for which it has been used in a manner that prevents contamination of clothing or skin and prevents agitation of the gown. [BII]***					
20.	***Wear a mask and eye protection to protect the mucous membranes of the eyes, nose and mouth when it is anticipated that a procedure or care activity is likely to generate splashes or sprays of blood, body fluids, secretions or excretions. [AII]***					
21.	***Wear an N95 respirator to prevent inhalation of small particles that may contain infectious agents transmitted via the airborne route. [AII]***					
22.	***Single rooms, with dedicated bathroom and sink, are preferred for placement of all clients/patients/residents.[BII]***					
23.	***Provide clear protocols for determining options for patient placement and room sharing based on a risk assessment if single rooms are limited. [BII]***					
24.	***Place clients/patients/residents who visibly soil the environment or for whom appropriate hygiene cannot be maintained in single rooms with dedicated toileting facilities. [AIII]***					
25.	***Implement a sharps injury prevention program in all health care settings. [AII]***					
26.	***Implement appropriate policies and procedures to ensure staff attend training/education in Routine Practices (including hand hygiene), with attendance recorded and reported back to the manager to become a part of the employee's performance review. [AII]***					
27.	***Implement a program that promotes respiratory etiquette to staff, clients/patients/residents and visitors in the health care setting. [AII]***					
28.	***Ensure that there is a clear expectation that staff do not come into work when ill with symptoms that are of an infectious origin, and***					

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
	this expectation is supported with appropriate attendance management policies. [BII]					
ADDITIONAL PRECAUTIONS						
29.	***Incorporate the elements of Additional Precautions into the health care practices of each health care setting. [BII]***					
30.	***Ensure appropriate policies and procedures are in place to require staff attendance at training/education in Additional Precautions, with attendance recorded and reported back to the manager to become a part of the employee's performance review. [AII]***					
31.	***When single patient rooms are limited, determine the feasibility of cohorting patients who are infected or colonized with the same microorganism. [BIII]***					
32.	***Consider the use of geographic cohorting patients and staff to reduce transmission during outbreaks. [AII]***					
33.	***When cohorting, apply Additional Precautions individually for each client/patient/resident within the cohort. Do not wear the same gowns and gloves when going from patient-to-patient within the cohort and do not share patient care equipment. [AII]***					
34.	***Provide PPE to visitors to clients/patients/residents on Additional Precautions if they will be in direct contact with clients/patients/residents or are providing direct care. [BIII]***					
35.	***In all health care settings, implement a policy authorizing any regulated health care professional to initiate the appropriate Additional Precautions at the onset of symptoms. [BII]***					
36.	***Continue Additional Precautions until there is no longer a risk of transmission of the microorganism or illness. [AII]***					

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
37.	***Implement a policy that permits discontinuation of Additional Precautions in consultation with the Infection Prevention and Control Professional (ICP) or designate. [BIII]***					
38.	***Do not use Additional Precautions any longer than necessary. Ongoing assessment of the risk of transmission should be performed by ICPs.[AII]***					
39.	***In acute care, place patients who require Contact Precautions in a single room with dedicated toilet and patient sink when available. [AII]***					
40.	***In long-term care and other residential settings, place residents who require Contact Precautions as determined on a case-by-case basis using a risk assessment. [BII]***					
41.	***In ambulatory settings, place patients who require Contact Precautions in an examination room or cubicle as soon as possible. [BII]***					
42.	***In acute care, for Contact Precautions wear gloves for all activities in the patient's room or bed space. Remove gloves and perform hand hygiene immediately on leaving the room or bed space. [AII]***					
43.	***In acute care, for Contact Precautions wear a gown for all activities where skin or clothing will come in contact with the patient or the patient's environment. When indicated, put on gown on entry to the patient's room or bed space. If used, remove gown and perform hand hygiene immediately on leaving the room or bed space. [BIII]***					
44.	***In non-acute settings, for Contact Precautions wear gloves and a gown for activities that involve direct care. Remove gloves and gown, if worn, and perform hand hygiene immediately on leaving the room. [AII]***					
45.	***Whenever possible, dedicate equipment and items to the***					

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
	client/patient/resident on Contact Precautions. [AII]					
46.	***In acute care, place patients who require Droplet Precautions in a single room with dedicated toilet and patient sink when available. [AII]***					
47.	***In long-term care and other residential settings, ensure residents who require Droplet Precautions remain in their room or bed space, if feasible. [AII]***					
48.	***In ambulatory settings, offer mask and hand hygiene to client/patient at triage. Triage symptomatic client/patient away from waiting area to a single room as soon as possible, or maintain a two-metre spatial separation. [AII]***					
49.	***Wear a mask and eye protection within two metres of a client/patient/resident on Droplet Precautions. [BII]***					
50.	***Provide a mask to clients/patients/residents on Droplet Precautions for transport or ambulation outside of the room, if tolerated. [BIII]***					
51.	***Move clients/patients/residents who require Airborne Precautions to an airborne infection isolation room as soon as possible. [AII]***					
52.	***Restrict client/patient/resident on Airborne Precautions to his/her room with the door closed, unless he/she must leave the room for medically necessary procedures. [BII]***					
53.	***Wear an N95 respirator when entering an airborne infection isolation room when it is being used for tuberculosis. [AII]***					
54.	***Do not enter the room of a patient with measles, varicella or zoster unless immune. [AIII]***					

Recommendation		Compliant	Partial Compliance	Non-compliant	Action Plan	Accountability
55.	***Provide a mask to clients/patients/residents on Airborne Precautions during transport or activities outside their room, if tolerated. [BIII]***					
56.	***Wear an N95 respirator during transport of clients/patients/residents on Airborne Precautions. [CIII]***					
OCCUPATIONAL HEALTH AND HYGIENE ISSUES						
57.	***Provide instruction in the appropriate and correct use and disposal of PPE for staff who are required to wear PPE. [BII]***					
58.	***Staff must not eat or drink in client/patient/resident care areas. [AII]***					
59.	***Implement a program to deal with staff exposures, including exposures to blood and body fluids. [AII]***					
60.	***Implement a respiratory protection program for staff who will be required to wear an N95 respirator. [Ministry of Labour Requirement]***					

Appendices

APPENDIX A: RANKING SYSTEM FOR RECOMMENDATIONS

Categories for strength of each recommendation	
Category	**Definition**
A	Good evidence to support a recommendation for use.
B	Moderate evidence to support a recommendation for use.
C	Insufficient evidence to support a recommendation for or against use
D	Moderate evidence to support a recommendation against use.
E	Good evidence to support a recommendation against use.
Categories for quality of evidence on which recommendations are made	
Grade	**Definition**
I	Evidence from at least one properly randomized, controlled trial.
II	Evidence from at least one well-designed clinical trial without randomization, from cohort or case-controlled analytic studies, preferably from more than one centre, from multiple time series, or from dramatic results in uncontrolled experiments.
III	Evidence from opinions of respected authorities on the basis of clinical experience, descriptive studies, or reports of expert committees.

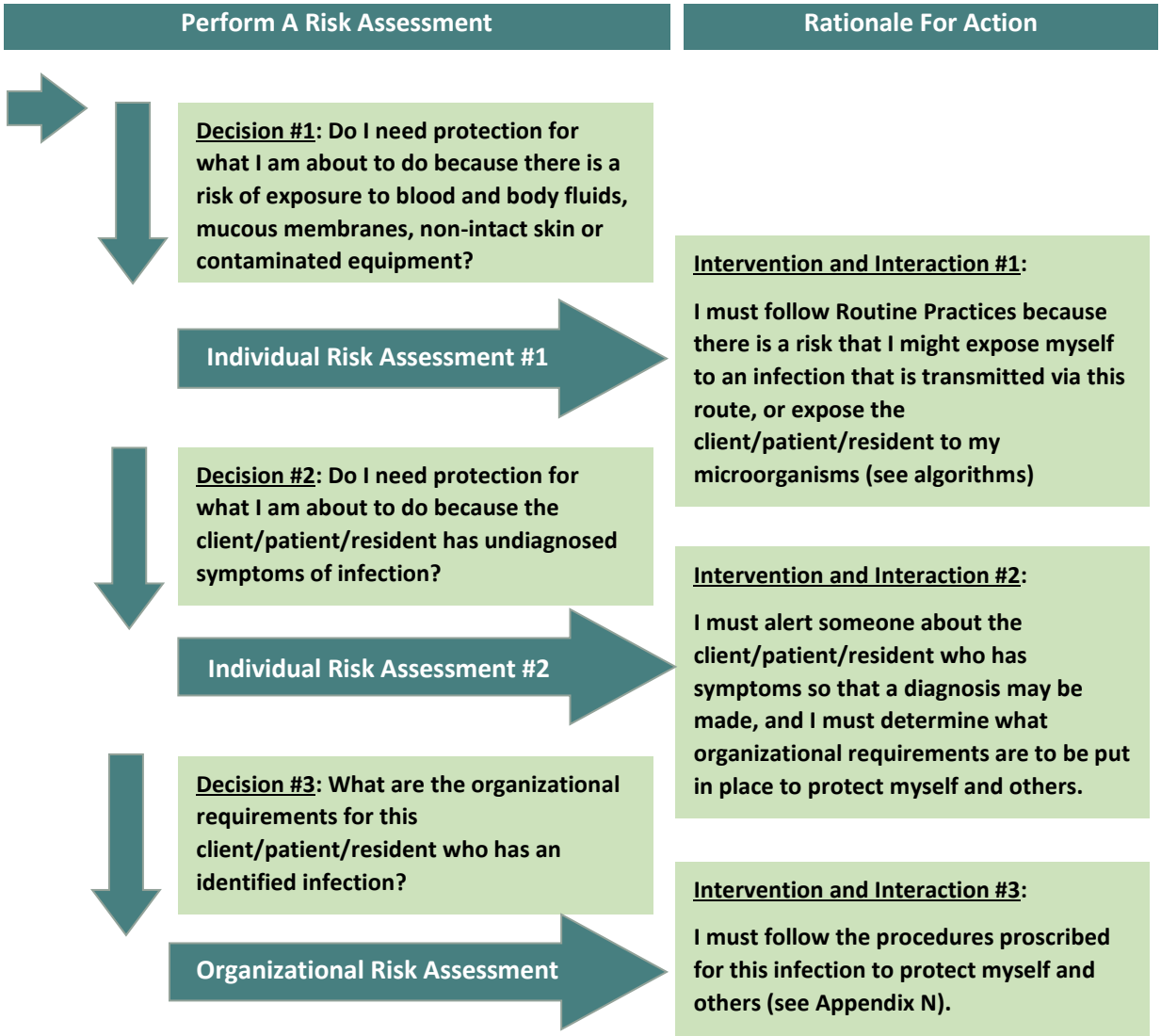
NOTE: When a recommendation is based on a regulation, no grading will apply.

[Source: Public Health Agency of Canada]

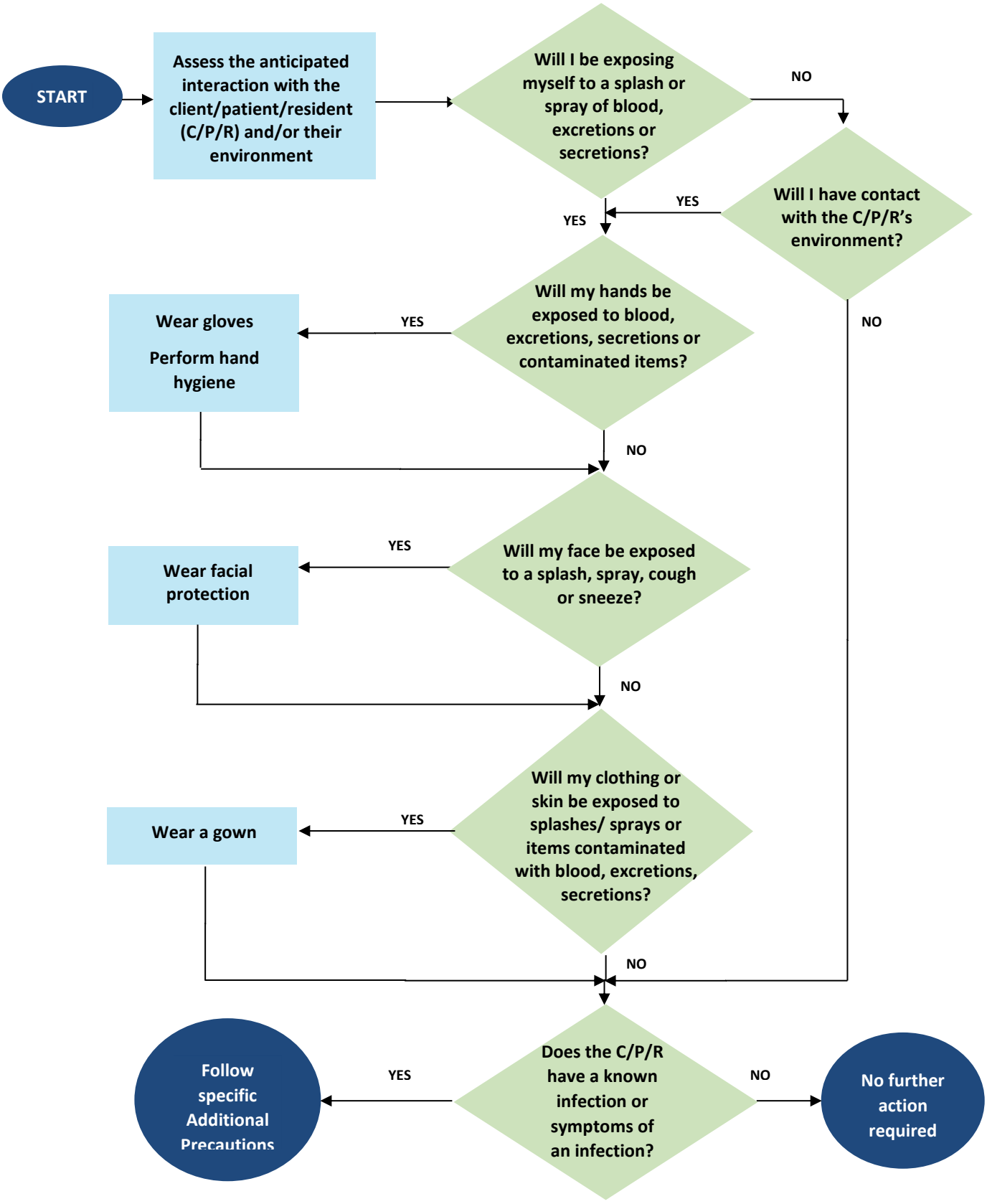
APPENDIX B: PERFORMING A RISK ASSESSMENT RELATED TO ROUTINE PRACTICES AND ADDITIONAL PRECAUTIONS

An **individual assessment** of each client/patient/resident's potential risk of transmission of microorganisms must be made by all health care providers and other staff who come into contact with them. Based on that risk assessment and a risk assessment of the task, one may determine appropriate **intervention and interaction** strategies, such as hand hygiene, waste management, use of personal protective equipment (PPE) and client/patient/resident placement, that will reduce the risk of transmission of microorganisms to and from the individual.[28] When a client/patient/resident has undiagnosed symptoms or signs of an infection, interventions must be informed by **organizational requirements**.

Risk Assessment Steps to be Performed by a Health Care Provider to Determine an Individual's Risk of Transmission of Infectious Agents and the Rationale for Associated Protective Measures



Routine Practices Risk Assessment Algorithm for All Client/Patient/Resident Interactions



APPENDIX C: DECISION-MAKING RELATED TO ACCOMMODATION AND ADDITIONAL PRECAUTIONS

A single room is the preferred accommodation for all clients/patients/residents in all health care settings. Where single rooms are not available, the following considerations may be taken into account:

1. Accommodation for Clients/Patients/Residents Requiring Droplet Precautions

There is a requirement for spatial separation of at least two metres and facial protection for close contact with a client/patient/resident with a new/worse cough or shortness of breath with fever, or copious uncontrolled respiratory secretions. The following may be used to determine placement:

- Does the client/patient/resident have:
  - A new or worse cough or shortness of breath with fever or chills?
  - Copious uncontrolled respiratory secretions?
  - Suspected or diagnosed meningococcal disease or meningitis of unknown etiology?

If yes:

- Should be accommodated preferentially in a single room
- If a single room is not available, maintain a spatial separation of at least two metres
- Facial protection for close contact with the client/patient/resident
- Initiate Contact Precautions if indicated (e.g., respiratory viral infection also spread by the contact route, such as influenza)

2. Accommodation for Clients/Patients/Residents with MRSA

Clients/patients/residents known to be colonized or infected with MRSA should be placed in a single room with individual toileting facilities. In acute care settings, patients with MRSA should not share rooms with patients without MRSA.

When single rooms for Contact Precautions are limited, priority should be given to clients/patients/residents who are at increased risk of disseminating microorganisms into the environment:

- Does the client/patient/resident have:
  - A respiratory infection?
  - Colonized tracheostomy and/or uncontrolled respiratory secretions?
  - Wound or stoma drainage not contained by a dressing or appliance?
  - Desquamating skin condition (e.g., psoriasis, burns)?
  - Cognitive impairment?
  - Poor compliance with personal hygiene?

If yes:

  - Should be accommodated preferentially in a single room
  - If a single room is not available, cohort with other clients/patients/residents with MRSA, in consultation with Infection Prevention and Control and on a case-by-case basis
  - Initiate Contact Precautions

- In non-acute care, MRSA residents should not share a room with:
  - Individuals who have open wounds or decubitus ulcers
  - Individuals who have urinary catheters, feeding tubes or other invasive devices
  - Individuals whose hygiene is compromised
  - Individuals who have debilitative or bed-bound conditions that require extensive 'hands-on' care

- If clients/patients/residents with MRSA are accommodated with clients/patients/residents who do not have MRSA, there must be increased attention to effective environmental cleaning

3. Accommodation for Clients/Patients/Residents with VRE or *Clostridium difficile* Infection (CDI)

Clients/patients/residents known to be colonized or infected with VRE or who have CDI should be placed in a single room with individual toileting facilities. In acute care settings, patients with VRE/CDI should not share rooms or toileting facilities with patients without VRE/CDI.

When single rooms for Contact Precautions are limited, priority should be given to clients/patients/residents who are at increased risk of disseminating microorganisms into the environment:

- Does the client/patient/resident have:
  - Diarrhea not contained by diapers?
  - Faecal incontinence?
  - Wound or stoma drainage not contained by a dressing or appliance?
  - Cognitive impairment?
  - Poor compliance with personal hygiene?

If yes:

- Should be accommodated preferentially in a single room
- If a single room is not available, cohort VRE clients/patients/residents with other clients/patients/residents with VRE, and CDI clients/patients/residents with other clients/patients/residents with CDI, in consultation with Infection Prevention and Control and on a case-by-case basis
- Clients/patients/residents with VRE or CDI should use a dedicated commode or bed pan for toileting
- Increase attention to effective environmental cleaning
- Move to a single room as soon as possible

APPENDIX D: TIME REQUIRED FOR AIRBORNE INFECTION ISOLATION ROOM TO CLEAR *M. TUBERCULOSIS*

Air Changes Per Hour (ACH) and Time (T) in Minutes Required for Removal Efficiencies of 90%, 99% or 99.9% of Airborne Contaminants.

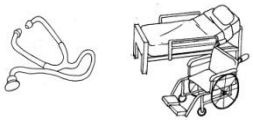
# Air Changes Per Hour	Minutes required for a removal efficiency of:		
	90%	99%	99.9%
1	138	276	414
2	69	138	207
3	46	92	138
4	35	69	104
5	28	55	83
6	23	46	69
7	20	39	59
8	17	35	52
9	15	31	46
10	14	28	41
11	13	25	38
12	12	23	35
13	11	21	32
14	10	20	30
15	9	18	28
16	9	17	26
17	8	16	24
18	8	15	23
19	7	15	22
20	7	14	21

This table is prepared according to the formula T=[In (C2/C1)/(Q/V)]x60, which is an adaptation of the formula for the rate of purging airborne contaminants (100-Mutchler 1973) with t1=0 and C2/C1=1— (removal efficiency/100), where:

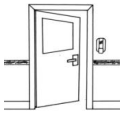
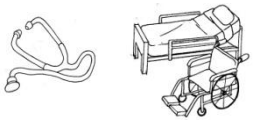
- t1 = initial timepoint
- C1 = initial concentration of contaminant
- C2 = final concentration of contaminants
- Q = air flow rate (cubic feet per hour)
- V = room volume (cubic feet)
- Q/ V = air changes per hour

[Source: Members of the Ad Hoc Committee for the Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings. '*Guidelines for Preventing the Transmission of Tuberculosis in Canadian Health Care Facilities and Other Institutional Settings*'. *Can Commun Dis Rep*. 1996;22 Suppl 1:i-iv, 1-50, i-iv, 1-55.[150]]

APPENDIX E: PIDAC'S ROUTINE PRACTICES FACT SHEET FOR ALL HEALTH CARE SETTINGS

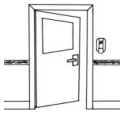
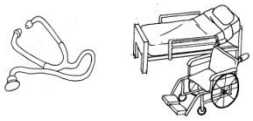
ROUTINE PRACTICES to be used with ALL PATIENTS	
	**Hand Hygiene** Hand hygiene is performed using alcohol-based hand rub or soap and water: ✓ Before and after each client/patient/resident contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the client/patient/resident's environment
	**Mask and Eye Protection or Face Shield [based on risk assessment]** ✓ Protect eyes, nose and mouth during procedures and care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions. ✓ Wear within two metres of a coughing client/patient/resident.
	**Gown [based on risk assessment]** ✓ Wear a long-sleeved gown if contamination of skin or clothing is anticipated.
	**Gloves [based on risk assessment]** ✓ Wear gloves when there is a risk of hand contact with blood, body fluids, secretions, excretions, non-intact skin, mucous membranes or contaminated surfaces or objects. ✓ Wearing gloves is NOT a substitute for hand hygiene. ✓ Remove immediately after use and perform hand hygiene after removing gloves.
	**Environment and Equipment** ✓ All equipment that is being used by more than one client/patient/resident must be cleaned between clients/patients/residents. ✓ All high-touch surfaces in the client/patient/resident's room must be cleaned daily.
	**Linen and Waste** ✓ Handle soiled linen and waste carefully to prevent personal contamination and transfer to other clients/patients/residents.
	**Sharps Injury Prevention** ✓ NEVER RECAP USED NEEDLES. ✓ Place sharps in sharps containers. ✓ Prevent injuries from needles, scalpels and other sharp devices. ✓ Where possible, use safety-engineered medical devices.
	**Patient Placement/Accommodation** ✓ Use a single room for a client/patient/resident who contaminates the environment. ✓ Perform hand hygiene on leaving the room.

APPENDIX F: SAMPLE SIGNAGE FOR ENTRANCE TO ROOM OF A PATIENT REQUIRING CONTACT PRECAUTIONS IN ACUTE CARE FACILITIES

CONTACT PRECAUTIONS – Acute Care Facilities	
	**Hand Hygiene as per Routine Practices** Hand hygiene is performed: ✓ Before and after each patient contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and other PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the patient's environment ✓ Whenever there is doubt about the necessity for doing so
	**Patient Placement** ✓ Single room with own toileting facilities ✓ Door may remain open ✓ Perform hand hygiene on leaving the room
	**Gown [based on risk assessment]** ✓ Wear a long-sleeved gown when entering the patient's room or bed space if skin or clothing will come into direct contact with the patient or the patient's environment
	**Gloves [based on risk assessment]** ✓ Wear gloves when entering the patient's room or bed space ✓ Wearing gloves is NOT a substitute for hand hygiene. ✓ Remove gloves on leaving the room or bed space and perform hand hygiene
	**Environment and Equipment** ✓ Dedicate routine equipment to the patient (e.g., stethoscope, commode) ✓ Disinfect all equipment that comes out of the room ✓ All high-touch surfaces in the patient's room must be cleaned at least daily
	**Visitors** ✓ Visitors must wear gloves and a long-sleeved gown if they will be in contact with other patients or will be providing direct care*, as required by Routine Practices ✓ Visitors must perform hand hygiene before entry and on leaving the room

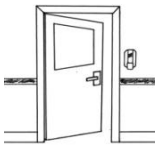
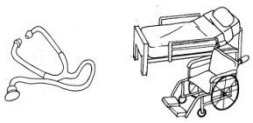
* Direct Care: Providing hands-on care, such as bathing, washing, turning the patient, changing clothing, continence care, dressing changes, care of open wounds/lesions or toileting. Feeding and pushing a wheelchair are not classified as direct care.

APPENDIX G: SAMPLE SIGNAGE FOR ENTRANCE TO ROOM OF A PATIENT REQUIRING CONTACT PRECAUTIONS IN NON-ACUTE CARE FACILITIES

CONTACT PRECAUTIONS – Non-acute Care Facilities	
	**Hand Hygiene as per Routine Practices** Hand hygiene is performed: ✓ Before and after each resident contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and other PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the resident's environment ✓ Whenever there is doubt about the necessity for doing so ✓ Clean the resident's hands before he/she leaves his/her room
	**Resident Placement** ✓ Single room with own toileting facilities if resident hygiene is poor ✓ Door may remain open ✓ Perform hand hygiene on leaving the room or bed space
	**Gown [based on risk assessment]** ✓ Wear a long-sleeved gown for direct care* when skin or clothing may become contaminated
	**Gloves [based on risk assessment]** ✓ Wear gloves for direct care* ✓ Wearing gloves is NOT a substitute for hand hygiene ✓ Remove gloves on leaving the room or bed space and perform hand hygiene
	**Environment and Equipment** ✓ Dedicate routine equipment to the resident if possible (e.g., stethoscope, commode) ✓ Disinfect all equipment before it is used for another resident ✓ All high-touch surfaces in the resident's room must be cleaned at least daily
	**Visitors** ✓ Visitors must wear gloves and a long-sleeved gown if they will be in contact with other residents or will be providing direct care*, as required by Routine Practices ✓ Visitors must perform hand hygiene before entry and on leaving the room

* Direct Care: Providing hands-on care, such as bathing, washing, turning the resident, changing clothing, continence care, dressing changes, care of open wounds/lesions or toileting. Feeding and pushing a wheelchair are not classified as direct care.

APPENDIX H: SAMPLE SIGNAGE FOR ENTRANCE TO ROOM OF A PATIENT REQUIRING DROPLET PRECAUTIONS IN ALL HEALTH CARE FACILITIES

DROPLET PRECAUTIONS – All Facilities	
	**Hand Hygiene as per Routine Practices** Hand hygiene is performed: ✓ Before and after each client/patient/resident contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and other PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the client/patient/resident's environment ✓ Whenever there is doubt about the necessity for doing so
	**Client/Patient/Resident Placement** ✓ Single room with own toileting facilities if available, or maintain a spatial separation of at least 2 metres between the client/patient/resident and others in the room, with privacy curtain drawn ✓ Door may remain open ✓ Perform hand hygiene on leaving the room
	**Mask and Eye Protection or Face Shield** ✓ Wear within 2 metres of the client/patient/resident ✓ Remove and perform hand hygiene on leaving the room
	**Environment and Equipment** ✓ Dedicate routine equipment to the client/patient/resident (e.g., stethoscope, thermometer) ✓ Disinfect all equipment that comes out of the room ✓ All high-touch surfaces in the client/patient/resident's room must be cleaned at least daily
	**Client/Patient/Resident Transport** ✓ Client/patient/resident to wear a mask during transport
	**Visitors** ✓ Non-household visitors wear a mask and eye protection within 2 metres of the client/patient/resident ✓ Visitors must perform hand hygiene before entry and on leaving the room

APPENDIX I: SAMPLE SIGNAGE FOR ENTRANCE TO ROOM OF A PATIENT REQUIRING DROPLET AND CONTACT PRECAUTIONS IN ACUTE CARE FACILITIES

DROPLET + CONTACT PRECAUTIONS – Acute Care Facilities

Hand Hygiene as per Routine Practices

Hand hygiene is performed:

- ✓ Before and after each patient contact
- ✓ Before performing invasive procedures
- ✓ Before preparing, handling, serving or eating food
- ✓ After care involving body fluids and before moving to another activity
- ✓ Before putting on and after taking off gloves and other PPE
- ✓ After personal body functions (e.g., blowing one's nose)
- ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids
- ✓ After contact with items in the patient's environment
- ✓ Whenever there is doubt about the necessity for doing so

Patient Placement

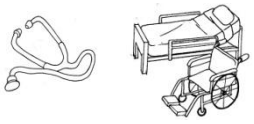
- ✓ Single room with own toileting facilities if available, or maintain a spatial separation of at least 2 metres between the patient and others in the room, with privacy curtain drawn
- ✓ Door may remain open
- ✓ Perform hand hygiene on leaving the room

Mask and Eye Protection or Face Shield

- ✓ Wear within 2 metres of the patient
- ✓ Remove and perform hand hygiene on leaving the room

Gown [based on risk assessment] and Gloves

- ✓ Wear gloves when entering the patient's room or bed space
- ✓ Wearing gloves is NOT a substitute for hand hygiene.
- ✓ Remove gloves on leaving the room or bed space and perform hand hygiene
- ✓ Wear a long-sleeved gown when entering the patient's room or bed space if skin or clothing will come into direct contact with the patient or the patient's environment



Environment and Equipment

- ✓ Dedicate routine equipment to the patient (e.g., stethoscope, thermometer)
- ✓ Disinfect all equipment that comes out of the room
- ✓ All high-touch surfaces in the patient's room must be cleaned at least daily

Patient Transport

- ✓ Patient to wear a mask during transport

Visitors

- ✓ Non-household visitors wear a mask and eye protection within 2 metres of the patient
- ✓ Visitors must wear gloves and a long-sleeved gown if they will be in contact with other patients or will be providing direct care*
- ✓ Visitors must perform hand hygiene before entry and on leaving the room

* Direct Care: Providing hands-on care, such as bathing, washing, turning the patient, changing clothing, continence care, dressing changes, care of open wounds/lesions or toileting. Feeding and pushing a wheelchair are not classified as direct care.

APPENDIX J: SAMPLE SIGNAGE FOR ENTRANCE TO ROOM OF A RESIDENT REQUIRING DROPLET AND CONTACT PRECAUTIONS IN NON-ACUTE CARE FACILITIES

DROPLET + CONTACT PRECAUTIONS – Non-acute Care Facilities

Hand Hygiene as per Routine Practices

Hand hygiene is performed:

- ✓ Before and after each resident contact
- ✓ Before performing invasive procedures
- ✓ Before preparing, handling, serving or eating food
- ✓ After care involving body fluids and before moving to another activity
- ✓ Before putting on and after taking off gloves and other PPE
- ✓ After personal body functions (e.g., blowing one's nose)
- ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids
- ✓ After contact with items in the resident's environment
- ✓ Whenever there is doubt about the necessity for doing so

Resident Placement

- ✓ Single room with own toileting facilities if resident hygiene is poor and if available, or maintain a spatial separation of at least 2 metres between the resident and others in the room, with privacy curtain drawn
- ✓ Door may remain open
- ✓ Perform hand hygiene on leaving the room

Mask and Eye Protection or Face Shield

- ✓ Wear within 2 metres of the resident
- ✓ Remove and perform hand hygiene on leaving the room

Gown and Gloves [based on risk assessment]

- ✓ Wear a long-sleeved gown for direct care* when skin or clothing may become contaminated
- ✓ Wear gloves for direct care*
- ✓ Wearing gloves is NOT a substitute for hand hygiene.
- ✓ Remove gloves on leaving the room or bed space and perform hand hygiene

Environment and Equipment

- ✓ Dedicate routine equipment to the resident if possible (e.g., stethoscope, thermometer)
- ✓ Disinfect all equipment before it is used for another resident
- ✓ All high-touch surfaces in the patient's room must be cleaned at least daily

Resident Transport

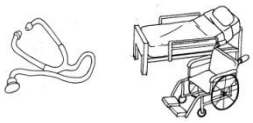
- ✓ Resident to wear a mask during transport

Visitors

- ✓ Non-household visitors wear a mask and eye protection within 2 metres of the resident
- ✓ Visitors must wear gloves and a long-sleeved gown if they will be in contact with other residents or will be providing direct care*
- ✓ Visitors must perform hand hygiene before entry and on leaving the room

* Direct Care: Providing hands-on care, such as bathing, washing, turning the patient, changing clothing, continence care, dressing changes, care of open wounds/lesions or toileting. Feeding and pushing a wheelchair are not classified as direct care.

APPENDIX K: SAMPLE SIGNAGE FOR ENTRANCE TO ROOM OF A PATIENT REQUIRING AIRBORNE PRECAUTIONS IN ALL HEALTH CARE FACILITIES

AIRBORNE PRECAUTIONS – All Facilities	
	**Hand Hygiene as per Routine Practices** Hand hygiene is performed: ✓ Before and after each client/patient/resident contact ✓ Before performing invasive procedures ✓ Before preparing, handling, serving or eating food ✓ After care involving body fluids and before moving to another activity ✓ Before putting on and after taking off gloves and other PPE ✓ After personal body functions (e.g., blowing one's nose) ✓ Whenever hands come into contact with secretions, excretions, blood and body fluids ✓ After contact with items in the client/patient/resident's environment ✓ Whenever there is doubt about the necessity for doing so
	**Client/Patient/Resident Placement** ✓ Single room with own toileting facilities ✓ Room must have negative pressure ventilation with room air exhausted outside or through a HEPA filter ✓ Monitor negative pressure daily while in use ✓ Door must remain closed
	**N95 Respirator** ✓ Wear a fit-tested, seal-checked N95 respirator for entry to the room for TB patients ✓ For measles, varicella or disseminated zoster, only immune staff are to enter the room and an N95 respirator is not required
	**Environment and Equipment** ✓ Equipment that is being used by more than one client/patient/resident must be cleaned between patients/residents ✓ All high-touch surfaces in the patient's room must be cleaned at least daily
	**Transport of the Client/Patient/Resident** ✓ Client/patient/resident to wear a mask during transport ✓ Transport staff to wear an N95 respirator during transport
	**Visitors** ✓ Visitors must be kept to a minimum ✓ Visitors must perform hand hygiene before entry and on leaving the room ✓ For TB, household members do not require an N95 respirator ✓ For TB, non-household visitors require an N95 respirator ✓ For measles/varicella, visitors should be counselled before entering the room

*** Direct Care:** Providing hands-on care, such as bathing, washing, turning the resident, changing clothing, continence care, dressing changes, care of open wounds/lesions or toileting. Feeding and pushing a wheelchair are not classified as direct care.

APPENDIX L: RECOMMENDED STEPS FOR PUTTING ON AND TAKING OFF PERSONAL PROTECTIVE EQUIPMENT (PPE)

[Images developed by Kevin Rostant.
Some images adapted from Northwestern Ontario Infection Control Network – NWOICN]

PUTTING ON PPE

1. Perform Hand Hygiene

2. Put on Gown

- Tie neck and waist ties securely

3. Put on Mask/N95 Respirator

- Place mask over nose and under chin
- Secure ties, loops or straps
- Mould metal piece to your nose bridge
- For respirators, perform a seal-check

4. Put on Protective Eyewear

- Put on eye protection and adjust to fit
- Face shield should fit over brow

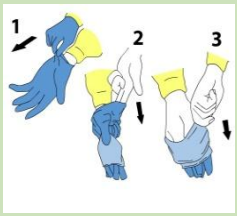
5. Put on Gloves

- Put on gloves, taking care not to tear or puncture glove
- If a gown is worn, the glove fits over the gown's cuff

TAKING OFF PPE

1. Remove Gloves

- Remove gloves using a glove-to-glove/skin-to-skin technique
- Grasp outside edge near the wrist and peel away, rolling the glove inside-out
- Reach under the second glove and peel away
- Discard immediately into waste receptacle



2. Remove Gown

- Remove gown in a manner that prevents contamination of clothing or skin
- Starting at the neck ties, the outer, 'contaminated', side of the gown is pulled forward and turned inward, rolled off the arms into a bundle, then discarded immediately in a manner that minimizes air disturbance

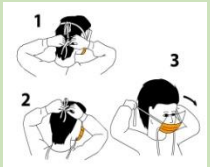
3. Perform Hand Hygiene

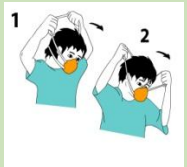
4. Remove Eye Protection

- Arms of goggles and headband of face shields are considered to be 'clean' and may be touched with the hands
- The front of goggles/face shield is considered to be contaminated
- Remove eye protection by handling ear loops, sides or back only
- Discard into waste receptacle or into appropriate container to be sent for reprocessing
- Personally-owned eyewear may be cleaned by the individual after each use

5. Remove Mask/N95 Respirator

- Ties/ear loops/straps are considered 'clean' and may be touched with hands
- The front of the mask/respirator is considered to be contaminated
- Untie bottom tie then top tie, or grasp straps or ear loops
- Pull forward off the head, bending forward to allow mask/respirator to fall away from the face
- Discard immediately into waste receptacle





6. Perform Hand Hygiene

APPENDIX M: ADVANTAGES AND DISADVANTAGES OF PPE

MEDICAL GLOVES

Type	Use	Advantages	Disadvantages
Vinyl	▪ Protection for: ○ Minimal exposure to blood/body fluids/infectious agents ○ Contact with strong acids and bases, salts, alcohols ○ Short duration tasks ▪ Protection for staff with documented skin breakdown	▪ Good level of protection but based on the quality of manufacturer ▪ Medium chemical resistance	▪ Not recommended for contact with solvents, aldehydes, ketones ▪ Quality varies with manufacturers ▪ Punctures easily when stressed ▪ Rigid – non elastic
Latex	▪ Activities that require sterility ▪ Protection for: ○ Heavy exposure to blood/body fluids/infectious agents ○ Contact with weak acids and bases, alcohols	▪ Good barrier qualities ▪ Strong and durable ▪ Has re-seal qualities ▪ Good comfort and fit ▪ Good protection from most caustics and detergents	▪ Not recommended for contact with oils, greases and organics ▪ Not recommended for individuals in the vicinity of those who have allergic reactions or sensitivity to latex
Nitrile	▪ Protection for: ○ Heavy exposure to blood/body fluids/infectious agents ○ Tasks of longer duration ○ Tasks with high stress on glove ○ Tasks requiring additional dexterity ○ Chemicals and chemotherapeutic agents ○ Recommended for contact with oils, greases, acids, bases ○ Sensitivity to vinyl ▪ Preferred replacement for vinyl gloves when a documented allergy or sensitivity occurs	▪ Offers good dexterity ▪ Strong and durable ▪ Puncture-resistant ▪ Good comfort and fit ▪ Excellent resistance to chemicals	▪ Not recommended for contact with solvents, ketones, esters
Neoprene	▪ Replacement sterile glove for latex when a documented allergy or sensitivity occurs ▪ Recommended for contact with acids, bases, alcohols, fats, oils, phenol, glycol ethers	▪ Good barrier qualities ▪ Strong and durable ▪ Good comfort and fit ▪ Good protection from caustics	▪ Not recommended for contact with solvents

[Adapted from Sunnybrook Health Sciences Centre, Patient Care Policy Manual Section II: Infection Prevention and Control [Policy No: II-D-1200, '*Gloves*'. Revised July, 2007 and London Health Sciences Centre, Occupational Health and Safety Services, '*Glove Selection and Use*'. Revised April 26, 2005.]

MASKS AND N95 RESPIRATORS

Type of Mask	Use	Advantages	Disadvantages
Standard Face Mask ('procedure' mask or 'isolation' mask)	▪ Protection for: ○ Minimal exposure to infectious droplets ○ Short duration tasks ○ Tasks that do not involve exposure to blood/body fluids ▪ Protection from client/patient/resident during transportation outside of room	▪ Inexpensive	▪ Not fluid or water resistant
Fluid Resistant Mask	▪ Protection for: ○ Heavy exposure to infectious droplets or blood/body fluids	▪ Good comfort and fit ▪ Fluid resistant	▪ Expensive
Surgical Mask	▪ Protection for: ○ Exposure to infectious droplets or blood/body fluids ○ Long duration tasks	▪ Good comfort and fit ▪ Fluid resistant ▪ Inexpensive	
NIOSH- certified N95 respirator	▪ Protection for airborne pathogens	▪ Provides protection from small particle aerosols ▪ Better face seal prevents leakage around mask	▪ Requires fit-testing, training and seal-checking ▪ Expensive ▪ Uncomfortable for long periods of use

EYE PROTECTION

Type of Eyewear	Use	Advantages	Disadvantages
Safety Glasses	▪ Protection for: ○ Exposure to infectious droplets or blood/body fluids	▪ may be cleaned and re-used until visibility is compromised ▪ may be worn over prescription eyeglasses ▪ good visibility	▪ with continued use, visibility may be compromised
Goggles	▪ Protection for: ○ Exposure to infectious droplets or blood/body fluids	▪ may be cleaned and re-used until visibility is compromised ▪ may be worn over prescription eyeglasses	▪ poor visibility
Face Shield	▪ Protection for: ○ Exposure to infectious droplets or blood/body fluids	▪ may be worn over prescription eyeglasses ▪ good visibility	
Visor attached to Mask	▪ Protection for: ○ Minimal exposure to infectious droplets or blood/body fluids	▪ May be worn with prescription eyeglasses ▪ Quick to put on	

APPENDIX N: CLINICAL SYNDROMES/CONDITIONS WITH REQUIRED LEVEL OF PRECAUTIONS

ORGANISM/ DISEASE	CATEGORY *	TYPE OF PRECAUTION	SINGLE ROOM?	DURATION OF PRECAUTIONS	COMMENTS
*** = Paediatric precautions apply to children who are incontinent or too immature to comply with hygiene** **RP = Routine Practices**					
ABSCESS	Minor	RP	No		If community-associated MRSA is suspected, use Contact Precautions until ruled out.
	Major (drainage not contained by dressing)	**Contact**	Yes	Continue precautions for duration of uncontained drainage.	
ADENOVIRUS INFECTION	Conjunctivitis	**Contact**	Yes	Continue precautions for duration of symptoms.	May cohort patients in outbreaks.
	Pneumonia	**Droplet + Contact**	Yes		
AIDS	**See HIV**				
AMOEBIASIS (Dysentery) *Entamoeba histolytica*	Adult	RP	No		**Reportable Disease**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes		
ANTHRAX *Bacillus anthracis*	Cutaneous or pulmonary	RP	No		**Reportable Disease** **Notify Infection Control**
ANTIBIOTIC-RESISTANT ORGANISMS (AROs) - not listed elsewhere		**Contact** may be indicated	May be indicated	Precautions, if required, are initiated and discontinued by Infection Control.	See also listings under MRSA, VRE, ESBL and CPE.
ARTHROPOD-BORNE VIRAL INFECTIONS Eastern, Western, & Venezuelan equine encephalomyelitis; St. Louis & California encephalitis; West Nile virus		RP	No		**Reportable Disease** No person-to-person transmission.
ASCARIASIS (Roundworm) *Ascaris lumbricoides*		RP	No		No person-to-person transmission.
ASPERGILLOSIS *Aspergillus* species		RP	No		If several cases occur in close proximity, look for environmental source.
BABESIOSIS		RP	No		Tick-borne. Not transmitted from person-to-person except by transfusion.
BLASTOMYCOSIS *Blastomyces dermatitidis*	Cutaneous or pulmonary	RP	No		No person-to-person transmission.
BOTULISM	**See Food Poisoning/Food-borne Illness**				
BRONCHITIS/ BRONCHIOLITIS	**See Respiratory Infections**				

ORGANISM/ DISEASE	CATEGORY *	TYPE OF PRECAUTION	SINGLE ROOM?	DURATION OF PRECAUTIONS	COMMENTS
*** = Paediatric precautions apply to children who are incontinent or too immature to comply with hygiene** **RP = Routine Practices**					
BRUCELLOSIS (Undulant fever)		RP	No		**Reportable Disease** No person-to-person transmission If lesions present, **see Abscess**
CAMPYLOBACTER	Adult	RP	No		**Reportable Disease** **Notify Infection Control**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes	Continue precautions until stools are formed.	
CARBAPENEMASE-PRODUCING *ENTEROBACTERIACEAE* (CPE)	**See *Enterobacteriaceae*, Resistant**				
CAT-SCRATCH FEVER *Bartonella henselae*		RP	No		No person-to-person transmission.
CELLULITIS , **with drainage**	**See Abscess**				
CELLULITIS	Child < 5 years of age if *Haemophilus influenzae* type B is present or suspected	**Droplet**	Yes	Continue precautions until 24 hours of appropriate antimicrobial therapy or until *H. influenzae* type B is ruled out.	
CHANCROID *Haemophilus ducreyi*		RP	No		**Reportable Disease**
CHICKENPOX	**See Varicella**				
CHLAMYDIA	*Chlamydia trachomatis* genital infection or lymphogranuloma venereum	RP	No		**Reportable Disease**
	Chlamydia pneumonia, psittaci	RP	No		
CHOLERA *Vibrio cholera*	Adult	RP	No		**Reportable Disease** **Notify Infection Control**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes		
CLOSTRIDIUM DIFFICILE		**Contact**	Yes	Continue precautions until formed stool for at least two consecutive days.	**Outbreaks Reportable** **Notify Infection Control.** Laboratory-confirmed cases may be cohorted.
COCCIDIOIDOMYCOSIS (Valley Fever)	Draining lesions or pneumonia	RP	No		No person-to-person transmission.
COMMON COLD Rhinovirus		**Droplet + Contact**	Yes	Continue precautions for duration of symptoms.	
CONGENITAL RUBELLA	**See Rubella**				
CONJUNCTIVITIS		**Contact**	Yes	Continue precautions until viral aetiology ruled out or for	

ORGANISM/ DISEASE	CATEGORY *	TYPE OF PRECAUTION	SINGLE ROOM?	DURATION OF PRECAUTIONS	COMMENTS
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				duration of symptoms.	
COXSACKIEVIRUS	**See Enteroviral Infections**				
CREUTZFELDT-JAKOB DISEASE (CJD)		RP	No		**Reportable Disease.** **Notify Infection Control.** Equipment in contact with infectious material requires special handling & disinfection practices.
CROUP		**Droplet + Contact**	Yes	Continue precautions for duration of illness or until infectious cause ruled out.	
CRYPTOCOCCOSIS *Cryptococcus neoformans*		RP	No		No person-to-person transmission.
CRYPTOSPORIDIOSIS	Adult	RP	No		**Reportable Disease** **Notify Infection Control**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes		
CYSTICERCOSIS		RP	No		No person-to-person transmission.
CYTOMEGALOVIRUS (CMV)		RP	No		**Reportable Disease if congenital** Transmitted by close, direct personal contact, blood transfusions or transplants.
DECUBITUS ULCER, infected	**See Abscess**				
DENGUE	**See Arthropod-borne viral infections**				
DERMATITIS		RP	Yes, if extensive		If compatible with scabies, see *Scabies*
DIARRHEA	**Acute infectious**	**See Gastroenteritis**			
	Suspected *C. difficile* diarrhea	**See *Clostridium difficile***			
DIPHTHERIA *Corynebacterium diphtheriae*	Pharyngeal	**Droplet**	Yes	Continue precautions until two appropriate cultures taken at least 24 hours apart after cessation of antibiotics are negative for *C. diphtheriae.*	**Reportable Disease** **Notify Infection Control**
	Cutaneous	**Contact**	Yes		
EBOLA VIRUS	**See Haemorrhagic Fevers**				
ECHINOCOCCOSIS		RP	No		No person-to-person transmission.
ECHOVIRUS DISEASE	**See Enteroviral Infections**				
EHRLICHIOSIS *Ehrlichia chaffeensis*		RP	No		Tick-borne

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ENCEPHALITIS	Adult	RP	No		**Reportable Disease**
	Paediatric*	**Contact**	Yes	Continue precautions until Enterovirus is ruled out.	
***ENTEROBACTERIACEAE*-RESISTANT** **Carbapenemase-producing *Enterobacteriaceae* (CPE)**		**Contact**	Yes	Continue precautions for duration of hospitalization	**Notify Infection Control** If readmitted, use Contact precautions
Extended-spectrum Beta-lactamase producing *Enterobacteriaceae* (ESBL)		**Contact** may be indicated	May be indicated	Precautions, if indicated, are initiated and discontinued by Infection Control	**Notify Infection Control**
ENTEROBIASIS (Pinworm disease) *Enterobius vermicularis*		RP	No		Transmission is faecal-oral directly or indirectly through contaminated articles e.g., bedding.
ENTEROCOLITIS	**See Gastroenteritis - Necrotizing Enterocolitis**				
ENTEROVIRAL INFECTIONS (Coxsackie viruses, Echo viruses)	Adult	RP	No		
	Paediatric*	**Contact**	Yes	Continue precautions for duration of illness.	
EPIGLOTTITIS, **due to** *Haemophilus influenzae* Type B	Adult	RP	No		**Type B is Reportable Disease.** **Notify Infection Control**
	Paediatric*	**Droplet**	Yes	Continue precautions for 24 hours after start of effective therapy.	
EPSTEIN-BARR VIRUS (Infectious Mononucleosis)		RP	No		Transmitted via intimate contact with oral secretions or articles contaminated by them.
ERYSIPELAS	**See Streptococcal Disease**				
ERYTHEMA INFECTIOSUM (Parvovirus B19)	Aplastic crisis	**Droplet**	Yes	Continue precautions for duration of hospitalization with immunocompromised persons, or 7 days with others.	
	Fifth disease	RP	No		No longer infectious by the time rash appears.
ESCHERICHIA COLI O157:H7	Adult	RP	No		**Reportable Disease** **Notify Infection Control**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes	Continue precautions until stools are formed.	
EXTENDED SPECTRUM BETA-LACTAMASE-PRODUCING *ENTEROBACTERIACEAE* (ESBL)	**See *Enterobacteriaceae,* Resistant**				

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FIFTH DISEASE	**See Erythema Infectiosum**				
FOOD POISONING/ FOOD-BORNE ILLNESS	*Clostridium botulinum* (Botulism)	RP	No		**Reportable Disease** No person-to-person transmission.
	Clostridium perfringens	RP	No		
	Salmonella or *Escherichia coli* O157:H7 in paediatric or incontinent adult if stool cannot be contained	**Contact**	Yes	Continue precautions until Salmonellosis or *E. coli* 0157:H7 are ruled out.	**Reportable Disease** **Notify Infection Control**
	Other causes	RP	No		
FRANCISELLA TULARENSIS	**See Tularemia**				
FURUNCULOSIS *Staphylococcus aureus*	**See Abscess**				
GANGRENE	Gas gangrene due to any bacteria	RP	No		No person-to-person transmission.
GASTROENTERITIS	Acute infectious	**Contact**	Yes	Continue precautions until *C.difficile* and norovirus or other viral agents ruled out.	**Outbreaks are reportable** **Notify Infection Control** See specific organism if identified.
	Paediatric* and incontinent/non-compliant adult	**Contact**	Yes	Continue precautions for duration of illness.	
GERMAN MEASLES	**See Rubella**				
GIARDIASIS *Giardia lamblia*	Adult	RP	No		**Reportable Disease**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes	Continue precautions until stools are formed	
GONORRHEA *Neisseria gonorrhoeae*		RP	No		**Reportable Disease** Sexual transmission.
GRANULOMA INGUINALE		RP	No		Sexual transmission.
HAEMOPHILUS INFLUENZAE TYPE B	Pneumonia - adult	RP	No		**Reportable Disease if invasive**
	Pneumonia – paediatric*	**Droplet**	Yes	Continue precautions until 24 hours after effective treatment	
	Meningitis	**See Meningitis**			
HAND, FOOT, & MOUTH DISEASE	**See Enteroviral Infection**				
HANTAVIRUS PULMONARY SYNDROME		RP	No		**Reportable Disease** No person-to-person transmission.
HANSEN'S DISEASE	**See Leprosy**				
HAEMORRHAGIC FEVERS (e.g., Lassa, Ebola, Marburg)		**Droplet + Contact**	Yes, with negative	Continue precautions until symptoms resolve	**Notify Public Health <u>immediately</u>**

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*** = Paediatric precautions apply to children who are incontinent or too immature to comply with hygiene** **RP = Routine Practices**					
		Airborne if pneumonia	air flow, door closed if pneumonia		**Notify Infection Control <u>immediately</u>**
HEPATITIS, VIRAL Hepatitis A & E	Adult	RP	No		**Reportable Disease**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes	Duration of precautions: < 3years: duration of hospital stay > 3years: one week from symptoms onset	
Hepatitis B & C (including Delta)		RP	No		**Reportable Disease** Report to Occupational Health if health care provider has percutaneous or mucous membrane exposure
HERPANGINA	**See Enterovirus**				
HERPES SIMPLEX	Encephalitis	RP	No		**Reportable Disease**
	Mucocutaneous - recurrent	RP	No		Gloves for contact with lesions.
	Disseminated/ severe	**Contact**	Yes	Continue precautions until lesions crusted and dry.	
	Neonatal infection, and infants born to mothers with active genital herpes until neonatal infection ruled out	**Contact**		Continue precautions for duration of symptoms	**Reportable Disease** **Notify Infection Control**
HISTOPLASMOSIS *Histoplasma capsulatum*		RP	No		No person-to-person transmission.
HIV		RP	No		**Reportable Disease** Report to Occupational Health if health care provider has percutaneous or mucous membrane exposure
HOOKWORM DISEASE (Ancylostomiasis)		RP	No		No person-to-person transmission.
HUMAN HERPESVIRUS 6 (Roseola)	**See Roseola**				
IMPETIGO	**See Abscess**				
INFECTIOUS MONONUCLEOSIS	**See Epstein-Barr virus**				
INFLUENZA **(seasonal)**		**Droplet + Contact**	Yes	Continue precautions for 5 days after onset of illness.	**Reportable Disease** **Notify Infection Control**

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KAWASAKI SYNDROME		RP	No		
LASSA FEVER	**See Haemorrhagic Fevers**				
LEGIONNAIRES' DISEASE *Legionella pneumophila*		RP	No		**Reportable Disease** **Notify Infection Control** No person-to-person transmission.
LEPROSY (Hansen's disease) *Mycobacterium leprae*		RP	No		**Reportable Disease**
LEPTOSPIROSIS *Leptospira* sp.		RP	No		No person-to-person transmission.
LICE	**See Pediculosis**				
LISTERIOSIS *Listeria monocytogenes*		RP	No		**Reportable Disease**
LYME DISEASE *Borrelia burgdorferi*		RP	No		**Reportable Disease** No person-to-person transmission.
LYMPHOCYTIC CHORIOMENINGITIS (Aseptic meningitis)		RP	No		No person-to-person transmission.
LYMPHOGRANULOMA VENEREUM	**See *Chlamydia trachomatis***				
MALARIA *Plasmodium* species		RP	No		**Reportable Disease** No person-to-person transmission, except by blood transfusion.
MARBURG VIRUS	**See Haemorrhagic Fevers**				
MEASLES (Rubeola)		**Airborne**	Yes, with negative air flow, door closed	Continue precautions for four days after start of rash, and for duration of illness in immunocompromised patients.	**Reportable Disease** **Notify Infection Control.** Only immune staff should enter the room.
MENINGITIS	Aetiology unknown - adult	**Droplet**	Yes		**Reportable Disease**
	Aetiology unknown – paediatric*	**Droplet + Contact**	Yes		
	Haemophilus influenzae type B - adult	RP	No		
	Haemophilus influenzae type B – paediatric*	**Droplet**	Yes	Continue precautions for 24 hours after start of effective therapy.	

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*** = Paediatric precautions apply to children who are incontinent or too immature to comply with hygiene** **RP = Routine Practices**					
	Meningococcal (*Neisseria meningitidis*)	**Droplet**	Yes	Continue precautions for 24 hours after start of effective therapy.	**Reportable Disease** **Notify Infection Control**
	Other bacterial	RP	No		**Reportable Disease** See listings by bacterial type.
	Viral - adult ("aseptic")	RP	No		**Reportable Disease** See also Enteroviral
	Viral - paediatric*	**Contact**	Yes		
MENINGOCOCCAL DISEASE *Neisseria meningitidis*		**Droplet**	Yes	Continue precautions for 24 hours after start of effective therapy.	**Reportable Disease** **Notify Infection Control**
MRSA Methicillin-resistant *Staphylococcus aureus*		**Contact** (+ **Droplet** if in sputum and coughing)	Yes	Continue precautions until discontinued by Infection Control.	
MUMPS (Infectious parotitis)		**Droplet**	Yes	Continue precautions for five days after onset of swelling.	**Reportable Disease** **Notify Infection Control**
MYCOBACTERIA Nontuberculosis, atypical eg., *Mycobacterium avium*		RP	No		No person-to-person transmission.
MYCOBACTERIUM TUBERCULOSIS	**See Tuberculosis**				
MYCOPLASMA PNEUMONIA		**Droplet**	Yes	Continue precautions for duration of illness.	
NECROTIZING ENTEROCOLITIS		RP	No		Cohorting ill infants + Contact Precautions may be indicated for clusters/outbreaks. Unknown if transmissible.
NECROTIZING FASCIITIS	**See Streptococcal Disease, Group A**				
NEISSERIA MENINGITIDIS	**See Meningococcal Disease**				
NOROVIRUS		**Contact**	Yes	Continue precautions until 48 hours after resolution of symptoms.	**Outbreaks Reportable** **Notify Infection Control**
OPHTHALMIA NEONATORUM	**See Conjunctivitis**				
PARAINFLUENZA VIRUS		**Droplet + Contact**	Yes	Continue precautions for duration of symptoms.	Cohorting may be necessary during outbreaks.
PARATYPHOID FEVER *Salmonella paratyphi*		RP	No		**Reportable Disease**
PARVOVIRUS B19	**See Erythema Infectiosum**				

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PEDICULOSIS (Lice)		RP, plus gloves for direct patient contact	No	Continue precautions for 24 hours after application of pediculicide.	
PERTUSSIS (Whooping Cough) *Bordetella pertussis*		**Droplet**	Yes	Continue precautions for five days after start of treatment or three weeks if not treated.	**Reportable Disease** **Notify Infection Control**
PINWORMS	**See Enterobiasis**				
PLAGUE *Yersinia pestis*	Pneumonic	**Droplet**	Yes	Continue precautions for 48 hours of effective therapy.	**Reportable Disease** **Notify Infection Control**
	Bubonic	RP	No		
PLEURODYNIA	**See Enteroviral Infection**				
PNEUMONIA Aetiology unknown		**Droplet + Contact**	Yes	Continue precautions until aetiology established or clinical improvement on empiric therapy	
POLIOMYELITIS		**Contact**	Yes	Continue precautions for 6 weeks after onset of illness	**Reportable Disease** **Notify Infection Control**
PSEUDOMEMBRANOUS COLITIS	**See *Clostridium difficile***				
PSITTACOSIS (Ornithosis) *Chlamydia psittaci*	**See Chlamydia**				
PHARYNGITIS	Adult	RP	No		
	Paediatric*	**Droplet + Contact**	Yes	Continue precautions for duration of illness, or 24 hours of effective therapy if Group A streptococcus	
Q FEVER *Coxiella burnetii*		RP	No		**Reportable Disease** No person-to-person transmission
RABIES Rhabdovirus		RP	No		**Reportable Disease** **Notify Infection Control** Person-to-person transmission not documented except via corneal transplantation. Open wound/mucous membrane exposure to saliva of a patient should be considered for prophylaxis
RESISTANT ORGANISMS	**See Antibiotic-Resistant Organisms**				

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*** = Paediatric precautions apply to children who are incontinent or too immature to comply with hygiene** **RP = Routine Practices**					
RESPIRATORY INFECTIONS , acute febrile		**Droplet + Contact**	Yes	Continue precautions until symptoms improve or infectious cause identified.	See specific organism, if identified.
RESPIRATORY SYNCYTIAL VIRUS (RSV)		**Droplet + Contact**	Yes	Continue precautions for duration of illness.	
REYE'S SYNDROME		RP	No		May be associated with viral infection.
RHEUMATIC FEVER		RP	No		Complication of a Group A streptococcal infection.
RHINOVIRUS	**See Common Cold**				
RINGWORM	**See Tinea**				
ROSEOLA INFANTUM (Exanthem Subitum, Sixth disease, HHV6)		RP	No		Transmission requires close, direct personal contact.
ROTAVIRUS		**Contact**	Yes	Continue precautions until formed stool.	
ROUNDWORM	**See Ascariasis**				
RUBELLA (German Measles)	Acquired	**Droplet**	Yes	Continue precautions for seven days after onset of rash.	**Reportable Disease** **Notify Infection Control** Only immune staff should provide care. Pregnant health care providers should <u>not</u> provide care regardless of immune status.
	Congenital	**Droplet + Contact**	Yes	Continue precautions for one year after birth, unless urine and nasopharyngeal cultures done after three months of age are negative.	
SALMONELLOSIS *Salmonella* species	Adult	RP	No		**Reportable Disease** **Notify Infection Control**
	Paediatric* and incontinent or non-compliant adult	**Contact**	Yes	Continue precautions until formed stool.	
SEVERE ACUTE RESPIRATORY SYNDROME (SARS) or Acute Respiratory Illness with travel to a high risk geographical area		**Droplet + Contact** N95 respirator for aerosol-generating procedures	Yes	Continue precautions 10 days following resolution of fever if respiratory symptoms have also resolved.	**Reportable Disease** **Notify Public Health <u>immediately</u>** **Notify Infection Control <u>immediately</u>**
SCABIES *Sarcoptes scabei*	Limited, 'typical'	RP, gloves for skin contact	No	Continue precautions until 24 hours after application of scabicide.	
	Crusted, 'Norwegian'	**Contact**	Yes		
SCALDED SKIN SYNDROME	**See Abscess, major**				
SHIGELLOSIS *Shigella* species	**See Gastroenteritis**				
SHINGLES	**See Varicella Zoster**				

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SMALLPOX	**See Variola**				
STAPHYLOCOCCAL DISEASE *Staphylococcus aureus*	Food poisoning	**See Food Poisoning/Food-borne Illness**			
	Skin, wound, or burn infection	**See Abscess**			
	Pneumonia - adult	RP	No		
	Pneumonia – paediatric*	**Droplet**	Yes	Continue precautions until 24 hours of effective therapy.	
	Toxic shock syndrome (TSS)	RP	No		
STREPTOCOCCAL DISEASE Group A *Streptococcus*	Skin, wound or burn infection, including necrotizing fasciitis	**Droplet + Contact**	Yes	Continue precautions until 24 hours of effective treatment.	**Reportable Disease if invasive** **Notify Infection Control**
	Toxic shock-like syndrome (TSLS)	**Droplet + Contact**	Yes		
	Pneumonia	**Droplet**	Yes		
	Pharyngitis/scarlet fever – paediatric*	**Droplet**	Yes		
	Endometritis (Puerperal Sepsis)	RP	No		
	Pharyngitis/ scarlet fever - adult	RP	No		
Group B Streptococcus	Neonatal	RP	No		**Reportable Disease** **Notify Infection Control**
Streptococcus pneumonia ('pneumococcus')		RP	No		
STRONGYLOIDIASIS *Strongyloides stercoralis*		RP	No		May cause disseminated disease in immunocompromised.
SYPHILIS *Treponema pallidum*		RP, gloves for contact with skin lesions	No		**Reportable Disease**
TAPEWORM DISEASE *Diphyllobothrium latum* (fish) *Hymenolepis nana, Taenia saginata* (beef) *Taenia solium* (pork)		RP	No		Autoinfection possible.
TETANUS *Clostridium tetani*		RP	No		**Reportable disease** No person-to-person transmission.
TINEA (Fungus infection		RP	No		Thorough cleaning of bath and shower after use. No

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dermatophytosis, dermatomycosis, ringworm)					shared combs or brushes.
TOXOPLASMOSIS *Toxoplasma gondii*		RP	No		No person-to-person transmission except vertical.
TOXIC SHOCK SYNDROME	**See Staphylococcal & Streptococcal Disease**				
TRENCHMOUTH	**See Vincent's angina**				
TRICHINOSIS *Trichinella spiralis*		RP	No		**Reportable Disease** No person-to-person transmission.
TRICHOMONIASIS *Trichomonas vaginalis*		RP	No		Sexual transmission
TUBERCULOSIS *Mycobacterium tuberculosis*	Extrapulmonary, no draining lesions	RP	No		**Reportable Disease** **Notify Infection Control** Assess for concurrent pulmonary TB.
	Extrapulmonary, draining lesions	**Airborne**	Yes, with negative air flow and door closed	Continue precautions until drainage ceased or three consecutive negative AFB smears.	
	Pulmonary - confirmed or suspected or laryngeal disease	**Airborne**	Yes, with negative air flow and door closed	Continue precautions until TB ruled out. If confirmed, until patient has received two weeks of effective therapy, is improving clinically and has three consecutive sputum smears negative for AFB, collected 24 hours apart. If multidrug-resistant TB, until culture negative.	**Reportable Disease** **Notify Infection Control**
	Skin-test positive with no evidence of current disease	RP	No		Latent tuberculous infection (LTBI).
TULAREMIA *Francisella tularensis*		RP	No		**Reportable Disease** No person-to-person transmission. Notify Microbiology laboratory if suspected, as aerosols from cultures are infectious.
TYPHOID FEVER *Salmonella typhi*		RP	No		**Reportable Disease**
TYPHUS *Rickettsia* species		RP	No		Transmitted through close personal contact, but not

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					in absence of lice.
URINARY TRACT INFECTION		RP	No		
VANCOMYCIN-RESISTANT ENTEROCOCCUS (VRE)	**See VRE**				
VANCOMYCIN-RESISTANT *STAPHYLOCOCCUS AUREUS* (VRSA)	**See VRSA**				
VARICELLA (Chickenpox)		**Airborne**	Yes, with negative air flow and door closed	Continue precautions until all vesicles have crusted and for at least five days.	**Reportable Disease** **Notify Infection Control** Neonates born to mothers with active varicella should be isolated at birth. **Only immune staff should enter the room.**
VARICELLA ZOSTER (Shingles, Zoster) *Herpes zoster*	Immunocompromised patient, or disseminated	**Airborne**	Yes, with negative air flow and door closed	Continue precautions until all lesions have crusted and dried.	**Notify Infection Control.** **Only immune staff should enter the room.**
	Localized in all other patients	RP	No		Roommates and staff must be immune to chickenpox.
VARIOLA (Smallpox)		**Airborne + Contact**	Yes, with negative air flow and door closed	Continue precautions until all lesions have crusted and separated (3 to 4 weeks)	**Report to Public Health immediately** **Notify Infection Control immediately**
VIBRIO	**See Gastroenteritis or Cholera**				
VINCENT'S ANGINA (Trench mouth)		RP	No		
VIRAL DISEASES - Respiratory (if not covered elsewhere)		**Droplet + Contact**	Yes		See also specific disease/organism.
VRE Vancomycin-resistant enterococcus		**Contact**	Yes	Continue precautions until discontinued by Infection Control.	**Notify Infection Control**
VRSA Vancomycin-resistant *Staphylococcus aureus*		**Contact**	Yes	Continue precautions for duration of hospital stay.	**Notify Infection Control**

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WEST NILE VIRUS (WNV)	**See Arthropod-borne Viral Fevers**				
WHOOPING COUGH	**See Pertussis**				
WOUND INFECTIONS	**See Abscess**				
YELLOW FEVER	**See Arthropod-borne Viral Fevers**				
YERSINIA ENTEROCOLITICA	**See Gastroenteritis**				
YERSINIA PESTIS	**See Plague**				
ZOSTER	**See Herpes Zoster**				

[Based on Health Canada's '*Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care*'[8] and the Center for Disease Control's '*2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Health Care Settings*'[18]]

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