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<th>Phone (weekdays)</th>
<th>Infection Control Officer (evenings and weekends)</th>
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<tr>
<td>Vancouver General</td>
<td>604-875-4002</td>
<td>604-875-5000</td>
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<td>Ask for Medical Microbiologist on Call</td>
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<td>UBC Hospital</td>
<td></td>
<td>604-875-5000</td>
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<td>Ask for Medical Microbiologist on Call</td>
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<td>GF Strong Rehabilitation Centre</td>
<td></td>
<td>604-875-5000</td>
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<td></td>
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<td>Ask for Medical Microbiologist on Call</td>
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<tr>
<td>George Pearson</td>
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<td>604-875-5000</td>
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<td>Richmond Hospital</td>
<td>604-244-5156</td>
<td>604-278-9711 ext. 4142</td>
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<td>Ask for Pathologist on Call</td>
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<td>Lions Gate Hospital</td>
<td>604-904-3531</td>
<td>604-988-3131</td>
</tr>
<tr>
<td></td>
<td>604-904-3505</td>
<td>Ask for Medical Microbiologist on Call</td>
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<tr>
<td>Whistler &amp; Pemberton</td>
<td>(604) 815-9339</td>
<td>604-527-4893</td>
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<td></td>
<td>Ask for Medical Health Officer on Call</td>
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<td>Squamish General Hospital</td>
<td>604-815-9339</td>
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By Intranet

The Infection Control intranet site provides more information about what we do, as well as useful links and current guidelines for Infection Control. The algorithms and forms in the manual are available on the IC Intranet site in a printable format.

In person

Contact Infection Control to arrange a visit from or an education session with an Infection Control Practitioner, who will come to your ward or unit.

When you have questions, and you are using the electronic edition of the Regional Infection Control Manual for information, click on the item in the Table of Contents. If you still cannot find the answer, during regular working hours, call the Infection Control Department for your site.
1.2 Scope

The prevention and control of infection within health care facilities is each individual’s responsibility. The Vancouver Coastal Health Infection Control Manual serves as a resource to facilitate compliance with the Infection Control Program. The manual contains recommended procedures based on national guidelines for prevention and control of infectious diseases. The infection control recommendations aim to prevent the development of new infections and to prevent the transfer of existing disease between patients, employees, students, volunteers and visitors.

For Creutzfeldt-Jakob Disease

Refer to BC Health Files for information about specific diseases.

1.3 Department policies

Programs such as Laboratory, Professional Practice, Operating Room, Sterile Processing Department, Housekeeping, and Food Services have written policies in their own manuals to provide guidance for the prevention of the spread of infection.

Refer to the Workplace Health site on VCH Intranet for information on prevention of occupational disease, Blood & Body Fluids Exposure Control Policy, Management & Surveillance of Communicable Diseases, Workplace Hazardous Materials Information System (WHMIS), and Personal Protective Equipment Program.

Refer to the Infection Control intranet site for more information. The Annual Report provides current, thorough information regarding the Infection Control department, programs, projects, surveillance activities and reports, and much more information.

1.4 Provincial policies

Refer to the BC Centre for Disease Control (BCCDC) website for information regarding provincial policy. The BCCDC website has a list of diseases that are deemed “reportable” because of being a risk to others.
2 THE CHAIN OF INFECTION

2.1 Transmission

Transmission of infection during the provision of health care requires three elements:

- A source of infecting microorganisms.
- A susceptible host.
- A means of transmission for the microorganism.

In health care settings, because source and host factors are more difficult to control, interruption of the transfer of microorganisms is directed primarily at transmission.

2.2 Source of micro-organisms

Human sources of the infecting microorganisms in health care facilities may be patients, personnel, or visitors, and may include persons with acute disease, persons in the incubation period of a disease, persons who are colonized by an infectious agent but have no apparent disease, or persons who are chronic carriers of an infectious agent.

Other sources of infecting microorganisms can be the patient’s own flora, which may be difficult to control, and fomites (inanimate objects that have become contaminated, including equipment and medications). Food and water can also be sources of microorganisms.

2.3 Susceptible host

Resistance among persons to pathogenic microorganisms varies greatly. Some persons may be immune to infection or may be able to resist colonization by an infectious agent; others exposed to the same agent may become asymptomatic carriers, while still others may develop clinical disease.

Host factors such as age; underlying diseases; certain treatments with antimicrobials; corticosteroids, chemotherapy or other immunosuppressive agents; irradiation; and breaks in the first line of defense (skin and mucous membranes) caused by such factors as surgical operations and line insertions, may render patients more susceptible to infection.

2.4 Transmission of micro-organisms

Microorganisms are transmitted in health care settings by several routes, and the same microorganism may be transmitted by more than one route.

There are five main routes of transmission: Contact, Droplet, Airborne, Common vehicle (such as food), and Vector-Borne (such as mosquitoes).

For the purpose of this manual, common vehicle and vector-borne will be discussed only briefly, because neither plays a significant role in infections in healthcare settings.

2.5 Droplet and Airborne Transmission

Recent discoveries have blurred the boundaries between droplet and airborne transmission.
Traditionally, droplet transmission refers to the dissemination of larger droplets of infectious material at close range, and usually generated by coughing, sneezing or talking. This is in contrast to airborne transmission that was originally thought to involve smaller sized droplets capable of being carried on air currents for considerable distances. It is now known that large droplets have the potential to evaporate to small droplet size and then be carried by air currents.

The healthcare setting has the potential to create aerosols of small droplets through such aerosol generating procedures as nebulizer therapy, bronchoscopy and ventilation. It remains unclear as to how much of a role either large droplets or aerosols have at close range. It is likely that both play a role in disease transmission.

Until the science of these forms of transmission is clearer, VCH has opted for the policy of initially treating known or suspected cases of respiratory infection (or fever with a rash which can be a manifestation of a respiratory infection) at the highest level of precautions, until the clinical situation of the patient is clearer and/or a diagnosis is confirmed. All sites should use the respiratory algorithm (in Chapter 3: Risk Assessment) for the initial management of these cases. After a diagnosis is available, a decision can be made as to the further management of the patient. For example, if a gram stain revealed the presence of *Streptococcus pneumoniae*, then a diagnosis of pneumococcal pneumonia would permit a step down from the higher level of precautions. Conversely, a test confirming tuberculosis would result in maintenance of the higher level of precautions until the patient is no longer infectious. Infection Control follows the patients who are identified (flagged) as “possible respiratory infection” daily, and advises staff on the appropriate level of precautions to take as the clinical situation becomes clearer. The level of precautions will take into account the patient, the organism, and the potential for aerosol generating procedures (see Section 3: Risk Assessment).

### 2.6 Contact Transmission

Contact Transmission is the most important and frequent mode of transmitting infections in health care settings, and is divided into direct and indirect contact transmission.

- **Direct Contact Transmission** involves a direct body surface to body surface contact with the physical transfer of microorganisms between a susceptible host and an infected or colonized person, such as occurs when a person turns a patient, gives a patient a bath, or performs other patient care activities requiring direct personal contact.
- Direct Contact Transmission can also occur between two patients, with one serving as the source of the infectious microorganisms and the other as a susceptible host.
- **Indirect Contact Transmission** involves contact of a susceptible host with a contaminated intermediate object, usually inanimate. Objects can include contaminated instruments, needles, or dressings; contaminated unwashed hands; and contaminated gloves.

### 2.7 Common Vehicle Transmission

This applies to microorganisms transmitted by contaminated items such as food, water, medications, medical devices, and equipment.

- Direct, e.g., Salmonella in food
- Indirect, e.g., Hepatitis A by a food service worker
2.8 Vector-Borne Transmission

This occurs when vectors, such as mosquitoes, flies, rats, and other vermin, transmit microorganisms.

This route of transmission is of less significance in healthcare facilities in Canada than in other regions of the world.
3 RISK ASSESSMENT

3.1 Why assess risk?

Health care providers recognize that infection prevention and control practices must be performed based on the risk of infection.

Infectious disease risk assessment requires adequate knowledge of the following:

- Clinical manifestations and significance of the infectious agent,
- Epidemiology – characteristics, reservoir, mode of transmission, incubation period, period of communicability,
- Transmission factors – type of exposure, size of inoculum, infectivity of organism, susceptibility, control methods.

Risk control measures to prevent health care worker (HCW) exposure to or infection with disease, in descending order of effectiveness are:

- Engineering controls: Engineering controls decrease or eliminate the hazard, e.g., negative ventilation pressure with exhaust to the outside in a room for a person with tuberculosis, design modifications for sharp instruments making them safer and less likely to pierce the skin of the health care worker.
- Administrative controls: Administrative controls include the development and adoption of policies and procedures that support Engineering Controls, the use of Work Practices, and Personal Protective Equipment.
- Work Practices: Work practices are procedures to decrease the risk of HCW exposure to and infection with disease.
- Personal Protective Equipment, when used appropriately, reduces the risk of exposure to an infectious agent.

3.2 Performing a risk assessment

To perform a risk assessment, consider the following:

- What task am I doing?
- Does this procedure increase the chance of exposure to blood, body fluids, mucous membranes, aerosols, non-intact skin (rash)?
- What is my skill level for this task?
- How cooperative is the patient/resident/client?
- Is there anything in the environment that will increase the risk of exposure?
- Are there any additional patient/resident/client characteristics to be considered (e.g., fever, new cough, diarrhea)? Apply the respiratory algorithm (Figure 1) and gastrointestinal (G.I.) algorithm (Figure 2) to all patients in the emergency department and admitted to units/wards.
3.3 Actions to be taken based on risk assessment

If your assessment indicates risk, take the following actions:

- Appropriate Infection Control Precautions (Airborne, Droplet, Contact)
- Appropriate personal protective equipment (PPE) required for patient/HCW
- Hygienic measures to be taken:
  - Aseptic technique vs. sterile technique
  - Consult Infection Control as needed.
  - Inform Infection Control of all patients being investigated for or diagnosed with an infectious disease.

3.4 Health care workers at higher risk of exposure to airborne infection

Vancouver Coastal Health recognizes that, either because of their job tasks (e.g., autopsy staff, respiratory therapists) or their area of work (e.g., ICU, ER, code teams, bronchoscopy suites), some employees are at higher risk of infection exposure through airborne transmission and aerosols. We recommend for these groups that they protect themselves with the PPE recommended for airborne precautions, i.e., N95 respirators and eye protection when indicated. For more information, see Section 4.7 Barriers and Personal Protection Equipment.

3.5 Respiratory algorithm

VCH uses the respiratory algorithm (Figure 1) to triage patients whose clinical status is unknown. Once the patient is diagnosed, infection control will determine ongoing precautions:

- continue with airborne precautions (e.g., pulmonary tuberculosis);
- step down to droplet precautions (e.g., meningococcus);
- or remove the patient from infection control precautions.

3.6 Gastrointestinal (GI) algorithm

VCH uses the gastrointestinal algorithm (Figure 2) to assess and manage the communicability of patients with gastrointestinal symptoms.

3.7 Higher risk patients

Patients at particular risk (i.e., immunosuppressed patients in the bone marrow transplant unit) will continue to use specific protocols, which were developed in collaboration with other experts, and also take into account the prolonged period of illness and potential for viral shedding. See Chapter 6 and Figure 11.
Figure 1  Acute Care Algorithm for the Immediate Management of Respiratory and/or Febrile Illness Not Yet Diagnosed

**ACUTE CARE ALGORITHM FOR IMMEDIATE MANAGEMENT OF RESPIRATORY AND/OR FEBRILE ILLNESS – NOT YET DIAGNOSED**

**TRIAGE 1**

- **INFECTION IS SUSPECTED**
  1. Patient has worsening respiratory illness with any of the following: cough, shortness of breath, difficulty breathing, abnormal CXR OR
  2. Patient has fever with any of the following: rash or parotid gland swelling

**INITIAL ISOLATION 2**

**YES TO 1 or 2**

- **INITIAL ISOLATION PENDING PHYSICIAN ASSESSMENT**
  - Patient: wears surgical mask if tolerated
  - Patient: isolated in negative pressure room, single room, or cubicle with curtain pulled
  - Staff: wears N95 respirator until differential diagnosis is determined

**ATTENDING PHYSICIAN ASSESSMENT**

**ROUTINE PRACTICES**

- Please refer to the VCH Infection Control intranet for the most current version; updates are made without notification.

**ISOLATE**

- **(for confirmed or suspected infections)**
- **AIRBORNE, DROPLET and CONTACT PRECAUTIONS**
  - SARS-CoV
  - MERS-CoV
  - Chicken Pox
  - Disseminated Herpes Zoster
- **AIRBORNE and CONTACT PRECAUTIONS**
  - Tuberculosis
  - Measles
- **AIRBORNE PRECAUTIONS**
  - Influenza
  - Viral respiratory infections
  - Meningitis
  - VHF (refer to VHF/EVD triage algorithm)*
- **DROPLET PRECAUTIONS**
  - Mumps
  - Pertussis

**ROUTINE:**

- **ALL PATIENT ENCOUNTERS:** hand hygiene, use of protective equipment appropriate for the clinical situation

- **AIRBORNE:** N95 respirator, patient in negative pressure room, door closed
- **DROPLET:** surgical mask, protective eyewear (face shield or goggles), follow respiratory/cough etiquette
- **CONTACT:** gown, gloves

*If the working diagnosis is unclear, default to the higher level of precaution(s).

*Use N95 respirator for aerosol generating medical procedures

References:
Figure 2 Acute Care Algorithm for the Immediate Management of Gastroenteritis – Not Yet Diagnosed

ACUTE CARE ALGORITHM FOR THE IMMEDIATE MANAGEMENT OF GASTROENTERITIS NOT YET DIAGNOSED

New onset of:
• Diarrhea more than 2 liquid stools per 24 hour period and/or
• Two or more episodes of vomiting in a 24 hour period
AND GASTROENTERITIS SUSPECTED

Yes

No

Routine Practices

TRIAGE NURSE OR DOCTOR (Refer to VCH Internet/Infection Control/IC Guidelines/IC Manual)
• Place patient on Contact Precautions.
• A single room is preferred. If not available, the patient may be temporarily placed in a cubicle with contact precaution sign posted on the curtain. Patient to be moved to a single room when available.
• Separate symptomatic patients from others.
• Update the IFD in the electronic record to indicate “G” gastroenteritis.

ADMITTING AND STAFF SUPPORT COORDINATORS
• Arrange for a single room
• Note “Contact Precautions Necessary” on patient chart. Flag chart as “G” (Gastroenteritis) in IFD section of the electronic patient record.

INFECTION CONTROL PRECAUTIONS
• Contact Precautions sign on door of patient’s room.
• Single room if possible. Door may remain open.
• Toilet facilities dedicated to patient or a dedicated commode must be used.
• Instruct patient and visitors to practice meticulous hand hygiene.

STAFF AND VISITORS
• Restrict symptomatic visitors. Keep number of visitors to a minimum.
• Wear gown and gloves for direct contact with patient secretions and excretions.
• Wear mask and eye protection if cleaning up feces or flushing toilet/hopper, or patient actively vomiting.
• Practice meticulous hand hygiene before contact, after task completed and after barriers are removed.
• Initiate Stool Chart.

EQUIPMENT AND CLEANING
• Equipment should be dedicated to patient. If not possible then clean equipment with recommended disinfectant prior to removal from room/cubicle and use on another patient.
• Use minimal supplies in room; discard after discharge or send with patient on transfer/discharge.
• Linen and garbage go in regular receptacles and food trays handled routinely.
• Isolation clean after discharge.

Infection Control June 2009
4 ROUTINE INFECTION CONTROL PRACTICES

4.1 What are Routine Practices?

The concept of Routine Practices specifies the level of care that should be provided for all patients every day. Routine Practices is a way of thinking and acting that forms the foundation for limiting the transmission of microorganisms in all health care settings. Routine Practices is the minimum standard of care for all patients/clients/residents.

Routine Practices supersedes, and is more encompassing than, previous blood borne pathogen precautions (Universal Precautions).

The elements of Routine Practices are:

- Risk assessment, hand hygiene, personal protective equipment (PPE), equipment management, environmental controls (e.g., waste management, cleaning, sharps handling), accommodation, and patient transportation, and
- Education of health care workers, clients/patients/residents, as well as families/visitors.

4.2 What are Additional Precautions?

Additional Precautions are additional infection control measures taken to protect against certain pathogens or clinical presentations.

In acute care settings, Additional Precautions must be adequate to prevent, or at least minimize, transmission of organisms.

These recommendations are adapted from the Health Canada guidelines, with modifications.

4.3 Take care of your own health

Perform proper and frequent hand hygiene.

Do not come to work ill. What may be a mild illness for you can be life threatening to immunocompromised patients.

Maintain your immunizations. Influenza, in particular, can be serious or lethal for patients and elderly long term care residents. It is important to receive yearly flu vaccinations.

Practice respiratory etiquette by covering your mouth and nose while coughing or sneezing and using a tissue if possible.
4.4 Practice safe sharps techniques

Dispose of sharps immediately after use in an approved sharps container. Always look at the sharps container when disposing of the needle. Many injuries occur because of not looking directly at the sharps container during disposal. Do not recap needles before disposal and do not expect someone else to dispose of sharps that you have used.

**NOTE:** If you experience a sharps injury, or are splashed in the face or on any mucous membrane with blood or body fluids, you must immediately seek consultation and follow-up. This means reporting either to Occupational Health, Disability Management and Safety (if available at your work site), reporting to a hospital emergency room, or following the recommended procedure at your site. Be sure to fill in all the appropriate forms as per the approved procedure at your site. The Employee Incident Report Form is available on the VCH Intranet site.

4.5 Practice good hand hygiene

Hand hygiene is the single most important procedure for the prevention of health care associated infections and the spread of antimicrobial resistant organisms.

4.5.1 Three types of hand hygiene

- Hand washing: washing hands with plain soap and water (refer to Figure 3)
- Hand rubbing: washing hands with and alcohol based hand sanitizer (refer to Figure 4)
- Surgical hand disinfection: antiseptic hand wash or antiseptic hand sanitizer performed preoperatively by surgical personnel to eliminate transient and reduce resident hand flora.

4.5.2 Indications for hand washing and hand antisepsis

These guidelines are adapted from [WHO Guidelines on Hand Hygiene in Health Care](http://www.who.int/hq/dg/meetings/Emergency/3 menneskeri/EN_Guidelines_for_Hand_Hygiene_in_Hospital設置_2009.pdf)

Hands should be washed with soap and water when visibly dirty, contaminated with proteinaceous material, visibly soiled with blood or other body fluids, if exposure to potential spore forming organisms is strongly suspected or proven (e.g., *C. difficile*), and after using the bathroom.

If hands are not visibly soiled, use an alcohol based hand sanitizer for routine hand antisepsis, and in all other clinical situations described below. Alternatively, wash hands with soap and water.

Antiseptic hand sanitizers (alcohol hand rubs) are excellent substitutions for hand washing and are generally less drying to hands than soap and water.

Hand washing with soap and water is preferred when:

a. managing a patient with *C. difficile* as spores are difficult to remove with hand rub
b. when hands are visibly soiled
c. during a viral gastroenteritis outbreak or when caring for a patient with known or suspected viral gastroenteritis.
Before handling medication and preparing food, wash hands with soap and water, or use an alcohol based sanitizer.

Do not use soap along with the alcohol based hand sanitizer.

Perform hand hygiene:

- Before contact with the patient or their environment
- Before donning and after doffing PPE
- Before handling an invasive device (regardless of whether or not gloves are used) for patient care
- After contact with body fluids or excretions, mucous membranes, non-intact skin, or wound dressings
- If moving from a contaminated body site to a clean body site during patient care

4.5.3 Patients and visitors

Patients and visitors should be instructed in proper hand hygiene.

The patient's hands should be cleaned before eating, after toileting, before leaving room, and when soiled.

4.5.4 Hand hygiene strategies

Health care workers can reduce the frequency of hand hygiene required by minimizing unnecessary direct contacts with patients and their immediate environments.

Organize care activities and avoid actions such as leaning on bedrails.

Hand washing sinks should be sufficient in number and placed so as to be readily accessible.

Alcohol based hand sanitizer dispensers should be available near patients to facilitate hand hygiene before and after patient contact, and at the entrances to patient rooms, units, elevators, facilities.

Artificial fingernails or extenders should not be worn when having direct contact with patients.

Natural fingernails should be kept short (tips less than 0.5 cm long).

4.5.5 Recommendations for surgical hand preparation

If hands are visibly soiled, wash hands with a plain soap before surgical hand preparation. Remove debris from underneath fingernails using a nail cleaner, preferably under running water.

Sinks should be designed to decrease the risk of splashes.

Remove rings, watches, and bracelets before beginning surgical hand preparation.

Artificial nails are prohibited in the operating theatre.

Surgical hand antisepsis should be performed using either an antimicrobial soap or an alcohol based hand sanitizer, preferably with sustained activity, before donning sterile gloves.
When performing surgical hand antisepsis using an antimicrobial soap, scrub hands and forearms for the length of time recommended by the manufacturer, typically two to five minutes. Long scrub times (e.g., 10 minutes) are not necessary.

When using an alcohol based surgical hand sanitizer product with sustained activity, follow the manufacturer’s instructions. Apply the product on dry hands only. Do not combine surgical hand scrub and surgical hand sanitizer with alcohol based products.

When using an alcohol based product, use sufficient product to keep hands and forearms wet with the hand sanitizer throughout the procedure.

After application of the alcohol based product, allow hands and forearms to dry thoroughly before donning sterile gloves.

**Figure 3**
How to Hand Wash

**Figure 4**
How to Hand Rub
4.6 Barriers and Personal Protective Equipment (PPE)

For detailed information about PPE, view the online module at http://ccrs.vch.ca
Disability Management and Safety has an instructional visual guide on Intranet: How to use PPE safely and effectively.

4.6.1 Gloves

Gloves may be “sterile” or “clean.”

Sterile gloves are worn to protect patients during an aseptic procedure and to provide protection for staff.
Clean gloves (examination gloves) are worn for a non sterile activity to protect the wearer.

Hand must be cleaned before donning (putting on) gloves.

For recommendations on glove use, refer to the World Health Organization – Glove Use Information Leaflet.

- Beware of the “magic glove syndrome,” where gloves are worn from task to task under the false sense of security that the worker is protected.
- Remember that a gloved hand can spread microorganisms just as readily as can an unclean hand. Wearing gloves for a prolonged period can cause bacteria to multiply quickly underneath the gloves due to the increased temperature and humidity, and the increased humidity can contribute to contact dermatitis.
- Discard gloves immediately after the task for which they were used to prevent spreading microorganisms and to protect your hands. Hands must be cleaned immediately after removing gloves.
- Gloves should be used as an additional measure, not as a substitute for hand hygiene.

Gloves are not required for routine patient care activities in which contact is limited to a patient’s intact skin.

Gloves may not be needed for routine diaper changes if the procedure can be done without contaminating the hands with stool or urine.

Clean, non sterile gloves should be worn:

- For contact with blood, body fluids, secretions and excretions, mucous membranes, draining wounds or non intact skin (open skin lesions or exudative rash)
- For handling items visibly soiled with blood, body fluids, secretions or excretions
- When the health care worker has open skin lesions on the hands.
- When indicated, gloves should be put on directly before contact with the patient or just before the task or procedure requiring gloves.
Gloves should be changed:

- Between care activities and procedures with the same patient
- After contact with materials that may contain high concentrations of microorganisms, e.g. after handling an indwelling urinary catheter or suctioning an endotracheal tube.

Gloves should be removed immediately:

- After completion of care or a specific task
- At point of use
- Before touching clean environmental surfaces.

Hands should be cleaned immediately after removing gloves.

Single use disposable gloves should not be reused or washed.

4.6.2 Masks, respirators, eye protection, face shields

Facial protection consists of masks, respirators, and protective eyewear.

VCH recommends the use of the respiratory algorithm (Figure 1) to triage patients whose clinical status is unknown. Once the patient is diagnosed, infection control will determine ongoing precautions: either continue with airborne precautions (e.g., tuberculosis); step down to droplet precautions (e.g., meningococcus); or remove the patient from infection control precautions.

Surgical masks are worn to prevent exposure to large infectious droplets while respirators (commonly called N95 respirators) are effective barriers to smaller infectious particles produced as aerosols. See Section 2 Droplet and Airborne Transmission.

Protective eyewear should be worn whenever there is a risk of droplet exposure to the eyes – prescription glasses are not suitable protective eyewear.

Masks and eye protection or face shields should be worn where appropriate to protect the mucous membranes of the eyes, nose, and mouth during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

N95 Respirators

Respirators require fit testing to ensure that the correct size and type is selected to achieve an adequate seal around the nose and mouth. It is also crucial to perform a simple fit check (user seal check) each time you wear a respirator to ensure that the seal is tight. A video demonstrating the proper use of respirators is available on line at http://ccrs.vch.ca.

Disability Management and Safety is responsible for fit testing of health care workers and should be contacted for information on times and locations for fit testing. The Respiratory Protection Program is available on the VCH Intranet site. Fit testing must be done annually and as required. Health care workers need to know that they can only wear the respirator
model for which they have been successfully fit tested. It is useful to record the respirator model that is correct for them on the back of their ID tag.

Healthcare workers should wear N95 Respirators during any procedure where generation of aerosolized particles may occur AND there is suspicion of a respiratory infection. If in doubt about the risk, use a N95 respirator

**Eye protection and gloves should be used and hand hygiene practiced.** Gowns should be worn if there is a risk of contamination to clothes or unprotected skin. Gowns are required if the patient is on Contact Precautions.

Examples of high-risk respiratory procedures include:

- Endotracheal intubation
- Bronchoscopy or other upper airway endoscopy
- Artificial airway suctioning
- Aerosol humidification
- Use of a bag valve mask to ventilate a patient
- Tube or needle thoracostomy
- Tracheostomy changes and care
- Non-invasive ventilation (CPAP, BIPAP) in the acutely ill patient

A surgical/procedure mask should be worn:

- By Healthcare personal to protect patients during aseptic procedures
- By patients who are severely immunocompromised during transport (Refer to Section 9D Neutropenic protective isolation for more information)
- By patients on Airborne or Droplet Precautions when it is necessary for them to leave their room
- By healthcare personnel when within 2 meters of a patient on Droplet Precautions

### 4.6.3 Gowns

The routine use of gowns is not recommended.

Gowns should be used to protect uncovered skin, and to prevent soiling of clothing during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

Aprons are occasionally used when limited contamination is anticipated.

Gowns are also recommended when caring for patients who are on Contact Precautions when caregivers have direct contact with the patient or body fluids.

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1 In the stable, ventilated patient (e.g. George Pearson Centre patients, or a long-term ICU ventilated patient, N95 Respirators need only be worn if there is a change in the patient’s condition and an infection is suspected.
4.6.4 Handling Personal Protective Equipment (PPE)
Hand hygiene must be performed prior to donning and after removing PPE.

Don’t touch your eyes and face while wearing PPE.

When removing masks, handle by the ties to prevent self contamination.

When not needed, remove mask completely and discard.

Protective eyewear should be removed by the sidepieces and, if disposable, discarded following one use. If reusable, clean with the recommended agent immediately after each use.

Don’t walk around outside the isolation area wearing used PPE.

Don’t use PPE that may be contaminated. If in doubt, throw it out.

4.6.5 Order of donning and doffing PPE

Donning:

1. Hand hygiene is always first
2. Masks are the first to be put on
3. Eye protection is next
4. Gowning is next
5. Gloves are put on last

Doffing:

1. Remove gloves first
2. Remove gown without touching the gown’s exterior
3. Perform hand hygiene
4. Remove eye protection
5. Remove mask by the straps
6. Perform hand hygiene when finished

4.7 Patient accommodation

4.7.1 Single rooms
Generally, single rooms are not required for routine patient care.

Single rooms are not required for children in diapers unless they have uncontained diarrhea and cannot be confined to their designated bed space.
4.7.2 Patients who soil the environment

In the acute care setting, patients who visibly soil the environment, or patients who cannot maintain appropriate hygiene, should be placed in single rooms with dedicated toilet facilities. This includes mobile patients with fecal incontinence, if stools cannot be contained in diapers, and patients with draining wounds who do not keep their dressings in place.

For guidelines on isolation precautions, please see Section 5, Additional Precautions.

4.8 Environmental Control and Patient Care Equipment

- Mouthpieces, resuscitation bags, or other ventilation devices should be provided for use in hospital areas where the need to resuscitate is likely to occur.
- Maintain a clean environment.
- Do not forget the importance of thorough cleaning.
- Body fluid spills should be cleaned up immediately.
- Keep clutter to a minimum.
- Bring in the least amount of supplies to a room as possible.
- Procedures should be established for routine care, cleaning, and appropriate disinfection of patient care equipment, furniture and environmental surfaces.
- Refer to Section 7, Cleaning, disinfection and sterilization for more information.

4.9 Sources for further information on Routine Practices


For further information about Routine Practices and Additional Precautions for acute, long term, ambulatory and home care, refer to the Health Canada publication, Infection Control Guidelines Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care.

For further information and recommendations on hand washing/hand hygiene; glove use; cleaning, disinfection and sterilization of patient care equipment; housekeeping, laundry, and waste management, refer to the Health Canada publication, Infection Control Guidelines Hand Washing, Cleaning, Disinfection, and Sterilization in Health Care


4.9.1 Bloodborne Pathogen information

For more information on bloodborne pathogens, risk reduction, blood spills, etc., refer to the Health Canada publication, Infection Control Guidelines Preventing the Transmission of Bloodborne Pathogens in Health Care and Public Services Settings

The VCH Blood and Body Fluid Exposure Control Plan contains current and relevant information regarding bloodborne pathogens, particularly hepatitis B virus, hepatitis C virus and the Human Immunodeficiency Virus. The VCH plan contains exposure criteria, methods of exposure prevention and control, post-exposure management, and MSDS sheets for the above three viruses.

http://vchconnect.vch.ca/ee/worksafe_and_wellness/more_information/hygiene/_docs/blood_and_body_fluid_exposures/binary_20471.pdf
5 ADDITIONAL PRECAUTIONS FOR ACUTE CARE FACILITIES

5.1 What are Additional Precautions?

Additional Precautions, in addition to Routine Practices, is necessary to protect against certain pathogens or clinical presentations.

Additional Precautions include airborne, droplet, and contact precautions. Additional Precautions are also known as “Isolation.” Additional Precautions are based on the method of transmission and are necessary for infections transmitted by the airborne or large droplet routes. Additional Precautions may be indicated for patients with certain highly transmissible or epidemiologically important microorganisms transmitted by direct or indirect contact.

For factual information about specific diseases, refer to Appendix 1 Transmission Characteristics and Recommended Precautions by Clinical Presentation and/or Specific Microorganisms, Fact Sheets on the Infection Control Intranet site, and BC Health Files: http://www.bchealthguide.org/healthfiles/DiseasePrevention.stm#General

5.2 When should Additional Precautions be taken?

Additional Precautions are taken when certain pathogens are identified by laboratory results and when there is suspicion of a communicable infection. Additional Precautions are often initiated before diagnostic confirmation. These precautions should be taken upon empirical evidence of clinical syndromes where the pathogens are likely causes, until the specific etiology is known. If the health care worker is unsure as to the patient’s diagnosis, implement the higher level of precautions until the clinical status is established. (See Figure 1, Respiratory Algorithm and Figure 2 GI Algorithm)

5.3 When taking Additional Precautions, consider the following factors

Patients with identical symptoms may be infected by different organisms with different routes of transmission. For example, acute respiratory infections may be spread by large droplets alone (pertussis), or large droplets/aerosols and direct and indirect contact (respiratory viruses). Transmission of meningitis may be by large droplet (meningococcus) or direct and indirect contact (enterovirus). More than one type of precaution may be required pending identification of specific microbial etiology.

Some microorganisms may be transmitted by more than one route, necessitating more than one type of transmission precaution, e.g. varicella (airborne and contact), RSV (droplet and contact).

Individual facilities can determine how they wish to combine precautions, post precautions signs, etc. Infection control precautions may differ depending on the level of care and the population in the facility.

Remember to isolate the germs, not the person.
5.4 Isolation Precautions Signage

Use Additional Precautions as instructed by isolation precautions signage. Isolation precautions signage is used whenever there is an additional risk of transmission. The signage has been purposely kept simple and clear, necessitating referral to the Infection Control Manual for further information regarding additional measures that are necessary for Airborne, Droplet and Contact Precautions.

These signs indicate the following types of precautions – See details in this chapter for more information. The Precautions signs can be ordered from VCH Printing Services (IC 1, IC 2, and IC 3).

- **Airborne Precautions**: used whenever there is a risk of spread of smaller infectious particles by the generation of respiratory aerosols. Tuberculosis is an example of an infection spread by this method.
- **Droplet Precautions**: used whenever there is a higher risk of spread of larger infectious droplets usually by coughing or sneezing. Classic examples of this are meningococcal meningitis and invasive Group A streptococcus for the first 24 hours of appropriate antibiotic therapy.
- **Contact Precautions**: used whenever there is a higher risk of spread by stool and wound discharge or with antibiotic resistant organisms. Examples of this include *Clostridium difficile* (C. diff.), diarrhea, or antibiotic resistant organisms such as Methicillin resistant *Staphylococcus aureus* (MRSA), or vancomycin resistant *enterococci* (VRE) only in high risk patient groups.²

5.5 Transporting patients

Transportation services/porters/ward aides should have policies and procedures in place for transporting patients with transmissible infections.

If any Additional Precautions are indicated during transport, the facility should inform the personnel transporting the patient which precautions are required.

5.6 Waste management

Waste from Isolation rooms should not be treated any differently than waste from other patient rooms, except for viral hemorrhagic fever and other unusual communicable diseases.

Waste is to be disposed of as per the waste segregation procedures.

Refer to the Environmental Management Department site on the VCH Intranet, http://www.vcha.ca/ , for information on proper waste segregation, and waste management policy.

² High risk wards include Bone marrow transplant (BMT), Solid organ transplant (SOT) ICU and BPTU
5.7 **Viral hemorrhagic fever**

For viral hemorrhagic fever and other unusual communicable diseases, refer to the VCH Unusual Communicable Diseases guidelines on the VCH Infection Control Intranet site. Go to Infection Control, Guidelines, Procedures site.
5.8 Airborne Precautions

In addition to Routine Practices, Airborne Precautions include the following: (See Figure 5).

Refer to Figure 6 for a list of diseases that require Airborne Precautions.

5.8.1 Accommodation

At VCH the term Airborne Precautions is used for diseases such as infectious tuberculosis that require a negative pressure room, as well as for other conditions for which Airborne Precautions are implemented that do not require a negative pressure room.)

- Single room
- Negative pressure in relation to surrounding areas.
- A minimum of 6-9 air exchanges per hour.
- Air discharged outside the building and away from intake ducts, or through a high efficiency filter if re-circulated.
- Door kept closed whether or not patient is in the room.
- Patient confined to room.
- Room should have toilet (or commode) and hand hygiene facilities
- After discharge of patient, door kept closed until sufficient time has elapsed to allow removal of airborne organisms.

5.8.1.1 Special considerations for accommodation

- Centers without appropriately ventilated, negative pressure rooms should transfer patients with infectious forms of tuberculosis to institutions with such accommodation.
- Plans should be coordinated in advance with other institutions.
- If numbers of negative pressure rooms are limited, priority for use of such rooms should be set according to the impact of potential airborne transmission in that specific institution, i.e., infectious tuberculosis > measles > varicella > disseminated zoster > extensive localized zoster.
- For measles or varicella, institutions without negative pressure rooms, and where transfer is not a feasible option, may consider using a single room with door closed, given that most individuals are immune and post exposure prophylaxis is possible. Such patients should be accommodated on wards where there are no susceptible, immunocompromised patients.

5.8.2 Personnel and visitors

All attending health care personnel should be immune to measles.

Personnel and visitors susceptible to measles should not enter the room of a patient with measles.

Varicella-susceptible personnel and visitors should not enter the room of a patient with varicella or disseminated zoster.
5.8.3 Respiratory protection

High efficiency dust/mist respirators should be available for all who enter the room of a patient with infectious tuberculosis, or for non-immune persons who absolutely must enter the room of a patient with varicella, disseminated zoster, or measles.

The Respiratory Protection Program on the VCH Intranet (Employee Engagement/Human Resources/PPE) includes policies and procedures for respirator wear and fit testing.

VCH recommends the use of the respiratory algorithm (Figure 1) to triage patients whose clinical status is unknown. Once the patient is diagnosed, infection control will determine ongoing precautions: either continue with airborne precautions (e.g., tuberculosis); step down to droplet precautions (e.g., meningococcus); or remove the patient from infection control precautions.

Health care workers should wear an N95 respirator when a patient is undergoing a procedure in which the likelihood of the generation of aerosolized particles is considered to be high.

An N95 respirator should always be worn for high-risk respiratory procedures.

Eye protection, gloves and hand hygiene should also be used. Gowns should be worn if there is risk of uniform or clothing being contaminated.

For examples of high-risk respiratory procedures, refer to Section 4.7.2. Masks, Respirators, Eye Protection, Face Shields

5.8.4 Patient transport

Patient should be out of the room for essential procedures only.

Patient should wear surgical (procedure) mask during transport.

Personnel in area to which patient is to be transported should be aware of precautions to follow.

5.8.5 Patient and family education

Patients and their families, as well as visitors, should understand the nature of the patient’s infectious disease and the precautions being used.

The patient, family members, and friends should also be educated on how to prevent the transmission of disease during the hospital stay, and upon return to the community.

5.8.6 Visitors

Visitors should talk with a nurse before entering the patient’s room and, if indicated, should be instructed in the appropriate use of a respirator and other precautions.

The number of visitors should be kept to a minimum.
Figure 5 Airborne Precautions

AIRBORNE PRECAUTIONS
Private Room, Negative Pressure

Visitors:
STOP
Keep door closed
Please Report to Staff before entering

Clean Hands:
- before and after touching patient
- before entering and after leaving room
- after touching environmental surfaces
- after removing gloves

Staff:
Required:
- N95 Respirator Mask

Notify Infection Prevention & Control Dept. - Before Discontinuing Airborne Precautions

AIRBORNE & CONTACT PRECAUTIONS
Private Room, Negative Pressure

Visitors:
STOP
Keep door closed
Please Report to Staff before entering

Clean Hands:
- before and after touching patient
- before entering and after leaving room
- after touching environmental surfaces
- after removing gloves

Staff:
Required:
- Gown and Gloves
- N95 Respirator Mask

Notify Infection Prevention & Control Dept. - Before Discontinuing Airborne Precautions
**Figure 6 AIRBORNE PRECAUTIONS ARE REQUIRED FOR**

<table>
<thead>
<tr>
<th>Disease/organism</th>
<th>Pediatrics</th>
<th>Adults</th>
</tr>
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<tbody>
<tr>
<td><strong>Known or suspected</strong></td>
<td></td>
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<tr>
<td>Measles (rubeola)</td>
<td>AIRBORNE</td>
<td>AIRBORNE</td>
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<tr>
<td></td>
<td>Susceptible staff and visitors NOT to enter</td>
<td>Susceptible staff and visitors NOT to enter</td>
</tr>
<tr>
<td>Severe Acute Respiratory Syndrome (SARS)</td>
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<td>AIRBORNE &amp; DROPLET</td>
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<td>Tuberculosis, pulmonary</td>
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<td>AIRBORNE</td>
</tr>
<tr>
<td>Varicella (Chickenpox)</td>
<td>CONTACT &amp; AIRBORNE</td>
<td>CONTACT &amp; AIRBORNE</td>
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<tr>
<td></td>
<td>Susceptible staff and visitors NOT to enter</td>
<td>Susceptible staff and visitors NOT to enter</td>
</tr>
<tr>
<td>Variola (Smallpox)</td>
<td>AIRBORNE &amp; CONTACT</td>
<td>AIRBORNE &amp; CONTACT</td>
</tr>
<tr>
<td>Viral Hemorrhagic Fevers (e.g. Lassa, Ebola)</td>
<td>AIRBORNE &amp; CONTACT</td>
<td>AIRBORNE &amp; CONTACT</td>
</tr>
<tr>
<td>Zoster, disseminated</td>
<td>CONTACT &amp; AIRBORNE</td>
<td>CONTACT &amp; AIRBORNE</td>
</tr>
<tr>
<td></td>
<td>Susceptible staff and visitors NOT to enter</td>
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</tr>
</tbody>
</table>
5.9 Droplet Precautions

In addition to Routine Practices, Droplet Precautions include the following: (See Figure 7).

Refer to Figure 8 for a list of diseases that require droplet precautions.

5.9.1 Accommodation

In adult acute care institutions, a single room is preferable, as it may otherwise be difficult to maintain the recommended two metre spatial separation between patients. In pediatric institutions, where large numbers of patients requiring Droplet Precautions are present simultaneously, and single rooms may be in short supply, single room accommodation is frequently not possible. If room is to be shared, see below.

**Single room:**
- Door may remain open.
- Should have toilet and hand washing facilities

**Cohort:**
- Patients known to be infected with the same organism (identified by culture or rapid antigen test) may be grouped together.

**Shared room:**
- Maintain spatial separation of at least 2 metres between infected patient and other patients and their visitors. Curtains to be closed.

5.9.2 Roommates

Roommates and all visitors must be aware of precautions to follow.

Select roommates:

- Room-mates should be selected for their ability and that of their visitors, to comply with precautions.
- With respiratory viruses, roommates at high risk of complications (e.g. chronic lung disease, severe congenital heart disease, immunodeficiency) should not be cohorted as they are at a higher risk for infection.

For newborn nurseries, a single room is not necessary if there is a two-metre aisle between infant stations.

If these conditions are not achievable, a single room is indicated.

5.9.3 Masks

VCH recommends the use of the respiratory algorithm (Figure 1) to triage patients whose clinical status is unknown. Once the patient is diagnosed, infection control will determine ongoing precautions: either
continue with airborne precautions (e.g., tuberculosis); step down to droplet precautions (e.g., meningococcus); or remove the patient from infection control precautions.

A surgical/procedure mask should be worn by all health care workers if within 2 metres of patient, with the following exceptions:

For care of patients with rubella or mumps, a mask is not needed if the health care worker is immune. Non-immune personnel should enter the room only if it is absolutely necessary, and should wear masks.

For care of children with symptoms of acute respiratory viral infection, health care workers should wear masks if within two metres of a patient who is coughing, or if performing procedures that may result in coughing.

Health care workers should wear an N95 respirator when a patient is undergoing a procedure in which the likelihood of the generation of aerosolized particles is considered to be particularly high. If in doubt about the risk, use an N95 respirator. Eye protection, gloves and hand hygiene should also be used. Gowns should be worn if there is risk of uniform or clothing being contaminated. For examples of high risk respiratory procedures refer to Section 4.7.2. Masks, Respirators, Eye Protection, Face Shields

Patients on Droplet Precautions must wear a surgical/procedure mask when leaving their rooms.

5.9.4 Eye protection (glasses, goggles, face shields)

Some viruses causing acute respiratory tract infections may be transmitted by direct deposition or inoculation of large droplets onto the conjunctiva (eye).

For infections transmitted by large droplets, eye protection should be worn as per Routine Practices, (i.e., eye protection or face shields should be worn where appropriate to protect the mucous membranes of the eyes, nose, and mouth during procedures and patient care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions).

Protective eyewear should be worn whenever there is a risk of droplet exposure to the eyes – prescription glasses are not suitable protective eyewear.

Eye protection may be indicated for care of children with symptoms of acute respiratory infection if the health care worker is within two metres of a coughing patient, or is performing procedures that may result in coughing.

5.9.5 Patient transport

Patient should be out of the room for essential procedures only.

Patient should wear surgical mask during transport.

Personnel in area to which patient is to be transported should be aware of infection control precautions.
5.9.6 Patient and family education

Patients and their families, as well as visitors, should understand the nature of the patients’ infectious disease and the precautions being used, as well as the prevention of transmission of disease to family and friends during the hospital stay and upon their return to the community.

Advise families, visitors, and patients about the importance of hand hygiene to minimize the spread of body substance contamination (e.g., respiratory secretions or fecal matter) to surfaces.

5.9.7 Visitors

Visitors should talk with a nurse before entering the room and, if indicated, should be instructed in the appropriate use of a mask and other precautions.

The number of visitors should be kept to a minimum.

In the case of patients with acute viral respiratory infections, masks are not mandatory for visitors, for whom wearing a mask for an extended period of time may be impractical. The risk to the health of the visitor should be evaluated as follows:

- For patients with rubella or mumps, a mask is not needed if the visitor is immune.
- Non-immune visitors should enter the room only if it is absolutely necessary, and should wear appropriate masks.
- For suspected or confirmed *H. influenzae* Type B infection, visitors need to wear masks only if they will have extensive close contact with non-immune infants.
- For all other infections *transmitted by* large droplets, all persons coming within two metres of the patient should wear masks.
Figure 7 Droplet Precautions
Figure 8 DROPLET PRECAUTIONS ARE REQUIRED FOR KNOWN:

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<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Cystic Fibrosis patients with:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burkholderia cepacia</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES, if hygiene is good CONTACT &amp; DROPLET if soiling the environment</td>
</tr>
<tr>
<td>Multidrug Resistant Pseudomonas aeruginosa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria pharyngeal</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Erythema infectiousum (Parvovirus B19) if in aplastic crisis, for duration of hospitalization</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Haemophilus influenzae type B invasive infection (until 24 hours after appropriate therapy)</td>
<td>DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Influenza</td>
<td>CONTACT &amp; DROPLET</td>
<td>CONTACT &amp; DROPLET</td>
</tr>
<tr>
<td>Meningitis, unknown etiology (until 24 hours after appropriate therapy)</td>
<td>CONTACT &amp; DROPLET</td>
<td>CONTACT &amp; DROPLET</td>
</tr>
<tr>
<td>Meningococcal Disease, including meningococcal meningitis (until 24 hours after appropriate therapy)</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Mumps</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Mycoplasma pneumonia</td>
<td>DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Parainfluenza virus</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Pertussis (Whooping cough)</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Plague, pneumonic</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Respiratory Syncytial Virus (RSV)</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Rhinovirus (common cold)</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Rubella (German measles)</td>
<td>CONTACT &amp; DROPLET</td>
<td>CONTACT &amp; DROPLET</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>Susceptible staff and visitors NOT to enter</td>
<td>Susceptible staff and visitors NOT to enter</td>
</tr>
<tr>
<td>Streptococcus group A, invasive (until 24 hours after appropriate therapy)</td>
<td>DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Streptococcal pharyngitis</td>
<td>DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
</tbody>
</table>

### 5.10 Contact Precautions

Contact Precautions may be indicated for certain organisms when Routine Practices are not sufficient to control transmission, for instance:

- If the organism has a low infective dose;
- If the organism may be transmitted from the source patient's intact skin;
- If there is potential for widespread environmental contamination.

In addition to Routine Practices, Contact Precautions include the following: (See Figure 9)

Refer to Figure 10 for a list of diseases that require Contact Precautions.

#### 5.10.1 Accommodation

In adult acute care institutions, a single room is preferable, as it may be difficult to maintain the recommended one metre physical separation between patients.

In pediatric institutions where large numbers of patients requiring Contact Precautions are present simultaneously, and where single rooms may be in short supply, single room accommodation is frequently not possible.

**Single room:**

- Door may remain open.
- Single room should have toilet and hand washing facilities.

**Shared room:**

- Single rooms are often not available, so in non-critical care areas, a multi-bed room is acceptable if body fluids can be controlled.
- Patients known to be infected with the same organism (identified by culture or rapid antigen test) may be grouped together (cohorted) unless acquisition of different strains of the microorganism is a concern.
- Dedicated toileting facilities (i.e., commodes) should be used in the presence of infectious fecal organisms.
Single rooms are indicated if the following condition is not achievable:

- Spatial separation of at least one metre between infected or colonized patient, and other patients and their visitors cannot be maintained.

### 5.10.2 Selecting roommates

Roommates should be selected for their ability, and that of their visitors, to comply with precautions.

Roommates should not be at high risk of serious disease if transmission occurs.

For newborn nurseries, a single room is not necessary if there is a one- to two-metre aisle between infant stations.

### 5.10.3 Gloves

VCH recommendations for use of gloves for Contact Precautions is as per Routine Practices:

Clean, non sterile, gloves should be worn:

- For contact with blood, body fluids, secretions and excretions, mucous membranes, draining wounds, or non-intact skin (open skin lesions or exudative rash)
- For handling items visibly soiled with blood, body fluids, secretions, or excretions when the health care worker has open skin lesions on the hands.

Gloves should be put on directly before contact with the patient or just before the task or procedure requiring gloves.

Gloves should be changed between care activities and procedures with the same patient after contact with materials that may contain high concentrations of microorganisms, e.g., after handling an indwelling urinary catheter or suctioning an endotracheal tube.

Gloves should be removed immediately after completion of care or a specific task, at point of use, and before touching clean environmental surfaces.

Hands should be cleaned immediately after removing gloves.

Single use disposable gloves should not be reused or washed.

### 5.10.4 Gowns

Gowns should be worn if clothing or forearms will have direct contact with the patient or body fluids.

Gowns should be worn if it is anticipated that clothing or forearms will be in direct contact with frequently touched environmental surfaces or objects, or if there is increased risk of the environment being
contaminated (incontinent patient, diarrhea, or drainage from a wound, colostomy or ileostomy not contained by dressing).

Gowns should be removed before leaving the room.

**5.10.5 Hand hygiene**

Remove gown and gloves and clean hands with antiseptic hand sanitizer before leaving the room.

When there is visible soiling, hands should be washed with soap and water before using waterless antiseptic hand sanitizers.

Wash hands with soap and water if exposure to potential spore forming organisms is strongly suspected or proven.

After hand hygiene, take care not to contaminate hands before leaving the room.

**5.10.6 Equipment and Environment**

Refer to Section 7, *Cleaning, disinfection and sterilization* and Section 8, *Management of patients with AROs*.

- Patient care equipment (e.g. thermometer, blood pressure cuff, razors, pulse oximeter) should be dedicated to the use of that patient only and should be cleaned and disinfected before reuse with another patient.
- Toys and personal effects should not be shared with other patients.
- A bedpan and commode should be dedicated to the patient, and labeled. Commodes, like toilets, should be cleaned regularly and when soiled. Bedpans should be sanitized in a washer-disinfector after each use.
- The patient chart should not be taken into the room.
- All horizontal and frequently touched surfaces should be cleaned daily and when soiled.
- Special cleaning procedures may be required in outbreak situations.
- Privacy and shower curtains should be removed and laundered after discharge of a patient on Contact Precautions. Window curtains should be changed if visibly soiled.
- Curtains should be changed if they become soiled prior to discharge of the patient.

**5.10.7 Patient transport**

Patient should be out of the room for essential purposes only.

It is the responsibility of the staff in the transferring ward/facility to communicate to the transporting personnel and the receiving facility the necessary infection control precautions.

Personnel in area to which patient is to be transported should be aware of precautions.

Maintain precautions during transport to minimize risk of transmission to other patients and contamination of environmental surfaces or objects.
5.10.8 Patient and family education
Advise families, visitors, and patients about the importance of hand hygiene to minimize the spread of contaminants (e.g., respiratory secretions or fecal matter) to surfaces.

5.10.9 Visitors
Visitors should talk with a nurse before entering the room and, if indicated, should be instructed in the appropriate use of gown, gloves or other special precautions.

The risk to the health of the visitor, and the risk of the visitor transmitting, should be evaluated.

The number of visitors should be kept to a minimum.

Visitors such as clergy who visit more than one patient should be encouraged to visit patients on Contact Precautions at the end of their visits.
Figure 9 Contact Precautions

CONTACT PRECAUTIONS

Visitors:
STOP
Please Report to Staff before entering

Clean Hands:
- before and after touching patient
- before entering and after leaving room
- after touching environmental surfaces
- after removing gloves

Clean hands with
- an alcohol hand rub or
- soap and water

Staff:
Required:
- Gown & Gloves

Point-of-Care Risk Assessment
When indicated by risk assessment, wear
- face and eye protection for
- splash/spray risk

CONTACT PLUS (GI) PRECAUTIONS

Visitors:
STOP
Please Report to Staff before entering

Clean Hands:
- before and after touching patient
- before entering and after leaving room
- after touching environmental surfaces
- after removing gloves

Clean hands with
- soap & water (scrub)
- an alcohol hand rub

Staff:
Required:
- Gown & Gloves

Point-of-Care Risk Assessment
When indicated by risk assessment, wear
- face and eye protection for
- splash/spray risk

 Twice daily cleaning of high touch surfaces
<table>
<thead>
<tr>
<th>Disease/organism Known or suspected</th>
<th>Paediatrics</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenovirus</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Clostridium difficile</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
<tr>
<td>Conjunctivitis, acute viral</td>
<td>CONTACT</td>
<td>ROUTINE PRACTICES, if hygiene is good</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CONTACT, if poor hygiene or noncompliant</td>
</tr>
<tr>
<td>Cystic Fibrosis patients with:</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES, if hygiene is good</td>
</tr>
<tr>
<td>Burkholderia cepacia</td>
<td></td>
<td>CONTACT &amp; DROPLET if soiling the environment</td>
</tr>
<tr>
<td>Multidrug Resistant Pseudomonas aeruginosa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diarrhea – acute infectious</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
<tr>
<td>Diphtheria – cutaneous</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
<tr>
<td>Hepatitis A, E</td>
<td>CONTACT</td>
<td>ROUTINE PRACTICES, if continent and hygiene is good.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CONTACT, if incontinent, noncompliant or soiling the environment</td>
</tr>
<tr>
<td>Herpes simplex</td>
<td>CONTACT – all neonates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONTACT – if disseminated</td>
<td>CONTACT – if disseminated</td>
</tr>
<tr>
<td>Impetigo/Furunculosis</td>
<td>CONTACT</td>
<td>CONTACT – if not contained by dressing</td>
</tr>
<tr>
<td>Influenza</td>
<td>CONTACT &amp; DROPLET</td>
<td>CONTACT &amp; DROPLET</td>
</tr>
<tr>
<td>Meningitis, unknown etiology (until 24 hours after appropriate therapy)</td>
<td>CONTACT &amp; DROPLET</td>
<td>DROPLET</td>
</tr>
<tr>
<td>Disease/organism Known or suspected</td>
<td>Paediatrics</td>
<td>Adults</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>Methicillin resistant S. aureus (MRSA)</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
<tr>
<td>Multiple Drug Resistant Gram Negative Bacilli&lt;sup&gt;3&lt;/sup&gt;</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
<tr>
<td>Parainfluenza virus</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Respiratory Syncytial Virus (RSV)</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Rhinovirus (common cold)</td>
<td>CONTACT &amp; DROPLET</td>
<td>ROUTINE PRACTICES</td>
</tr>
<tr>
<td>Rubella (German measles)</td>
<td>CONTACT &amp; DROPLET</td>
<td>CONTACT &amp; DROPLET</td>
</tr>
<tr>
<td>Susceptible staff and visitors NOT to enter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scabies – Norwegian (&quot;crusted&quot;) only</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
<tr>
<td>Vancomycin resistant enterococci (VRE)</td>
<td>Routine (except high risk groups)&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Routine (except high risk groups)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Varicella (Chickenpox)</td>
<td>CONTACT &amp; AIRBORNE</td>
<td>CONTACT &amp; AIRBORNE</td>
</tr>
<tr>
<td>Zoster, disseminated (Shingles)</td>
<td>SUSCEPTIBLE STAFF AND VISITORS NOT TO ENTER</td>
<td>SUSCEPTIBLE STAFF AND VISITORS NOT TO ENTER</td>
</tr>
<tr>
<td>Wounds, if infected and large amount of drainage not contained by dressing, or on a burn patient</td>
<td>CONTACT</td>
<td>CONTACT</td>
</tr>
</tbody>
</table>

<sup>3</sup> This refers mainly to carbapenemase producing gram negative bacilli. Medical Microbiology and/or Infection Prevention and Control practitioners will inform the unit if a patient has one of these organisms

<sup>4</sup> High risk wards include Bone marrow transplant (BMT), Solid organ transplant (SOT) ICU and BPTU
6 NEUTROPENIC PROTECTIVE ISOLATION

6.1 Specialized care protective isolation

Specialized care protective isolation units are intended for severely immunosuppressed patients who have prolonged granulocytopenia, most notably bone marrow transplantation recipients or solid organ transplantation recipients with hematological malignancies who are receiving chemotherapy and are severely granulocytopenic.

Protective isolation is generally required for the severely neutropenic patient who is expected to remain so for some time (e.g. bone marrow transplantation) and for significant burn injuries. The lack of demonstrable beneficial effect of protective isolation for patients with short duration neutropenia (i.e., less than 14 days) is likely because infections in these patients are often due to: their own endogenous flora; transmission of microorganisms by unwashed hands of personnel; or through the use of contaminated equipment.

In general, compromised patients with short-term neutropenia should be cared for by using Routine Infection Control Practices and Additional Precautions as appropriate; however, these techniques (particularly good hand hygiene) must be emphasized and enforced.

Additional specific measures must be followed as indicated in the following clinical areas: the burn unit, the bone marrow transplant unit, and for these patients who are admitted to the intensive care unit.

6.2 Immunocompromised patients

Immunocompromised patients should be in a private room when possible, and housed separately from infected patients or those likely to have an infection. Whether the door remains closed is dependent upon the nature of the underlying illness. The clinician in conjunction with Infection Control should make this decision.

Patients should wear a surgical mask (to prevent aspergillosis) when outside their room. The use of HEPA filtration and private rooms is recommended for patients with prolonged severe neutropenia (if the absolute number of neutrophils is below 500/cu mm) (e.g., bone marrow transplant patients). If the patient is in a controlled airflow isolation room, ensure that the room pressure is positive relative to the hallway.

6.3 Persons with infections

Persons with known or suspected infections (common cold, sore throat, draining lesion, rash, diarrhea, etc.) must not enter the patient’s room.

6.4 The Neutropenic Protective Isolation procedure

This procedure is as follows: (See Figure 11)
- Single room.
- Door kept closed if ordered by physician.
- Positive pressure relative to the hallway if ordered by physician.
- Hand hygiene by all persons prior to entering a patient’s room.
- Visitors are restricted. Visitors should check with nurse before entering room.
- No cut flowers (fresh or dried), no potted plants or floral arrangements with moss (because Aspergillus spp. have been isolated from the soil of potted ornamental plants (e.g., cacti), the surface of dried flower arrangements, and fresh flowers).
- Patient must remain in room unless required to go for tests or procedures.
- Patient must wear a surgical mask when outside of room.
- Staff and visitors do not require a mask or gown.

6.5 Sources


http://www.cdc.gov/ncidod/eid/vol7no2/dykewicz.htm#1


**Neutropenic Protective Precautions**

VISITORS PLEASE REPORT TO STAFF BEFORE ENTERING

**CLEAN HANDS:**
- before and after touching patient
- before entering and after leaving room
- after touching environmental surfaces
- after removing gloves

Clean hands with:
- A) Hand foam/gel
- B) soap and water

- Single room
- Positive pressure and door closed if ordered by physician
- Persons with a cold, flu, sore throat, open sores or infection should NOT enter this room
- No animal visitors
- No fresh or dried flowers/plants
- Patient to wear surgical mask when outside of room
7 CLEANING, DISINFECTION AND STERILIZATION

7.1 The reprocessing method

Reprocessing (i.e., cleaning, disinfection, and sterilization) for used patient care equipment and medical devices depends on the intended use of the equipment/device, and the potential risk of infection involved in the use of the equipment/device.

7.1.1 Spaulding's Classification of Equipment/Devices

The classification system developed by Spaulding divides equipment/devices into three categories, based on the potential risk of infection involved in their use.

Figure 12 Spaulding’s Classification of Equipment/Devices and Required Level of Reprocessing

<table>
<thead>
<tr>
<th>Classification</th>
<th>Definition</th>
<th>Level of Reprocessing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Equipment/Device</td>
<td>Equipment/device that enters sterile tissues, including the vascular system.</td>
<td>Cleaning followed by sterilization.</td>
</tr>
<tr>
<td>Semi critical Equipment/Device</td>
<td>Equipment/device that comes in contact with non-intact skin or mucous membranes but does not penetrate them.</td>
<td>Cleaning followed by high level disinfection (as a minimum). Sterilization is preferred.</td>
</tr>
</tbody>
</table>
| Non critical Equipment/Device   | Equipment/device that touches only intact skin and not mucous membranes, or does not directly touch the client/patient/resident. | Cleaning followed by low level disinfection.  
                                        |                                            | In some cases, cleaning alone is acceptable.  |
7.1.2 Critical items
Instruments that enter sterile body sites or vascular spaces will be meticulously cleaned, followed by sterilization before reuse.

Critical items include items such as surgical instruments, obstetrical equipment, rigid scopes, cardiac catheters, implants, dressing and suture sets.

7.1.3 Semi-critical items
Instruments that have contact with mucous membranes will receive a minimum of high level disinfection before reuse.

Semi critical items include laryngoscope blades, respiratory therapy and anaesthesia equipment, vaginal ultrasound probes, GI endoscopes, thermometers, tonometers, diaphragm fitting rings.

7.1.4 Non-critical items
Instruments that have contact with intact skin will receive a low level disinfection (sanitizing) process before reuse.

Non critical items include patient room furnishings, bedpans, IV pumps, BP apparatus, stethoscopes, wheelchairs, stretchers, dishes, etc.
In contrast to critical and semi critical items, most non-critical reusable items may be decontaminated where they are used and do not need to be transported to a central processing area.

7.1.5 Decontamination
Decontamination is the process of cleaning, followed by the inactivation of pathogenic microorganisms, in order to render an object safe for handling.

7.1.6 Cleaning
The process of cleaning is to physically remove contaminants from the equipment/device, rather than to kill micro-organisms.

- The thorough cleaning of reusable equipment/devices is essential in order to remove soil, including organic matter (blood, protein, faeces, mucus, and tissue) and other material, prior to use on a client/patient/resident, and prior to submitting the device to a disinfection or sterilization process.
- Soil retained on devices not only furnishes a medium for the growth of microorganisms but also may physically protect microorganisms from sterilization or disinfection processes, or render chemical disinfectants inactive.
- Extension or repetition of the disinfection or sterilization process will not necessarily remove the microbial load on inadequately cleaned devices.
- Disinfectants that become overloaded with soil can become contaminated and may themselves become a source for transmission of microorganisms.
- Cleaning usually involves soap and water, detergents, or enzymatic agents.
“Cleaning is always essential prior to disinfection or sterilization. An item that has not been cleaned cannot be assuredly disinfected or sterilized.” (Health Canada, Hand washing, cleaning, disinfection and sterilization in health care. Can Commun Dis Rep. 1998; 24 Suppl 8:p10)

7.1.7 Low level disinfection

Low level disinfection is a process capable of killing most vegetative bacteria, some viruses, and some fungi.

Low level disinfection cannot be relied on to kill microorganisms such as mycobacteria, including Mycobacterium tuberculosis, or bacterial spores.

7.1.8 Intermediate level disinfection

Intermediate level disinfection is a process capable of killing vegetative bacteria, mycobacteria including Mycobacterium tuberculosis, fungi, and lipid and non-lipid viruses. This class does not necessarily kill bacterial spores.

● This implies that chemicals considered to have an intermediate level of activity must have approved label claims against both mycobacteria and non-lipid viruses such as poliovirus, enterovirus, hepatitis A, etc. In Canada, disinfectants with an approved label claim against poliovirus are considered to be general virucides. Labels with claims against only influenza virus, herpes virus or HIV, for example, are not considered to be intermediate disinfectants because they are only effective for enveloped (lipid) viruses.

7.1.9 High level disinfection

High level disinfection is the minimum level of decontamination required for semicritical medical devices. The process is capable of killing vegetative bacteria, mycobacteria including Mycobacterium tuberculosis, fungi, and lipid and non-lipid viruses, as well as some, but not necessarily high numbers of, bacterial spores.

● High level disinfection can be performed by chemicals at concentrations that are sporicidal when the contact time is prolonged, but which are usually used as disinfectants for much shorter contact periods.
● High level disinfectants are therefore potent disinfectant chemicals and appropriate precautions should be taken. Staff using high level disinfectants must be properly trained.
● Examples of high level disinfectants are hydrogen peroxide, glutaraldehyde, peracetic acid, and ortho-phthalaldehyde.

Pasteurization is a process of hot water disinfection used for some semicritical equipment for anesthesia and respiratory therapy.
7.1.10 Sterilization

Sterilization is a validated process used to render a product free from viable microorganisms. The sterilization process includes meticulous cleaning, followed by sterilization by moist heat, ethylene oxide, hydrogen peroxide plasma, or chemical sterilization.

7.1.10.1 Emergency (Flash) Sterilization

Emergency sterilization (also called “flash” and “unwrapped” sterilization) is not recommended and should be used only in an emergency, and never for implantable devices. (Health Canada, Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care. CCDR 24S8;26)

A facility employing Emergency (Flash) sterilization must comply with all of Clause 13 (Flash Sterilization) in CSA Z314.3 Effective sterilization in health care facilities by the steam process.

7.2 Cleaning, handling, and transporting used equipment and devices

7.2.1 Reusable equipment

Reusable equipment that has been in direct contact with a patient shall be cleaned and reprocessed appropriately before being used for the care of another patient.

The reprocessing process for a semi critical or non critical device shall be determined based on the intended use of the device and the associated risks. Current research must be followed regarding selection of an effective disinfectant for semi critical devices (e.g., applanation tonometers, rectal/vaginal probes, cryosurgical instruments, diaphragm fitting rings) and specific organisms.

Where possible, dedicated patient care equipment that will not be shared between patients should be considered for ICU and other high risk areas.

Critical devices (i.e., devices that will invade the blood stream, such as biopsy forceps and cautery devices) shall be sterilized following thorough cleaning.

Procedures should be established for assigning responsibility and accountability for routine cleaning of all patient care equipment, e.g., housekeeping cleans equipment in room on discharge, health care worker cleans equipment between patients, using a low level disinfectant, e.g., Virex.

The method and effectiveness of cleaning must be considered prior to purchase of equipment.

Manufacturers must provide detailed directions for effective cleaning of all reusable equipment/devices. ISO Standard 17664 Information to be provided by the manufacturer for the processing of resterilizable medical devices is available from the Canadian Standards Association.
If cleaning directions from the manufacturer are not available, the health care setting has the responsibility to develop detailed cleaning procedures.

The frequency for cleaning and disinfecting equipment/surfaces should comply with facility policies and minimally when visibly soiled and on a regular basis, for example,

- Equipment that is visibly soiled should be cleaned.
- A routine cleaning schedule should be established and monitored for items that are in contact only with intact skin.

Staff responsible for cleaning contaminated equipment/devices must be properly trained.

Staff should wear personal protective equipment (PPE) appropriate to the task to protect themselves from exposure to potential pathogens and chemicals and to protect the integrity of their skin, e.g., wear the PPE required during the handling and cleaning of soiled equipment when soiling or splashing is anticipated. Employees should also have recommended immunization, e.g., Hepatitis B.

### 7.2.2 Non critical equipment/devices/surfaces

Non critical equipment/devices/surfaces with no visible blood should be disinfected with a low level disinfectant at the recommended dilution, and a contact time of at least 1 minute.

Commodes, like toilets, should be cleaned regularly and when soiled.

Bedpans should be sanitized in a washer-disinfector after each use. Alternatively, bedpans can be reserved for use by a single patient and clearly labeled.

Use barrier protective coverings, as appropriate, for non critical equipment surfaces that are:

- Touched frequently with gloved hands during the delivery of patient care,
- Likely to become contaminated with blood or body substances, or
- Difficult to clean, e.g., computer keyboards.

Non critical equipment, devices, and surfaces used on a patient on isolation precautions should be disinfected before use by another patient, as per approved protocols.

If cleaning cannot be done immediately, the equipment/device must be submerged in tepid water and/or detergent and enzymatic cleaner, to prevent organic matter from drying on it.

Gross soil should be removed immediately at the point of use if the cleaning process cannot be completed immediately after use.

Personal care supplies such as lotions, creams, soaps, razors (electric and safety), combs, etc., shall be designated to the patient, and labelled where possible with the patient’s name. These items should not
be shared with other patients. At the time of discharge, these items shall be sent with the patient, or
discarded.

7.2.3 Soft goods cleaning and disinfection (non critical equipment)

Soft patient care supplies pose a challenge to clean and disinfect. They can be woven and nonwoven
fabrics, foams, gauze, etc. Some fabrics can be laundered. Others are more difficult to clean, e.g., some
pillows, mats, toys, stockinettes.

Articles that cannot be cleaned and disinfected between patients cannot be used on more than one
patient.

Patient care supplies should be purchased with the cleaning and disinfection methods considered. When
possible, use the instructions from the manufacturer of the article regarding its cleaning. If these
instructions are not available, consult manufacturers of cleaning and disinfection technologies regarding
processes compatible with the fabric needing cleaning.

Consult equipment suppliers for alternative products, e.g., some equipment for spinal cord patients
come in firmer, more cleanable materials than does the problematic equipment.

Whenever possible, protect the fabric from soiling, e.g., covers, stain repellants.

During a patient’s use of an article, it may become soiled and require cleaning to continue to be used on
that patient.

The aim of cleaning and disinfecting soft goods is to reduce the microbial dose using the best available
 technologies.

Wiping up a spill of body fluids on a soft good as soon as it happens will facilitate cleaning.

7.2.4 Bath Tubs/Century Tubs/Hydrotherapy Pools/Whirlpools

Hydrotherapy tubs require particular cleaning and disinfection methods.
The health care worker is responsible for cleaning and disinfecting the hydrotherapy tub between
patients.

The Health Canada Infection Control Guidelines Long-Term Care Facilities states:

“Single use recirculating hydrotherapy equipment, such as bath tubs, century tubs, hubbard tanks
and whirlpools, must be drained after each resident use....It is necessary to disinfect all components
of the unit, including the basin, the internal plumbing and the lift chair with a disinfectant-detergent
after every bather. Prior to the first use of the day, it is necessary to disinfect the entire system with
a disinfectant-detergent, as organisms may have survived the disinfection process of the previous
day and multiplied.
One method to disinfect a single use recirculating tub is as follows:

1. Prepare a disinfectant solution of proper concentration in the tub basin. Use a product recommended by the manufacturer of the tub. If this is not possible, use a quaternary ammonium compound. Quaternary ammonium compounds usually have a detergent that can help remove organic matter and penetrate the biofilm. Household bleach (minimum dilution of 200 ppm free chlorine) may be used, although many tub manufacturers have suggested that chlorinated disinfectants may corrode the unit piping and users may have problems with chlorine odours.

2. Immerse the chair (or scrub thoroughly if the solution level is not sufficient to immerse the whole chair). Clean the interior surface of the tub and the upper and lower surfaces of the user’s chair with the disinfectant-detergent.

3. Circulate the solution for 15 minutes to ensure adequate contact time between the disinfectant and all internal surfaces of the unit. Foaming by the quaternary ammonium compounds or odours from chlorinated disinfectants may problems during the 15 minute circulating process.

Alternative approaches to control contamination in hydrotherapy tubs include the use of plastic liners and batch chlorination of tub water (15 ppm of free available chlorine). Liners make it possible to achieve the agitation effect with minimal contamination of the difficult-to-disinfect internal components. Batch chlorination of tub water offers an added safe margin against organisms present in the system.

7.2.5 Handling and transporting equipment

Soiled equipment/devices must be handled in a manner that reduces the risk of exposure and/or injury to personnel and clients/patients/residents, or contamination of environmental surfaces.

Closed carts or covered containers with easily cleanable surfaces should be used for handling and transporting soiled equipment/devices.

Soiled equipment/devices should be transported by direct routes to areas where cleaning will be done.

Containers or carts used to transport soiled equipment/devices should be cleaned after each use.

7.2.6 Sharps Disposal and Waste Management

Fluid-filled, reusable containers shall be emptied into the sanitary sewer before they are transported to the Sterile Supply Department (SSD).

All reusable containers shall be emptied of waste material before being transported to SSD.

Used needles and other sharp instruments should be handled with care to avoid injuries during disposal or reprocessing.
Disposable used sharp items should be disposed of immediately in designated puncture-resistant containers located in the area where the items were used.

Disposable sharps shall be removed from procedure trays by the healthcare professional that conducted, or assisted directly with, the procedure.

Reusable sharps and other contaminated instruments capable of penetrating human tissue must be secured in a puncture-resistant container for transport to SSD.

7.2.7 Single use devices

Single use, disposable equipment/devices are to be disposed of following use unless there is a system in place for reprocessing through a VCH approved reprocessor.

7.3 Storage of sterile items

7.3.1 The sterile storage area

The sterile storage area should be well ventilated and provide protection against dust, moisture, vermin, and temperature and humidity extremes.

Sterile items should be stored so that packaging is not compromised.

The shelf life of a sterilized package is event related. Event related shelf life is based on the concept that if items have been properly decontaminated, wrapped, sterilized, stored, and handled, sterility can be maintained indefinitely, unless the integrity of the package is compromised, e.g., tear, moisture. If the integrity of the package has been compromised, or is questionable, the package shall be reprocessed.

Storage and transportation of clean and sterile supplies shall meet the Standards in Canadian Standards Association Z312.15 Warehousing, Storage, and Transportation of Clean and Sterile Medical Devices.

7.4 Special pathogens

Standard disinfection and sterilization procedures for patient care equipment are adequate to sterilize or disinfect instruments or devices contaminated with blood and other body fluids, from persons infected with emerging pathogens.

There is no data to show that antibiotic resistant bacteria are less sensitive than antibiotic sensitive bacteria, to the currently used disinfectant, contact conditions, and concentrations.

Use standard cleaning and disinfection protocols to control environmental contamination with antibiotic resistant gram-positive cocci (e.g., Methicillin resistant *Staphylococcus aureus*, vancomycin intermediate resistant *Staphylococcus aureus*, or vancomycin resistant *enterococcus* [VRE]).
Pay close attention to cleaning and disinfection of high touch surfaces in patient care areas (e.g., bed rails, carts, bedside commodes, bedrails, doorknobs, or faucet handles).

Use appropriate hand hygiene, PPE (e.g., gloves), and infection control precautions during cleaning and disinfecting procedures.

Use hospital disinfectants appropriate for the surface to be disinfected, as specified by the manufacturers’ instructions.

Thoroughly clean and disinfect environmental and medical equipment surfaces on a regular basis using hospital disinfectants in accordance with manufacturers’ instructions.

When Contact Precautions are indicated for patient care, use disposable patient care items (e.g., blood pressure cuffs) whenever possible to minimize cross-contamination with multiple resistant microorganisms.

7.4.1 Creutzfeldt-Jakob Disease

The exception to standard reprocessing protocol is medical devices that have been used with patients who are known or suspected to have Creutzfeldt-Jacob Disease and other prion diseases.

Refer to VCH infection control guidelines for CJD:

http://www.vcha.ca/programs_services/infection_control/guidelines/guidelines/_docs/guidelines/binary_10356.pdf


7.4.2 Clostridium difficile

Studies have shown that three high level disinfectants/sterilants commonly used to disinfect endoscopes are effective against C. difficile spores:

- 2% glutaraldehyde: contact time 20 minutes
- 55% ortho-phthalaldehyde (OPA): contact time, 10 minutes
- Steris 20: Follow manufacturer’s instructions for contact time


7.4.3 Adenovirus and tonometers

Sterilization is essential for adenovirus and tonometers, as well as ophthalmic instruments, in order to prevent outbreaks of epidemic keratoconjunctivitis.
CDC Recommendations [CDC, 2006]: Wipe clean tonometer tips, and then disinfect them by immersing for 5-10 minutes in either 5000 ppm chlorine or 70% ethyl alcohol.


7.5 Reprocessing of endoscopes

Recommendations for reprocessing endoscopes are found in:

Canadian Standards Association. Z312.8, *Decontamination of Reusable Medical Devices*


7.6 For more information

Health Canada Infection Control Guidelines are available on Internet at:

http://www.phac-aspc.gc.ca/dpg_e.html#infection


The full text version of the environment guidelines is on the Internet at:

www.cdc.gov/ncidod/hip/enviro/guide.htm


7.7 Environmental Cleaning

7.7.1 Cleaning spills of blood and body substances

Instructions for cleaning up a spill of blood or body fluids are available on line at:


Promptly clean and decontaminate spills of blood or other potentially infectious materials.

Follow proper procedures for site decontamination of spills of blood, or blood containing body fluids.
Use protective gloves and other PPE appropriate for this task.

If the spill contains large amounts of blood or body fluids, clean the visible matter with disposable absorbent material, and discard the contaminated materials in appropriate, labeled containment. Swab the area with a cloth or paper towels moderately wet with Accelerated hydrogen peroxide, and allow the surface to dry. The surface must remain wet with the disinfectant as per manufacturer’s instruction to be effective. Use in accordance with label instructions to decontaminate spills of blood and other body fluids.

If Accelerated hydrogen peroxide is not available, use a 1:100 dilution (500–615 ppm available chlorine) to decontaminate nonporous surfaces after cleaning a spill of either blood or body fluids in patient care settings.

7.7.2 Housekeeping

Contract cleaners have detailed protocols to follow for daily, weekly, and discharge cleaning of regular and isolation rooms. Queries related to cleaning protocols in each facility can be obtained from the cleaning contractor, Value Improvement Network (Value IN), and Infection Control.

Standard cleaning terms for VCH are attached at the end of this chapter, as well as being on the Infection Control Intranet site.

Keyboards should be cleaned by the user.

Housekeeping responsibilities:

- Day to day cleaning, discharge cleaning, isolation room cleaning daily and on discharge.
- Keeping surfaces (e.g., floors, walls, and tabletops) visibly clean on a regular basis and clean up spills promptly.
- Cleaning and disinfecting high touch surfaces (e.g., doorknobs, bed rails, light switches, surfaces in and around toilets in patients’ rooms, sinks, faucets, chairs, call bells, telephones, intravenous poles, blood pressure cuffs, wall panel controls, thermostats) on a more frequent schedule than minimal touch housekeeping surfaces.
- Active scrubbing facilitates surface cleaning.
- Clean walls, blinds, and window curtains in patient care areas when they are visibly dusty or soiled.
- Linens must be changed upon discharge of a patient.
- In ambulatory care the health care worker changes linens and cleans surfaces between patients.
- Avoid large surface cleaning methods that produce mists, or aerosols. These may disperse dust in patient care areas.
- Follow proper procedures for the effective use of mops, cloths, and solutions.
- Prepare cleaning solutions daily or as needed, and replace with fresh solution frequently, according to facility policies and procedures.
- Change the mop head at the beginning of the day and also as required by facility policy.
- Change mops after cleaning up large spills of blood or other body substances, and after cleaning isolation rooms.
- Change cleaning cloths frequently during the day as needed.
- Launder mops and cleaning cloths daily. Clean mops and cloths after use and allow to dry before reuse; or use single use, disposable mop heads and cloths.
- In the operating room (OR), all ORs have their own mops. Mops are not transferred from one OR to the other and are changed after each case or terminal clean. After the last surgical procedure of the day or night, wet vacuum or mop operating room floors with a single use mop using hospital disinfectant.
- Do not use mats with tacky surfaces at the entrance to operating rooms or rooms of patients on isolation precautions.
- Use appropriate dusting methods (e.g., damp dusting, static cloth) for patient care areas designated for immunocompromised patients, BMT, burns, oncology, ICU, neonatal nursery.
- Wet dust horizontal surfaces daily by moistening a cloth with a small amount of hospital detergent/disinfectant. Dry dusting is not acceptable.
- Avoid dusting methods that disperse dust (e.g., feather dusting).
- Keep vacuums in good repair, and equip vacuums with HEPA (high efficiency particulate) filters for use in areas with patients at risk.
- Close the doors of immunocompromised patients’ rooms when vacuuming, waxing, or buffing corridor floors, to minimize exposure to airborne dust.
- When disinfecting environmental surfaces in nurseries and neonatal units, avoid unnecessary exposure of neonates to disinfectant residues on environmental surfaces by using disinfectants in accordance with manufacturers’ instructions and safety advisories. Do not use phenolics in nurseries.
- If upholstered furniture in a patient’s room requires cleaning to remove visible soil or body substance contamination, move that item to a maintenance area where it can be adequately cleaned with a process appropriate for the type of upholstery and the nature of the soil.

### 7.7.3 Enhanced Cleaning Protocol

#### 7.7.3.1 Purpose

This section is to assist BISS, housekeeping and Infection Control Practitioners (ICPs) in their cooperative efforts to address infection control needs in situations when Enhanced Cleaning or Isolation Room Cleaning are required.

BISS and housekeeping undertake to provide the housekeeping services set forth in this section so as to fulfill their roles in the prevention and containment of disease transmission. In turn, ICPs understand that “Enhanced Cleaning” will be deployed in response to different situations, and will be carefully monitored.

This section outlines only those understandings concerning items/areas to be cleaned and the frequencies for such cleaning. Additional details relating to cleaning, including precautionary procedures or apparel to be employed, are beyond the scope of this section.
This section provides further guidance to the Standard Terminology fact sheet.

7.7.3.2 Communication

It is agreed that housekeeping services, as per the provisions of this section, will continue to comply with requests for Enhanced Cleaning from ICPs.

When the level of Enhanced Cleaning requested exceeds the appropriate level (as defined below), the matter shall be referred to the Infection Control Officer or designate for approval. Should the making of such referral not be immediately practical, housekeeping shall comply with the request until the first reasonable instance when such a referral can be made (e.g., the next business day).

7.7.3.3 Isolation Room Clean

When a discharged patient/resident is believed to have C. difficile or a communicable GI illness (e.g. norovirus), housekeeping shall perform an Isolation Room Clean using accelerated hydrogen peroxide. While this will generally be sufficient, there will be some instances when double-clean using accelerated hydrogen peroxide may be requested.

In a GI outbreak, all Isolation Room Cleans shall be double-cleaned with Accelerated hydrogen peroxide on discharge. A double clean is required for all C. difficile discharges.

When a discharged patient/resident is believed to have a respiratory illness, housekeeping shall perform an Isolation Room Clean once using accelerated hydrogen. This is the case whether it is an outbreak or not.

7.7.3.4 VRE Clean

There are no special cleaning requirements for patients who carry VRE except in high risk wards, when a discharged patient/resident is believed to have VRE, housekeeping shall perform a double clean using Accelerated hydrogen peroxide.

In a VRE outbreak, which will be declared only at the discretion of infection control, all discharge cleans in the unit/wing shall be double cleans using Accelerated hydrogen peroxide (regardless of whether the discharged patient/resident is believed to have VRE).

7.7.3.5 Enhanced Cleaning

When Enhanced Cleaning is requested by Infection Control to combat gastrointestinal (GI) illness or Antimicrobial Resistant Organisms (AROs) outbreaks or increased numbers of cases, public washrooms, public toilet seats, commodes and contact points must be cleaned with Accelerated hydrogen peroxide at least once per day and Accelerated hydrogen peroxide must be provided in bathrooms, with nursing staff encouraging patients/residents to use such wipes.

5 High risk wards include Bone marrow transplant (BMT), Solid organ transplant (SOT) ICU and BPTU
If practical, especially at the larger sites where housekeeping staffing can be more readily reallocated, the public washrooms, public toilet seats, commodes and contact points should be cleaned with Accelerated hydrogen peroxide an additional one time by housekeeping on a subsequent shift that same day.

In the event of a GI outbreak, housekeeping should clean twice daily all public washrooms, public toilet seats, commodes, over-bed tables and all contact points with Accelerated hydrogen peroxide.

The dining room (patient and staff), including tables and chairs, must be cleaned with Accelerated hydrogen peroxide at the start of the outbreak.

When Enhanced Cleaning is required to combat concerns relating to influenza or a respiratory illness, contact points must be cleaned with Accelerated hydrogen peroxide at least once per day.

If practical, especially at the larger sites where housekeeping staffing can be more readily reallocated, the contact points should be cleaned with Accelerated hydrogen peroxide an additional one time by housekeeping on a subsequent shift that same day.

In the event of a respiratory illness outbreak, housekeeping should seek further direction from Infection Control Practitioners.

With all Enhanced Cleaning, the refrigerators must be emptied of all food and cleaned with Accelerated hydrogen peroxide though only once, at the start of the Enhanced Cleaning period.

When Enhanced Cleaning is initiated to address GI or respiratory illnesses, ICPs will encourage nursing to minimize clutter on the affected units.
Reprocessing a medical device consists of many different processes that are interdependent. Each of these processes has a relevant standard that should be followed. The following is a list of the CSA Standards that relate to the reprocessing of medical devices in health care facilities:

**Figure 13 Canadian Standards Association Standards**

**General standards and guides – for all facilities**

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<tr>
<th>Number</th>
<th>Title</th>
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<tr>
<td>Z312.8</td>
<td>Decontamination of Reusable Medical Devices</td>
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<tr>
<td>Z312.10</td>
<td>Selection, Use, Maintenance &amp; Laundering of Reusable Textile Wrappers, Surgical Gowns and Drapes for Health Care Facilities</td>
<td>Laundries and purchasing departments in facilities that use or process reusable textiles.</td>
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<td>Z312.14</td>
<td>Selection and Use of Rigid Sterilization Containers</td>
<td>Sterile processing departments and other area where sterilization containers, organizing trays, etc. are used.</td>
</tr>
<tr>
<td>Z312.15</td>
<td>Warehousing, Storage and Transportation of Clean and Sterile Medical Devices</td>
<td>Material managers, sterile processing departments and infection prevention and control personnel in facilities that store and pick medical devices outside of controlled sterile supply areas.</td>
</tr>
<tr>
<td>Z312.22</td>
<td>Management of Loaned, Shared and Leased Medical Devices</td>
<td>Sterile processing departments and operating rooms (Standard outlines requirements and responsibilities for the safe and effective use of loaners).</td>
</tr>
<tr>
<td>PLUS 1112</td>
<td>Handbook on Infection Prevention and Control in Office Based Health Care and Allied Services</td>
<td>Smaller health care facilities that want guidance consistent with the hospital sterilization standards.</td>
</tr>
<tr>
<td>Z15882</td>
<td>Sterilization of Health Care Products - Chemical Indicators - Guidance for Selection, Use and Interpretation of Results</td>
<td>Health care facility departments and staff that purchase or use chemical indicators.</td>
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### Additional standards for steam sterilization

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<td>Hospital engineering departments</td>
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### Additional standards for ethylene oxide (EtO) sterilization

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<td>Z312.2</td>
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<tr>
<td>Z312.9</td>
<td>Installation, Ventilation and Safe Use of Ethylene Oxide Sterilizers in Health Care Facilities</td>
<td>Hospital engineering and sterile processing departments in facilities that perform EtO sterilization</td>
</tr>
</tbody>
</table>
**Standard Cleaning Terminology**

Using common terminology across Vancouver Coastal Health for cleaning requests will help to avoid confusion.

**Regular Discharge Clean** - request this when a routine discharge clean is required (i.e. - no isolation precautions)

**Isolation Room Clean** - request this when any isolation room is to be cleaned (including MRSA). This tells the housekeeper to wear personal protective equipment, use Accelerated hydrogen peroxide, and change the curtains.

**VRE Clean** - request this in ICU, BMT, Burns and Trauma or Solid Organ transplant ward when a room was used by a patient colonized or infected with VRE. This tells the housekeeper to follow the isolation room clean protocol, and to clean the entire room twice.

**Preventing Confusion**

**Remember:**

Leave the isolation sign posted outside the room. Allow the housekeeping staff to remove the sign when they are finished.

This is not a breach of confidentiality as there is no record of who was in the room on the isolation sign.
ACCELERATED HYDROGEN PEROXIDE 5 FACT SHEET

What is Accelerated hydrogen peroxide?
- A hydrogen peroxide based cleaner and disinfectant that is bactericidal and virucidal.
- Accelerated hydrogen peroxide Wipes are ready for use.
- Accelerated hydrogen peroxide is a 7% AHP solution and should be diluted at 1:16 to give a 0.5% AHP concentration when used for cleaning and disinfecting.
- Read label on container for manufacturer’s instructions.

When to use Accelerated hydrogen peroxide
- Accelerated hydrogen peroxide is the standard disinfectant used across VCH for isolation cleaning and blood and body fluid spills.

How to use Accelerated hydrogen peroxide
- Wear gloves.
- Remove visible organic matter with paper towel. Discard paper towel.
- Wet cloth with Accelerated hydrogen peroxide Wipe and let dry. Surface should remain wet for 5 minutes to disinfect.
- Discard gloves and cloths. Launder if cloth is reusable.
- Clean hands.

Why use Accelerated hydrogen peroxide
- Accelerated hydrogen peroxide is effective against microorganisms and viruses.
- Accelerated hydrogen peroxide contains ingredients that are considered safe for humans and benign to the environment.
- Accelerated hydrogen peroxide is safe for use with rubber and plastic.
- The previous 2-step procedure (use of a detergent followed by a disinfectant) is not required with Accelerated hydrogen peroxide.

Safety issues
- Not flammable. Corrosive in concentrate – may cause burns to eye and skin.

First aid measures
- Eye: immediately flush with water.
- Skin: flush with water. Wash with soap and water.
- Inhalation: Not a normal route of exposure. If symptoms develop move to fresh air.
- Ingestion: Do not induce vomiting. Drink a glass of water and seek medical attention.

A note on Virex
- Note: Accelerated hydrogen peroxide is different from Virex, our standard cleaning agent for Everyday Environmental cleaning throughout the facilities across the region.
- Virex is used for Regular Discharge Cleaning.
- Virex is a quaternary compound, a low level disinfectant.
8 MANAGEMENT OF PATIENTS WITH AROs

8.1 Background information

Antimicrobial resistant organisms (AROs) have been found in hospitals since the advent of penicillin. Strategies to improve antimicrobial use, and to prevent transmission of AROs, have been implemented to control the spread of resistance.

The infection prevention and control procedures in this chapter are directed towards Methicillin Resistant *Staphylococcus aureus* (MRSA) and Vancomycin Resistant enterococci. (VRE) in high risk wards.7

For surveillance data for facilities in Vancouver Coastal Health Authority, refer to the Infection Control Annual Report on the Infection Control Intranet site. Analysis of current data of MRSA, VRE, and *Clostridium difficile* in health care facilities across the continuum of care in Vancouver Coastal Health, provides excellent factual information.

8.1.1 What is *Staphylococcus aureus* (S. aureus)?

*Staphylococcus aureus* (S. aureus) is bacteria normally found in the nose and/or on the skin in up to 30% of healthy people.

S. aureus can also cause a variety of infections, ranging from localized skin lesions, such as impetigo, boils or wound infections, to invasive disease.

8.1.2 What is Methicillin Resistant *Staphylococcus aureus* (MRSA)?

Methicillin Resistant *Staphylococcus aureus* (MRSA) is a strain of S. aureus resistant to oxacillin and Cloxacillin.

They may also be resistant to aminoglycosides, erythromycin, quinolones and other antibiotics. Many MRSA infections can be effectively treated with commonly available oral antibiotics.

Infections caused by MRSA are not inherently more serious than infections caused by Methicillin sensitive strains of S. aureus (MSSA).

Most people with MRSA are carriers without infections, as is the case with other strains of S. aureus.

7 High risk wards include Bone marrow transplant (BMT), Solid organ transplant (SOT) ICU and BPTU
8.1.3 What are *enterococci*?

*Enterococci* are bacteria commonly found in the gastrointestinal tract of 95% of healthy individuals. As well, there are non-pathogenic colonizing flora in the vagina, oral cavity, perineal area, hepatobiliary tract, and upper respiratory tract.

Human faeces contain the greatest quantity of *enterococci* and therefore the faecal-oral route is the most efficient route of transmission.

Occasionally, *enterococci* are capable of causing invasive disease, particularly in severely immune-suppressed patients.

*Enterococci* are bacteria of low pathogenicity and produce disease in only the most vulnerable patients, often as part of a mixed infection.

*Enterococci* may also contribute to the normal contamination of open wounds and decubitus ulcers, thereby creating a reservoir for the organism.

8.1.4 What are vancomycin resistant *enterococci* (VRE)?

VRE are *enterococci* that have acquired resistance to vancomycin, the drug of choice for treating multi-drug resistant *enterococci* infections. *Enterococci* have always had inherent resistance to many antibiotics and can readily acquire resistance to other antibiotics. Newer drugs have recently become available, such as Daptomycin and linezolid, which are useful in treating serious infections with VRE.

In addition, there is the possibility that the vancomycin resistant gene (Van A gene or Van B gene) present in VRE may be transmitted to other gram-positive organisms, such as *S. aureus*, although this is very rare.

Like MRSA, VRE is neither more pathogenic nor more virulent than susceptible *enterococci*, i.e., it is not more likely to cause infection, nor does it cause more serious infection than other *enterococci*. However, as with MRSA, treatment of serious VRE infection is more problematic due to the limited options.

In the U.S. there has been a rapid rise in the incidence of infection and colonization with VRE. In 1989, 0.3% of enterococcal isolates were resistant to vancomycin whereas by 1995 >10% of the enterococcal strains isolated from ICU and non-ICU settings were resistant to vancomycin.

In Canada, the first isolate of VRE was reported in 1993. The Canadian Nosocomial Infection Surveillance Program (CNISP) has received reports of 411 cases of VRE from 23 hospital sites between October 1998 and September 2000. The majority (95%) of these occurrences reflect colonization picked up on screening within acute care settings.
After 10 years of experience with VRE, we have noted that most patients do not develop infections from VRE but are only asymptotically carrying the organism and that those infections that occur are mainly from the urinary tract and generally not severe in nature.

8.1.5 What is colonization?

Colonization is the presence, growth, and multiplication of an organism in, or on a body site without signs and symptoms of infection.

S. aureus colonization of the nose (anterior nares) occurs in 20% to 30% of normal healthy individuals. Health care workers have higher rates of S. aureus nasal colonization when compared to the general population. Colonization may also occur in the axillae, chronic or surgical wounds, decubitus ulcers, perineum, sputum, urine and invasive device sites such as intravascular catheters, gastrostomy and tracheostomy sites of hospitalized patients.

There is no difference between the common sites for MR(Resistant)SA colonization and MS(Sensitive)SA. In tertiary care facilities where MRSA is highly endemic, 4.2 per 1,000 patient admissions acquired MRSA in 1999. Although health care workers have higher rates of S. aureus colonization, MRSA colonization is uncommon among health care workers.

Enterococci are normally found in the bowel and female genital tract. When exposed to antibiotics, the enterococci that are resistant may survive and multiply resulting in an overgrowth of the more resistant subpopulation.

VRE studies indicate colonization with the bacterium is much more common than infection, and colonization can last several months to years.

8.1.6 What is infection?

Infection refers to tissue invasion by the organism with multiplication and overt signs and symptoms of infection (fever, increased white blood cell count, purulence, inflammation, etc.).

Among hospitalized patients who acquire MRSA, 30-60% may develop an MRSA infection. However, unlike hospitalized patients, only 5-15% of residents in LTC facilities are likely to develop infection following acquisition of MRSA. The risk of infection following acquisition of MRSA is low and those infections that occur are mainly from the urinary tract and generally not severe in nature.

8.1.7 What causes antibiotic resistance to develop?

The following factors are thought to contribute to emergence of resistance in acute care settings:

- Intensive, prolonged use of broad spectrum antibiotics;
- High intensity of medical care provided in the close physical confines of a hospital;
- A more vulnerable population, especially patients suffering chronic illness, those who are critically ill, those with invasive devices in place, those requiring intensive medical or surgical care.
In community settings, the prevalence is unknown, however, the following represent high risk groups:

- Injection drug users;
- Individuals taking frequent and/or prolonged courses of broad spectrum antibiotics;
- Chronically ill persons with frequent admissions to hospital;
- Some First Nations communities;
- Those with close contact with individuals within these risk groups or with populations where MRSA is endemic (some areas of the United States and some third world countries).

### 8.1.8 Community acquired MRSA

New strains of Methicillin resistant *Staphylococcus aureus* (MRSA) have emerged in the community, and sometimes cause aggressive infection in otherwise healthy people.

The term “community acquired Methicillin resistant *Staphylococcus aureus*” (CA-MRSA) describes MRSA infections that appear to take their origin in the community. Many CA-MRSA infections are caused by unique clones of *S. aureus* that produce a toxin that may cause necrosis and leucopenia, and may relate to key clinical presentations such as abscess and necrotizing pneumonia.

### 8.1.9 What causes MRSA and VRE to spread?

The single most important mode of transmission of MRSA and VRE in health care settings is via transiently colonized hands of health care workers who acquire it from contact with colonized or infected clients/patients/residents, or after handling contaminated material or equipment.

The unrecognized colonized client/patient/resident presents a particular risk for transmission to other clients/patients/residents.

The number of colonized clients/patients/residents will also influence the likelihood of acquiring MRSA or VRE.

Contamination of the environment with VRE is more likely when a patient/client/resident has diarrhea, is incontinent, and/or has poor hygiene.

VRE can survive on surfaces for days or weeks.

### 8.2 Prevention and control of Antibiotic Resistant Organisms (AROs)

#### 8.2.1 Preventing transmission of AROs

Preventing transmission of AROs across the continuum of care at VCH is the responsibility of all health care workers, patients, visitors and support service workers. Nosocomial colonization of patients is a more frequent occurrence than was previously recognized.
Routine Practices need to be adequate to prevent, or at least minimize, transmission of organisms during the provision of health care. Adherence to Routine Practices and Additional Precautions will prevent spread of microorganisms. Refer to Section 4, Routine Infection Control Practices, and Section 5, Additional Precautions for Acute Care Facilities, for details. Routine Practices are the level of care that should be provided for all patients/clients/residents. Routine Practices are the most important factor in the control of AROs with an emphasis on hand hygiene and cleaning and disinfection of the environment.

8.2.2 Differences in approach between acute care and other levels of care

There are several differences in approach to AROs across the continuum of care in VCH. These are based on the differences in the types of care provided, the degree of patient risk associated with the acute care setting and what is currently known about the epidemiology of these organisms. It is impractical and unnecessary to implement the same degree of control measures in every setting across the continuum of care.

In hospitals where AROs are established, targeted intervention in key clinical areas, for example ICUs, burn units, oncology units, or orthopedic/trauma units, may be more successful where the impact of AROs is likely to be the greatest.

8.2.3 Management of AROs in the elderly, ambulatory care and patients undergoing active rehabilitation

In ambulatory settings, including diagnostic facilities such as endoscopy suites, Routine Practices are to be adhered to, including for patients known to be infected or colonized with MRSA/VRE.

As per Routine Practices, gloves and gowns are used for contact with uncontrolled secretions, pressure ulcers, draining wounds, stool incontinence, and ostomy tubes and bags.

Equipment must be cleaned between patients as per Routine Practices.

For elective procedures, when possible, schedule patients known to be colonized or infected with an ARO, as the last cases of the day.

8.2.4 Screening for AROs

Patients colonized or infected with an ARO unbeknownst to health care workers often contribute to the spread of AROs. With the increase of AROs in community settings among residents with no prior admission to a hospital, it is even more important for health care workers to adhere to Routine Practices to prevent transmission of organisms whether or not colonization has been identified.

In acute medical/surgical areas and the emergency department, the following patients require screening:
Any patient who has been admitted to any health care facility the last six months, and
Patients from long term care facilities where AROs are known to be present.

Patients who are known to have tested positive for MRSA previously are not re-screened.
Patients who have had healthcare encounters (clinic, hospital, long-term care, etc) outside Canada or in contact with somebody with a multidrug resistant Gram negative rod (MDR-GNR) should be screened for the presence of MDR-GNRs.

8.2.4.1 Screening cultures

Screening cultures should consist of

- swabs from perineum/groin area, draining wound(s), ostomy sites for MRSA in patients with risk factors for MRSA, and MDR-GNR in patients with risk factors for MDR-GNR. The same swabs may be used for both screens if patient is at risk for both.
- the anterior nares for MRSA in patients with risk factors for MRSA.

Screening cultures should be done within 12 hours of admission.

Use a regular microbiology requisition and indicate that the specimen is for an MRSA search or an MDR-GNR search.
When a patient needs swabs for MRSA, please send:

1 nasal swab for MRSA (a single swab inserted into both R & L nares)

and

1 Peri-rectal swab for MRSA.
(A peri-rectal swab is taken from the skin around the rectum.
It is not necessary to insert the swab into the rectum.)

The same peri-rectal swab can now be used in the lab to test for both MRSA and VRE (when required for high risk groups\(^8\)).

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\(^8\) High risk wards include BMT, SOT, ICU and BPTU
Guidelines for the Management of Multiple Antibiotic Resistant Gram-Negative Bacilli

Multiple antibiotic-resistant gram-negative bacilli are becoming increasingly common due to selective antibiotic pressure and the transfer of patients from other countries with endemic resistance patterns. The following protocol has been written with the intent of managing patients with multiple antibiotic resistant gram-negative bacilli in the acute care setting at the discretion of the Infection Control team.

1. All patients admitted who have recently been an inpatient in any foreign country will be placed on Contact Precautions upon admission pending results from screening swabs (see below). This is in addition to routine appropriate admission screens.

2. Screening swabs will include:
   - Sputum
   - Wounds
   - Perineum/groin
   - Urine

   Label requisition: Multiple Antibiotic Resistant Gram Negative Bacilli Search and specify organism of interest if known, (e.g., A. baumannii, imipenem resistant E.coli) and/or country visited

3. Ventilated patients will be placed on Airborne and Contact Precautions pending the results of the admission screen.

4. If a ventilated patient is positive for multiple resistant gram-negative bacilli Airborne and Contact Precautions will continue to be required.

5. Any non-ventilated patient with multiple antibiotic-resistant gram-negative bacilli identified will remain on Contact Precautions. If a multiple resistant gram-negative bacillus is in the patient's sputum, Droplet Precautions are necessary.

6. Equipment that goes into the patient room should be limited (particularly respiratory equipment) and meticulously cleaned and disinfected before use on another patient. All devices, e.g., stethoscopes, must be disinfected before use on another patient.

7. Rooms will be cleaned daily using the Isolation Room Cleaning protocol.

8. Transfers and/or bed moves should not be done unless absolutely necessary for clinical reasons.

9. Infection Control will provide brief education sessions to all who provide direct care. Issues to be reviewed will include:
   - Proper use of PPE
   - Meticulous hand hygiene
   - The potential for environmental contamination.
   - Understanding the difference between colonization and infection.

10. Infection Control will direct ward/unit surveillance of other patients for detection of possible transmission based on risk assessment (e.g. patient population, environment, unit, previous transmission history).

   As a reminder, multiple antibiotic-resistant gram-negative bacilli such as A. baumannii or imipenem resistant E.coli are not a significant problem in the healthy host.
Identification and notification of an outbreak

Identification of a positive MRSA screening result should be made in the patient’s medical record and computer file, for the purpose of management during the current hospitalization, and to facilitate prompt identification if readmitted.

A receiving facility that finds within 48 hours of admission that a patient admitted from another institution is infected or colonized with an ARO should inform the transferring institution.

It is the responsibility of the transferring facility to inform the receiving facility of the patient’s colonization or infection status if known prior to transfer. Unit Clerks (or other staff as necessary) must inform diagnostic areas and Patient Escort of patient’s ARO status when booking a procedure.

Notify Infection Control if you receive a patient from another institution who is known to be positive for MRSA and is not flagged in PCIS, or otherwise identified on the chart.

8.2.6 Isolation precautions in acute care

8.2.6.1 What isolation precautions are necessary for AROs?

Contact Precautions are implemented for patients who are known to be colonized or infected with MRSA or VRE *ONLY* in high risk patient populations.\(^9\)

- A Contact Precautions sign must be placed outside the room.
- Signage should maintain privacy by indicating only the precautions that are required, not information regarding the patient’s condition.
- All who enter the room of a patient on Contact Precautions must comply with the infection control precautions in the Infection Control Manual in Section 5, Additional Precautions, Contact Precautions.
- Gloves are used as consistent with Routine Practices, i.e., gloves for direct contact with body fluids, unless directed otherwise by Infection Control.
- Gowns are worn for all direct contact activities with the patient or body fluids. Certain clinical programs may require gowns at all times.
- Masks are used consistent with Routine Practices and Additional Precautions.
- Gloves and gown (and mask, if worn) must be removed, discarded and hand hygiene performed immediately on leaving the bed space or room of the patient on Contact Precautions.

Contact Precautions can only be discontinued by Infection Control.

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\(^9\) High risk wards include BMT, SOT, ICU and BPTU
Patients with screening culture results pending should not be placed on precautions, or in rooms with known positive MRSA patients.

8.2.6.2 Patient placement

- Patients should be placed in a single room (ideally with a private bathroom).
- The door to the patient’s room may remain open.
- Alternatively, patients may be cohorted with patients known to have similar AROs, that is MRSA together with other MRSA patients.
- When single rooms for Contact Precautions are limited, priority should be given to patients who are an increased risk of disseminating microorganisms into the environment.

MRSA patients at increased risk of dissemination of MRSA include:

- Individuals with colonized tracheostomy and uncontrolled respiratory secretions;
- Individuals with respiratory infections;
- Individuals with wound or stoma drainage that is not contained by a dressing or appliance;
- Individuals with desquamating skin conditions (e.g., psoriasis).

VRE patients at increased risk of dissemination of VRE include individuals who are at a high risk of soiling their environment (e.g., diarrhea, fecal incontinence). Patients at high risk of infection with VRE are immunosuppressed populations and those with invasive devices.

Patients known to be positive for an ARO (MRSA, MDR-GNR) should be encouraged to minimize the time spent outside their rooms. This restriction should be balanced with the patient’s need to mobilize. Before leaving their rooms, patients must wash their hands and use an antiseptic hand rub. They should be instructed to minimize their contact with other patients and the environment. Any patients unable to comply with these instructions should be supervised by staff when leaving their room. It is not necessary for the patient to wear a gown, gloves or mask to leave the room.

8.2.7 Education of health care workers and patients

All employees should receive general information regarding AROs, and specific information about prevention, as it relates to their jobs.

Patient and family members should receive appropriate information about AROs and preventive measures, including hand hygiene, respiratory etiquette, and compliance with Routine Practices and Contact Precautions.

A pamphlet *MRSA Information for Patients and Visitors* is available from VCH Printing Services, form FG 520.M566.

8.2.8 Supplies

- Supplies should not be stockpiled in the room, as this may lead to them being needlessly discarded on patient discharge.
- Unnecessary supplies must not be brought into the room.
- Equipment (e.g., stethoscopes) should be dedicated for the patient on Contact Precautions.
- Equipment used for a patient on Contact Precautions must be adequately cleaned using a hospital grade disinfectant, prior to use on another patient.
- Any equipment that has been in the room of a patient positive for an ARO that cannot be cleaned must be discarded.

### 8.2.9 Cleaning

Refer to Section 7., *Cleaning, disinfection, and sterilization*, for cleaning information.

- Cleaning staff will use an accelerated hydrogen peroxide solution daily.
- An Isolation Room Clean will be done when the patient is discharged.
- Cleaning methods must be adequate to clean and disinfect equipment between each patient.
- Equipment other than bedpans and urinals are sent to the Sterile Service Department, or wiped down with an approved disinfectant.
- Cleaning should include sufficient contact time for cleaning solutions, appropriate strength of cleaning solutions, use of damp dusting, working from clean to dirty areas, use of double buckets, and eliminating the practice of dipping a cloth back into cleaning solution after use, and re-using it on another surface.
- Regular cleaning of high touch surfaces, e.g., bed rails, sinks, faucets, chairs, call bells, telephones, intravenous lines and poles, blood pressure cuffs, door handles, wall panel controls, thermostats, and keyboards must be done.
- Active scrubbing facilitates surface cleaning.
- Twice daily cleaning using intensive environmental disinfection has been reported to assist in ending an outbreak of VRE. Infection control practitioners liaise with housekeeping to initiate and discontinue VRE Cleaning.
- All curtains (privacy, window and shower) should be removed and laundered after discharge of a patient on Contact Precautions.
- Linens must be changed upon discharge of a patient in all health care settings, including ambulatory care.

### 8.2.10 Hydrotherapy

Hydrotherapy tubs require particular cleaning and disinfection methods. Refer to Section 7.2.4.

### 8.2.11 Linen and garbage disposal

Regular linen hampers can be used, and soiled items may be treated as regular laundry.

Deposit laundry securely into the hamper while avoiding touching the outsides. Double bagging is not required.

Garbage is handled as regular garbage.

### 8.2.12 Dishes and utensils

Regular dishes and utensils can be used. Regular dishwashing effectively cleans dishes and utensils and removes any potential pathogens.
It is not necessary to use disposable dishes for patients colonized or infected with an ARO.

8.2.13 Visitors

Visitors do not need to wear a gown, gloves or mask, other than as per Routine Practices if they are participating in direct patient care (and as directed by Infection Control).

Visitors must be instructed in proper hand hygiene techniques. Hand hygiene must be performed when leaving the patient’s room.

8.2.14 Patient transfer

The MRSA or VRE status of a patient should not affect the decision about transferring the individual to any health care setting, and a negative result is not required prior to the transfer.

➢ Before transferring a patient with MRSA, all individuals involved in the transfer and the receiving department or health care setting should be informed about the patient’s status so that appropriate precautions may be taken, and placement may be arranged.

➢ The receiving facility must be notified about cultures that subsequently become positive.

➢ In acute care, staff should wear gloves and a gown if they will have physical contact during transport of a patient colonized or infected with MRSA.

➢ In long term care, staff should wear appropriate PPE if they will have physical contact (e.g., lifting) during transport of a patient/resident who is colonized or infected with MRSA.

➢ Transport equipment and equipment or surfaces which have had direct or indirect contact with a patient who is colonized or infected with MRSA, and who undergoes a medical, surgical or diagnostic procedure in another department, must be cleaned immediately after the patient leaves, using a hospital grade disinfectant (Virex).
8.3 Sources

Source of Background Information:

BCCDC British Columbia Guidelines for Control of Antibiotic Resistant Organisms (AROs) [Methicillin Resistant *Staphylococcus aureus* (MRSA) and Vancomycin Resistant *Enterococci* (VRE)]

BCCDC Infection Control Guidelines. Interim Guidelines for the Management of Community-Associated Methicillin Resistant *Staphylococcus aureus* Infections in Primary Care February 2006
http://www.bccdc.org/Guidelines for Management of Community Associated Methicillin Final


Vancouver Coastal Health has many levels of care—from acute to long term. A patient’s risk of acquiring MRSA and the risk of infection with these organisms vary with the level of care provided. The following protocol is to be used in acute medical/surgical areas and Emergency. Separate protocols exist for long term care units and diagnostic areas.

Who is screened?

- Any patient who has been admitted to any healthcare facility for 48 hours or more within the last three (3) months.
- Patients from LTC facilities are screened
- Swabs are taken from the nares peri-anal area and any open wound(s) including colostomy site.
- Use a regular microbiology requisition and indicate that the specimen is for a MRSA search.
- Cultures must be done within 12 hours of admission.
- Patients who have been hospitalized outside of Canada should be screened for MDR-GNR within 12 hours of admission

Patients being screened for AROs are not placed on precautions.
Patients who are known to have tested positive for MRSA previously are not re-screened.

Who is placed on precautions?

- Any known MRSA/MDR-GNR patient.
- Any patient with a history of MRSA or MDR-GNR.
- Patients with VRE *ONLY* in high risk wards (ICU, BPTU, SOT, BMT)

Infection Control Precautions include:

- Patients are placed in a single room (ideally with a private bathroom).
- A Contact Precautions sign must be placed outside the room
- Door may remain open.
- Alternatively, cohort patients known to have similar AROs, that is MRSA together and the same MDR-GNR together.
- Contact the Infection Control Practitioner at your facility.
- Frequent and appropriate hand hygiene is mandatory. Antiseptic hand rub may be used as an alternative. Hands must be cleaned between patient contacts and before leaving the room. The risk of health care staff becoming colonized with AROs is very low with good hand hygiene practices.
- Unit Clerks (or other staff as necessary) must inform diagnostic areas and Patient Escort of patient’s ARO status when booking a procedure.
- Patients may go outside their room if the following criteria are met:
  - Patient is continent of stool and urine.
  - Patient is competent and compliant with hand hygiene and general good hygiene practices.
  - Any draining wounds can be covered and contained.
  - Patient is compliant with wearing a mask if he has MRSA in his sputum.
- Patient is compliant with restrictions as imposed by nursing staff.
- If there are any concerns or questions regarding a specific patient, Infection Control should be consulted.

- Patients must wash hands or use an antiseptic hand rub when leaving the room.
- It is not necessary for patients to wear gloves, gowns or masks.
- Linen and garbage is disposed of in the usual manner.
- Gloves are used as per Routine Practice, i.e., gloves for direct contact with body fluids, unless directed otherwise by Infection Control.
- Gowns are worn for all direct contact activities with the patient or body fluids. Certain units may require gowns at all times.
- Masks are used as consistent with Routine Practice and Transmission Based Precautions.
- Patient care equipment must be dedicated to the patient’s use when possible, and decontaminated before use on another patient.
- Unnecessary supplies must not be brought into the room.
- Treatment is not recommended for colonization without infection.
- Decolonization may be considered on an individual basis by Infection Control.
- Contact Precautions can only be removed by Infection Control.
- Environmental swabs will be done only by the Infection Control staff.
- Visitors do not need gowns, gloves or masks (except as directed by Infection Control), but must practice good hand hygiene on leaving the patient’s room and not visit other hospital areas.

**Cleaning**

- Cleaning staff will use an accelerated hydrogen peroxide solution (Accelerated hydrogen peroxide) daily.
- Notify housekeeping that an Isolation Room Clean is necessary when the patient is discharged.
- Equipment other than bedpans or urinals is sent to Sterile Processing, or wiped down with an approved disinfectant.
- Disposable equipment in an isolation room is discarded after discharge of patient.

For further information

Refer to the Infection Control Intranet site, [http://www.vcha.ca/site_765/program_8945/index.htm](http://www.vcha.ca/site_765/program_8945/index.htm)
9 OUTBREAK MANAGEMENT

- Outbreaks may be suspected when healthcare-associated infections occur above the background rate or when an unusual microbe is recognized.
- Outbreaks can occur within a facility, in the community, or as a result of an unusual new disease.
- Outbreaks may be associated with specific groups of patients, locations, treatment modalities, contaminated products or devices, healthcare providers, and/or healthcare practices.
- Epidemiologic investigations of an epidemic or cluster of infections must be conducted in a standardized way that assesses the contributing factors: source(s), the pathogen(s), the host(s), and the mode of transmission.
- Ending an outbreak involves modifying one or more of these factors.
- The goal of an outbreak investigation is to identify contributing factors in order to control the outbreak and to prevent similar outbreaks in the future.
- Cooperation between epidemiologists, infection control professionals, laboratories, and public health experts are necessary to effectively manage outbreak situations.
- Surveillance is the basic tool necessary to identify endemic and epidemic healthcare-associated infections.
- Endemic infections are the usual level of a disease within a geographic area, such as a hospital or long term care facility. Endemic infections represent the majority of preventable nosocomial infections. This background rate may fluctuate slightly from month to month, but does not differ significantly.
- Epidemic (outbreak) infections represent an excess over the expected (endemic) level of a disease within a geographic area.
- With some agents, e.g., botulism, one case may constitute an epidemic.

9.1 Components of infection control measures to investigate and manage an outbreak

- The importance and sequence of the various steps in dealing with a potential outbreak vary, depending on the nature of the problem.
- Steps often occur simultaneously. Prepare for the investigation. This includes advising microbiology to save specimens and isolates for antimicrobial susceptibility testing, molecular, and non-molecular typing.
- Confirm the existence of an outbreak. Develop a case definition and use it to estimate the magnitude of the problem.
- Compare the current incidence with usual or baseline incidence.
- Assess the need for outside consultation and report to public health if required. Institute appropriate early control measures based on the magnitude and nature of the problem.
- Establish or verify diagnosis of reported cases. Identify agent if possible.
- Develop specific criteria for the definition of a case. Initially this may be a broad definition, e.g., diarrhea, that is refined as the investigation proceeds and a specific agent and diagnosis is confirmed.
- The final case definition may include specific laboratory components, e.g., positive blood culture with specific isolate), radiologic findings and clinical signs and symptoms.
- Review the patient charts to characterize the nature of the disease.
- Obtain appropriate laboratory specimens to identify specific agent responsible. Search for additional cases.
Collect critical data.

Develop a line listing.

Collect specimens if indicated.

Encourage immediate reporting of new cases by laboratory, physicians, nurses and others as appropriate (e.g., radiology in cases of pneumonia).

Search for other cases that may have occurred retrospectively or concurrently through laboratory reports, medical records, patient charts, physicians and nurses, and public health data.

Use a specific data collection form. Selected critical items may be abstracted on a line listing.

Characterize cases of disease by person, place and time to help determine who is at particular risk and who should be included in further studies.

Take immediate control measures, if indicated. These may include increased attention to hand hygiene, additional use of barriers (e.g., gloves and gown), limiting movement of patients, or confiscating the specific suspected product (e.g., patient care item).

See the Outbreak Management Checklist for Suspected Gastrointestinal Outbreaks, which follows, for an example of specific control measures.


Formulate tentative hypothesis (making the best guess to explain the observations) on the likely reservoir, sources, and mode of transmission of the disease.

Test the hypothesis (hypothesis should explain the majority of cases). Many investigations do not reach this stage, usually if the problem resolves without intervention or does not require further study. Examples of situations that should be studied include infection associated with a commercial product, infection associated with considerable morbidity and/or mortality, and infections associated with multiple services.

If necessary, refine the hypothesis and carry out additional studies. Interpreting the results can provide meaningful associations between risk factors and disease.

Evaluate control and preventative measures. Identify specific preventive and control measures based on the nature of the agent and characteristics of high risk groups and sources (e.g., eliminate contaminated product, modify nursing procedures, treat implicated carriers, immunize susceptibles).

Ongoing surveillance can measure the efficacy of the intervention to determine if cases cease to occur or return to endemic level.

Communicate findings. Summarize investigation for authorities. Communication of findings can be by an oral briefing or a written report.

9.2 Source of Outbreak Management Components


Figure 17 Outbreak Management Checklist for Suspected Gastrointestinal Outbreaks

**Initial Response by Facility/Unit**
- Alert Infection Control if the facility/unit suspects a GI outbreak in either staff or patients. *
- After consultation with Infection Control, alert Stores that additional hand hygiene products, gloves, gowns, eye protection and masks will be required.
- After consultation with Infection Control, alert Housekeeping Services that enhanced cleaning will be required.
- Infection Control will ensure that all parties (Management, Housekeeping, Occupational Health, Stores, Food Services, Public Health, Communications) have been informed and will arrange meetings as appropriate.

**Infection Control**
- Start line listing of only those patients who fit clinical/microbiological definition.
- Close unit/facility to admissions and transfers out as needed.
- Cohort or isolate in acute care facilities.
- Inform Public Health if outbreak confirmed clinically or microbiologically and close unit/facility.
- Inform B.C. Bedline and facility administrator of facility closure.
- Liaise at least daily with unit/facility manager and Housekeeping Services.
- Daily rounds to ensure all Infection Control measures are in place.
- Ensure that stool specimens are collected, labeled “query Norovirus” and obtain BCCDC outbreak number by phoning 604-660-6079. Provide specimen containers and requisitions to areas.
- Liaise daily with Occupational Health to cross check patient/resident and staff status.
- Provide a daily update to Communications and senior management detailing number currently affected, total affected and ward closure status.
- Determine when outbreak is over and inform Public Health.
- Arrange education sessions with Manager(s).
- Write up report when outbreak is over.

**Management/ Administration**
- Cancel all group activities.
- Post signage where appropriate (Contact Precautions, No sharing of food)
- Post signage on facility entrances, exits, bathroom facilities, kitchens, ice machines, water fountains, as indicated.
- Restrict or limit visitors as appropriate. Ill visitors should not visit.
- No cross coverage to other units or facilities by staff on affected unit/facility.
- Limit traffic flow between affected and nonaffected areas within a facility.
- Assemble extra hand hygiene stations at entrances.
- Assemble isolation supplies or isolation carts.
- Clean out all staff fridges to allow housekeeping to properly disinfect.
- Clean up all dirty utensils. Use plastic or own utensils during outbreak and do not share.
- Stop all shared food or beverages for staff and patients. This includes group meals (on affected unit(s)) until further notice during the acute stage of the outbreak. (Recruit other ancillary staff, e.g., Occupational and Physical Therapists, Music Therapists, to assist with feeding patients.)
- Close patient kitchen if present on unit.
- Ensure that ice machines are used only for medical care and not for beverages or oral intake.
- Place signage on machine.
- Staff to assist with cleaning patient/resident hands before eating meals and after using toilet if unable to manage independently
- Staff to clean own work surfaces (with Accelerated hydrogen wipes) and keyboards (with alcohol wipes) every shift.
- Ensure that staff is aware that they must use masks and eye protection in addition to other personal protective equipment for Contact Precautions if cleaning up feces or vomitus.
- Ensure that all hoppers have splash shields.

**Housekeeping Services**

- Follow regional enhanced cleaning protocol.
- Liaise daily with Infection Control and management team.
- Keep a log of any affected workers. Ensure that staff members do not come to work ill or return until 48 hours symptom-free if they have been affected. Liaise with Occupational Health.
- Ensure staff wear masks and eye protection when cleaning commodes or washrooms in addition to the personal protective equipment used for Contact Precautions.

**Occupational Health**

- Maintain a line listing of staff with clinical or microbiologically confirmed, and epidemiologic link to the facility, GI illness and contact staff who report in ill for type of symptoms.
- Ensure that staff knows not to come to work ill and not to return until 48 hours symptom-free if they have been affected.
- Advise re specimen collection for staff and use the outbreak number initiated by Infection Control.
  Liaise daily with Infection Control for patient/resident and staff status coordination.

**Food Services**

- Keep a log of any affected workers. Ensure that staff members do not come to work ill or return until 48 hours symptom-free if they have been affected.
- Liaise daily with Infection Control for updates on group meal status.

* Three or more cases of gastroenteritis within the same setting within a four-day period
Figure 18 GI Outbreak Guidelines
The following guidelines are meant to assist you with the management of patients with known or suspected gastro-intestinal illness. Regardless of the causative organism, the principles are the same.

For Patients - Symptomatic
- Patients must stay in room, must not be visiting the cafeteria or any other public area.
- Are on Contact Precautions. When possible, diagnostic tests should be done on unit, if not possible, tests should be the last of the day, if that is not possible – isolation cleaning must be done in testing area immediately after test completed BEFORE next patient.

For Patients - Asymptomatic
- Any patient on affected units who must leave floor for tests will be on Contact Precautions. Staff must inform receiving area that this patient is from an outbreak unit and Contact Precautions must be used.
- Asymptomatic patients on affected units should stay on floor, not go to cafeteria, Café Ami, etc.
- If exposed, asymptomatic patients are transferred, the patient must remain on Contact Precautions for 6 days after exposure.

Visitors
- Strictly limited/compassionate visiting only – no ill visitors
- Must be compliant with hand hygiene.
- Visitors to affected area may not go to cafeteria, Café Ami, etc. Visit, then must leave facility.

In General
- New, unexpected, unexplained diarrhea – send specimen with BCCDC requisition. Inform Infection Control.
- Maintain list of symptomatic patients, when symptoms started and ended.
- Patients may be discharged home, but no transfers out except in identified circumstances with consult of Infection Control
- Patient kitchen remains closed on affected units.

For Staff
- Keep list of GI sick calls – names and when last worked, if possible → will be given to Occupational Health. Must not return to work until 48 hours after last episode of vomiting, diarrhea, fever or cramps.
- Dedicated support staff – when impossible, staff that must go between affected and clean areas:
  - go to clean areas first, then affected areas.
  - must use meticulous hand hygiene and appropriate PPE. This includes gown for direct patient contact.
- Use appropriate barriers with mask/eye shield for vomitus/diarrhea.
- No shared food, this is in place throughout the facility.
- Accelerated hydrogen in bathroom → if symptomatic → please use Accelerated hydrogen peroxide and let someone know to have room cleaned → go home.
- Recommended to have lunch/break on unit or off site.
- Minimize clutter, potential place for virus → restricts cleaning. Use Accelerated hydrogen peroxide wipes on keyboards, telephones, charts.
- Staff on exposed units may not work in unaffected areas.
- No group meetings mixing exposed and unexposed staff.
- If exposed (worked on closed unit) – may not work on clean area for 72 hours post exposure.
- If ill → may not return to work until 48 hours after last episode of vomiting, diarrhea, fever or cramps.

**General Rule**

6 days post last newly identified ill person – the outbreak may be over as determined by Public Health and Infection Control.
10 Conditions of particular infection control concern

Refer to Appendix I *Table of Transmission Characteristics and Recommended Precautions by Clinical Presentation and/or Specific Microorganisms.*

Refer to BC Health Guide for current information on many health topics and diseases
http://www.bchealthguide.org/kbaltindex.asp

Refer to the Infection Control site on Intranet for Fact Sheets on Influenza, Cold vs Flu, Flu Myths, Meningitis, Norovirus, Respiratory Syncitial Virus, Scabies, Tuberculosis, Varicella, bed bugs, lice, CMV, and others as they are developed:

http://www.vcha.ca/programs_services/infection_control/guidelines/fact_sheets/page_10342.htm