

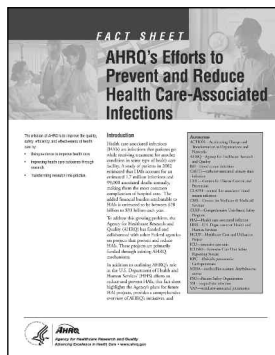


10 Patient Safety Tips for Hospitals

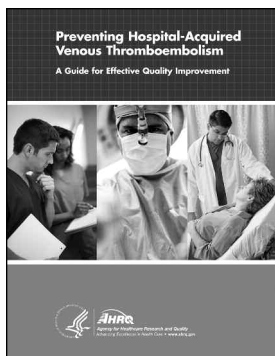
Medical errors may occur in different health care settings, and those that happen in hospitals can have serious consequences. The Agency for Healthcare Research and Quality (AHRQ), which has sponsored hundreds of patient safety research and implementation projects, offers these 10 evidence-based tips to prevent adverse events from occurring in your hospital. Ordering information and links to free AHRQ tools are also provided.

1. Prevent central line-associated blood stream infections.

Be vigilant preventing central line-associated blood stream infections by taking five steps every time a central venous catheter is inserted: wash your hands, use full-barrier precautions, clean the skin with chlorhexidine, avoid femoral lines, and remove unnecessary lines. Taking these steps consistently reduced this type of deadly health care-associated infection to zero in a study at more than 100 large and small hospitals.ⁱ Additional AHRQ resources on preventing health care-associated infections are available at <http://www.ahrq.gov/qual/hais.htm>.



2. Re-engineer hospital discharges. Reduce potentially preventable readmissions by assigning a staff member to work closely with patients and other staff to reconcile medications and schedule necessary followup medical appointments. Create a simple, easy-to-understand discharge plan for each patient that contains a medication schedule, a record of all upcoming medical appointments, and names and phone numbers of whom to call if a problem arises. AHRQ-funded research shows that taking these steps can help reduce potentially preventable readmissions by 30 percent.ⁱⁱ An online toolkit is available at <http://www.bu.edu/fammed/projectred/>.

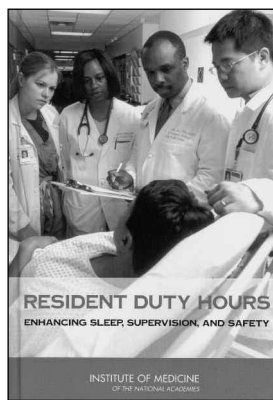
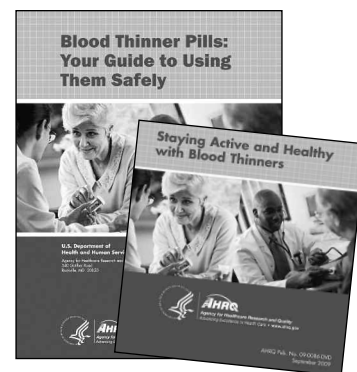


3. Prevent venous thromboembolism. Eliminate hospital-acquired venous thromboembolism (VTE), the most common cause of preventable hospital deaths, by using an evidence-based guide to create a VTE protocol. This free guide explains how to take essential first steps, lay out the

evidence and identify best practices, analyze care delivery, track performance with metrics, layer interventions, and continue to improve. Ordering information for *Preventing Hospital-Acquired Venous Thromboembolism: A Guide for Effective Quality Improvement* (AHRQ Publication No. 08-0075) is available at <http://www.ahrq.gov/qual/vtguide/>.

4. Educate patients about using blood thinners safely.

Patients who have had surgery often leave the hospital with a new prescription for a blood thinner, such as warfarin (brand name: Coumadin®), to keep them from developing dangerous blood clots. However, if used incorrectly, blood thinners can cause uncontrollable bleeding and are among the top causes of adverse drug events. A free 10-minute patient education video and companion 24-page booklet, both in English and Spanish, help patients understand what to expect when taking these medicines. Ordering information for *Staying Active and Healthy with Blood Thinners* (AHRQ Publication No. 09-0086-DVD) and *Blood Thinner Pills: Your Guide to Using Them Safely* (AHRQ Publication No. 09-0086-C) is available at <http://www.ahrq.gov/consumer/btpills.htm>.



5. Limit shift durations for medical residents and other hospital staff if possible.

Evidence shows that acute and chronically fatigued medical residents are more likely to make mistakes. Ensure that residents get ample sleep and adhere to 80-hour workweek limits. Residents who work 30-hour shifts should only treat patients for up to 16 hours and



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PATIENT
SAFETY

should have a 5-hour protected sleep period between 10 p.m. and 8 a.m.ⁱⁱⁱ *Resident Duty Hours: Enhancing Sleep, Supervision, and Safety* is available at http://books.nap.edu/openbook.php?record_id=12508&page=R1.



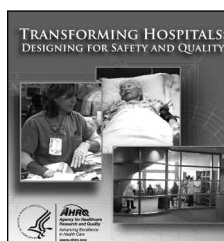
6. Consider working with a Patient Safety Organization.

Report and share patient safety information with Patient Safety Organizations (PSOs) to help others avoid preventable errors. By providing both

privilege and confidentiality, PSOs create a secure environment where clinicians and health care organizations can use common formats to collect, aggregate, and analyze data that can improve quality by identifying and reducing the risks and hazards associated with patient care. Information on PSOs and Common Formats is available at <http://www.pso.ahrq.gov/>.

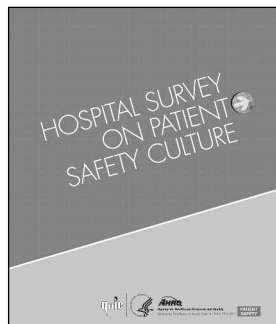
7. Use good hospital design principles.

Follow evidence-based principles for hospital design to improve patient safety and quality. Prevent patient falls by providing well-designed patient rooms and bathrooms and creating decentralized nurses' stations that allow easy access to patients. Reduce infections by offering single-bed rooms, improving air filtration systems, and providing multiple convenient locations for hand washing. Prevent medication errors by offering pharmacists well-lit, quiet, private spaces so they can fill prescriptions without distractions. Ordering information for a free 50-minute DVD, *Transforming Hospitals: Designing for Safety and Quality* (AHRQ Publication No. 07-0076-DVD), is available at <http://www.ahrq.gov/qual/transform.htm>.



8. Measure your hospital's patient safety culture.

Survey hospital staff to assess your facility's patient safety culture. AHRQ's free *Hospital Survey on Patient Safety Culture* and related materials are designed to provide tools for improving the patient safety culture, evaluating the impact of interventions, and



tracking changes over time. If your health system includes nursing homes or ambulatory care medical groups, share culture surveys customized for those settings. Free patient safety culture surveys for hospitals (AHRQ Publication No. 04-0041), nursing homes (AHRQ Publication No. 08-0060), and medical offices

(AHRQ Publication No. 08(09)-0059) are available at <http://www.ahrq.gov/qual/patientsafetyculture/>.

9. Build better teams and rapid response systems.

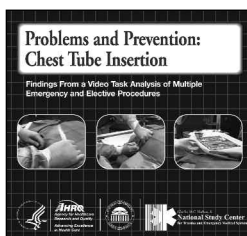
Train hospital staff to communicate effectively as a team. A free, customizable toolkit called TeamSTEPPS™, which stands for Team Strategies and Tools to Enhance Performance and Patient Safety, provides evidence-based techniques for promoting effective communication and other teamwork skills among staff in various units or as part of rapid response teams. Materials can be tailored to any health care setting, from emergency departments to ambulatory clinics. A free 2 ½-day train-the-trainer course is currently being offered in five locations nationwide. Ordering information for the TeamSTEPPS Multimedia Resource Kit (AHRQ Publication No. 06-0020-3) and information on the training sessions are available at <http://teamstepps.ahrq.gov/index.htm>.



10. Insert chest tubes safely.

Remember UWET when inserting chest tubes. The easy-to-remember mnemonic is based on a universal protocol from the Joint Commission and stands for:

Universal Precautions (achieved by using sterile cap, mask, gown, and gloves); Wider skin prep; Extensive draping; and Tray positioning. A free 11-minute DVD provides video excerpts of 50 actual chest tube insertions to illustrate problems that can occur during the procedure. Ordering information for *Problems and Prevention: Chest Tube Insertion* (AHRQ Publication No. 06-0069-DVD) is available at <http://www.ahrq.gov/qual/chesttubes.htm>.



For free copies of AHRQ tools, please call the AHRQ Publications Clearinghouse at 1-800-358-9295.

ⁱ Pronovost P, Needham D, Berenholtz S, Sinopoli D, Chu H, Cosgrove S, Sexton B, Hyzy R, Welsh R, Roth G, Bander J, Kepros J, Goeschel C. An intervention to decrease catheter-related bloodstream infections in the ICU. *N Engl J Med* 2006 Dec 28;355(26):2725-32.

ⁱⁱ Jack BW, Chetty VK, Anthony D, Greenwald JL, Sanchez GM, Johnson AE, Forsythe SR, O'Donnell JK, Paasche-Orlow MK, Manasseh C, Martin S, Culpepper L. A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. *Ann Intern Med* 2009 Feb 3;150(3):178-87.

ⁱⁱⁱ Institute of Medicine, 2009. *Resident Duty Hours: Enhancing Sleep, Supervision, and Safety*. Washington, DC: The National Academies Press.

SHEA/APIC GUIDELINE

SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility

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Philip W. Smith, MD; Gail Bennett, RN, MSN, CIC; Suzanne Bradley, MD, Paul Drinka, MD; Ebbing Lautenbach, MD; James Marx, RN, MS, CIC; Lona Mody, MD; Lindsay Nicolle, MD; and Kurt Stevenson, MD

Long-term care facilities (LTCFs) may be defined as institutions that provide health care to people who are unable to manage independently in the community.¹ This care may be chronic care management or short-term rehabilitative services. The term nursing home is defined as a facility licensed with an organized professional staff and inpatient beds that provides continuous nursing and other services to patients who are not in the acute phase of an illness. There is considerable overlap between the 2 terms.

More than 1.5 million residents reside in United States (US) nursing homes. In recent years, the acuity of illness of nursing home residents has increased. LTCF residents have a risk of developing health care-associated infection (HAI) that approaches that seen in acute care hospital patients. A great deal of information has been published concerning infections in the LTCF, and infection control programs are nearly universal in that setting. This position paper reviews the literature on infections and infection control programs in the LTCF.

Recommendations are developed for long-term care (LTC) infection control programs based on interpretation of currently available evidence. The recommendations cover the structure and function of the infection control program, including surveillance, isolation precautions, outbreak control, resident care, and employee health. Infection control resources are also presented.

Hospital infection control programs are well established in the US. Virtually every hospital has an infection control pro-

fessional (ICP), and many larger hospitals have a consulting hospital epidemiologist. The Study on the Efficacy of Nosocomial Infection Control (SENIC) documented the effectiveness of a hospital infection control program that applies standard surveillance and control measures.²

The major elements leading to a HAI are the infectious agent, a susceptible host, and a means of transmission. These elements are present in LTCFs as well as in hospitals. It is not surprising, therefore, that almost as many HAIs occur annually in LTCFs as in hospitals in the US.³

The last 2 decades have seen increased recognition of the problem of infections in LTCFs, with subsequent widespread development of LTCF infection control programs and definition of the role of the ICP in LTCFs. An increasingly robust literature is devoted to LTC infection control issues such as the descriptive epidemiology of LTCF infections, the microbiology of LTCF infections, outbreaks, control measures, and isolation. Nevertheless, there is as yet no SENIC-equivalent study documenting the efficacy of infection control in LTCFs, and few controlled studies have analyzed the efficacy or cost-effectiveness of the specific control measures in that setting.

Although hospitals and LTCFs both have closed populations of patients requiring nursing care, they are quite different. They differ with regard to payment systems, patient acuity, availability of laboratory and x-ray, and nurse-to-patient ratios. More fundamentally, the focus is different. The acute care facility focus is on providing intensive care to a patient who is generally expected to

Professor of Infectious Diseases, Colleges of Medicine and Public Health, University of Nebraska Medical Center, Omaha, Nebraska (P.W.S.); President, ICP Associates, Inc, Rome, Georgia (G.B.); Professor of Internal Medicine, Divisions of Infectious Diseases and Geriatric Medicine VA Ann Arbor Healthcare System, and the University of Michigan Medical School, Ann Arbor, Michigan (S.B.); Clinical Professor, Internal Medicine/Geriatrics, University of Wisconsin-Madison, and Medical College of Wisconsin-Milwaukee, Wisconsin (P.D.); Associate Professor of Medicine and Epidemiology, Associate Hospital Epidemiologist, Hospital of the University of Pennsylvania, and Senior Scholar, Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania (E.L.); Infection Preventionist, Broad Street Solutions, San Diego, California (J.M.); Assistant professor, Divisions of Geriatric Medicine, University of Michigan Medical School, and Geriatric Research and Education Center, Veteran Affairs Ann Arbor Healthcare System, Ann Arbor, Michigan (L.M.); Professor, Internal Medicine and Medical Microbiology, University of Manitoba, Winnipeg, Manitoba, Canada (L.N.); and Associate Professor of Medicine, Division of Infectious Diseases, Department of Internal Medicine, The Ohio State University College of Medicine, Columbus, Ohio (K.S.).

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recover or improve, and high technology is integral to the process. In LTCFs, the patient population may be very heterogeneous. Most LTCFs carry out plans of care that have already been established in acute care or evaluate chronic conditions. The LTCF is functionally the home for the resident, who is usually elderly and in declining health and will often stay for years, hence comfort, dignity, and rights are paramount. It is a low-technology setting. Residents are often transferred between the acute care and the LTC setting, adding an additional dynamic to transmission and acquisition of HAIs.

Application of hospital infection control guidelines to the LTCF is often unrealistic in view of the differences noted above and the different infection control resources. Standards and guidelines specific to the LTCF setting are now commonly found. The problem of developing guidelines applicable to all LTCFs is compounded by the varying levels of nursing intensity (eg, skilled nursing facility vs assisted living), LTCF size, and access to physician input and diagnostic testing.

This position paper provides basic infection control recommendations that could be widely applied to LTCFs with the expectation of minimizing HAIs in LTC. The efficacy of these measures in the LTCF, in most cases, is not proven by prospective controlled studies but is based on infection control logic, adaptation of hospital experience, LTCF surveys, Centers for Disease Control and Prevention (CDC) and other guidelines containing specific recommendations for LTCFs, and field experience. Every effort will be made to address the unique concerns of LTCFs. Because facilities differ, the infection risk factors specific to the resident population, the nature of the facility, and the resources available should dictate the scope and focus of the infection control program.

In a number of instances, specific hospital-oriented guidelines have been published and are referenced (eg, guidelines for prevention of intravascular (IV) device-associated infection). These guidelines are relevant, at least in part, to the LTC setting but may be adapted depending on facility size, resources, resident acuity, local regulations, local infection control issues, etc. Reworking those sources to a form applicable to all LTCFs is beyond the scope of this guideline.

Any discussion of infection control issues must be made in the context of the LTCF as a community. The LTCF is a home for residents, a home in which they usually reside for months or years; comfort and infection control principles must both be addressed.

BACKGROUND

Demography and Definitions

The US population aged 65 to 85 years is increasing rapidly, and the population aged 85 years and older is expected to double by 2030.⁴ One of every 4 persons who reach the age of 65 can be expected to spend part of his or her life in a nursing home; more people occupy nursing home beds than acute care hospital beds in the US.⁵ Approximately 1.5 million persons in the US reside in a nursing home; there are 15,000 nursing homes in this country.⁶

Ninety percent of nursing home residents are over 65 years of age, and the mean age of residents is over 80 years.

A LTCF is a residential institution for providing nursing care and related services to residents. It may be attached to a hospital (swing-bed) or free standing; the latter is often called a nursing home. A resident is a person living in the LTCF and receiving care, analogous to the patient in a hospital.

Scope of Position Paper

This position paper addresses all levels of care in the LTCF. The focus is specifically the LTCF, also known as the nursing home, caring for elderly or chronically ill residents. These recommendations generally also should apply to special extended care situations (such as institutions for the mentally retarded, psychiatric hospitals, pediatric LTCFs, and rehabilitation hospitals). However, other extended care facilities may have different populations (eg, the residents of institutions for the mentally retarded are much younger than nursing home residents), different disease risks (eg, hepatitis B in psychiatric hospitals), or different levels of acuity and technology (eg, higher acuity in long-term acute care facilities or LTACs). Thus, the recommendations may need to be adapted for these special extended care situations.

Changes from prior guideline. This position paper is similar to the 1997 Society for Healthcare Epidemiology of America (SHEA)/Association for Professionals in Infection Control and Epidemiology (APIC) guideline,⁷ although the present version reflects an updating of research and experience in the field. Several important areas of discussion are new or changed.

INFECTIONS IN THE LONG-TERM CARE FACILITY

Epidemiology

In US LTCFs, 1.6 million to 3.8 million infections occur each year.⁸ In addition to infections that are largely endemic, such as urinary tract infections (UTIs) and lower respiratory tract infections (LRTIs), outbreaks of respiratory and gastrointestinal (GI) infections are also common.⁹ The overall infection rate in LTCFs for endemic infections ranges from 1.8 to 13.5 infections per 1000 resident-care days.⁸ For epidemics, good estimates are difficult to ascertain, but the literature suggests that several thousand outbreaks may occur in US LTCFs each year.^{8,9} The wide ranges of infections and resulting mortality and costs illustrate the challenge in understanding the epidemiology of infections and their impact in LTCFs. There are currently little data and no national surveillance systems for LTCF infections; the estimates have been calculated based on research studies and outbreak reports from the medical literature.

As a part of aging, the elderly have diminished immune response including both phenotypic and functional changes in T cells.¹⁰ However, these changes are of limited clinical significance in healthy elderly. Consequently, immune dysfunction in elderly residents of LTCFs is primarily driven by the multiple factors that result in secondary immune dysfunction such

as malnutrition, presence of multiple chronic diseases, and polypharmacy, especially with medications that diminish host defenses (eg, immunosuppressants).^{11,12} In addition, LTCF residents often have cognitive deficits that may complicate resident compliance with basic sanitary practices (such as hand-washing and personal hygiene) or functional impairments such as fecal and urinary incontinence, immobility, and diminished cough reflex. The elderly nursing home resident is known to have a blunted febrile response to infections.¹³ This parallels other age-related immunologic abnormalities. A notable fever in this population often signals a treatable infection, such as UTI or aspiration pneumonia.

While the use of urinary catheters in LTCF residents has decreased in recent years, utilization remains around 5%. In LTC residents, the use of invasive devices (eg, central venous catheters, mechanical ventilators, enteral feeding tubes) increases the likelihood of a device-associated infection. Of the over 15,000 LTCFs in the US in 2004, 42% provided infusion therapy, 22% had residents with peripherally-inserted central lines, and 46% provided parenteral nutrition.¹⁴ Another challenge for preventing infections in LTCFs is the increasing acuity of residents, especially with the rapidly growing subpopulation of postacute residents. Postacute residents are hospitalized patients who are discharged to LTCFs to receive skilled nursing care or physical/occupational therapy. In the past, these patients, often frail, would have remained hospitalized, but, with increasing efforts to control hospital costs, these patients are now discharged to LTCFs. In addition to higher device utilization, these residents are more likely to receive antimicrobial therapy than long-stay LTCF residents.¹⁵

Much remains to be learned about resident and LTCF factors correlated with HAIs. There is evidence that institutional factors such as nurse turnover, staffing levels, prevalence of Medicare recipients, rates of hospital transfer for infection, intensity of medical services, and family visitation rates are associated with incidence of HAI in the LTC setting.¹⁶

The rate of deaths in LTCF residents with infections ranges from 0.04 to 0.71 per 1000 resident-days, with pneumonia being the leading cause of death.⁸ Infections are a leading reason for hospital transfer to LTCF residents, and the resulting hospital costs range from \$673 million to \$2 billion each year.⁸

LTCFs and acute care facilities differ in another key aspect: LTCFs are residential. As residences, LTCFs are required to provide socialization of residents through group activities. While these activities are important for promoting good physical and mental health, they may also increase communicable infectious disease exposure and transmission. Occupational and physical therapy activities, while vital toward restoring or maintaining physical and mental function, may increase risk for person-to-person transmission or exposure to contaminated environmental surfaces (eg, physical or occupational therapy equipment).

SPECIFIC NOSOCOMIAL INFECTIONS IN THE LONG-TERM CARE FACILITY

Urinary Tract Infections

In most surveys, the leading infection in LTCFs is UTI,¹⁷ although with restrictive clinical definitions, symptomatic urinary infection is less frequent than respiratory infection.¹⁸ Bacteriuria is very common in residents of these facilities but, by itself, is not associated with adverse outcomes and does not affect survival.^{19,20} Bacteriuria and UTI are associated with increased functional impairment, particularly incontinence of urine or feces.^{21,22}

The symptoms of UTI are dysuria and frequency (cystitis) or fever and flank pain (pyelonephritis). The elderly may present with atypical or nonlocalizing symptoms. Chronic genitourinary symptoms are also common but are not attributable to bacteriuria.^{20,21} Because the prevalence of bacteriuria is high, a positive urine culture, with or without pyuria, is not sufficient to diagnose urinary infection.²⁰ Clinical findings for diagnosis of UTI in the noncatheterized resident must include some localization to the genitourinary tract.²³ The diagnosis also requires a positive quantitative urine culture. This is obtained by the clean-catch voided technique, by in and out catheterization, or by aspiration through a catheter system sampling port. A negative test for pyuria or a negative urine culture obtained prior to initiation of antimicrobial therapy excludes urinary infection.

The prevalence of indwelling urethral catheters in the LTCF is 7% to 10%.²⁴⁻²⁶ Catheterization predisposes to clinical UTI, and the catheterized urinary tract is the most common source of bacteremia in LTCFs.^{17,19} Residents with long-term catheters often present with fever alone. Residents with indwelling urinary catheters in the LTCF are uniformly colonized with bacteria, largely attributable to biofilm on the catheter.²⁷ These organisms are often more resistant to oral antibiotics than bacteria isolated from elderly persons in the community.^{28,29} Catheter-related bacteriuria is dynamic, and antimicrobial treatment only leads to increased antimicrobial resistance.³⁰ Thus, it is inappropriate to screen asymptomatic catheterized residents for bacteriuria or to treat asymptomatic bacteriuria.²⁰ Specimens collected through the catheter present for more than a few days reflect biofilm microbiology. For residents with chronic indwelling catheters and symptomatic infection, changing the catheter immediately prior to instituting antimicrobial therapy allows collection of a bladder specimen, which is a more accurate reflection of infecting organisms.³¹ Catheter replacement immediately prior to therapy is also associated with more rapid defervescence and lower risk of early symptomatic relapse posttherapy.³¹

Guidelines for prevention of catheter-associated UTIs in hospitalized patients³² are generally applicable to catheterized residents in LTCFs. Recommended measures include limiting use of catheters, insertion of catheters aseptically by trained personnel, use of as small diameter a catheter as possible, hand-washing before and after catheter manipulation, maintenance

of a closed catheter system, avoiding irrigation unless the catheter is obstructed, keeping the collecting bag below the bladder, and maintaining good hydration in residents. Urinary catheters coated with antimicrobial materials have the potential to decrease UTIs but have not been studied in the LTCF setting. For some residents with impaired voiding, intermittent catheterization is an option, and clean technique is as safe as sterile technique.³³ External catheters are also a risk factor for UTIs in male residents³⁴ but are significantly more comfortable and associated with fewer adverse effects, including symptomatic urinary infection, than an indwelling catheter.³⁵ Local external care is required. The CDC guideline³² briefly discusses care of condom catheters and suprapubic catheters, but no guideline for leg bags is available. Leg bags allow for improved ambulation of residents but probably increase the risk of UTI because opening of the system and reflux of urine from the bag to the bladder occur more frequently than with a standard closed system. Suggestions for care of leg bags include using aseptic technique when disconnecting and reconnecting, disinfecting connections with alcohol, changing bags at regular intervals, rinsing with diluted vinegar, and drying between uses.³⁶ A 1:3 dilution of white vinegar has been recommended for leg bag disinfection.³⁷

Respiratory Tract Infections

Because of the impaired immunity of elderly persons, viral upper respiratory infections (URIs) that generally are mild in other populations may cause significant disease in the institutionalized elderly patient.^{38,39} Examples include influenza, respiratory syncytial virus (RSV), parainfluenza, coronavirus, rhinoviruses, adenoviruses, and recently discovered human metapneumovirus.⁴⁰

Pneumonia. Pneumonia or lower respiratory tract infection (LRTI) is the second most common cause of infection among nursing home residents, with an incidence ranging from 0.3 to 2.5 episodes per 1000 resident care-days and is the leading cause of death from infections in this setting. Elderly LTCF residents are predisposed to pneumonia by virtue of decreased clearance of bacteria from the airways and altered throat flora, poor functional status, presence of feeding tubes, swallowing difficulties, and aspiration as well as inadequate oral care.⁴¹⁻⁴³ Underlying diseases, such as chronic obstructive pulmonary disease and heart disease, further increase the risk of pneumonia in this population.⁴⁴ The clinical presentation of pneumonia in the elderly often is atypical. While there is a paucity of typical respiratory symptoms, recent studies have shown that fever is present in 70%, new or increased cough in 61%, altered mental status in 38%, and increased respiratory rate above 30 per minute in 23% of residents with pneumonia.⁴⁵

While acquiring a diagnostic sputum can be difficult, obtaining a chest radiograph is now more feasible than in the past. In general it is recommended that a pulse oximetry, chest radiograph, complete blood count with differential, and blood urea nitrogen should be obtained in residents with suspected

pneumonia.⁴⁶ *Streptococcus pneumoniae* appears to be the most common etiologic agent accounting for about 13% of all cases,^{47,48} followed by *Hemophilus influenzae* (6.5%), *Staphylococcus aureus* (6.5%), *Moraxella catarrhalis* (4.5%), and aerobic gram-negative bacteria (13%).⁴⁴ *Legionella pneumoniae* also is a concern in the LTCF. Colonization with methicillin-resistant *S aureus* (MRSA) and antibiotic-resistant, gram-negative bacteria further complicate diagnosis and management of pneumonia in LTCF residents.^{49,50}

The mortality rate for LTCF-acquired pneumonia is significantly higher than for community-acquired pneumonia in the elderly population.⁵¹ Preinfection functional status, dementia, increased rate of respirations and pulse, and a change in mental status are considered to be poor prognostic factors. Several indices predictive of mortality have been developed and may be useful in managing residents with pneumonia.^{45,52,53}

The CDC guideline for prevention of pneumonia⁵⁴ is oriented toward acute care hospitals but covers a number of points relevant to the LTCF, including respiratory therapy equipment, suctioning techniques, tracheostomy care, prevention of aspiration with enteral feedings, and immunizations. Examples of relevant recommendations for the LTCF include hand hygiene after contact with respiratory secretions, wearing gloves for suctioning, elevating the head of the bed 30 to 45 degrees during tube feeding and for at least 1 hour after to decrease aspiration, and vaccination of high-risk residents with pneumococcal vaccine.⁵⁴ The evidence for the efficacy of pneumococcal vaccine in high-risk populations, including the elderly population, is debated.^{55,56} However, the vaccine is safe, relatively inexpensive, and recommended for routine use in individuals over the age of 65 years.^{56,57} Pneumococcal vaccination rates for a facility are now publicly reported at the Centers for Medicare and Medicaid Services (CMS).⁵⁸

Influenza. Influenza is an acute respiratory disease signaled by the abrupt onset of fever, chills, myalgias, and headache along with sore throat and cough, although elderly LTCF residents may not have this typical presentation. The incubation period for influenza is approximately 1 to 2 days.⁵⁹ It is a major threat to LTCF residents, who are among the high-risk groups deserving preventive measures.⁶⁰ Influenza is very contagious, and outbreaks in LTCFs are common and often severe. Clinical attack rates range from 25% to 70%, and case fatality rates average over 10%.⁶¹⁻⁶⁴

A killed virus vaccine is available but must be given annually. Influenza vaccine in the elderly is approximately 40% effective at preventing hospitalization for pneumonia and approximately 50% effective at preventing hospital deaths from pneumonia.⁶⁵ Although concern has been expressed regarding the efficacy of the influenza vaccine in institutionalized elderly patients, most authors feel that the influenza vaccine is effective and indicated for all residents and caregivers.⁶³⁻⁶⁸ Recent surveys have shown an increased rate of influenza vaccination among LTCF residents, although significant variability exists.^{69,70} Influenza vaccination rates for a facility are now publicly reported at the Centers for Medicare and Medicaid (CMS)

Web site <http://www.medicare.gov/NHCompare/home.asp>. Staff immunization rates remain less impressive, with average immunization rates between 40% and 50% at best.

While viral cultures from nasopharynx remain the gold standard for diagnosis of influenza, several rapid diagnostic methods (rapid antigen tests) such as immunofluorescence or enzyme immunoassay have been developed. These tests detect both influenza A and B viral antigens from respiratory secretions. Amantadine-resistant influenza has caused LTCF outbreaks and hence amantadine is not recommended for influenza prophylaxis.⁷¹ Zanamivir and oseltamivir are effective against both influenza A and B and have been approved for prophylaxis and treatment of influenza A and B. Oseltamivir is administered orally and is excreted in the urine requiring dose adjustments for renal impairment. Zanamivir is given by oral inhalation, which is a problem in a noncooperative LTCF resident.

Rapid identification of cases in order to promptly initiate treatment and isolate them to prevent transmission remains the key to controlling influenza outbreaks. Other measures recommended during an outbreak of influenza include restricting admissions or visitors and cohorting of residents with influenza.^{60,72,73} Infected staff should not work.

Tuberculosis. Tuberculosis (TB) also has caused extensive outbreaks in LTCFs, generally traced to a single ambulatory resident. Large numbers of staff and residents may be involved, with a potential to spread in the community.⁷⁴⁻⁷⁶ Price and Rutala⁷⁷ found 8.1% of new employees and 6.4% of new residents to be positive by the purified protein derivative (PPD) of tuberculin method in their North Carolina survey, with significant 5-year skin test conversion rates in both groups.

The diagnosis of TB in the LTCF is problematic. Clinical signs (fever, cough, weight loss) are nonspecific. Chest radiographs, when obtained, often show characteristic pulmonary infiltrates (eg, cavities in the upper lung fields). Infection with TB usually causes a positive tuberculin skin test (TST), although occasional false positives and false negatives are seen. The specificity of the TST may be improved by an in vitro blood test of interferon release in response to TB peptides, such as the quantiferon test. The most specific diagnostic test is a sputum culture for TB, but a good specimen may be difficult to obtain. Recent advances in microbiology have facilitated the diagnosis of TB greatly. Diagnostics such as radiometric systems, polymerase chain reaction (PCR), as well as specific DNA probes help shorten the time for diagnosis of TB, although susceptibility testing requires several weeks.

Guidelines discussing standards for control of TB in institutions are available.⁷⁸⁻⁸¹ There appears to be a consensus that TST of residents and personnel in the LTCF should be undertaken on a regular basis, although many LTCFs have inadequate TB screening programs.⁸² The cost-effectiveness of using a 2-step TST to survey for the booster effect is not demonstrable for all populations, but the 2-step skin test is recommended by the CDC for initial screening of employees and residents.

For LTCF residents without any known contact with a case of known TB or other significant risk factors such as human immunodeficiency virus (HIV) or immunosuppression, induration of 10 mm or greater to PPD injection is considered positive. Induration of 5 mm or greater is considered positive in any individual with recent contact with a known case of TB or other significant risk factors such as immunosuppression or changes on chest x-ray consistent with old TB.⁸³

There was a resurgence of TB in the US in the mid- 1980s; multidrug-resistant cases of TB have been seen, and nosocomial spread within health care facilities is a concern.⁸⁴ In response to this, guidelines have been promulgated by the CDC that address surveillance (identification and reporting of all TB cases in the facility including residents and staff); containment (recommended treatment under directly observed therapy and appropriate respiratory isolation and ventilation control measures); assessment (monitoring of surveillance and containment activities); and ongoing education of residents, families, and staff.⁸⁵ Since most LTCFs do not have a negative-pressure room, residents with suspected active TB should be transferred to an appropriate acute care facility for evaluation. There should be a referral agreement with that facility.

Skin and Soft-Tissue Infections, Infestations

Pressure ulcers (also termed "decubitus ulcers") occur in up to 20% of residents in LTCFs and are associated with increased mortality.⁸⁶⁻⁸⁸ Infected pressure ulcers often are deep soft-tissue infections and may have underlying osteomyelitis; secondary bacteremic infections have a 50% mortality rate.⁸⁸ They require costly and aggressive medical and surgical therapy. Once infected, pressure ulcer management requires a multidisciplinary approach with involvement of nursing, geriatrics and infectious disease specialists, surgery, and physical rehabilitation.

Medical factors predisposing to pressure ulcers have been delineated⁸⁶ and include immobility, pressure, friction, shear, moisture, incontinence, steroids, malnutrition, and infection. Reduced nursing time can also increase the risk of developing pressure ulcers. Several of these factors may be partially preventable (such as malnutrition and fecal incontinence). Prevention of pressure ulcers involves developing a plan for turning, positioning, eliminating focal pressure, reducing shearing forces, and keeping skin dry. Attention to nutrition, using disposable briefs and identifying residents at a high risk using prediction tools can also prevent new pressure ulcers.

The goals are to treat infection, promote wound healing, and prevent future ulcers. Many physical and chemical products are available for the purpose of skin protection, debridement, and packing, although controlled studies are lacking in the area of pressure ulcer prevention and healing.⁸⁹ A variety of products may be used to relieve or distribute pressure (such as special mattresses, kinetic beds, or foam protectors) or to protect the skin (such as films for minimally draining stage II ulcers, hydrocolloids and foams for moderately draining wounds, al-

ginates for heavily draining wounds). Negative-pressure wound therapy (vacuum dressings) using gentle suction to provide optimal moist environment is increasingly being used in treatment of complex pressure ulcers.⁹⁰ Nursing measures such as regular turning are essential as well. A pressure ulcer flow sheet is a useful tool in detecting and monitoring pressure ulcers and in recording information such as ulcer location, depth, size, stage, and signs of inflammation as well as in timing of care measures. Infection control measures include diligent hand hygiene and glove usage.

Because all pressure ulcers, like the skin, are colonized with bacteria, antibiotic therapy is not appropriate for a positive surface swab culture without signs and symptoms of infection. Nonintact skin is more likely to be colonized with pathogens. True infection of a pressure ulcer (cellulitis, osteomyelitis, sepsis) is a serious condition, generally requiring broad spectrum parenteral antibiotics and surgical debridement in an acute care facility.

Cellulitis (infection of the skin and soft tissues) can occur either at the site of a previous skin break (pressure ulcer) or spontaneously. Skin infections generally are caused by group A streptococci or *S aureus*. Outbreaks of group A streptococcal infections have been described, presenting as cellulitis, pharyngitis, pneumonia, or septicemia.⁹¹⁻⁹³

Scabies is a contagious skin infection caused by a mite. Lesions usually are very pruritic, burrow-like, and associated with erythema and excoriations, usually in interdigital spaces of the fingers, palms and wrists, axilla, waist, buttocks, and the perineal area. However, these typical findings may be absent in debilitated residents, leading to large, prolonged outbreaks in LTCFs.⁹⁴⁻⁹⁶ Diagnosis in an individual with a rash requires a high index of suspicion in order to recognize the need for diagnostic skin scrapings. The presence of a proven case should prompt a thorough search for secondary cases. A single treatment with permethrin or lindane usually is effective, but repeated treatment or treatment of all LTCF residents, personnel, and families occasionally is necessary.^{97,98} Ivermectin, an oral antihelminthic agent, is an effective, safe, and inexpensive option for treatment of scabies. However, it has not been approved by the FDA for this indication. Therapy of rashes without confirming the diagnosis of scabies unnecessarily exposes residents to the toxic effects of the topical agents. Because scabies can be transmitted by linen and clothing, the environment should be cleaned thoroughly. This includes cleaning inanimate surfaces, hot-cycle washing of washable items (clothing, sheets, towels, etc), and vacuuming the carpet.

Other Infections

Viral gastroenteritis (caused by rotavirus, enteroviruses, or noroviruses),^{99,100} bacterial gastroenteritis (caused by *Clostridium difficile*, *Bacillus cereus*, *Escherichia coli*, *Campylobacter* spp, *C perfringens*, or *Salmonella* spp), and parasites (such as *Giardia lamblia*) are well-known causes of diarrhea outbreaks in LTCFs.¹⁰¹⁻¹⁰⁶

The elderly are at increased risk of infectious gastroenteritis due to age-related decrease in gastric acid. In a population with a high prevalence of incontinence, the risk of cross infection is substantial. Person-to-person spread, particularly due to shared bathroom, dining, and rehabilitation facilities, plays a role in viral gastroenteritis and in *Shigella* spp and *C difficile* diarrhea.¹⁰⁷ Foodborne disease outbreaks also are very common in this setting,¹⁰⁸ most often caused by *Salmonella* spp or *S aureus*. *E coli* O157:H7 and *Giardia* also may cause foodborne outbreaks, underscoring the importance of proper food preparation and storage.

Bacteremia¹⁰⁹⁻¹¹¹ in the LTCF, although rarely detected, may be primary or secondary to an infection at another site (pneumonia, UTI). The most common source of secondary bacteremia is the urinary tract, with *E coli* being the culprit in over 50% of cases.^{109,111} As the acuity of illness in LTCF residents has risen, the prevalence of IV devices and related bacteremic complications appears to have increased. The CDC guideline for prevention of IV infections is a useful resource and generally applicable to the LTCF.¹¹² Relevant points include aseptic insertion of the IV cannula, daily inspection of the IV for complications such as phlebitis, and quality control of IV fluids and administration sets.

Conjunctivitis in the adult presents as ocular pain, redness, and discharge. In the LTCF, cases may be sporadic or outbreak-associated.¹¹³ Many cases are nonspecific or of viral origin; *S aureus* appears to be the most frequent bacterial isolate.¹¹⁴ Epidemic conjunctivitis may spread rapidly through the LTCF. Transmission may occur by contaminated eye drops or hand cross contamination. Gloves should be worn for contact with eyes or ocular secretions, with hand hygiene performed immediately after removing gloves.

Many additional infections have been encountered in the LTCF, including herpes zoster, herpes simplex, endocarditis, viral hepatitis, septic arthritis, and abdominal infections. There has been a resurgence of "pediatric" infections in the LTCF (eg, pertussis, RSV, and *H influenzae* respiratory tract infections), reflecting the decline of the host's immunologic memory with aging.

Epidemic Infections in the LTCF

Most LTCF HAIs are sporadic. Many are caused by colonizing organisms with relatively low virulence. Tissue invasion may be facilitated by the presence of a urinary catheter or chronic wound or following an aspiration event. Ongoing surveillance (see Surveillance section below) is required to detect epidemic clustering of transmissible, virulent infections. Outbreaks must be anticipated. Ideally, infection control surveillance and practices should be the responsibility of frontline staff as well as infection control staff.

An outbreak or transmission within the facility may occur explosively with many clinical cases appearing within a few days or may, for example, involve an unusual clustering of MRSA clinical isolates on a single nursing unit over several

TABLE 1. Common Long-Term Care Facility Epidemics

Respiratory:
Influenza
Tuberculosis
<i>S. pneumoniae</i>
<i>Chlamydia pneumoniae</i>
<i>Legionella</i> spp
Other respiratory viruses (Parainfluenza, RSV)
Gastrointestinal: (may be foodborne)
Viral gastroenteritis (Norovirus, etc)
<i>Clostridium difficile</i>
Salmonellosis
<i>E. coli</i> 0157:H7 colitis
Other infections:
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)
Vancomycin-resistant <i>Enterococcus</i> (VRE)
Group A <i>Streptococcus</i>
Scabies
Conjunctivitis

months. On the other hand, a case of MRSA infection may follow a prolonged period of asymptomatic nasal colonization after an aspiration event or development of a necrotic wound.¹¹⁵

Outbreaks in LTCFs accounted for a substantial proportion (15%) of reported epidemics¹¹⁶ (Table 1). Clustering of URIs, diarrhea, skin and soft tissue infection, conjunctivitis, and antibiotic-resistant bacteriuria have been noted.⁹ Major outbreaks of infection have also been ascribed to *E coli*,¹¹⁷ group A streptococci,^{92,118} *C difficile*,^{104,119} respiratory viruses,³⁸ *Salmonella* spp,¹²⁰ *Chlamydia pneumoniae*,^{121,122} *Legionella* spp,¹²³ and gastrointestinal viruses.¹²⁴ Nursing homes accounted for 2% of all foodborne disease outbreaks reported to the CDC (1975–1987) and 19% of outbreak-associated deaths.¹²⁵ Transmissible gastrointestinal pathogens may be introduced to the facility by contaminated food or water or infected individuals. High rates of fecal incontinence, as well as gastric hypochlorhydria, make the nursing home ideal for secondary fecal-oral transmission.¹²⁶ Other epidemics include scabies, hepatitis B,¹²⁷ group A streptococcal infections, viral conjunctivitis, and many other infections.

These outbreaks underscore the vulnerability of the elderly to infection, as well as the role of cross infection in residents with urinary catheters and open wounds or in those with incontinence who require serial contact care by staff.¹²⁰ In addition, mobile residents with poor hygiene may interact directly.

Antibiotic-Resistant Bacteria

Multidrug resistant organisms (MDROs) such as MRSA, vancomycin-resistant enterococci (VRE), drug resistant *S pneumoniae*, and multidrug-resistant gram-negative bacteria (eg, *Pseudomonas aeruginosa*, *Acinetobacter* spp and extended-spectrum β -lactamase (ESBL)–producing Enterobacteriaceae) are increasingly important causes of colonization and infection in LTCFs.^{128–137} In this setting, infection with MDROs has been

associated with increased morbidity, mortality, and cost,^{138,139} although the attributable morbidity, mortality, and cost of MDROs has not yet been fully defined. Indeed, LTCF residence has been frequently identified as a risk factor for antibiotic-resistant infection in hospitalized patients.^{140,141}

Elderly and disabled residents are at increased risk for colonization with resistant organisms, and colonization may persist for long periods of time (ie, months to years).^{133,142–146} Within the LTCF, length of stay in the facility and accommodation in rooms with multiple beds have been identified as risk factors for transmission of MRSA.¹⁴⁷ Both infected and colonized residents may serve as sources for the spread of MDROs in the LTCF.^{135,148} When MRSA becomes endemic within a facility, elimination is highly unlikely.¹⁴⁸ LTCFs can expect infections with MDROs to be a continuing problem. Strategies for curbing the emergence and spread of antimicrobial resistance in LTCFs are discussed below in “Antibiotic Stewardship” and “Isolation and Precautions” sections.

THE INFECTION CONTROL PROGRAM

Evolution of Programs

The 1980s saw a dramatic increase in LTCF infection control activities, stimulated by federal and state regulations. Several studies provide insight into the extent of program development. A 1981 survey of Utah LTCFs¹¹³ noted that all facilities had regular infection control meetings, but none performed systematic surveillance for infections or conducted regular infection control training. All LTCFs had policies regarding the maintenance and care of urinary catheters, although the policies were not uniform. Price et al¹⁴⁹ surveyed 12 North Carolina LTCFs in 1985 and found that, although all 12 had a designated ICP, none of the ICPs had received special training in this area. Also noted were deficiencies in isolation facilities, particularly an insufficient number of sinks and recirculated, inadequately filtered air.

In a 1985 survey of Minnesota LTCFs, Crossley et al¹⁵⁰ found that the majority had an infection control committee (ICC) and a designated ICP, although substantial deficiencies in resident and employee health programs occurred. For instance, only 61% offered the influenza vaccine to residents, and one third did not screen new employees for a history of infectious disease problems. A 1988 Maryland survey¹⁵¹ found that one third of nursing homes still performed routine environmental cultures, and many lacked proper isolation policies. In 1990, a survey of Connecticut LTCFs found that most ICPs had received some training in infection control.^{152,153} Most LTCFs performed surveillance at least weekly, and most used written criteria to determine HAIs.

More recent regional surveys of facilities from Maryland and New England in the mid-1990s and Michigan in 2005 noted increasing gains in time spent in infection control activities from 1994 to 2005.^{69,154} In New England, 98% of facilities had a person designated to do infection control, 90% were registered nurses, and 52% had formal training.¹⁵⁴

In the 1990s, an average of 9 to 12 hours per week was spent on infection control; 50% to 54% of that time was spent on surveillance activities.¹⁵⁴ Seventy-eight to 97% percent of the LTCFs reported a systematic surveillance system.⁶⁹ Formal definitions were used by 95% of respondents; 81% used the McGeer criteria, and 59% calculated infection rates.¹⁵⁴ All facilities reportedly used Universal Precautions in caring for their residents.¹⁵⁴

By 2005, 50% of responding facilities in Michigan had a full-time ICP.⁶⁹ The mean time spent on infection control activities by the infection control staff varied from 40 hours per week for full-time ICPs to 15 hours per week for part-time staff.⁶⁹ However, part-time ICPs did not necessarily supervise smaller facilities with fewer subacute care beds or give fewer in-services than full-time staff.

Despite these improvements, the number of ICPs per nursing home bed is 4-fold fewer than the number of ICPs available in acute care hospitals.¹⁵⁵ LTCF-based ICPs are more likely to assume noninfection control functions than acute care ICPs regardless of bed size; in one survey, 98% of LTCF ICPs had other duties,¹⁵⁶ while in a Michigan survey, 50% of 34 LTCFs had fulltime ICPs.⁶⁹ Many of these noninfection control functions include employee health, staff education and development, and quality improvement.¹⁵⁵ In addition, LTCF ICPs are still less likely to receive additional formal training in infection control (8%) compared with 95% of acute care ICPs.¹⁵⁵ The results of this study from Maryland led to a state proposal that at least one ICP from each LTCF be formally trained in infection control.¹⁵⁵

From these surveys, one can develop a composite picture of the LTCF ICP as a nurse who still has not necessarily received formal training in infection control.^{154,155} Many ICPs still work part-time on infection control activities regardless of the number of beds or patient acuity.^{69,155} While the time spent on infection control activities appears to have increased significantly from 36 to 48 hours per month in the 1990s to 90 to 160 hours per month in 2005, the ICP continues to have other duties such as general duty nursing, nursing supervision, in-service education, employee health, and quality assurance.^{34,69,154}

Regulatory Aspects

LTCFs are covered by federal and state regulations as well as voluntary agency standards such as those written by The Joint Commission (TJC).¹⁵⁷ Skilled nursing facilities are required by the Omnibus Budget Reconciliation Act of 1987 (OBRA) to have an infection control program.¹⁵⁸ CMS has published requirements for LTCFs¹⁵⁹ that apply to LTCFs accepting Medicare and/ or Medicaid residents. CMS regulations address the need for a comprehensive infection control program that includes surveillance of infections; implementation of methods for preventing the spread of infections including use of appropriate isolation measures, employee health protocols, hand hygiene practices; and ap-

propriate handling, processing, and storage of linens.^{160,161} For example, the LTCF is required to establish and maintain an infection control program designed to provide a safe, sanitary, and comfortable environment and to help prevent the development and transmission of disease and infection. Interpretive guidelines for surveyors further discuss definitions of infection, risk assessment, outbreak management and control, measures for preventing specific infections, staff orientation, antibiotic monitoring, sanitation, and assessment of compliance with infection control policies.¹⁶¹

Because the LTCF is an employer of health care workers (HCWs), it must comply with federal and/or state OSHA regulations. For infection control, those regulations^{162,163} deal primarily with protection of workers from exposure to bloodborne pathogens such as HIV, hepatitis B virus (HBV), and hepatitis C virus (HCV) and from TB exposure.⁸⁵ Adherence of LTCFs to infection control regulations is an OSHA priority.

Other standards that apply to LTCFs include the federal minimum requirements for design, construction, and equipment¹⁶⁴ and TJC LTC Standards.¹⁶⁵ The 2007 TJC Standards for LTC require a written infection control plan based on an assessment of risk; establishment of priorities, goals, and strategies; and an evaluation of the effectiveness of the interventions. The Standards also deal with managing an influx of patients with an infectious disease as well as leadership's involvement in the program.¹⁶⁵ In addition, many states have statutory requirements for LTCFs that vary widely.

On October 7, 2005, CMS published a final rule requiring LTCFs to offer annually to each resident immunization against influenza and to offer lifetime immunization against pneumococcal disease. LTCFs are required to ensure that each resident or legal representative receive education on the benefits and potential side effects of the immunizations prior to their being administered.⁵⁸ The LTCF administrative staff should be knowledgeable about the federal, state, and local regulations governing infection control in order to implement and maintain a program in compliance with these regulations. The LTCF ICP ideally should be involved in the formation and revision of regulations, through local and national infection control and long-term care organizations, to help assure the scientific validity of the regulations.

Experts in infection control in Canada have called for 1 full-time formally trained ICP per 150 to 250 long-term beds.¹⁶⁶ The Consensus Panel from SHEA and APIC has recommended that nonhospital facilities including LTCFs provide adequate resources in terms of personnel, education, and materials to ICPs to fulfill their functions.¹⁶⁷ While most of the current information has been derived from facilities serving older populations in North America, reports from LTCFs in Europe and Australia and those serving pediatric populations are increasing.¹⁶⁸⁻¹⁷¹

TABLE 2. Long-Term Care Facility Infection Control Program: Structure

Leadership	Expertise/training	Role(s)
Infection Control Committee/ Oversight Committee		
Core members	Administration, Nursing Representative, Medical Director, ICP	Identifies areas of risk
Ad hoc members	Food Service, Maintenance, Housekeeping, Laundry Services, Clinical Services, Resident Activities, Employee Health	Establishes priorities Plans, strategies to achieve goals Implements plans Develops policies/procedures Allocates of resources Assesses program efficiency at least annually
Infection Control Professional ICP		
	Qualification via education, experience, certification	Surveillance Data collection and analysis Implementation of policies, procedures Education Reporting to oversight group/ICC Communication to public health Communication to other agencies Communication to other facilities

Infection Control Program Elements

The structure and components of an infection control program are shown in Tables 2 and 3, respectively. Several authors have discussed the components of an infection control program in the LTCF.^{34,36,166,167,172-177} These components generally are drawn from regulatory requirements, current nursing home practices, and extrapolations from hospital programs. The limited resources of most LTCFs affect the type and extent of programs developed.¹⁷³ Most authors feel that an infection control program should include some form of surveillance for infections, an epidemic control program, education of employees in infection control methods, policy and procedure formation and review, an employee health program, a resident health program, and monitoring of resident care practices. The program also may be involved in quality improvement, patient safety, environmental review, antibiotic monitoring, product review and evaluation, litigation prevention, resident safety, preparedness planning, and reporting of diseases to public health authorities.

The ICP

An ICP is an essential component of an effective infection control program and is the person designated by the facility to be responsible for infection control (see Table 2). The ICP usually is a staff nurse, a background that is helpful for resident assessment and chart review. The ICP most commonly is a registered nurse. Because of size and staffing limitations, the vast majority of LTCF ICPs have other duties, such as assistant director of nursing, charge nurse, in-service coordinator, employee health, or performance improvement. The number of LTCF beds justifying a full-time ICP is unknown and usually depends on the acuity level of

residents and the level of care provided. A LTCF with more than 250 to 300 beds may need a fulltime ICP. The LTCF ICP, like the hospital ICP, requires specific training in infection control; well-defined support from administration; and the ability to interact tactfully with personnel, physicians, and residents.

APIC and the Community and Hospital Infection Control Association-Canada (CHICA-Canada) have developed professional and practice standards for infection control and epidemiology that address education including qualifications and professional development for the ICP.¹⁷⁸ These standards may not represent the current education and qualifications of ICPs in many LTCFs, but they serve as a benchmark for which LTC ICPs and their facilities can strive.

The qualifications include 3 criteria for entering the profession. The ICP:

- Has knowledge and experience in areas of resident care practices, microbiology, asepsis, disinfection/sterilization, adult education, infectious diseases, communication, program administration, and epidemiology;
- has a baccalaureate degree (the minimum educational preparation for the role); and
- attends a basic infection control training course within the first year of entering the profession.

The criteria for professional development include the ICP maintaining current knowledge and skills in the area of infection prevention, control, and epidemiology. The professional development standards include 5 criteria. The ICP:

- Becomes certified in infection control within 5 years of entry into the profession and maintains certification;

TABLE 3. Long-Term Care Facility Infection Control Program: Elements

Elements	Examples
Infection control activities	
Establish and implement routine infection control policies and procedures	Hand hygiene Standard precautions Organism-specific isolation Employee education
Infection identification	Develop case definitions Establish endemic rates Establish outbreak thresholds
Identification, investigation, and control of outbreaks	
Organism-specific infection control policies and procedures	Influenza TB Scabies MDROs (eg, MRSA)
Disease reporting	Public health authorities Receiving institutions LTCF staff
Antibiotic stewardship	Review of antimicrobial use
Monitoring of patient care practices	Aspiration precautions Pressure ulcer prevention Invasive device care and use
Facility management issues	General maintenance Plumbing/ventilation Food preparation/storage Laundry collection/cleaning Infectious waste collection/disposal Environment Housekeeping/cleaning Disinfection/sanitation Equipment cleaning
Product evaluation	Single use devices
Resident health program	TB screening Immunization program
Employee health program	TB screening Immunizations
Employee health program TB screening	Occupational exposures
Other program elements	
Performance improvement	Serve on PI committee
Resident safety	Study preventable adverse events
Preparedness planning	Develop pandemic influenza preparedness plan

- advances knowledge and skills through continuing education;
- pursues formal education in health care epidemiology;
- maintains a knowledge base of current infection prevention and control information through peer networking, Internet access, published literature, and/or professional meetings; and
- advances the field of infection prevention and control and epidemiology through support of related research

The Infection Control Oversight Committee

The regulatory requirement for a formal LTCF ICC was dropped by OBRA at the federal level, but some states still require them.¹⁷⁴ The ICP should be familiar with state regulations. This committee frequently has been less active than the corresponding ICC in the hospital setting, in part because of decreased physician availability. A small working group (the infection control oversight committee) consisting of the ICP, the administrator, the medical director, and the nursing supervisor or their designee may efficiently make most of the infection control decisions (Table 2). The ICC functions may be merged with the performance improvement or patient safety programs, but infection control must remain identifiable as a distinct program. Whatever group is selected to oversee the infection control program, it should meet regularly to review infection control data, review policies, and monitor program goals and activities. Written records of meetings should be kept.

The LTCF administrative staff should support the ICP with appropriate educational opportunities and resources, including expert consultation in infectious diseases and infection control as needed. The participation of an infectious diseases (ID) physician or other health care professional with training or experience in infection control should be available on at least a consultative basis. Information may be obtained from SHEA (www.shea-online.org or 703-684-1006). The local health department may have useful information, and local ICPs are another valuable source of information, available from the APIC at www.apic.org.

Educational Opportunities for ICPs

Courses are available for ICPs and health care epidemiologists. SHEA offers jointly sponsored courses in health care epidemiology and infection control for individuals with different levels of experience. The SHEA/CDC course is for physicians and others with advanced training who wish to increase their expertise in infection control. The SHEA/Infectious Diseases Society of America (IDSA)/Johns Hopkins University School of Medicine of America course is designed primarily for ID physicians in training. Similar courses are offered in Europe through SHEA and the European Society for Clinical Microbiology and Infectious Diseases (www.shea-online.org or 703-684-1006). APIC offers a training course for hospital and LTCF infection control professionals (www.apic.org or 202-789-1890). The Nebraska Infection Control Network offers regular 2-day basic training courses specifically for LTCF ICPs (www.nicn.org), and other local courses are available.

Surveillance

Infection surveillance in the LTCF involves the systematic collection, consolidation, and analysis of data on HAIs. Standardization of surveillance is desirable. To facilitate standardization, resources that include practice guidance for surveillance identifying seven recommended steps are available. These

steps are¹ assessing the population,² selecting the outcome or process for surveillance,³ using surveillance definitions,⁴ collecting surveillance data,⁵ calculating and analyzing infection rates,⁶ applying risk stratification methodology, and⁷ reporting and using surveillance information.¹⁷⁹

Assessing the population. Infection surveillance may either include all residents in a facility (total house surveillance) or be targeted at specific subpopulations. Although facility-wide surveillance is useful for calculating baseline rates and detecting outbreaks, a more focused analysis could include examination of infection rates in residents who are at risk for certain kinds of infection (such as aspiration pneumonia in residents receiving tube feedings or bloodstream infection among residents with indwelling vascular catheters). Focused surveillance should target infections that are preventable; that occur frequently; and that are associated with significant morbidity, mortality, and cost. Facility-wide surveillance is useful for establishing an infection control “presence” in the LTCF and may be required as a part of local or state regulatory programs. To establish baseline infection rates, track progress, determine trends, and detect outbreaks, site-specific rates should be calculated (eg, central line infections per 1000 central line-days). Routine analysis should try to explain the variation in site-specific rates. For example, a change in the rate might be related to a change in the resident population. Focused or high-risk resident surveillance may permit conservation of resources, although in many small institutions whole house surveillance is feasible.

Selecting the outcome measures. Traditionally surveillance in the LTCF refers to collection of data on outcome measures such as HAIs that occur within the institution (eg, incidence of UTI or central line-associated bacteremia). These surveillance data are used primarily to guide control activities, to plan educational programs, and to detect epidemics, but surveillance also may detect infections that require therapeutic action.

Process measures (eg, surveillance of infection control practices) should also be part of the infection control and quality improvement programs and may be very helpful in identifying areas for improvement in practice and for monitoring compliance with regulatory aspects of the infection control program. Examples of process measures include observation of hand hygiene compliance, observation of correct catheter care technique, antibiotic utilization studies, timeliness in administering and reading TB skin tests, and administration of hepatitis B immunization to new employees within 10 working days of hire.

Using surveillance definitions. Surveillance requires objective, valid definitions of infections. Most hospital surveillance definitions are based on the National Nosocomial Infections Surveillance System (NNIS) criteria,¹⁸⁰ but no such standard exists for long-term care. NNIS (now the National Healthcare Safety Network [NHSN]) definitions depend heavily on laboratory data and recorded clinical observations. In the LTCF, radiology and microbiology data are less avail-

able, and written physician notes and nursing assessments in the medical record usually are brief. Timely detection of HAI in the LTCF often depends on recognition of clues to infection by nurses’ aides and reporting of these findings to the licensed nursing staff.¹⁸¹ Positive cultures do not necessarily signify infection.

Modified LTCF-specific surveillance criteria were developed by a Canadian consensus conference. These definitions were designed in light of some of the unique limitations of nursing home surveillance mentioned previously. They are used widely, although they have not yet been validated in the field.²³

Collecting surveillance data. Published LTCF surveys have been either incidence or prevalence studies. Prevalence studies detect the number of existing (old and new) cases in a population at a given time, whereas incidence studies find new cases during a defined time period. The latter is preferred because more concurrent information can be collected by an incidence study if data are collected with regularity.

The surveillance process consists of collecting data on individual cases and determining whether or not a HAI is present by comparing collected data to standard written definitions (criteria) of infections. One recommended data collection method in the LTCF is “walking rounds.”¹⁸² This is a means of collecting concurrent and prospective infection data that are necessary to make infection control decisions. Surveillance should be done on a timely basis, probably at least weekly.¹⁸³ During rounds, the ICP may use house reports from nursing staff, chart reviews, laboratory or radiology reports, treatment reviews, antibiotic usage data, and clinical observations as sources of information.

Analysis and reporting of surveillance data. Analysis of absolute numbers of infections is misleading; calculation of rates provides the most accurate information. Rates are generally calculated by using 1000 resident-days as the denominator. In the past, average daily census has sometimes been used as the denominator, but resident-days more clearly reflect resident risk.

Infection control data, including rates, then need to be displayed and distributed to appropriate committees and personnel (including administration) and used in planning infection control efforts. The data should lead to specific interventions such as education and control programs.

To compare rates within a facility or to other facilities, the method of calculation must be identical (including the denominator). Even when calculation methods are consistent, infection rates may differ between facilities because of different definitions of infection or differences in resident risk factors and disease severity, and thus comparisons may not be valid. Comparison of infection rates between facilities, for public reporting or other purposes, requires control of definitions and collection methods, severity adjusting and data validation.¹⁸⁴ The use of a regional data set may allow for more meaningful in-

trafacility comparison of infection rates.¹⁸⁵ This may also allow for interfacility comparisons of infection rates across a corporation or geographic area.¹⁸

Analysis and reporting of infection data usually are done monthly, quarterly, and annually to detect trends. This process is facilitated by an individual infection report form, samples of which have been published.^{36,186,187} The statistics used in analysis of data need not be complex. Computerization for sorting and analysis of data may be timesaving for larger programs, and software for use on a personal computer is available. Graphs and charts facilitate presentation and understanding of infection control data and also may be facilitated by computer programs. The commercially available programs may help with analysis of surveillance data, but manual data collection is still usually necessary.

The feasibility of routine surveillance in LTCFs has been demonstrated, and data have been used to provide a basis for continuing education.¹⁸⁸ Surveillance needs to be simple and pragmatic, particularly because the LTCF ICP may be able to spend only a few hours per week on infection control activities.¹⁸¹

Outbreak Control

Outbreak surveillance and control should be considered a high priority for ICPs. The leading causes of LTCF outbreaks are discussed above and listed in Table 1. When the number of cases exceeds the normal baseline, an outbreak within the facility should be considered. The ICP is advised, and required by CMS, to monitor resident and staff illnesses, since healthy personnel may acquire and transmit virulent pathogens.

For many, the word outbreak means a dramatic clustering of cases of an infectious disease in a geographic area over a relatively short period of time. However, the threshold for declaring an outbreak and initiating control measures may be much lower. For example, we know that influenza may cause explosive outbreaks in nursing homes.⁵⁹ Public health officials have, therefore, set low thresholds for identifying an outbreak if influenza is suspected so that outbreak control strategies can be implemented to avoid high attack rates. The CDC recommends defining a nursing home outbreak of influenza as a single laboratory-confirmed case or a sudden increase of acute febrile respiratory illness over the normal background rate.¹⁸⁹ Special outbreak control measures may, therefore, be appropriate if there is evidence of transmission of an epidemiologically important pathogen within the facility rather than waiting for a fully evolved clinical outbreak.

For TB, an outbreak investigation should be triggered by a single active case. TB outbreaks are often caused by a single case and may infect large numbers of residents and staff by the airborne route before detection.^{74,190} In addition, a single infection caused by *Legionella* spp, scabies, *Salmonella* spp, or other GI pathogens associated with outbreaks should trigger an evaluation. A single case of *Legionella* spp may signal colonization of the water supply.¹²³

The approach to investigating an outbreak includes¹ determining that an outbreak has occurred,² developing a case definition,³ case finding,⁴ analyzing the outbreak,⁵ formulating a hypothesis regarding mechanism of transmission,⁶ designating control measures, and⁷ evaluating control measures. A CDC SHEA publication is available to guide investigation of outbreaks.¹⁹¹

Given the fact that influenza and norovirus outbreaks are relatively common, clinical case definitions should be developed in advance and placed in preexisting policies and procedures. To facilitate rapid implementation of control measures, the charge nurses should be empowered by preexisting policies to rapidly isolate and/or cohort infected individuals and to curtail contact between residents and staff on units in an outbreak situation.

The LTCF may have difficulty responding to an epidemic with appropriate measures (such as mass vaccination or administration of antivirals during an influenza outbreak) if consent needs to be obtained on short notice from a resident's decision maker or primary physician. One way to circumvent this problem is to develop preexisting policies and procedures approved by the medical staff and to obtain consent for vaccination and outbreak control measures at the time of admission from the resident or their power of attorney/ medical decision maker.

Isolation and Precautions: Importance and Evolution

Prevention of transmission of significant pathogens to patients and HCWs is the major goal of isolation within health care systems. There are very limited data on the impact of isolation and infection control precautions, however, on the transmission of pathogens within LTCFs. The high prevalence of risk factors for infection among LTCF residents, the high colonization rate of MDROs in skilled care units, and the frequent reports of LTCF infectious disease outbreaks support the need for appropriate infection control in that setting.¹³⁶ A unique infection control challenge for the LTCF is the mobile resident, who may be confused or incontinent and serves as a possible vector for infectious diseases.⁷

The presence of MDROs in the LTCF has implications beyond the individual facility. Because residents of LTCFs are hospitalized frequently, they can transfer pathogens between LTCFs and receiving hospitals; transfer of patients colonized with MDROs between hospitals and LTCFs has been well documented.^{192,193} On the other hand, LTCF residents remain in the facility for extended periods of time, and the LTCF is functionally their home. An atmosphere of community is fostered, and residents share common eating and living areas and participate in various activities. Thus, the psychosocial consequences of isolation measures must be carefully balanced against the infection control benefits.

Isolation recommendations from the CDC have been available since 1970 but have specifically been targeted towards acute care settings. ICPs in the LTCF have thus been required

to adapt these practices to their individual settings. Traditionally, 2 types of systems for implementing barrier precautions in the hospital were promoted. A Category-Specific System listed 7 categories of isolation or precautions based on means of disease transmission: strict isolation, contact isolation, respiratory isolation, TB isolation, enteric precautions, drainage and secretion precautions, and blood and body fluid precautions. Modifications of this approach have been promoted since 1970 with a refined Category-Specific System in the 1983 recommendations.^{194,195} A Disease-Specific System listed all relevant contagious diseases and the recommended barrier method. In general, the Category-Specific System was simpler to use, but the Disease-Specific System consumed fewer resources because precautions were tailored to the specific disease. In the 1983 guideline, blood precautions were expanded to include body fluids.¹⁹⁵ In response to the HIV/AIDS epidemic, the concept of Universal Precautions was introduced to protect HCWs from all bloodborne exposures.^{196,197} These recommendations became adopted by OSHA and have thus been applicable to all health care settings including LTCFs.^{163,198} In this system, all blood and certain body fluids are considered potentially infectious. Education, provision of needle-disposal units, provision of protective equipment (such as gloves, gowns, and protective eye wear), and monitoring compliance were part of Universal Precautions, although it alone was not considered a complete isolation system.

CDC isolation guidelines released in 1996 integrated earlier isolation systems by introducing transmission-based precautions.¹⁹⁹ Standard Precautions replaced Universal Precautions and were to be applied to all patients. Standard Precautions emphasize hand hygiene, gloves (when touching body fluids), masks, eye protection, and gowns (when contamination of clothing is likely), as well as avoidance of needlestick and other sharps injuries. More specific isolation was recommended for patients with documented or suspected contagious pathogens. These include Airborne Precautions (eg, for varicella, measles, and TB), Droplet Precautions (eg, for influenza and other respiratory infections), and Contact Precautions (eg, for MRSA, VRE, and *C difficile* diarrhea).

CDC and HICPAC have recently released 2 infection control guidelines that have application in this regard to LTCFs. The first one released focuses specifically on the management of MDROs in health care settings, and the second is an update to previously recommended general isolation precautions from 1996 guidelines.^{200,201} Respiratory hygiene/cough etiquette and safe injection practices were added as new elements of Standard Precautions. Most LTCFs do not have negative-pressure rooms for Airborne Precautions, and residents with suspected TB should be transferred to facilities where such units exist.

Isolation and Precautions: MDROs

The majority of the infection control literature on MDROs in the LTCF has focused on MRSA, but these guidelines may also

apply if a facility recognizes significant problems with other MDROs such as VRE or antibiotic-resistant, gram-negative bacilli. Barrier precautions are important in preventing cross infection with known resistant microorganisms, but approaches to isolation of LTCF patients colonized or infected with MDROs vary substantially across facilities.^{69,156} Most LTCFs employ at least some type of isolation for MDROs.^{202,203} It was found that 90.5% of facilities accepting patients with MRSA stated that they followed Contact Precautions despite only 39.7% placing them in private rooms.²⁰² In another survey, most LTCFs in Nebraska were aware of and often screened for MRSA and employed some precautions in dealing with these residents (eg, single room, cohorting, contact isolation, or placing the resident with MDRO in the same room as a low-risk roommate).²⁰³ Another study demonstrated no difference in transmission of MDROs in a skilled care unit between contact isolation precautions and routine glove use.²⁰⁴ The authors suggested that universal glove use may be preferable to contact isolation because it reduces social isolation for LTCF residents where their health care facility is also their home. Others have suggested a “modified” contact isolation protocol as often more appropriate in the LTCF setting.²⁰⁵ Clearly, additional evidence-based studies defining the specific isolation needs within LTCF are needed.

General guidelines for control of MRSA¹⁴⁸ and VRE²⁰⁶ are published but emphasize hospital settings. These guidelines serve as an appropriate starting point for adapting an LTCF approach. There are many reports of aggressive infection control measures containing MDROs in the hospital setting.²⁰⁰ However, data in the LTCF are very limited, and implementation of isolation procedures identical to those found in a hospital may result in undesirable social and psychological consequences and functional decline for residents.²⁰⁷ SHEA position papers on antimicrobial resistance and infection control specifically address the LTCF^{208,209} and discuss prescreening admissions for resistant bacteria, surveillance for resistant bacteria, and endemic resistance.

The recent HICPAC isolation guidelines attempt to address some of the specific needs and concerns of the LTCF.^{200,201} The principles in both documents can be adopted for use in the LTCF setting. The MDRO document discusses general control interventions such as administrative support, education of HCWs, surveillance, and judicious use of antimicrobial agents (see Antibiotic stewardship section below) that are applicable in the LTCF setting. LTCFs are encouraged to identify experts who can provide consultation for analyzing surveillance data and devising effective infection control strategies to control MDROs. The development of laboratory protocols for storing bacterial isolates for molecular typing when needed to understand the epidemiology of transmission is recommended. When the LTCF laboratory has contracted with an off-site laboratory, the facility will need to develop an arrangement for storing and testing isolates.

The guidelines^{200,201} recommend continuing the use of transmission-based isolation precautions. In LTCFs, it is ad-

vised to consider the individual resident's clinical situation when deciding whether to implement or modify the use of Contact Precautions in addition to Standard Precautions if colonized or infected with a MDRO. Standard Precautions are sufficient for relatively healthy and independent residents, ensuring that gloves and gowns are used for contact with uncontrolled secretions, pressure ulcers, draining wounds, stool, and ostomy tubes/bags.

Contact Precautions are indicated for residents with MDROs who are ill and totally dependent upon HCWs for activities of daily living or whose secretions or drainage cannot be contained. Single rooms for these residents are recommended if available. The cohorting of MDRO residents is acceptable if single rooms are not available. If cohorting is not possible, then placing residents with MDRO with residents who are low risk for acquisition or with anticipated short lengths of stay is advised. While "low risk for acquisition" of an MDRO has not been officially defined, one source suggested that it should include residents who are not immunosuppressed; not on antibiotics; and free of open wounds, drains, and indwelling urinary catheters.²⁰⁹ Case-by-case decisions, as needed, can be made regarding the best precautions to use for each resident with a MDRO. With Contact Precautions, wearing a gown and gloves for all interactions that may involve contact with the resident and their environment is advised, and eye protection is recommended when there is risk of splash or spray of respiratory or other body fluids.

Recommendations for minimizing antibiotic resistance also include using appropriate barrier precautions for MDROs, maintaining a line listing of residents infected or colonized with MDROs, and not attempting eradication of MDROs from colonized residents.²⁰⁸ It is not recommended that the LTCF refuse MRSA or VRE cases but develop an institutional strategy for control of the resistant organisms based on local considerations.^{133,148,208,210}

In summary, elements of routine MDRO control for the LTCF include monitoring MRSA and VRE culture results, communicating MDRO data to health care providers, including routine communication about MDROs at in-services, assessing compliance with isolation precautions and hand hygiene, monitoring antimicrobial usage, notifying receiving or transmitting facilities of the presence of a MDRO, designating residents previously known to be infected or colonized with MDROs, and instituting adequate environmental cleaning. If a MDRO problem exists in a LTCF and is not controlled with these basic infection control practices, then additional control measures are indicated. These include consultation from experts, intensification of education, increased efforts to control antimicrobial use, active surveillance cultures, point-prevalence culturing of targeted units, intensification of isolation with compliance assessment, and monitoring environmental cleaning.

Isolation and Precautions: Bloodborne Pathogen Issues

LTCFs may be asked to provide care for persons with hepatitis C, hepatitis B, HIV, and acquired immunodeficiency syndrome (AIDS), especially for individuals with advanced disease who are too ill to reside at home but do not require acute hospital care. Earlier guidelines for dealing with HIV infection in the health care setting are incorporated widely in hospitals but also apply in the LTCF.^{197,199} The standard approaches to protecting HCWs and other patients from transmission of bloodborne pathogens have essentially not changed since these earlier recommendations. In the current isolation guidelines,²⁰¹ Standard Precautions are still promoted as the main method for preventing exposure to blood and body fluids for all patient interactions. These include the routine use of hand hygiene, gloves, gowns, masks, and eye protection, depending upon the anticipated exposures.

The guideline also discusses in detail safe work practices to prevent exposures to bloodborne pathogens, including prevention of needlesticks and other sharp-related injuries; prevention of mucous membrane contact; safe injection practices; and precautions during aerosol-generating procedures. Infection control personnel at all LTCFs should carefully review these guidelines and develop a plan for implementation within their facilities. As in hospitals, it is known that needlestick injuries do occur in the LTCF and usually are related to needle recapping.²¹¹ Plans for regular education of all staff and for compliance with OSHA standards should be in place, and LTCFs should ensure the availability to hepatitis B vaccination and postexposure prophylaxis for HIV or hepatitis B for all employees in accordance with the most recent guidelines.²¹²

Hand Hygiene

Hand hygiene likely remains the most important infection control measure in the LTCF as well as in the hospital. Unfortunately, poor compliance with hand hygiene recommendations has been noted in LTCFs, as in other settings.^{213,214} Health care provider hand contamination is usually transient and amenable to hand hygiene,²¹⁵ frequent hand hygiene would be expected to lower LTCF infection rates,^{203,216} and the availability of alcohol-based hand sanitizer dispensers enhances access to hand sanitizing agents.

CDC and HICPAC published a comprehensive hand hygiene guideline.²¹⁷ Other published guidelines for hand hygiene and choice of antiseptic agents are also applicable.^{218,219} They recommend the use of bar or liquid soap when hands are visibly dirty or contaminated with proteinaceous material or visibly soiled with blood or other body fluids. If hands are not visibly soiled, then the routine use of an alcohol-based hand rub is recommended in the LTCF. Hands should always be decontaminated after the removal of gloves. Hand hygiene with an antiseptic agent or alcohol-based hand rub is recommended before donning sterile gloves for performing invasive procedures such as placement of an intravenous or urinary

catheter. Hand hygiene compliance should be monitored by the facility.

Resident Health

Resident health programs are recommended for prevention of infections,⁷ but comprehensive programs often are lacking in LTCFs.¹⁴⁹ One of the major functions of a resident health program is the immunization of the elderly resident.^{59,220,221} The elderly are underserved in terms of immunization to tetanus,²²² as well as pneumococcal and influenza vaccines.²²³ They should receive pneumococcal vaccine at age 65, when they are relatively immunologically responsive, rather than at age 80 to 85 when entering the LTCF.⁵⁷ Standing orders for influenza and pneumococcal vaccination are associated with improved vaccination rates.²²⁴ Residents should receive a TB skin test on admission and undergo chest radiograph if TST positive or symptomatic.⁷⁸

Other resident care practices that should be addressed include resident hand hygiene, oral hygiene, prevention of aspiration, skin care, and prevention of UTIs. Clinical trials in LTCFs have reported no decrease in infections with routine vitamin or mineral supplementation.^{225,226} However, optimal care of comorbid illnesses and good nutrition are principles of care irrespective of impact on infections.

Employee Health

Published information on infection control in hospital personnel is available.²²⁷⁻²²⁹ Employee infection prevention considerations in the LTCF are somewhat different than in the hospital, but the published literature and guidelines generally apply to the LTCFs as well as hospitals. Because of congregate living conditions in most LTCFs, there are some notable differences including an increased risk of exposure to residents with herpes zoster, scabies, conjunctivitis, influenza, TB, and viral gastroenteritis. The pediatric LTCF offers additional challenges to the prevention of infection including childhood diseases, such as varicella, measles, mumps, and rubella.

Regulations concerning protection of employees from bloodborne pathogens apply to the LTCF.^{163,196} The LTCF should be able to provide timely chemoprophylaxis to employees who may have blood/body fluid exposure to residents known to have HIV.²¹² Employee health policies and procedures should address postexposure follow-up or prophylaxis for certain infections, such as hepatitis B, hepatitis C, TB, scabies, and HIV.

Primary employee vaccination considerations should include influenza, hepatitis B, tetanus/diphtheria, and pertussis. Varicella, measles, mumps, rubella, and hepatitis A are of greater concern in the pediatric LTCF setting. Influenza vaccine campaigns should require signed declination statements by employees who decline vaccination.²³⁰

Adult vaccination information can be found at <http://www.immunize.org/>. Vaccination should include hepatitis B to protect from this bloodborne pathogen. Varicella vaccine is

appropriate if an employee is not immune. Hepatitis A vaccine may be appropriate in certain circumstances, especially in behavioral health and developmental disability facilities. Vaccine Information Sheets (VIS) should be given to all adult vaccinees as required by the National Childhood Vaccine Injury Act (42 U.S.C. §300aa-26). Anaphylaxis or any other adverse event requiring medical attention within 30 days after receipt of a vaccine must be reported to the Vaccine Adverse Events Reporting System (VAERS), a requirement of the National Vaccine Injury Compensation Program (www.vaers.org/pdf/vaers_form.pdf).

Initial assessment of employees and education in infection control also are important, as is a reasonable sick-leave policy.¹⁵⁰ Ill employees may cause significant outbreaks in the LTCF.¹²⁴ Initial screening should include TB, also required by some states.^{231,232} LTCFs are required to prohibit employees with communicable diseases or infected skin lesions from direct contact with residents and to prohibit employees with potentially infectious skin lesions from contact with residents' food.¹⁵⁹

Education. The value of education of the LTCF ICP has long been recognized, and surveys of personnel confirm this need.²³³ The importance of ICP education is accentuated by the great turnover in LTCF personnel. While the benefits of ICP training are widely assumed, one study analyzed the effects of a 2-day, intensive basic training program on 266 ICPs.^{234,235} Trainees not only demonstrated an increase in postcourse knowledge but, at 3- and 12-month follow-up, had a significant increase in implementation of key infection control practices. Practices included performance of surveillance, using infection definitions, calculating infection rates, and giving employees and residents TST and influenza vaccine.

The role of education in infection prevention in the LTCF extends well beyond the ICP. One of the most important roles of the ICP is education of LTCF personnel in basic infection control principles. It is recommended that the ICP routinely assess the educational needs of staff, residents, and families and develop educational objectives and strategies to meet those needs; collaborate in the development, delivery, and evaluation of educational programs or tools that relate to infection prevention, control, and epidemiology; and continuously evaluate the effectiveness of educational programs and learner outcomes.

Education should focus on new personnel and certified nursing assistants.¹⁸⁶ Priority for training should be directed toward orientation, OSHA-mandated programs, problem-oriented teaching, and other programs required by regulations. Surveillance data are an excellent starting point for infection control training, and compliance rounds provide an opportunity for the ICP to provide timely, informal education to personnel. Infection control content should include information on disease transmission, hand hygiene, barrier precautions, and basic hygiene.²³⁴ In addition, all individuals with direct resident care responsibility need education in early problem and symptom recognition. The teaching methods

used need to be sensitive to language, cultural background, and educational level. A coordinated, effective educational program will result in improved infection control activities.²³⁵

Antibiotic Stewardship

Antibiotic-resistant bacteria pose a significant hazard in the LTCF, and this resistance has been strongly associated with antibiotic use.^{136,236-240} Antimicrobials are among the most frequently prescribed medications in the LTCF.²⁴¹

Antibiotics are given to approximately 7% to 10% of residents in LTCFs, frequently for lengthy periods of time.²⁴²⁻²⁴⁴ A study of 22 LTCFs noted an incidence of antibiotic prescriptions of 2.9 to 13.9 antibiotic courses per 1000 resident-days.²⁴⁵ Several studies have questioned the appropriateness of this practice.²⁴²⁻²⁴⁴ A common problem is the failure to distinguish infection and colonization (such as a positive swab culture of a pressure ulcer or a urine culture showing bacteriuria without signs or symptoms of infection) and the treatment of the colonization with antibiotics. In addition, antibiotics often are prescribed over the telephone in this setting.²⁴⁶ There also appears to be significant variability in antibiotic prescribing patterns in the LTCF.²⁴⁷

Several reviews and guidelines for infection control efforts to curb antibiotic resistance in health care settings (including LTCFs) have been published.^{167,173,200} These guidelines stress the importance of having an ICP trained in infection control and LTCF administrative support and resources for the infection control program.²³⁷ The CDC has published a 12-step program for preventing antimicrobial resistance among LTCF residents that addresses the broad areas of preventing infection (eg, resident vaccination), diagnosis/treatment of infection, using antibiotics wisely, and preventing transmission (www.cdc.gov). A LTCF antibiotic review program is recommended¹⁷³ and is often found in LTCFs.^{248,249}

Recent guidelines have addressed the development of antimicrobial stewardship programs in hospitals.²⁵⁰ Using this guideline as a starting point, LTCFs are encouraged to include antimicrobial stewardship in the LTCF infection control program and discuss appropriate choices for various clinical situations.²⁴¹ A recent survey revealed that fewer than one third of LTCFs surveyed had any such antibiotic use protocols in place.²⁵¹ Minimum criteria for initiation of antibiotic therapy have been proposed to improve antimicrobial prescribing in LTCFs²⁵² and may be of assistance in developing antibiotic appropriateness criteria.

Approximately two thirds of LTCF professionals identified a clear need for greater education regarding judicious antibiotic use in LTCFs.²⁵¹ Education and development of antibiotic guidelines have improved antimicrobial usage in the LTCF setting in several studies.^{253,254}

Other Aspects of the Program

Policies and procedures. An important aspect of infection control programs is the development and updating of infection

control policies and procedures. Because practices change, they should be reviewed on a scheduled basis. Review of the Bloodborne Pathogens Exposure Control Plan is required to be done annually.¹⁶³

Resources are available on the writing of policies and procedures in general^{255,256} dietetic service policies,²⁵⁵ laundry policies,²⁵⁷ physical therapy policies,^{255,258,259} and handwashing.²¹⁷⁻²¹⁹ Respiratory therapy issues may be relevant to the LTCF, including cleaning of humidifiers, respiratory therapy equipment, suctioning technique, and tracheotomy care.³⁶ Pharmacy and medication issues include use of multidose medication vials and resident specific creams and ointments.

A policy and procedure on hand hygiene are critically important to have available for staff.²¹⁷ The policy details specific indications for hand hygiene, including when coming on duty; whenever hands are soiled; after personal use of toilet; after blowing or wiping nose; after contact with resident blood or body secretions; before performing any invasive procedures on a resident; after leaving an isolation room; after handling items such as dressings, bedpans, catheters, or urinals; after removing gloves; before eating; and on completion of duty. The corresponding procedure should list explicit steps in the hand hygiene process. A 15-second handwash is usually recommended.^{36,219} Alcohol-based hand rubs should be made available and used by staff, especially when handwashing facilities are inadequate or inaccessible. Hand hygiene compliance should be monitored.²¹⁷

Facility management. *Environmental control* in the facility is an important consideration. Routine environmental cultures are not cost-effective and do not usually generate information relevant to clinical infections. However, periodic environmental compliance rounds are recommended.^{186,258} Sources are available suggesting specific environmental measures such as dishwasher and laundry cleaning temperatures,^{186,258,260} although limited data exist. A related area of concern is *sterilization, disinfection, and asepsis*, including the evaluation of cleaning methods, such as monitoring reuse of disposable equipment. Resources are available.^{261,262} An infection control program should also monitor basic hygiene (eg, respiratory etiquette) and compliance with proper infection control techniques. Staff, residents, and families may all be the source of HAIs if there is a breakdown in basic hygiene.

Selection of proper disinfectants and antiseptics requires infection control expertise. Reading the manufacturer's label directions and following the required dilution and contact time instructions are recommended. Infection control input will also be needed on additional and new products that affect infection prevention, such as urinary catheter systems, gloves, and disposable diapers. Quality, efficacy, and cost issues need to be weighed in product selection.²⁶³

Waste management is important in the LTCF. Medical and biohazardous waste issues are controversial; Environmental Protection Agency (EPA) regulations, OSHA regulations, and CDC recommendations may conflict.²⁶⁴ Local health department regulations should also be checked. Sev-

eral resources are available on medical waste issues relevant to the LTCF.^{162,255,258,260,264,265}

Disease reporting. Another important function of the infection control program is disease reporting to public health authorities. State and local health departments will provide a list of reportable diseases and other public health resources.

Performance improvement/resident safety. The increased emphasis on quality indicators in health care is becoming evident in LTC. There are important differences in definitions of infection published for LTCF surveillance (see Surveillance section above) and those in the long-term care Minimum Data Set (MDS) manual. This is especially important for UTIs. In addition, CMS provides a Web site called Nursing Home Compare,⁵⁸ which posts information to the public on nursing home quality measures, inspections, staffing, and other data for individual LTCFs. For instance, UTI in the CMS MDS requires a physician diagnosis in the chart and a positive urine culture.²⁶⁶ This definition has been found to be inaccurate compared with standard definitions such as the McGeer definition,²³ which requires a combination of symptoms and signs.²⁶⁷

A quality assessment and assurance committee is required.¹⁵⁹ Infection control is the prototype quality improvement or performance improvement (PI) program, and many of the techniques used in infection control are directly applicable to PI, such as data collection, data analysis, and intervention.^{268,269} The traditional performance improvement process focuses on adverse events and assesses functions of the system.^{270,271} In the course of performing infection surveillance, there is ample opportunity to monitor compliance with infection control policies and procedures and to provide informal infection control education to address observed problems.

Examples of appropriate quality indicators for PI study include resident immunization with influenza and pneumococcal vaccines,²⁷² employee vaccination for influenza,²⁷³ number of employee TST conversions, and employee hand hygiene compliance. A national focus on patient safety and prevention of adverse events has relevance to the LTC setting as well.²⁷⁴

Preparedness planning. The ICP will frequently play a key role in LTCF preparedness planning. The planning is currently focused on pandemic influenza but should prepare the LTCF for dealing with a variety of disaster scenarios. Issues to be considered include surge capacity, medication availability and rationing, stockpiling, staff shortages during an influenza pandemic, and communication with public health authorities for planning purposes.^{275,276} It appears that the LTCF ICP will play an important role in preparedness and that about half of LTCFs have a pandemic influenza plan.²⁷⁷

Resources

Having appropriate job-related resources is essential to good performance in the role of infection prevention and control. A few resources for the ICP are listed below.

1. Smith PW, editor. Infection control in long-term care facilities. 2nd ed. Albany, NY: Delmar Publishers, Inc (800-347-7707); 1994. Cost, \$38.95.
2. APIC infection connection: long-term care facilities newsletter. Available from the Association for Professionals in Infection Control and Epidemiology (202-296-2742). Cost for nonmembers, \$15.
3. Strausbaugh LJ, Joseph C. Epidemiology and prevention of infections in residents of long-term care facilities. In: Mayhall CG, editor. Hospital epidemiology and infection control. Baltimore, MD: Williams & Wilkins (800-6380672); 2004. Cost, \$199.
4. Heymann DL, editor. Control of communicable diseases manual. 18th ed. Washington, DC: American Public Health Association; 2004. Cost, \$33.00.
5. Horan-Murphy E, Barnard B, Chenoweth C, Friedman C, Hazuka B, Russell B, et al. APIC/CHICA-Canada infection control and epidemiology: professional and practice standards. *Am J Infect Control* 1999;27:47-51.
6. McGeer A, et al. Definitions of infection for surveillance in long-term care facilities. *Am J Infect Control* 1991; 19:1-7.
7. APIC text of infection control and epidemiology. Washington, DC: Association for Professionals in Infection Control and Epidemiology, Inc.; 2005.
8. Nicolle LE, Garibaldi RA. Infection control in long-term care facilities. *Infect Control Hosp Epidemiol* 1995;16:348-53.

RECOMMENDATIONS

See Table 4 for scoring scheme.

A. Infection Control Program

1. An active, effective, facility-wide infection control program should be established in the LTCF. The purpose of the program is to help prevent the development and spread of infectious diseases (Category IC).

Comment: The elements of a program generally include the following:

- a. Surveillance—Systematic data collection to identify infections in residents
- b. Outbreak control—A system for detection, investigation, and control of epidemic infectious diseases in the LTCF
- c. Isolation—An isolation and precautions system to reduce the risk of transmission of infectious agents
- d. Policies and procedures—Relevant to infection control (see Table 2)
- e. Education—Continuing education in infection prevention and control
- f. Resident health program
- g. Employee health program
- h. Antibiotic stewardship—A system for antibiotic review and control

TABLE 4. Categorization of Recommendations

In this document, as in a number of published HICPAC, SHEA, and APIC guidelines, each recommendation is categorized on the basis of existing scientific evidence, theoretical rationale, applicability, and national or state regulations. The following categorization scheme is applied in this guideline: Category IA. Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies. Category IB. Strongly recommended for implementation and supported by some experimental, clinical, or epidemiologic studies and by strong theoretical rationale. Category IC. Required for implementation, as mandated by federal or state regulation or standard. Category II. Recommended for implementation and supported by suggestive clinical or epidemiologic studies or by theoretical rationale. No Recommendation. Unresolved issue. Practices for which insufficient evidence or no consensus regarding efficacy exists.	
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- i. Disease reporting to public health authorities
- j. Facility management, including environmental control, waste management, product evaluation and disinfection, sterilization and asepsis
- k. Performance improvement/resident safety
- l. Preparedness planning
2. The infection control program must be in compliance with federal, state, and local regulations (Category IC).

B. Infection Control Administrative Structure

1. Oversight of the infection control program should be defined and should include participation of the ICP, administration, nursing staff, and physician staff (Category II).

Comment: A committee, traditionally the ICC (infection control committee), may oversee the infection control program for the facility. ICC members often include the ICP; the medical director; and representatives from nursing, administration, and pharmacy. Participation of other departments, such as dietary, housekeeping, and physical therapy, should be considered on an ad hoc basis. Administrative structures other than an ICC may provide oversight to the infection control program. One example is an infection control oversight committee, a small group consisting of the LTCF administrator, the ICP, and the medical director. Alternatively, the performance improvement committee or patient safety committee and the ICC may be combined, but it is important to maintain the identity of the infection control program. The duties of the ICC should be delegated appropriately if no formal ICC exists.

2. Formal delegation of infection control oversight should be made in writing (Category II).
 3. The infection control oversight committee should meet on a regular basis and have a mechanism for emergent meetings as needed (Category II).
 4. This committee should maintain written minutes with identification of problems and plans for action (Category II).
 5. The effectiveness of the infection control program should be evaluated by the administration on at least an annual basis (Category II).
 6. Policies and procedures for investigating, controlling, and preventing infection transmission in the facility should be established (Category IC).
- Comment:* Other functions include (a) review of infection control data, (b) approval of policies and procedures, (c) monitoring program activities, and (d) recommending policy to the facility administration.
7. Consultation should be available as needed including with an infectious disease physician or other professional with expertise in infection control (Category II).

C. ICP

1. One person, the ICP, should be assigned the responsibility of directing infection control activities in the LTCF. The ICP should be someone familiar with LTCF resident care problems (Category IC).
 2. The ICP should have a written job description of infection control duties (Category II).
 3. The ICP is responsible for implementing, monitoring, and evaluating the infection control program for the LTCF (Category II).
 4. The ICP should be guaranteed sufficient time and the support of the administration to effectively direct the infection control program (Category II).
 5. The ICP (or another appropriate individual, such as the medical director) should have written authority to institute infection control measures in emergency situations (Category IB).
 6. The ICP should have a sufficient infection control knowledge base to carry out responsibilities appropriately (Category II).
- Comment:* A background in infectious diseases, microbiology, geriatrics, and educational methods is advisable. Management and teaching skills also are helpful. Continuing education is essential for the ICP (eg, meetings, courses, journals).
7. The ICP should know the federal, state, and local regulations dealing with infection control in the LTCF (Category II).
 8. The ICP should communicate with relevant facility committees and personnel within the facility, ICPs from transferring facilities, and public health authorities to

ensure appropriate isolation and collection of surveillance information (Category II).

9. No recommendation on number of ICPs per 100 LTCF beds.

D. Surveillance

1. The LTCF should have a system for ongoing collection of data on infections in the institution (Category IC).
2. A documented surveillance procedure should be used, including written definitions of infections (Category IB).

Comment: Concurrent surveillance is preferable to retrospective surveillance. The frequency of surveillance for HAIs in the LTCF should be based on factors such as acuity level of the resident population. Surveillance at least once a week generally is needed to collect timely data. Surveillance data should be collected from communication with staff; this may be during walking rounds in the LTCF. Medical progress notes in the chart, laboratory or radiology reports, nursing notes, treatment records, medication records, physical assessments, environmental observations, and follow-up information from transfers to acute care hospitals provide clues to the presence of infections.

3. The ICP should review surveillance data frequently and recommend infection control measures, as appropriate, in response to identified problems (Category IB).

Comment: Analysis of surveillance data should include at least the following elements on each infection to detect clusters and trends: resident identifier, type of infection, date of onset, location in the facility, and appropriate laboratory information.

4. Infection rates should be calculated periodically, recorded, analyzed, and reported to the administration and the infection control oversight committee (Category IB).

Comment: Infection rates usually are calculated monthly, quarterly, and annually. HAI rates are calculated preferably as infections per 1000 resident-days. A standard infection report form facilitates reporting of surveillance information. Tables, graphs, and charts may be used and facilitate education of personnel.

5. Surveillance data should be used for planning infection control efforts, detecting epidemics, directing continuing education, and identifying individual resident problems for intervention (Category IB).

Comment: In addition to collection of baseline infection rates, the ICP should perform problem-focused studies. Examples of special studies are evaluation of UTIs in catheterized residents, a study of the occurrence of influenza in vaccinated versus unvaccinated residents, or the prevalence of pressure ulcers in bed-bound residents.

6. In addition to the above outcome measures, surveillance should also include analysis of process measures relevant to infection control (Category II).

Comment: Examples include monitoring hand hygiene compliance, observation of aseptic technique, and measuring HCW influenza vaccination rates.

E. Outbreak Control

1. Surveillance data should be used to detect and prevent outbreaks in the LTCF (Category IB/IC).

Comment: The occurrence of even a single verified case of a highly transmissible disease (such as infectious TB, influenza, scabies, *Salmonella*, and norovirus) in the LTCF should prompt notification of appropriate individuals (such as the medical director or administrator), consideration of an outbreak, and institution of control measures. After the institution of isolation precautions, assessment of exposed residents and personnel should be made in a timely fashion to detect other cases.

2. The facility should define authority for intervention during an outbreak (Category IB).

Comment: The LTCF should have a preexisting protocol for dealing with infectious disease epidemics, including the authority to relocate residents, confine residents to their rooms, restrict visitors, obtain cultures, isolate, and administer relevant prophylaxis or treatment (such as antivirals during an influenza outbreak).

3. In order to facilitate response to an outbreak, consent for appropriate diagnostic or therapeutic measures should be obtained from the resident or medical decision maker and the resident's primary physician on admission to the facility (Category II).
4. Obtaining cultures of the environment or from asymptomatic personnel is not recommended except as targeted by an epidemiologic investigation (Category II).
5. A TB control program should focus on detection of active cases in residents and staff and isolation or transfer of residents with known or suspected pulmonary TB disease (Category IC).

Comment: TB control programs are mandated by OSHA. A case of TB in residents or staff that was or may have been acquired in the facility should lead to clinical evaluation and TB testing of residents and employees.

F. The Facility

1. Hand hygiene facilities and supplies should be available and conveniently located for residents and staff (Category IA).
2. Clean and soiled utility areas should be functionally separate and clearly designated (Category IC).
3. Appropriate ventilation and air filtration should be addressed by the LTCF (Category IC).

Comment: If the LTCF provides care for residents or accepts residents with a diagnosis of active TB, the air-

borne infection isolation (AII) requirement should be met. If these requirements cannot be met, a system for transfer of cases to an appropriate institution that provides AII should be part of the overall infection control plan.

4. Housekeeping in the facility should be performed on a routine and consistent basis to provide for a safe and sanitary environment (Category IC).

Comment: Cleaning schedules should be kept for all areas in the LTCF. Cleaning products should be approved and labeled appropriately; manufacturer's (or other authoritative) recommendations for use and dilution should be followed.

5. Measures should be instituted to correct unsafe and unsanitary practices (Category II).

Comment: Environmental cleanliness may be monitored by walking rounds with a checklist for each area of the LTCF. Nursing interventions may be monitored by direct observation during such rounds.

6. Areas in the LTCF with unique infection control concerns (eg, laundry, kitchen, rehabilitation) should have the appropriate policies and procedures developed (Category II).

Comment: Laundry policies and procedures should address the following: proper bagging of linen at the site of use, transporting linen in appropriate carts, cleaning of the carts on a regular basis, separation of clean and soiled linen, washing temperatures or use of an appropriate chemical mix for low-temperature washing, covering of clean linen, protection of personnel handling soiled laundry, and hand hygiene after contact with soiled linen. Adequate supplies of clean linen should be available. Laundry regulations should be addressed if the facility does its own laundry. Dietetic service area policies and procedures should address the following: handling of uncooked foods, cooking of food, cleaning of food preparation areas, food storage, cooking and refrigeration temperatures, cleaning of ice machines, hand hygiene indications, and employee health. Food and drink should be limited to specific areas. Policies and procedures covering infection control aspects of physical therapy (including cleaning of hydrotherapy tanks) should be developed. It should include cleaning and disinfection of hydrotherapy equipment, hand hygiene indications, and cleaning of exercise equipment. If pets are allowed, the LTCF should have a policy defining access, containment, cleanliness, and vaccination of pets.

7. Policies and procedures for disposal of infectious medical waste (including waste categorization, packaging, storage, collection, transport, and disposal) should be developed in accordance with federal, state, and local regulations (Category IC).

Comment: Examples of specific issues include types of waste disposal bags, cleaning of waste transportation

carts, and types of waste storage containers. Policies for sharps disposal should be developed.

G. Isolation and Precautions

1. Isolation and precautions policies and procedures should be developed, evaluated, and updated in accordance with most recent CDC/HICPAC guidance (Category IC).
2. Regular education programs should be developed to reinforce understanding and compliance (Category IC).
3. Compliance with these infection control practices (eg, hand hygiene, isolation) should be monitored (Category IC).
4. Any isolation and precautions system used should include implementation of Standard Precautions for all residents (eg, wearing of gloves, masks, eye protection, and gowns when contamination or splashing with blood or body fluids is likely) (Category IC).
5. Any isolation and precautions system should include the implementation of transmission-based precautions (Contact Precautions, Droplet Precautions, or Airborne Precautions) in accordance with current CDC/HICPAC guidance (Category IB/IC).
6. The LTCF should have a policy dealing with MDROs (such as MRSA or VRE) that is compatible with current national standards (such as the HICPAC isolation and MDRO guidelines) and appropriate to the LTCF setting (Category IB).

Comment: This policy should deal with issues such as acceptance of colonized or infected patients into the facility, inquiring about colonization of admissions with MDROs, and isolation of residents with MDROs. Denial of admission to the LTCF solely on the basis of colonization or infection with a resistant organism is not appropriate. HICPAC recommends intensification of containment measures for MDROs if ongoing transmission is occurring.

7. The individual resident's clinical situation should be considered when deciding whether to implement or modify the use of Contact Precautions in addition to Standard Precautions if colonized or infected with a MDRO (Category IB/IC).

Comment: Routine glove use is an example of a form of modified Contact Precautions, but it has not been validated in the LTCF setting.

8. A program of safe work practices to prevent HCW exposure should be developed in accordance with CDC/HICPAC and OSHA guidance. Used needles and syringes should not be manually recapped, broken, or bent. Self-capping needles should be used. They should be disposed of, with all sharps, in a puncture-resistant, leak-proof container (Category IC).

9. Gloves are indicated for contact with blood or body fluids, contaminated items, mucous membranes, or nonintact skin (Category IC).
10. Policies should be developed to deal with spills and personnel exposure to blood or body fluids. Employees should know how to respond to an exposure (eg, immediately washing the skin in the event of a blood exposure). Postexposure prophylaxis should be readily available (Category IC).
11. Residents with suspected TB should be placed in a negative-pressure room or transferred to a facility with such a room (Category IC).

H. Asepsis and Hand Hygiene

1. Routine hand hygiene should be encouraged. Hands should be washed after any patient contact but especially after contact with body fluids, after removing gloves, when soiled, and when otherwise indicated (Category IA). Unless hands are visibly soiled, use of alcohol-based hand gels is encouraged (Category IA/IC).
2. A hand hygiene policy and procedure should be developed by the LTCF in accordance with current CDC/HICPAC guidance with a program of ongoing hand hygiene education (Category IB/IC).
3. Hand hygiene compliance should be monitored (Category IC).
4. Policies and procedures for disinfection and sterilization should be developed (Category IB).

Comment: These policies and procedures should address issues such as sterile supplies, reuse of disposable items, disinfection of equipment (such as thermometers), and cleaning of noncritical items. All items, other than disposables, should be cleaned, disinfected, or sterilized, following published guidelines and manufacturers' recommendations. The ICP should identify those resident care procedures that require aseptic technique.

I. Resident Care

1. Resident rooms should have an accessible sink, with soap, water, towels, and toilet facilities (Category II).
Comment: Provision should be made for maintaining adequate resident personal hygiene and for instructing residents in hygiene and hand hygiene as appropriate to their functional status.
2. A resident skin care program should be developed to maintain the skin as a barrier to infection (Category II).
Comment: Resident skin care should include the following: routine frequent turning for those unable to do so themselves, keeping the residents clean and dry, inspecting all residents' skin on a routine basis, ensuring appropriate nutrition, treating pressure ulcers, and providing prompt care for any other breaks in skin integrity.

Turning schedules and pressure ulcer assessment forms may be useful.

3. A program to prevent UTIs should be developed, including the following:
 - Routine urinalysis or urine culture to screen for bacteriuria or pyuria is not recommended (Category IA).
 - Residents with impaired bladder emptying managed with intermittent catheterization should be managed with a clean technique (Category IA).
 - Policies for catheter use should address catheter insertion, closed drainage systems, maintenance of urinary flow, and indications for changing the catheter (Category IB).
 - Irrigation of indwelling catheters with saline or antiseptics is not routinely recommended (Category IB).
 - If leg bags are used, the LTCF should develop policies and procedures for aseptic connection, cleaning, and storage of leg bags (Category II).
 - Adequate hydration should be maintained (Category II).

Comment: Men with incontinence should have voiding managed by a condom catheter rather than indwelling catheter, where possible. Residents with chronic indwelling catheters should have the catheter replaced and a specimen collected immediately prior to initiating antimicrobial therapy for symptomatic infection.

4. A program to minimize the risk of pneumonia in the LTCF should address the following: reducing the potential for aspiration, minimizing atelectasis, and caring for respiratory therapy equipment (Category II).

Comment: Pneumonia prevention guidelines are available, and many of the suggested measures are applicable to the LTCF.

5. Policies and procedures should be developed for prevention of infections associated with nasogastric and gastrostomy feeding tubes, including the following: preparation, storage, refrigeration, and administration of feeding solutions and care of percutaneous feeding tube skin sites (Category II).
6. Policies and procedures should be developed for prevention of IV infections, including central lines, if these devices are used (Category IB).
Comment: Policies should address indications for IV therapy, the type of dressing used to cover the IV exit site, cannula insertion, site maintenance, and changing fluids or tubing.

J. Resident Health Program

1. A resident health program should be implemented (Category II).
 - There should be explicit and accessible documentation of program components in the resident record (Category II).

2. At admission, each resident should have a complete history (including important past and present infectious diseases), immunization status evaluation, and recent physical examination (Category II).
3. All newly admitted residents should receive TB screening unless a physician's statement is obtained that the resident had a past positive TST (Category IA/IC).

Comment: A 2-step booster TST is often recommended in this setting.

4. When new or active TB is suggested by a positive skin-test result, or symptoms are consistent with active TB, a chest radiograph and medical evaluation should be obtained (Category II).
5. Follow-up TST for TB should be performed periodically or after discovery of a new case of TB in a resident or staff member (Category IB). No recommendation on frequency of routine follow-up TSTs for residents.
6. Each resident should receive current vaccinations for tetanus, diphtheria, influenza, pertussis, pneumococcal pneumonia, and any other vaccines recommended by the ACIP (Category IB/IC).
7. Each resident should receive the influenza vaccine annually in the fall, unless medically contraindicated (Category IC).

Comment: Facilities should obtain resident consent at admission for yearly influenza vaccination and use standing orders for yearly influenza vaccination.

8. Policies and procedures addressing visitors should be developed to limit introduction of community infections (such as influenza) into the LTCF (Category II).

K. Employee Health Program

1. All new employees should have a baseline health assessment, including immunization status and history of relevant past or present infectious diseases (Category 1B/IC).

Comment: The past history of infectious diseases should address contagious diseases such as chickenpox, measles, hepatitis, furunculosis, and bacterial diarrhea. Screening cultures of new employees are rarely indicated.

2. All new employees should receive TST unless there is written documentation that the employee had a positive reaction to a tuberculin test. When new or active TB is suggested by a positive TST result or by symptoms, a chest radiograph and medical evaluation should be obtained (Category 1A/IC).

Comment: A 2-step booster TST technique is recommended when indicated. Only employees who have active pulmonary TB should be restricted from work.

3. Follow-up skin testing of staff who are TST negative should be performed periodically based on the facility's annual risk assessment or after discovery of a new

case of TB in a resident or staff member (Category 1A/IC).

Comment: The intradermal Mantoux method or licensed blood test should be used. The frequency of testing depends on the regional prevalence of TB; the facility's annual risk assessment; and federal, state, or local regulations.

4. All employees should have current immunizations as recommended for HCWs by the Advisory Committee on Immunization Practices (ACIP), with documentation in the employee record (Category 1A/IC).
5. Employees with blood or body fluid contact should be offered HBV immunization within 10 working days of hire and after training has been completed (Category 1C).

Comment: Refusal of this vaccine should be documented, using the OSHA-required Declination Statement for Hepatitis B vaccine.

6. Employees should be offered the influenza vaccine annually (Category 1A/1C).

Comment: A vaccine declination statement may be signed by each employee who declines influenza vaccination.

7. Each employee should be taught basic use of personal protective equipment and hand hygiene and to consider blood and all body fluids as potentially infectious (Category 1C).
8. Employees with signs or symptoms of communicable diseases (eg, cough, rash, diarrhea) should not have contact with the residents or their food (Category 1B).
9. All employees should be educated to report any significant infectious illnesses to their supervisor and the staff member responsible for employee health (Category 1B).

Comment: Each employee record should include factors affecting immune status (such as steroid therapy, diabetes, HIV infection), history of communicable diseases, illnesses, and incidents such as exposures to contagious diseases, needlesticks, injuries, and accidents.

10. The LTCF should develop protocols for managing employee illnesses and exposures (such as bloodborne pathogens like HIV and hepatitis B and C, as well as TB, scabies, or gastroenteritis) (Category 1B/IC).

Comment: An employee absentee policy that discourages the employee from working while ill should be developed.

L. Education

1. Infection control education should be provided at the initiation of employment and regularly thereafter. Training should include all staff, especially those providing direct resident care (Category IC).

2. All programs should be documented with the date, topic, names of attendees, and evaluations (Category IC).

Comment: Program topics should be timely and relevant to infection prevention and control. Basic hygiene, hand hygiene, respiratory etiquette, transmission of infectious diseases, occupational health, prevention of TB and bloodborne pathogens, Standard and Transmission-based Precautions, infection control standards, and the susceptibility of residents to infectious diseases are topics that should be included. The ICP may recommend topics. Surveillance data are of interest to staff and may be included as appropriate. The educators should evaluate the educational program and outcomes and use that information to modify future programs.

M. Policies and Procedures

1. Infection control policies and procedures dealing with relevant aspects of infection control such as hand hygiene, disinfection, and isolation precautions should be in place and compatible with current regulations and infection control knowledge (Category IC).
2. Infection control policies and procedures should be approved, reviewed, and revised on a regular basis (Category IC).

Comment: The ICP should assist in the development and updating of infection-related policies and procedures.

3. Employees should be made aware of infection control policies and procedures (Category IC).

Comment: The ICP should develop a system for monitoring staff compliance with infection control policies and procedures.

N. Antibiotic Stewardship

1. Infection control programs in LTCFs should be encouraged to include a component of antimicrobial stewardship (Category IB).

Comment: The LTCF should encourage judicious use of antimicrobials with guidelines based in part on local susceptibility patterns. Antibiotic utilization and appropriateness may be monitored, and these data used for interventions (eg, education, antibiotic restrictions).

2. The ICP should monitor antibiotic susceptibility results from cultures to detect clinically significant antibiotic-resistant bacteria (such as MRSA or VRE) in the institution. Changes in antibiotic-susceptibility trends should be communicated to appropriate individuals and committees (Category IB).

O. Miscellaneous Aspects

1. There should be a system for reporting notifiable diseases to proper public health officials (Category 1C).

2. The infection control program should collaborate with the performance improvement (PI) program, if a formal program exists (Category II).

Comment: Infection control is an important component of PI, and the epidemiological techniques used in infection control will assist the PI program.

3. The ICP should be involved with the review and selection of new products that have infection control implications (Category II).
4. The ICP should be involved with LTCF influenza pandemic preparedness planning (Category II).
5. Infection control activities should address relevant resident safety issues (Category II).

P. Regulations

1. The infection control program must be in compliance with federal, state, and local regulations (Category IC).
2. The infection control program should reflect national, evidence-based standards of practice for infection prevention and control (Category IC).

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Address correspondence to Philip W. Smith, MD, Section of Infectious Disease, University of Nebraska Medical Center, 985400 Nebraska Medical Center, Omaha, NE 68198-5400 (pwsmith@unmc.edu).

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Best Practice Guidelines for the Cleaning, Disinfection and Sterilization of Medical Devices in Health Authorities

March 2007



Patient Safety Branch
Ministry of Health

Foreword

This document was developed by the Ontario Provincial Infectious Diseases Advisory Committee (PIDAC) and reviewed and approved by the Ontario Ministry of Health and Long-Term Care (MOHLTC). The MOHLTC gave permission to the British Columbia (BC) Ministry of Health (MoH) to use the best practices included in its document to further improve patient safety in BC. Permission was also given to amend certain aspects of the best practices to suit BC's unique circumstances. The MoH extends its deepest thanks and appreciation to its colleagues in Ontario for their guidance and leading-edge work in the area of medical device reprocessing standards. The MoH also recognizes that the bulk of the information contained in this document was researched, compiled, analyzed and presented by the Infection Prevention and Control Subcommittee of PIDAC.

PIDAC was established June 2004 to advise the Chief Medical Officer of Health on matters related to infectious diseases. PIDAC would like to acknowledge the contribution and expertise of the subcommittee which developed this document:

Infection Prevention and Control Subcommittee

Dr. Mary Vearncombe, Chair

Medical Director, Infection Prevention and Control, Microbiology
Sunnybrook and Women's College Health Sciences Centre

Mary Lou Card

Citywide Infection Control Team Leader
London Health Services Ctr. & St. Joseph's Health Care

Dr. Maureen Cividino

Occupational Health Physician
St. Joseph's Hospital, Hamilton

Dr. Beth Henning

Medical Officer of Health
Huron County

Dr. Allison McGeer

Director, Infection Control
Mount Sinai Hospital, Toronto

Pat Piaskowski

Regional Coordinator
Northwestern Ontario Infection Control Network

Dr. Virginia Roth

Director, Infection Prevention and Control Program
Ottawa Hospital – General Campus

Liz Van Horne

Infection Control Specialist
Peel Public Health, Communicable Disease Division

Dr. Dick Zoutman

Professor and Chair, Divisions of Medical Microbiology and of Infectious Diseases
Medical Director of Infection Control, South Eastern Ontario Health Sciences Centre
Queen's University, Kingston, Ontario
Co-Chair, Provincial Infectious Diseases Advisory Committee (PIDAC)

Dr. Erika Bontovics

Ex-officio member
Senior Infection Control Consultant
Disease Control Service
Public Health Division, Ministry of Health and Long-Term Care

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Preamble

About This Document

This document is intended for health care providers to ensure that the critical elements and methods of decontamination, disinfection and sterilization are incorporated into health care facility procedures. The document describes essential elements and methods in the safe handling, transportation and biological decontamination of contaminated medical equipment/devices.

In this document, “shall” indicates mandatory requirements according to the Canadian Standards Association; “must” indicates best practice, i.e. the minimum standard based on current recommendations in the medical literature.

This document reflects the best expert opinion on the reprocessing of medical equipment/devices in a health care setting. As new information becomes available, the recommendations in this document will be reviewed and updated. Users must be cognizant of the basic principles of reprocessing and safe use of medical equipment/devices when making decisions about new equipment/devices and methodologies that might become available.

Information in this document is consistent with, or exceeds, recommendations from the Public Health Agency of Canada. It also meets standards developed by the Canadian Standards Association and reflects position statements of the Ontario Hospital Association. As such, it may be used as a basis for auditing reprocessing practice in any health care setting in Ontario.

How and When to Use This Document

The best practices for reprocessing medical equipment set out in this document should be practiced in all settings where care is provided, across the continuum of health care. This includes settings where emergency care is provided, hospitals, long term care homes, outpatient clinics, community health centres and clinics, physician offices, dental offices, offices of allied health professionals, Public Health and home health care.

All reprocessing of equipment/devices, regardless of source, must meet these best practices whether the equipment/device is purchased, loaned, physician/practitioner-owned, research equipment/device or obtained by any other method.

Assumptions and General Principles for Infection Prevention and Control

The best practices set out in this document are based on the assumption that health care settings in British Columbia have basic infection prevention and control systems or programs in place. If this is not the case, these settings must work with organizations that have infection prevention and control expertise, such as regional academic health science centers, regional networks, public health units that have certified infection prevention and control staff and local infection prevention and control associations (e.g. Community and Hospital Infection Control Association – Canada chapters), to develop evidence-based programs.

In addition to the general assumption (above) about basic infection prevention and control, these best practices are based on the following assumptions and principles:

1. Health care settings routinely implement best practices to prevent and control the spread of infectious diseases.
2. Health care settings devote adequate resources to infection prevention and control.
3. All staff are, or will be, certified in infection prevention and control.

4. Health care settings provide regular education and support to help staff consistently implement appropriate infection prevention and control practices. Effective education programs emphasize:
 - The risks associated with infectious diseases and their transmission via medical equipment/devices and objects;
 - The importance of immunization against vaccine-preventable diseases;
 - Hand hygiene (including the use of alcohol based hand rubs or hand washing);
 - Principles and components of Routine Practices (Health Canada. Infection Control Guidelines: [*Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care*](#). Can Commun Dis Rep. 1999; 25 Suppl 4: 1-149.)
 - Assessment of the risk of infection transmission and the appropriate use of personal protective equipment, including safe application, removal and disposal;
 - Appropriate cleaning and/or disinfection of care equipment, supplies and surfaces or equipment/devices that have been in the healthcare environment;
 - Procedures that are considered high risk and rationale;
 - Individual staff responsibility to keep clients/patients/residents, themselves and fellow staff members safe;
 - Collaboration between Occupational Health and Safety and Infection Prevention and Control departments/individuals.

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

5. All health care settings promote collaboration between occupational health and safety and infection prevention and control in implementing and maintaining appropriate infection prevention and control standards that protect workers.
6. The facility is to be in compliance with the *Workers Compensation Act RSBC 1996, c.492* and the associated *Occupational Health and Safety Regulation 296/97*. Particular emphasis should be placed on Part Five: Chemical and Biological Substances and Part Six: Substance Specific Requirements.
7. All health care settings have established communication with their local public health unit.
8. All health care settings have access to ongoing infection prevention and control advice and guidance to support staff and resolve any uncertainty about the level of reprocessing required for a particular piece of equipment/device or a given situation.
9. **Health care settings have established procedures for receiving and responding appropriately to all international, regional and local health alerts regarding medical equipment/devices.** They also communicate health alerts promptly to all staff responsible for reprocessing medical equipment/devices and provide regular updates. Current alerts are available from local Public Health units, the Ministry of Health, Health Canada's medical devices alerts website [www.hc-sc.gc.ca/dhp-mps/medeff/advisories-avis/index_e.html], local regional infection prevention and control networks, etc.
10. All health care settings regularly assess the effectiveness of their infection prevention and control education programs and their impact on practices, and use that information to refine their programs.
11. All health care settings have a process for evaluating personal protective equipment (PPE) to ensure it meets quality standards where applicable.

Abbreviations

AER	Automated Endoscope Reprocessor
CSA	Canadian Standards Association
CJD	Creutzfeldt-Jakob Disease
DIN	Drug Identification Number
HLD	High Level Disinfection
LLD	Low Level Disinfection
MoH	Ministry of Health
MSDS	Material Safety Data Sheet
OPA	Ortho-phthalaldehyde
PHAC	Public Health Agency of Canada
PPE	Personal Protective Equipment
QUAT	Quaternary Ammonium Compound
USFDA	United States Food and Drug Administration

Glossary of Terms

Automated Endoscope Reprocessor (AER): Machines designed to assist with the cleaning and disinfection of endoscopes.

Bioburden: The number and types of viable microorganisms that contaminate the equipment/device.

Biologic Monitor: Spore-laden strips or vials that are used to monitor the effectiveness of the sterilization process.

Chemiclave: A machine that sterilizes instruments with high-pressure, high-temperature water vapour, alcohol vapour and formaldehyde vapour (occasionally used in offices).

Cleaning: The physical removal of foreign material (e.g. dust, soil, organic material such as blood, secretions, excretions and microorganisms). Cleaning physically removes rather than kills microorganisms. It is accomplished with water, detergents and mechanical action. Thorough and meticulous cleaning is required before any equipment/device may be decontaminated, disinfected and/or sterilized.

Client/patient/resident: Any person receiving health care within a health care setting.

Critical medical equipment/devices: Medical equipment/devices that enter sterile tissues, including the vascular system (e.g. biopsy forceps, foot care equipment, dental hand pieces, etc.). Critical medical equipment/devices present a high risk of infection if the equipment/device is contaminated with any microorganisms, including bacterial spores. Reprocessing critical equipment/devices involves meticulous cleaning followed by sterilization.

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

Detergent: A synthetic cleansing agent that can emulsify oil and suspend soil. A detergent contains surfactants that do not precipitate in hard water, and may also contain protease enzymes (see enzymatic cleaner) and whitening agents.

Disinfectant: A process or product that is used on medical equipment/devices which results in disinfection of the equipment/device.

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

Drug Identification Number (DIN): In Canada, disinfectants are regulated as drugs under the Food and Drugs Act and Regulations. Disinfectant manufacturers must obtain a drug identification number (DIN) from Health Canada prior to marketing, which ensures that labelling and supporting data have been provided and that it has been established by the Therapeutic Products Directorate that the product is effective and safe for its intended use.

Endoscope – Critical: Endoscopes used in the examination of critical spaces, such as joints and sterile cavities. Many of these endoscopes are rigid with no lumen. Examples of critical endoscopes are arthroscopes, laparoscopes and cystoscopes.

Endoscope – Semicritical: Fiberoptic or video endoscopes used in the examination of the hollow viscera. These endoscopes generally invade only semicritical spaces, although some of their components might enter tissues or other critical spaces. Examples of semicritical endoscopes are laryngoscopes, nasopharyngeal endoscopes, transesophageal probes, colonoscopes, gastroscopes, duodenoscopes, sigmoidoscopes and enteroscopes.

Enzymatic Cleaner: An enzymatic cleaner is a solution that aids in the removal of proteinaceous material on medical equipment/devices when plain water and/or a detergent solution are considered inadequate.

Hand Hygiene: A process for the removal of soil and transient microorganisms from the hands. Hand hygiene may be accomplished using soap and running water or the use of alcohol-based hand rubs. Optimal strength of alcohol-based hand rubs should be 60% to 90% alcohol.

Health Care Setting: Any location where health care is provided, including settings where emergency care is provided, hospitals, long term care homes, outpatient clinics, community health centres and clinics, physician offices, dental offices, offices of allied health professionals and home health care.

High Level Disinfection (HLD): The level of disinfection required when processing semicritical medical equipment/devices. High level disinfection processes destroy vegetative bacteria, mycobacteria, fungi and enveloped (lipid) and non-enveloped (non-lipid) viruses, but not necessarily bacterial spores. Medical equipment/devices must be thoroughly cleaned prior to high level disinfection.

Indicator: Indicators reveal a change in one or more of the sterilization process parameters. They do not verify sterility, but they do allow the detection of potential sterilization failures due to factors such as incorrect packaging, incorrect loading of the sterilizer, or equipment malfunction.

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

Loaned Equipment: Medical equipment/devices used in more than one facility, including borrowed, shared or consigned equipment/devices, which are used on patients/clients/residents. Reprocessing is carried out at both loaning and receiving sites. Loaned equipment may also be manufacturer-owned and loaned to multiple health care facilities.

Licensed Reprocessor: A facility licensed by a regulatory authority (e.g. government agency) to reprocess medical equipment/devices to the same quality system requirements as manufacturers of the equipment/device, resulting in a standard that ensures the equipment/device is safe and performs as originally intended.

Low Level Disinfection (LLD): Level of disinfection required when processing noncritical medical equipment/devices or some environmental surfaces. Low level disinfectants kill most vegetative bacteria and some fungi as well as enveloped (lipid) viruses. Low level disinfectants do not kill mycobacteria or bacterial spores. Medical equipment/devices must be thoroughly cleaned prior to low level disinfection.

Manufacturer: Any person, partnership or incorporated association that manufactures and, under its own name or under a trade mark, design, trade name or other name or mark owned or controlled by it, sells medical equipment/devices.

Medical equipment/device: Any instrument, apparatus, appliance, material, or other article, whether used alone or in combination, intended by the manufacturer to be used for human beings for the purpose of diagnosis, prevention, monitoring, treatment or alleviation of disease, injury or handicap; investigation, replacement, or modification of the anatomy or of a physiological process; or control of conception.

Noncritical medical equipment/device: Equipment/device that either touches only intact skin (but not mucous membranes) or does not directly touch the client/patient/resident. Reprocessing of noncritical equipment/devices involves cleaning and may also require low level disinfection (e.g. blood pressure cuffs, stethoscopes).

Personal Protective Equipment (PPE): Clothing or equipment worn by staff for protection against hazards.

Pasteurization: A high level disinfection process using hot water at a temperature of 75°C for a contact time of at least 30 minutes.

Reprocessing: The steps performed to prepare used medical equipment/devices for use (e.g. cleaning, disinfection, sterilization).

Reprocessing Department: A centralized area within the health care setting for cleaning, disinfection and/or sterilization of medical equipment/devices. In community settings, any segregated area where reprocessing of equipment/devices takes place, away from patients and clean areas (e.g. Central Processing Department – CPD, Central Processing Service - CPS, Central Surgical Supply - CSS, Surgical Processing Department - SPD, etc.).

Reusable: A designation given by the manufacturer of medical equipment/devices that allows it, through the selection of materials and/or components, to be reused.

Semicritical medical equipment/device: Medical equipment/device that comes in contact with nonintact skin or mucous membranes but ordinarily does not penetrate them (e.g. respiratory therapy equipment, transrectal probes, specula etc.). Reprocessing semicritical equipment/devices involves meticulous cleaning followed by, at a minimum, high level disinfection.

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

Single patient-use: Medical equipment/device that may be used on a single client/patient/resident and may be reused on the same client/patient/resident, but may not be used on other clients/patients/residents.

Single-use/disposable: Medical equipment/device designated by the manufacturer for single-use only. Single-use equipment/devices must not be reprocessed.

Staff: Anyone conducting activities within a health care setting including: all health care providers (e.g. emergency service workers, physicians/practitioners, dentists, chiropractors, nurses, respiratory therapists and other allied health professionals, students); support services (e.g. housekeeping); and volunteers.

Sterilant: A chemical used on medical equipment/devices which results in sterilization of the equipment/device.

Sterilization: The level of reprocessing required when processing critical medical equipment/devices. Sterilization results in the destruction of all forms of microbial life including bacteria, viruses, spores and fungi. Equipment/devices must be cleaned thoroughly before effective sterilization can take place.

Ultrasonic washer: A machine that cleans medical equipment/devices by the cavitations produced by ultrasound waves.

Washer-disinfector: A machine that removes soil and cleans medical equipment/devices prior to high level disinfection or sterilization. Noncritical medical equipment/devices that do not require high level disinfection or sterilization may be reprocessed in a washer-disinfector (e.g. bedpans).

Washer-sterilizer: A machine that washes and sterilizes medical equipment/devices. Saturated steam under pressure is the sterilizing agent. If used as a sterilizer, quality processes must be observed as with all sterilization procedures (e.g. use of chemical and biologic monitors, record-keeping, wrapping, drying, etc.).

BEST PRACTICES FOR CLEANING, DISINFECTION AND STERILIZATION IN ALL HEALTH CARE SETTINGS

I. General Principles

All reprocessing of medical equipment/devices, regardless of source, must meet this guideline whether the equipment/device is purchased, loaned, physician/practitioner-owned, used for research or obtained by any other means, and regardless of where reprocessing occurs..

“Effective reprocessing requires rigorous compliance with recommended protocols.”¹

“All activities included in the reprocessing of medical equipment/devices are based on the consistent application of Routine Practices and Hand Hygiene.”²

The goals of safe reprocessing of medical equipment/devices include:

- Preventing transmission of microorganisms to personnel and clients/patients/residents;
- Minimizing damage to medical equipment/devices from foreign material (e.g. blood, body fluids, saline and medications) or inappropriate handling.

Best practices in reprocessing medical equipment/devices must include the following:

- A corporate strategy for dealing with single-use medical equipment/devices;
- Adequate review by all parties whenever new equipment/devices are being considered for purchase (e.g. reprocessing committee);
- A centralized area for reprocessing or an area that complies with the requirements for reprocessing;
- Training of all staff who do reprocessing;
- Written policies and procedures for each type of medical equipment/device that is reprocessed;
- Validation of cleanliness, sterility and function of the reprocessed equipment/device;
- Continual monitoring of reprocessing procedures to ensure their quality.

Decisions related to reprocessing medical equipment/devices should be made by a **multi-disciplinary reprocessing committee** that includes the individuals responsible for purchasing the equipment/device, reprocessing the equipment/device, maintaining the equipment/device, infection prevention and control, occupational health and safety, and the end-user of the equipment/device.

There must be a clear definition of the lines of authority and accountability with respect to reprocessing, whether done centrally or elsewhere.

It is strongly recommended that, wherever possible, reprocessing should be performed in a centralized area that complies with the physical and human resource requirements for reprocessing.

When formulating written policies and procedures, the following steps in reprocessing must be addressed:³

- Collection at point of use, containment and transport
- Cleaning
- Inspection
- Disinfection/Sterilization
- Rinsing (following disinfection)
- Drying/aeration
- Clean transportation
- Storage

¹ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep.* 1998; 24 Suppl 8: i-xi, 1-55.

² Health Canada. Routine practices and additional precautions for preventing the transmission of infection in health care. *Can Commun Dis Rep.* 1999; 25 Suppl 4: 1-149.

³ Canadian Standards Association. *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada.* Toronto, Ont.: Canadian Standards Association; 2000 (R2005). Adapted from Figure 1.

It is essential that an **overall inventory** of all reprocessing practices within the healthcare setting is done and documented where, how and by whom all equipment/devices are being reprocessed and whether current standards are being met, as set out in this document.

All processes must continue to be **audited** on a regular basis (e.g. annually), with clear and known consequences attached to non-compliance. Compliance with the processes must also be audited.

As new reprocessing technologies and processes become available, they must be evaluated against the same criteria as current methodologies. Verify that:

- the process is compatible with the equipment/device being reprocessed;
- the process is compatible with the cleaning products being used;
- environmental issues with the process have been considered (e.g. odours, toxic waste products, toxic vapours);
- occupational health issues with the process have been considered (e.g. are PPE or special ventilation required);
- staff education and training is available (provided by the manufacturer);
- the facility is able to provide the required preventive maintenance;
- the process can be monitored (e.g. there are mechanical, chemical and biologic monitors and indicators available);
- chemical products have a Drug Identification Number (DIN) from Health Canada.

II. Best Practices

1. Single-Use Medical Equipment/Devices

1.1 **Critical and semi-critical medical equipment/devices labeled as single-use must not be reprocessed and reused unless the reprocessing is done by a licensed reprocessor.** ^{4,5,6}

Currently there are no licensed reprocessors in Canada. There are reprocessors in the USA licensed by the United States Food and Drug Administration (USFDA).^{5,6}

Health care settings that wish to have their single-use medical equipment/devices reprocessed by a licensed reprocessor should ensure that the reprocessor's facilities and procedures have been certified by a regulatory authority or an accredited quality system auditor to ensure the cleanliness, sterility, safety and functionality of the reprocessed equipment/devices.⁷ In order to have critical or semicritical medical equipment/devices reprocessed by one of these facilities, there must be processes for:

- Equipment/device tracking and labeling
- The ability to recall reprocessed medical equipment/devices
- Proof of sterility or high level disinfection
- Pyrogenicity testing
- Maintenance of equipment/device functionality and integrity
- The presence of quality assurance and quality control programs
- The ability to report adverse events
- Proof of good manufacturing procedures

Whereas reusable medical equipment/devices are sold with instructions for proper cleaning and sterilization, no such instructions exist for single-use medical equipment/devices. Furthermore, manufacturers often have not provided data to determine whether the equipment/device can be thoroughly cleaned, whether the materials can withstand heat or chemical sterilization, or whether delicate mechanical and electrical components will continue to function after one or more reprocessing cycles.⁵

In circumstances where the manufacturer does not approve of reuse, the facility will bear the brunt of legal responsibility in establishing when and under what conditions reuse of medical equipment/devices presents no increased risk to patients and that a reasonable standard of care was adhered to in the reuse of the equipment/device. This would involve written policies, extensive testing of reprocessing protocols and strict adherence to quality assurance investigations.⁴ This is a detailed and expensive process and should only be undertaken if there is a compelling reason to do so.

Single-use medical equipment/devices are usually labeled by the manufacturer with a symbol:



1.2 **Needles must be single-use and must not be reprocessed.**

Sharps are devices that can cause occupational injury to a worker. Some examples of sharps which cannot be safely cleaned include needles, lancets, blades and glass. Reprocessing needles is an occupational health hazard. Further, reprocessing needles is a patient safety issue as there is no guarantee that the lumen is clean and that the reprocessing is effective.

⁴ Canadian Healthcare Association. *The Reuse of Single-Use Medical Devices: Guidelines for Healthcare Facilities*. Ottawa: CHA Press, 1996.

⁵ Health Canada. Therapeutic Products Directorate. *Reprocessing of Reusable and Single-Use Medical Devices*. Letter to hospital administrators, July 30, 2004. Available [online](#). Accessed November 9, 2005.

⁶ Ontario Hospital Association. Report of OHA's Reuse of Single-Use Medical Devices Ad-hoc Working Group. Toronto, Ont.: Ontario Hospital Association; 2004. Executive summary available [online](#).

⁷ Ontario Hospital Association Bulletin. *Reprocessing of Single Use Medical Devices*. July 8, 2005.

- 1.3** *It is strongly recommended that catheters, drains and other medical equipment/devices with small lumens (excluding endoscopy equipment) be designated single-use and not be reprocessed and reused.*
- 1.4** *Home health care agencies may consider reusing single-use semicritical medical equipment/devices for a single client in their home when reuse is safe and the cost of discarding the equipment/device is prohibitive for the client.*
- a) Equipment/devices owned by the client that are reused in their home must be adequately cleaned prior to reuse. See Section 10, "Disassembling and Cleaning Reusable Medical Equipment" for cleaning requirements.
- 1.5** *The health care setting must have written policies regarding single-use medical equipment/devices.*

2. Purchasing and Assessing Medical Equipment/Devices and/or Products to be Subjected to Disinfection or Sterilization Processes

All reprocessing of medical equipment/devices, regardless of source, must meet these best practices whether the equipment/device is purchased, loaned, physician/practitioner-owned, used for research, or equipment obtained by any other means.

The administration of the health care setting is responsible for verifying that any product used in the provision of care to clients/patients is capable of being cleaned, disinfected and/or sterilized according to the most current standards and guidelines from the Canadian Standards Association (CSA), the Public Health Agency of Canada (PHAC)/Health Canada as well as these best practices. The issuing of a purchase order is a useful point of control for ensuring that appropriate review of the equipment/device has taken place prior to purchase.

Equipment that is used to clean, disinfect or sterilize (e.g. ultrasonic cleaners, pasteurizers, washer-disinfectors, Automated Endoscope Reprocessors - AERs, sterilizers) must also meet standards established by Health Canada/PHAC, the CSA and the standards contained in this document.

- 2.1** *Do not purchase medical equipment/devices that cannot be cleaned and reprocessed according to the recommended standards.*
- 2.2** *When purchasing reprocessing equipment or chemical products for reprocessing, consideration must be given to Occupational Health requirements, patient safety, and environmental safety issues.*
- 2.3** *All medical equipment/devices intended for use on a client/patient/resident that are being considered for purchase or will be obtained in any other way (e.g. loaned equipment/devices, trial or research equipment/devices, physician/practitioner-owned, etc.) must meet established quality reprocessing parameters.*
- a) The manufacturer must supply the following:
- i) Information about the design of the equipment/device
 - ii) Manuals/directions for use
 - iii) Device-specific recommendations for cleaning and reprocessing of equipment/device
 - iv) Education for staff on use, cleaning and the correct reprocessing of the equipment/device
 - v) Recommendations for auditing the recommended process
- b) Infection prevention and control as well as reprocessing personnel must make a recommendation regarding the suitability of the equipment/device for purchase after reviewing:

- i) Manufacturer's directions
- ii) CSA standards regarding the equipment/device
- iii) Health Canada/PHAC guidelines regarding the equipment/device
- iv) MoH best practices for cleaning, disinfection and sterilization
- c) Biomedical engineering must review the equipment/device.
- d) A valid medical device license issued by the Therapeutic Products Directorate of Health Canada [www.mdall.ca] or provided by the manufacturer must be available for all medical equipment/devices⁸ that are class II and higher. Failure to comply with licensing could result in litigation under the Medical Devices Regulations section of the Food and Drugs Act.⁹
- e) Once the decision to use the equipment/device is made, the following factors must then be addressed:
 - i) Who is accountable to verify that the required protocols are written and in place, staff are adequately trained and certified, and that routine audits will occur to verify that the process is safe?
 - ii) Who will reprocess the equipment/device?
 - iii) Where will the reprocessing be done?
 - iv) What process will be used for reprocessing?
 - v) Are personnel certified to carry out this procedure (this includes training in the procedure, auditing the process, regular re-education and re-certification)?
 - vi) How often will audits be performed?

2.4 Newly purchased non-sterile critical and semicritical medical equipment/devices must first be inspected and reprocessed according to their intended use.

Refer to Table 1, "Spaulding's Classification of Medical Equipment/Devices and Required Level of Reprocessing" for the level of processing that is to be used for medical equipment/devices based on the intended use of the equipment/device.

2.5 The organization shall develop and maintain policies and procedures that apply to the sending, transporting, receiving, handling and processing of loaned, shared and leased medical equipment/devices,⁸ including endoscopes.

- a) In addition to the requirements in Section 2.3, equipment/devices loaned to a health care setting must be disassembled, cleaned and reprocessed by the receiving facility prior to use in the receiving facility.
- b) Ideally, the equipment/device should be received by the facility's reprocessing department at least 24 hours before use. **The facility shall not accept for use any medical equipment/device that does not arrive in sufficient time to allow the receiving health care setting to follow its procedures for inventory, inspection and reprocessing.**
- c) Loaned medical equipment/devices must include written instructions for reprocessing and staff must have received training in reprocessing the equipment/device.
- d) A health care setting that uses loaned, shared and/or leased medical equipment/devices shall have a policy to cover emergencies related to the equipment/devices.
- e) Loaned equipment/devices must be tracked and logged. There must be a tracking mechanism and log book which includes:
 - i) The identification number of the equipment/device must be recorded;
 - ii) The owner of the equipment/device must have a system to track the equipment/device. This information should be given to the user for their records;
 - iii) There must be a record of the client/patient/resident involved with the equipment/device, so that the client/patient/resident may be identified if the equipment/device is recalled;
 - iv) There must be documentation about the reason for using loaned equipment and awareness of the possible consequences.
- f) Borrowed equipment/devices must be cleaned and reprocessed before returning it to the owner.

⁸ Canadian Standards Association. CAN/CSA-Z314.22-04. *Management of Loaned, Shared and Leased Medical Devices*. Toronto, Ont.: Canadian Standards Association; 2004.

⁹ Food and Drugs Act, R.S.C. 1985, c. F-27. Available [online](#); Medical Devices Regulations, SOR/98-282. Available [online](#).

- g) Organizations that transport loaned, shared and leased medical equipment/devices shall have written procedures for the safe handling and transportation of medical equipment/devices, including provision for maintenance of cleanliness/ sterility, separation of clean and dirty items, and safety of those doing the transport:
 - i) Soiled equipment/devices must be transported in compliance with federal [\[laws.justice.gc.ca/en/T-19.01/index.html\]](http://laws.justice.gc.ca/en/T-19.01/index.html) and provincial [\[www.oshforeveryone.org/wsib/external/www.ccohs.ca/legislation/documents/ont/onedgt/onadgte0.htm\]](http://www.oshforeveryone.org/wsib/external/www.ccohs.ca/legislation/documents/ont/onedgt/onadgte0.htm) regulations regarding the transport of dangerous goods.
 - ii) Clean equipment/devices must be transported in a manner that does not compromise the integrity of the clean item.
- h) The use of loaned equipment/devices for neurosurgical procedures is strongly discouraged (see Section 2.6).

2.6 *Because of the risks associated with Creutzfeldt-Jakob disease (CJD), surgical instruments that are used on high risk neurological and eye tissue from patients at high risk for CJD must be subjected to rigorous decontamination processes as detailed in the Health Canada/Public Health Agency of Canada infection control guideline, "Classic Creutzfeldt-Jakob Disease in Canada".¹⁰*

Creutzfeldt-Jakob disease (CJD) is caused by infection with a prion, which is a fragment of protein that is resistant to most of the usual methods of reprocessing and decontamination. Special recommendations have been made by Health Canada/PHAC for the cleaning and decontamination of instruments and surfaces that have been exposed to tissues considered infective for Creutzfeldt-Jakob disease (CJD).¹⁰ These instruments should not be pooled with other instruments.

Health Canada/PHAC defines a high risk patient as a patient diagnosed with CJD or a patient with an unusual, progressive neurological disease consistent with CJD (e.g. dementia with myoclonus and ataxia, etc.). High risk tissue includes brain, spinal cord, dura mater, pituitary and eye (including optic nerve and retina).¹⁰

3. *Education and Training*

3.1 *The policies of the health care setting shall specify the requirements for, and frequency of, education and training as well as competency assessment for all personnel involved in the reprocessing of medical equipment/devices.*

- a) Any individual involved in the cleaning, disinfection and/or sterilization of medical equipment/devices must be properly trained and their practice audited on a regular basis to verify that standards are met.
- b) Training will include information on cleaning, disinfection and sterilization, occupational health and safety issues, and infection prevention and control.
- c) Orientation and continuing education for all personnel involved in reprocessing of medical equipment/devices will be provided and documented.
- d) Feedback should be provided to personnel in a timely manner.

3.2 *All aspects of reprocessing shall be supervised and shall be performed by knowledgeable, trained personnel.*

3.3 *The program director and all supervisors involved in reprocessing must, as a minimum, have completed a recognized qualification/certification course in reprocessing practices. A plan must be in place for each person involved in reprocessing to obtain this qualification within five years.*

Refer to Appendix G for a list of education and training resources.

- a) All staff who are primarily involved in reprocessing must obtain and maintain certification.

¹⁰ Health Canada. Classic Creutzfeldt-Jakob disease in Canada. An infection control guideline. *Can Commun Dis Rep.* 2002; 28 Suppl 5: 1-84.

- b) Any individual involved in any aspect of reprocessing must obtain education and training specific to the medical equipment/device to be reprocessed (e.g. dental hygienists, radiation technologists, nurses in long term care, nurses in physician offices).
- c) There must be a process in place to ensure continued competency, including continuing education.
- d) It is strongly recommended that recertification be obtained every five years.

4. Written Policies and Procedures

4.1 *The health care setting will, as a minimum, have policies and procedures for all aspects of reprocessing that are based on current recognized standards/recommendations and that are reviewed at least annually.*

- a) Policies and procedures must be established to ensure that the disinfection processes follow the principles of infection prevention as set out by Health Canada¹¹, the CSA Standards^{12,13} and these best practices.
- b) Policies and procedures must include the following:
 - i) Responsibilities of management and staff;
 - ii) Qualifications, education and training for staff involved in reprocessing;
 - iii) Infection prevention and control activities;
 - iv) Worker health and safety activities;
 - v) Preventive maintenance requirements with documentation of actions;
 - vi) Written protocols for each component of the cleaning, disinfection and/or sterilization process that are based on the manufacturer's recommendations and established guidelines for the intended use of the product;
 - vii) Annual review with updating as required;
 - viii) Documentation and maintenance of records for each process;
 - ix) Ongoing audits of competency and procedures (who, when, how);
 - x) Management and reporting of incidents where patient safety may have been compromised to administration or appropriate regulatory body.

4.2 *Manufacturer's information for all medical equipment/devices must be received and maintained in a format that allows for easy access by personnel carrying out the reprocessing activities.*

4.3 *All policies and procedures for reprocessing medical equipment/devices require review by an individual with infection prevention and control expertise (e.g. facility's infection prevention and control professionals, Public Health staff with certification in infection prevention and control, regional infection control network).*

4.4 *There must be a procedure established for the recall of improperly reprocessed medical equipment/devices.*

- a) Improper reprocessing includes, but is not limited to, the following situations:
 - i) The load contains a positive biologic monitor;¹¹
 - ii) Incorrect reprocessing method was used on the equipment/device;
 - iii) Print-outs on reprocessing equipment indicate failure to reach correct parameters (e.g. temperature, pressure, exposure time, etc.);
 - iv) Chemical monitoring tape or indicator has not changed colour.
- b) All equipment/devices in each processed load must be recorded to enable tracking in the event of a recall.

¹¹ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep.* 1998; 24 Suppl 8: i-xi, 1-55.

¹² Canadian Standards Association. *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada.* Toronto, Ont.: Canadian Standards Association; 2000 (R2005).

¹³ Canadian Standards Association. *CAN/CSA-Z314.3-00. Effective Sterilization in Hospitals by the Steam Process.* Toronto, Ont.: Canadian Standards Association; 2001.

4.5 The recall procedure should include assessment of patient risk and a procedure for subsequent notification of clients/patients/residents, other facilities and/or regulatory bodies if indicated.

- a) Where a health care setting has a risk manager, that individual must be involved in any recall procedure.

5. Selection of Product/Process for Reprocessing

5.1 Products used for any/all stages in reprocessing (i.e. cleaning, disinfection, sterilization) must be approved by the committee responsible for product selection, by an individual with reprocessing expertise and by an individual with infection prevention and control expertise (e.g. facility's infection prevention and control professionals, Public Health staff with certification in infection prevention and control, regional infection control network).

5.2 The reprocessing method and products required for medical equipment/devices will depend on the intended use of the equipment/device and the potential risk of infection involved in the use of the equipment/device.

The classification system developed by Spaulding¹⁴ divides medical equipment/devices into three categories based on the potential risk of infection involved in their use:

TABLE 1: Spaulding's Classification of Medical Equipment/Devices and Required Level of Processing/Reprocessing

Classification	Definition	Level of Processing/Reprocessing
Critical Equipment/device	Equipment/device that enters sterile tissues, including the vascular system.	Cleaning followed by Sterilization
Semicritical Equipment/device	Equipment/device that comes in contact with nonintact skin or mucous membranes but do not penetrate them.	Cleaning followed by High Level Disinfection (as a minimum). Sterilization is preferred.
Noncritical 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)

5.3 Products used for decontamination must be appropriate to the level of reprocessing that is required for the use of the medical equipment/device.

Refer to Appendix A and Appendix F for guidance in choosing reprocessing products and processes.

5.4 The process and products used for cleaning, disinfection and/or sterilization of medical equipment/devices must be compatible with the equipment/devices.

- a) Compatibility of the equipment/device to be reprocessed to detergents, cleaning agents and disinfection/sterilization processes is determined by the manufacturer of the equipment/device.
- b) The manufacturer must provide written information regarding the safe and appropriate reprocessing of the medical equipment/device.

¹⁴ Spaulding EH. The Role of chemical disinfection in the prevention of nosocomial infections. In: PS Brachman and TC Eickof (ed). *Proceedings of International Conference on Nosocomial Infections*, 1970. Chicago, IL: American Hospital Association: 1971: 254-274.

- 5.5** *All medical equipment/devices that will be purchased and will be reprocessed must have written device-specific manufacturer's cleaning, decontamination, disinfection, wrapping and sterilization instruction. If disassembly or reassembly is required, detailed instructions with pictures must be included. Staff training must be provided on these processes before the medical equipment/device is placed into circulation.*

6. Environmental Issues

- 6.1** *There must be a centralized area for reprocessing medical equipment/devices. Reprocessing performed outside the centralized area must be kept to a minimum and must be approved by the reprocessing committee or those accountable for safe reprocessing practices and must conform to the requirements for reprocessing space.*

Refer to [Appendix B](#) for details regarding recommendations for processing space. The environment where cleaning is performed must:

- a) Have adequate space for the cleaning process and storage of necessary equipment and supplies;
- b) Be distinctly separate from areas where clean/disinfected/sterile equipment/devices are handled or stored;
- c) Have easy access to hand hygiene facilities;
- d) Have surfaces that can be easily cleaned;
- e) Have restricted access from other areas in the setting and ensure one-way movement by staff;
- f) Have air changes, temperature and humidity appropriate to the process/product being used (see manufacturer's recommendations and CSA Standards). Refer to [Appendix B](#);
- g) In health care settings where there are dedicated central reprocessing areas, negative pressure airflow must be used in soiled areas, and positive pressure airflow must be used in clean areas;¹⁵
- h) The health care setting should be aware of the quality of its water supply and develop policies to address known problems (refer to [Appendix B](#));
- i) The health care setting should have written reprocessing contingency plans in place that address loss of potable water, boil water advisories and other situations where the water supply becomes compromised.

- 6.2** *Wherever chemical disinfection/sterilization is performed, air quality must be monitored when using products that produce toxic vapours.*

Many products (e.g. glutaraldehyde) have a maximum ceiling exposure value (CEV) as documented in the Worker's Compensation Act and Occupational Health and Safety Regulation. If reprocessing is not carried out in an appropriately vented space, air sampling may be required to ensure that the CEV has not been exceeded for the chemical being used.

7. Occupational Health and Safety Issues

Occupational Health and Safety for the health care setting will review all protocols for reprocessing medical equipment/devices to verify that worker safety measures are followed and in compliance with the Workers Compensation Act RSBC 1996, c.492 and the associated Occupational Health and Safety Regulation 296/97.

- 7.1** *The following aspects of the reprocessing procedure must be reviewed by a representative from the facility's Occupational Health and Safety Department:*
- a) Sharps are handled appropriately;
 - b) Air handling systems adequately protect the worker from toxic vapours;¹⁶

¹⁵ Canadian Standards Association. Physical requirements for decontamination facilities. In: CAN/CSA Z314.8-00. *Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000 (R2005), Appendix C.

- c) Chemicals are stored and handled appropriately, and MSDS documentation is available as required by the *Workplace Hazardous Materials Information System (WHMIS)*, R.R.O. 1990, Reg. 860 *Amended to O. Reg. 36/93* [information on WHMIS is available online from Health Canada website at: www.hc-sc.gc.ca/ewh-semt/occup-travail/whmis-simduit/index_e.html].
- 7.2** *There is a policy that prohibits eating/drinking, storage of food, smoking, application of cosmetics and handling contact lenses in the reprocessing area.*
- 7.3** *Appropriate PPE must be worn for all reprocessing activities.*
- a) Personnel involved in reprocessing will be trained in Routine Practices¹⁷, the correct use and requirement to wear PPE¹⁸, and hand hygiene.¹⁹
 - b) Personnel must not wear hand and arm jewellery or nail enhancements.
 - c) PPE for cleaning and handling contaminated equipment/devices includes gloves, face protection (e.g. mask, protective eyewear and/or face shield) and impermeable gown or waterproof apron.
 - d) When choosing gloves, the following points need to be considered:
 - i) Gloves must be long enough to cover wrists and forearms;
 - ii) Gloves must be of sufficient weight to be highly tear-resistant;
 - iii) Gloves must allow adequate dexterity of the fingers;
 - iv) Disposable gloves are recommended. If reusable gloves are used, they must be decontaminated daily, inspected for tears and holes and be staff-specific.
 - e) Personnel must be trained in management of a blood or body fluid spill.
- 7.4** *All personnel working in reprocessing must be immune to Hepatitis B or receive Hepatitis B immunization.*^{20,21}
- 7.5** *Procedures shall be written to prevent and manage injuries from sharp objects. In addition, procedures shall be in place for immediate response to worker exposure to blood and body fluids.*²¹

8. Factors Affecting the Efficacy of the Reprocessing Procedure

- 8.1** *Procedures for Disinfection and Sterilization must include statements and information regarding the type, concentration and testing of chemical products; duration and temperature of exposure; and physical and chemical properties that might have an impact on the efficacy of the process. These procedures must be readily accessible to staff performing the function.*

Many factors²² affect the efficacy of reprocessing, particularly when chemical reprocessing is used. These factors include:

¹⁶ Canadian Standards Association. Physical requirements for decontamination facilities. In: *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000 (R2005), Appendix C.

¹⁷ Health Canada. Routine practices and additional precautions for preventing the transmission of infection in health care. *Can Commun Dis Rep*. 1999; 25 Suppl 4: 1-149.

¹⁸ Canadian Standards Association. Personal protective equipment. In: *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000 (R2005), Appendix A.

¹⁹ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep*. 1998; 24 Suppl 8: i-xi, 1-55.

²⁰ *Occupational Health and Safety Act*, R.S.O. 1990, c.O.1; *Control of Exposure to Biological or Chemical Agents*, R.R.O. 1990, Regulation 833 *Amended to O. Reg. 607/05*. [Part 5: Ceiling Exposure Values (CEV) for Biological and Chemical Agents]

²¹ Ontario Hospital Association, the Ontario Medical Association Joint Communicable Diseases Surveillance Protocols Committee. *Blood-borne Diseases Surveillance Protocol for Ontario Hospitals: Publication #206*. (Rev.ed). Toronto, Ont.: Ontario Hospital Association; 2004. Available [online](#).

- a) **Cleanliness of the surface of the equipment/device**
 - i) Many chemical disinfectants/sterilants are inactivated by organic material. Cleaning must always precede decontamination.
 - ii) The greater the bioburden, the more difficult it is to disinfect or sterilize the equipment/device.
- b) **Type and concentration of the product**
 - i) Products used for disinfection and/or sterilization must be mixed according to the manufacturer's recommendations in order to achieve the correct dilution. If the concentration of the disinfectant is too low, the efficacy will be decreased. If the concentration is too high, the risk of damage to the instrument or toxic effects on the user increases.
 - ii) Dry equipment/devices after cleaning, before immersing in disinfectant to prevent dilution of the disinfectant.
 - iii) Discard solutions on or before expiry date. Diluted products are inherently unstable once mixed and the manufacturer's directions as to duration of use must be followed.
 - iv) Use chemical test strips for all high level liquid disinfectants to assess their efficacy. During reuse, the concentration of active ingredients may drop as dilution of the product occurs and organic impurities accumulate (see Section 11.7).
 - v) Use the right disinfectant for the job. Infection prevention and control must approve the product and application.
 - vi) Some microorganisms are more resistant to germicidal chemicals, and this must be taken into consideration when choosing the product/process.
- c) **Duration and temperature of exposure to the product**
 - i) Use Health Canada recommendations for the level of disinfection/sterilization required for the intended use of the equipment/device and minimum exposure time to disinfectants/sterilants to achieve this level (refer to Appendix F).
 - ii) Use manufacturer's recommendations for temperature and for exposure time required to achieve the desired level of disinfection/sterilization. Do not exceed the manufacturer's maximum exposure time as some chemicals may cause damage to the medical equipment/device if used for extended periods of time.
 - iii) Where the manufacturer's recommendations for minimum exposure time conflict with those of Health Canada, an infection prevention and control specialist must be consulted for advice.
 - iv) All surfaces of the article must be in direct contact with the disinfectant/sterilant.
 - v) Contact may be compromised by the complexity of the article and the ability of the disinfectant to penetrate lumens etc.
- d) **Physical and chemical properties of the equipment/device being reprocessed or the surrounding environment**
 - i) Water hardness can affect some disinfectants (refer to Appendix B).
 - ii) Excessive humidity may compromise sterile wrappings (refer to Appendix B, section 7: "Temperature and Humidity").
 - iii) The pH of the solution may be important as extremes of acidity or alkalinity can limit growth of microorganisms or alter the activity of disinfectants and sterilants.
 - iv) Materials such as rubber and plastic may require special treatment.
 - v) Hinges, cracks, crevices on the equipment/device may impede successful disinfection/sterilization.

9. **Transportation and Handling of Contaminated Medical Equipment/Devices**

9.1 **Disposable sharps such as needles and blades shall be removed and disposed of in an appropriate puncture-resistant sharps container at point of use, prior to transportation.**

²² Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep.* 1998; 24 Suppl 8: i-xi, 1-55

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

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

9.3 *Soiled medical 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.*

- a) Closed carts or covered containers with easily cleanable surfaces should be used for handling and transporting soiled medical equipment/devices.
- b) Soiled equipment/devices should be transported by direct routes to areas where cleaning will be done.
- c) Containers or carts used to transport soiled medical equipment/devices should be cleaned after each use.

9.4 *A process should be in place that will ensure that medical equipment/devices which have been reprocessed can be differentiated from equipment/devices which have not been reprocessed (e.g. colour coding).*

10. Disassembling and Cleaning Reusable Medical Equipment/Devices

“Cleaning is always essential prior to disinfection or sterilization. An item that has not been cleaned cannot be assuredly disinfected or sterilized.”²³

The process of cleaning is to physically remove contaminants from the equipment/device, rather than to kill or damage microorganisms. If an item is not cleaned, soil (e.g. blood, body fluids, dirt) can protect the microorganisms from the action of the disinfection or sterilization process making it ineffective, as well as inactivating the disinfectant or sterilant so that it does not work. Disinfectants that become overloaded with soil can become contaminated and may themselves become a source for transmission of microorganisms.

10.1 *Reusable medical equipment/devices must be thoroughly cleaned before disinfection or sterilization.*²³

10.2 *Factors that affect the ability to effectively clean medical equipment/devices must be considered prior to cleaning.*

See Section 8.1 for a list of factors that must be considered prior to cleaning medical equipment/devices.

10.3 *The process for cleaning should include written protocols for disassembly, sorting and soaking, physical removal of organic material, rinsing, drying, physical inspection and wrapping.*

Full PPE must be worn for handling and cleaning contaminated equipment/devices (see Section 7.3). The process used for cleaning should include the following steps:

- a) **Disassembly**
 - i) Unless otherwise recommended by the manufacturer, equipment/devices must be disassembled prior to cleaning.
 - ii) The manufacturer's recommendations shall be followed when disassembling medical equipment/devices prior to washing.
- b) **Sorting and soaking**

²³ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep.* 1998; 24 Suppl 8: i-xi, 1-55.

- i) Sort equipment/devices into groups of like products requiring the same processes.
- ii) Segregate sharps and/or delicate equipment/devices to prevent injury to personnel and damage to the equipment/device.
- iii) Soak equipment/device in a hospital approved instrument soaking solution to prevent drying of soil, making cleaning easier.
- iv) Saline should not be used as a soaking solution as it damages some medical equipment/devices.
- v) Detergent-based products, including those containing enzymes, may be used as part of the soaking process.
- vi) Ensure that detergents (including enzymatic detergents) are appropriate to the equipment/device being cleaned.
- c) **Physical removal of organic material**
 - i) Completely submerge immersible items during the cleaning process to minimize aerosolization of microorganisms and assist in cleaning.
 - ii) Remove gross soil using tools such as brushes and cloths.
 - iii) Employ manual or mechanical cleaning, such as a washer-disinfector or ultrasonic cleaning, after gross soil has been removed.
 - iv) **Washer-disinfectors** are strongly recommended for medical equipment/devices that can withstand mechanical cleaning, to achieve the required exposure for cleaning and to reduce potential risk to personnel. Washer-disinfectors must meet the requirements of the CSA.²⁴ Manufacturer's instructions must be followed for the use and regular maintenance, cleaning and calibration of the washer-disinfector. Washer-disinfectors may be used for low level disinfection. **Washer-disinfectors are not to be used for high level disinfection.**²⁵
 - v) **Ultrasonic washers** are strongly recommended for any semi-critical or critical medical equipment/device that has joints, crevices, lumens or other areas that are difficult to clean. Manufacturer's instructions must be followed for use of the ultrasonic cleaner. The ultrasonic washing solution should be changed at least daily or more frequently if it becomes visibly soiled.
 - vi) If manual cleaning is performed, physical removal of soil must occur under the water level to minimize splashing.
 - vii) Tools used to assist in cleaning, such as brushes, must be cleaned and disinfected after use.
- d) **Rinsing**
Rinsing following cleaning is necessary as residual detergent may neutralize the disinfectant.
 - i) Rinse all equipment/devices thoroughly after cleaning with water to remove residues which might react with the disinfectant/sterilant.
 - ii) Perform the final rinse for equipment/devices containing lumens with commercially prepared sterile water (note: distilled water is not necessarily sterile).
- e) **Drying**
Drying is an important step that prevents dilution of chemical disinfectants which may render them ineffective and prevents microbial growth.
 - i) Follow the manufacturer's instructions for drying of the equipment/device.
 - ii) Equipment/devices may be air-dried or dried by hand with a clean, lint-free towel.
 - iii) Dry stainless steel equipment/devices immediately after rinsing to prevent spotting.
- f) **Inspection**
 - i) Visually inspect all equipment/devices once the cleaning process has been completed and prior to terminal disinfection/sterilization to ensure cleanliness and integrity of the equipment/device (e.g. cracks, defects, adhesive failures).
 - ii) Repeat the cleaning on any item that is not clean.
 - iii) Follow the manufacturer's guidelines for lubrication.
 - iv) Do not reassemble equipment/device prior to disinfection/sterilization.

²⁴ Canadian Standards Association. CAN/CSA Z314.8-00. *Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000 (R2005).

²⁵ Canadian Standards Association. Mechanical washers. In: CAN/CSA Z314.8-00. *Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000 (R2005), Appendix E.

- g) **Wrapping**
 - i) Equipment/devices that are to be sterilized require wrapping prior to sterilization (except for flash sterilization: see Section 13.8).
 - ii) Materials used for wrapping shall be prepared in a manner that will allow adequate air removal, steam penetration and evacuation.²⁶
- h) **Practice audits**
 - i) Cleaning processes must be audited on a regular basis.
 - ii) A quality improvement process must be in place to deal with any irregularities/concerns resulting from the audit.

11. Disinfection of Reusable Medical Equipment/Devices

“Failure to use disinfection products or processes appropriately has repeatedly been associated with the transmission of healthcare associated infections.”²⁷

Disinfection is the inactivation of disease-producing microorganisms. Disinfection does not destroy bacterial spores or prions. Disinfection of medical equipment/devices falls into two major categories – low level disinfection and high level disinfection.

Methods of Disinfection

There are two major methods of disinfection used in health care settings – liquid chemicals and pasteurization.

Liquid Chemical Disinfection

Low Level Disinfection (LLD)

Low level disinfection eliminates vegetative (“live”) bacteria, some fungi and enveloped viruses. LLD is used for noncritical medical equipment/devices and some environmental surfaces. Low level disinfectants include 3% hydrogen peroxide, 0.5% accelerated hydrogen peroxide, some quaternary ammonium compounds (QUATS), phenolics and diluted sodium hypochlorite (e.g. bleach) solutions. LLD is performed after the equipment/device is thoroughly cleaned and rinsed. The container used for disinfection must be washed, rinsed and dried when the solution is changed. Refer to Appendix A for chemical products that may be used to achieve low level disinfection.

High Level Disinfection (HLD)

High level disinfection eliminates vegetative bacteria, enveloped viruses, fungi, mycobacteria (e.g. Tuberculosis) and non-enveloped viruses. HLD is used for semicritical medical equipment/devices. High level disinfectants include 2% glutaraldehyde, 6% hydrogen peroxide, 0.2% peracetic acid, 7% accelerated hydrogen peroxide and 0.55% ortho-phthalaldehyde (OPA). Pasteurization also achieves high level disinfection. HLD is performed after the equipment/device is thoroughly cleaned and rinsed. Refer to Appendix A and Appendix F for chemical products that may be used to achieve high level disinfection.

- 11.1 Noncritical medical equipment/devices are to be decontaminated using a Low Level Disinfectant.**
- 11.2 Semicritical medical equipment/devices must be decontaminated using, at a minimum, High Level Disinfection. Sterilization is the preferred method of decontamination.**
- 11.3 Noncritical and semicritical medical equipment/devices that are owned by the client and reused by a single client in their home do not require disinfection between uses provided that they are adequately cleaned prior to reuse.**

²⁶ Canadian Standards Association. CAN/CSA Z314.3-01. *Effective Sterilization in Health Care Facilities by the Steam Process*. Toronto, Ont.: Canadian Standards Association; 2001.

²⁷ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep*. 1998; 24 Suppl 8: i-xi, 1-55.

See Section 10, "Disassembling and Cleaning Reusable Medical Equipment/Devices" for cleaning requirements.

11.4 All disinfectants must have a Drug Identification Number (DIN) from Health Canada.²⁸

11.5 The chemical disinfectant used for disinfecting medical equipment/devices must be compatible with both the equipment/device manufacturer's instructions for disinfection and the cleaning products involved in the reprocessing of the equipment/device.

The following items should be considered when selecting a disinfectant for use in the health care setting:

- a) Compatibility with equipment/device and surfaces to be disinfected;
- b) Compatibility with detergents, cleaning agents, and disinfection and/or sterilization processes;
- c) The intended end use of the equipment/devices to be disinfected;
- d) Personal and environmental safety.

11.6 Disinfectant manufacturers must supply recommended usage for the disinfectant to ensure that it is compatible with the medical equipment/devices on which it will be used.

- a) Manufacturer's recommendations for chemical disinfectants must be followed pertaining to:
 - i) Use
 - ii) Contact time (NOTE: Where the manufacturer recommends a shorter contact time with a particular product than is required to achieve the desired level of disinfection/sterilization, an infection prevention and control specialist must be consulted for advice)
 - iii) Shelf life
 - iv) Storage
 - v) Appropriate dilution
 - vi) Required PPE
- b) If a disinfectant manufacturer is unable to provide compatibility information specific to a piece of medical equipment/device, information may be obtained from Health Canada's drug information website:
[\[www.hc-sc.gc.ca/dhp-mps/prodpharma/databasdon/dpd_index_e.html\]](http://www.hc-sc.gc.ca/dhp-mps/prodpharma/databasdon/dpd_index_e.html).

11.7 The process of high level disinfection requires monitoring and auditing. If a chemical product is used, the concentration of the active ingredient(s) must be verified and a logbook of daily concentration test results is to be maintained.

- a) Chemical test strips should be used to determine whether an effective concentration of active ingredients is present despite repeated use and dilution.
- b) The frequency of testing should be based on how frequently the solutions are used (i.e. test daily if used daily).
- c) Chemical test strips must be checked each time a new package/bottle is opened to verify they are accurate, using positive (e.g. full strength disinfectant solution) and negative (e.g. tap water) controls. See manufacturer's recommendations for appropriate controls.
- d) Test strips must not be considered a way of extending the use of a disinfectant solution beyond the expiration date.
- e) A permanent record of processing shall be completed and retained according to the policy of the facility.²⁹ This record shall include, but not be limited to, the identification of the equipment/device to be disinfected; date and time of the clinical procedure; concentration and contact time of the disinfectant used in each process; results of each inspection (and, for endoscopes, each leak test); result of each testing of the disinfectant; and the name of the person completing the reprocessing.
- f) Disinfection practices shall be audited on a regular basis and a quality improvement process must be in place to deal with any irregularities/concerns resulting from the audit.

²⁸ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep.* 1998; 24 Suppl 8: i-xi, 1-55

²⁹ Canadian Standards Association. *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada.* Toronto, Ont.: Canadian Standards Association; 2000. (R2005).

- g) If manual disinfection is performed, the container used for disinfection must be kept covered during use, and washed, rinsed and dried when the solution is changed.
- h) Rinsing of medical equipment/devices following chemical disinfection requires three separate rinses, using sterile water, and the rinse solutions must be changed after each process.

Pasteurization

Pasteurization is a process of hot water disinfection (75°C for 30 minutes) which is accomplished through the use of automated pasteurizers or washer disinfectors. Semicritical medical equipment/devices suitable for pasteurization include equipment for respiratory therapy and anaesthesia. Equipment/devices require thorough cleaning and rinsing prior to pasteurization.

Advantages of pasteurization include:

- No toxicity
- Rapid disinfection cycle
- Moderate cost of machinery and upkeep

Disadvantages of pasteurization include:

- It may cause splash burns
- There is difficulty validating the effectiveness of the process
- Pasteurizers and related equipment can become contaminated without a good preventive maintenance program and careful monitoring of processes

11.8 Manufacturer's instructions for installation, operation and ongoing maintenance of pasteurizing equipment must be followed to ensure that the machine does not become contaminated.

The process must be monitored with mechanical temperature gauges and timing mechanisms for each load, with a paper printout record. Pasteurizing equipment must have, or be retrofitted for, mechanical paper printout. In addition:

- a) Water temperature within the pasteurizer should be verified weekly by manually measuring the cycle water temperature;
- b) Cycle time should be verified manually and recorded daily;
- c) Calibration of pasteurization equipment will be performed according to the manufacturer's recommendations;
- d) Daily cleaning of pasteurizing equipment is required following the manufacturer's recommendations;
- e) Following pasteurization, medical equipment/devices should be inspected for wear, cracks or soil. Damaged equipment/devices should be handled according to facility procedures. Soiled equipment/devices should be reprocessed;
- f) Following pasteurization, medical equipment/devices shall be handled so as to prevent contamination. Equipment/devices shall be transported directly from the pasteurizer to a clean area for drying, assembly and packaging.

11.9 A preventive maintenance program for pasteurizing equipment must be implemented and documented.

11.10 Following the pasteurizing cycle, medical equipment/devices shall be thoroughly dried in a drying cabinet that is equipped with a HEPA filter and that is used exclusively for the drying of pasteurized equipment/devices.³⁰

A preventive maintenance program for drying cabinets must be implemented and documented.

11.11 A logbook of contents, temperature and time is to be maintained for pasteurizing equipment.

³⁰ Canadian Standards Association. CAN/CSA Z314.8-00. *Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000. (R2005).

If the pasteurizer produces printed records of the parameters of each cycle, these records shall be retained in accordance with the facility's requirements.

12. Reprocessing Endoscopy Equipment/Devices

For the purposes of this document, endoscopes will be considered to be of two types:

Critical Endoscope: Endoscopes used in the examination of critical spaces, such as joints and sterile cavities. Many of these endoscopes are rigid with no lumen. Examples of critical endoscopes are arthroscopes, laparoscopes and cystoscopes.

Semicritical Endoscope: Fiberoptic or video endoscopes used in the examination of the hollow viscera. These endoscopes generally invade only semicritical spaces, although some of their components might enter tissues or other critical spaces. Examples of semicritical endoscopes are laryngoscopes, nasopharyngeal endoscopes, transesophageal probes, colonoscopes, gastroscopes, duodenoscopes, sigmoidoscopes and enteroscopes. Opinions differ regarding the reprocessing requirements for bronchoscopes; a minimum of high level disinfection is required.

Due to the complexity of their design, flexible fibreoptic and video endoscopes ("semicritical endoscopes") require special cleaning and handling.^{30,31}

12.1 *Individuals responsible for reprocessing endoscopes shall be specially trained and shall meet the facility's written endoscope processing competency requirements, including ongoing education and training.*³⁰

- a) Staff assigned to reprocess endoscopes must receive device-specific reprocessing instructions to ensure proper cleaning and high-level disinfection or sterilization.
- b) Competency testing of personnel reprocessing endoscopes must be performed on a regular basis.³¹
- c) Temporary personnel must not be allowed to reprocess endoscopes until competency has been established.³¹

12.2 *Each health care setting in which endoscopic procedures are performed shall have written detailed procedures for the cleaning and handling of endoscopes.*³⁰

12.3 *Ventilation shall be such as to remove toxic vapours³⁰ generated by, or emitted from, cleaning or disinfecting agents.*

- a) The vapour concentration of the chemical disinfectant used shall not exceed allowable limits³¹ (e.g. 0.05 ppm for glutaraldehyde).
- b) Air-exchange equipment (e.g. ventilation system, exhaust hoods) should be used to minimize the exposure of all persons to potentially toxic vapours.³¹
- c) In-use disinfectant solutions must be maintained in closed, covered, labeled containers at all times.
- d) Air quality should be monitored on a scheduled basis to ensure control of vapours.

12.4 *Endoscopic cleaning shall commence immediately following completion of the clinical procedure.*³²

Soil residue in endoscope lumens dries rapidly, becoming very difficult to remove. Initial cleaning includes:

- a) The manufacturer's recommendations for cleaning and cleaning products shall be followed;

³¹ American Society for Gastrointestinal Endoscopy. Multi-society guideline for reprocessing flexible gastrointestinal endoscopes. *Gastrointest Endosc.* 2003;58: 1-8.

³² Canadian Standards Association. CAN/CSA Z314.8-00. *Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000. (R2005).

- b) Soaking and manual cleaning of all immersible endoscope components with water and a recommended cleaning agent shall precede automated or further manual disinfection or sterilization;
 - c) Endoscope components (e.g. air/water and suction valves) must be disconnected and disassembled as far as possible and the endoscope and components must be completely immersed in enzymatic detergent;³³
 - d) All channels and lumens of the endoscope shall be flushed and brushed while submerged to remove debris while minimizing aerosols;
 - e) Brushes used for cleaning lumens shall be of an appropriate size, inspected before and after use, and discarded or cleaned, high-level disinfected and dried following use;
 - f) Irrigation adaptors or manifolds shall be utilized to facilitate cleaning;
 - g) Damaged endoscopes shall be identified and immediately removed from service.
 - h) Enzymatic detergent shall be discarded after each use;
 - i) Cleaning items shall be disposable or thoroughly cleaned and disinfected/sterilized between uses.³²
- 12.5 Patency and integrity of the endoscope sheath should be verified through leak testing, performed after each use.**^{32,33}
- a) The leak test is performed prior to, and during, immersion of the endoscope.
 - b) An endoscope that fails the dry leak test should not undergo the immersion leak test.
- 12.6 Endoscopic equipment/devices shall be rinsed and dried prior to disinfection or sterilization.**³²
- a) Sterile water is recommended for rinsing and flushing.
- 12.7 Semicritical endoscopes and accessories (excluding biopsy forceps and brushes) must receive at least high-level disinfection after each use.**³³
- a) Choose a disinfectant that is compatible with the endoscope.³³
 - b) Completely immerse the endoscope and endoscope components in the high-level disinfectant/sterilant and ensure all channels are perfused.³³
 - c) Maintain a written log of monitoring test results.
 - d) Monitoring of the disinfectant must be carried out before each use with test strips available from the product manufacturer.
 - e) Disinfectants must not be used past the expiry date.
 - f) Manufacturer's directions must be carefully followed regarding the ambient temperature and duration of contact for disinfectant (e.g. 2% glutaraldehyde = 20 minutes at 20°C).
 - g) Following disinfection, rinse the endoscope and flush the channels with water (preferably sterile water).
- 12.8 Endoscopic accessories (e.g. biopsy forceps and brushes) that break the mucosal barrier must be sterilized after each use.**³³
- a) Because of the difficulty cleaning biopsy forceps/brushes, **it is strongly recommended that disposable items be used.**
 - b) If biopsy forceps/brushes are not disposable, they must be meticulously cleaned prior to sterilization using ultrasonic cleaning.
- 12.9 If an automated endoscope reprocessor (AER) is used, ensure that the endoscope and endoscope components are compatible with the AER.**³⁴
- a) Follow the manufacturer's instructions for use of the AER.
 - b) Ensure that the endoscope to be reprocessed is compatible with the AER used.
 - c) Ensure that channel connectors and caps for both the AER and the endoscope are compatible.

³³ American Society for Gastrointestinal Endoscopy. Multi-society guideline for reprocessing flexible gastrointestinal endoscopes. *Gastrointest Endosc.* 2003;58: 1-8.

³⁴ American Society for Gastrointestinal Endoscopy. Multi-society guideline for reprocessing flexible gastrointestinal endoscopes. *Gastrointest Endosc.* 2003;58: 1-8.

- d) If an AER cycle is interrupted, high level disinfection cannot be assured.
 - e) Brushes and instruments used to clean the equipment/device may be placed in the AER for disinfection.
 - f) Infection prevention and control and reprocessing staff should routinely review Health Canada/OHA alerts and advisories and the scientific literature for reports of AER deficiencies that may lead to infection.³⁴
- 12.10 Final drying of semicritical endoscopes shall be facilitated by flushing all channels with 70% isopropyl alcohol, followed by forced air purging of the channels.**^{34,35}
- 12.11 Semicritical endoscopes shall be stored hanging vertically in a well-ventilated area in a manner that minimizes contamination or damage. Endoscopes shall not be coiled, allowed to touch the floor or bottom of the cabinet while hanging, or stored in their cases.**³⁵
- a) Caps, valves and other detachable components should be removed during storage and reassembled before use.³⁴
 - b) Endoscopic storage cabinets shall be cleaned and disinfected at least weekly³⁵ and should be made of non-porous material that can be cleaned.
 - c) Colonoscopes have a maximum shelf life of 7 days, if stored dry.³⁶ There are no recommendations regarding shelf life of other types of endoscopes.
- 12.12 The water bottle and its connecting tube, used for cleaning the endoscope lens and irrigation during the procedure, should receive high level disinfection or sterilization at least daily.**³⁴
- a) Sterile water should be used to fill the water bottle.
- 12.13 A preventive maintenance program for automated endoscope reprocessor (AER) must be implemented and documented.**
- 12.14 Healthcare settings shall have policies in place providing a permanent record of endoscope use and reprocessing, as well as a system to track endoscopes and patients that includes recording the endoscope number in the patient record.**^{34,35}
- a) For each procedure, document the client/patient/resident's name and record number, the date and time of the procedure, the type of procedure, the endoscopist, and the serial number or other identifier of both the endoscope and the AER (if used) to assist in outbreak investigation.^{34,35}
 - b) Retain records according to the policy of the facility.³⁵

13. Sterilization of Reusable Medical Equipment/Devices

Sterilization is the elimination of all disease-producing microorganisms, including spores (e.g. *Clostridium* and *Bacillus* species). Prions are not susceptible to routine sterilization. Sterilization is used on critical medical equipment/devices and, whenever possible, semicritical medical equipment/devices. **The preferred method for heat-resistant equipment/devices is steam sterilization (pre-vacuum sterilizers are preferred).** For equipment/devices that cannot withstand heat sterilization, some examples of sterilants include 6% hydrogen peroxide, 2% glutaraldehyde (> 10 hours), hydrogen peroxide gas plasma, 0.2% peracetic acid, 7% accelerated hydrogen peroxide, 100% ethylene oxide and ozone. Refer to Appendix A and Appendix F for chemical products that may be used to achieve sterilization.

13.1 Critical medical equipment/devices must be sterilized.³⁷

³⁵ Canadian Standards Association. *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000, (R2005).

³⁶ Riley R, Beanland C, Bos H. Establishing the shelf life of flexible colonoscopes. *Gastroenterol Nurs*. 2002; 25:114-9.

³⁷ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep*. 1998; 24 Suppl 8: i-xi, 1-55.

13.2 Whenever possible, semicritical medical equipment/devices should be sterilized.**13.3 All sterilization processes must ensure that they follow the manufacturer's instructions for installation, operation and preventive maintenance of the equipment.**

- a) Manufacturers of sterilizers must be contacted for specific instructions on installation and use of their equipment.
- b) Storage and transportation practices must maintain sterility to the point of use.
- c) Manufacturers of sterilizers must be specific as to which medical equipment/devices can be sterilized in their machines and manufacturers of medical equipment/devices must be specific as to the recommended sterilization methods.

13.4 The sterilization process must be validated and documented with written policies and procedures.

- a) Policies and procedures must be established to ensure that the sterilization processes follow the principles of infection prevention and control as set out in Health Canada guidelines³⁷, CSA standards^{38,39} and these best practices.
- b) All sterilization processes must be thoroughly evaluated before being put into service, and at regular intervals thereafter.

13.5 The sterilization process requires testing, monitoring and auditing.**For all sterilizers:**

- a) All three of the following parameters must be completed to ensure that effective sterilization has been achieved:
 - i) **Mechanical monitoring** (e.g. time, temperature, pressure graphs);
 - ii) **Chemical monitoring** – each pack must have external chemical indicators. In addition, it is recommended that both internal and external visible chemical indicators be used to detect penetration into the pack. The CSA recommends that “an internal chemical indicator shall be placed inside all packages. This indicator shall be placed in the area of the package least accessible to steam”³⁹ or to the sterilizing agent,⁴⁰ in order to verify that the sterilant has penetrated the package;
 - iii) **Biologic monitoring** (e.g. spore-laden strips or vials) – include a biologic monitor each day a sterilizer is used. A biologic monitor must be used with each load if implantable equipment/devices are being sterilized.³⁷ Refer to Appendix F for sterilizer-specific criteria. The recommended test microorganisms are:
 - *Geobacillus stearothermophilus* (formerly *Bacillus stearothermophilus*) spores for sterilizers that use steam, hydrogen peroxide gas plasma or peracetic acid, as well as flash sterilizers;
 - *Bacillus atrophaeus* (formerly *Bacillus subtilis*) spores for sterilizers that use dry heat or ethylene oxide;
- b) Staff performing the process must document the daily operation of the sterilizer. This documentation should be reviewed for each operation, and any malfunction should be noted and appropriate action taken to ensure that the product either has been properly treated or is returned for reprocessing.

Additional sterilizer-specific criteria:

- c) Autoclaves must be installed according to the manufacturer's instructions. Tabletop steam sterilizers are recommended for office settings.⁴¹
- d) Filter systems should be tested for leakage.
- e) Gas sterilization units should be appropriately validated for such factors as gas concentration, temperature, and relative humidity.

³⁸ Canadian Standards Association. *CAN/CSA Z314.8-00. Decontamination of Reusable Medical Devices: A National Standard of Canada*. Toronto, Ont.: Canadian Standards Association; 2000, (R2005).

³⁹ Canadian Standards Association. *CAN/CSA-Z314.3-01. Effective Sterilization in Hospitals by the Steam Process*. Toronto, Ont.: Canadian Standards Association; 2001.

⁴⁰ Canadian Standards Association. *CAN/CSA Z15882-04. Sterilization of Health Care Products – Chemical Indicators – Guidance for Selection, Use and Interpretation of Results*. Toronto, Ont.: Canadian Standards Association; 2004.

⁴¹ The College of Physicians and Surgeons of Ontario. *Infection Control in the Physician's Office*, 2004 ed. Toronto, Ont.: CPSO; 2004.

- f) For sterilizers of the dynamic air removal type, three consecutive tests shall also be conducted with the air detection test pack (Bowie-Dick) yielding uniform colour change.
- g) Ethylene oxide is a designated substance under the *Workers Compensation Act RSBC 1996, c.492* and the associated *Occupational Health and Safety Regulation 296/97*.
 - i) Facilities that use 10 kg. or more per year of ethylene oxide for sterilization must comply with guidelines from Environment Canada⁴², specifically:
 - Emissions of ethylene oxide must be reduced by 99% during the sterilization cycle by installing an emission control system;
 - Emissions of ethylene oxide must be reduced by 95% during aeration;
 - Eliminate liquid discharge to avoid releases of ethylene oxide to the local sewer system;
 - Test emissions of ethylene oxide annually;
 - Report annually to Environment Canada.
 - ii) At the conclusion of a sterilization cycle and before the load is removed, the operator shall check the recording chart printout to ensure that required parameters have been met. If the chart or printout indicates a failure of any parameter, the operator shall follow the health care setting's applicable policies and procedures.⁴³
 - iii) Medical equipment/devices sterilized with ethylene oxide shall be thoroughly aerated prior to handling or use, according to the equipment/device manufacturer's recommendations. Reprocessing staff shall not interrupt the aeration cycle to retrieve items for use.⁴³
- h) Dry heat sterilization must be rigidly monitored with each cycle due to differences in penetration with different items.

13.6 *Infection Prevention and Control input must be obtained prior to the purchase of a new sterilizer (e.g. facility's infection prevention and control professionals, Public Health staff with certification in infection prevention and control, regional infection control network).*

13.7 *Sterilizers must be subjected to rigorous testing and monitoring on installation and following disruptions to their normal activity.*

- a) Following installation of a new sterilizer, the sterilizer must pass at least three consecutive cycles with the appropriate challenges (i.e. biological, chemical) placed in an empty sterilizer, as well as at least one cycle challenged with a full test load, before the sterilizer can be put into routine service.
- b) The sterilizer shall not be approved for use if the biologic monitor yields a positive result on any of the tests.⁴⁴
- c) Sterilizers must be monitored with a test load in the following circumstances:
 - i) After major repairs to an existing sterilizer;
 - ii) When there has been construction or relocation in the area;
 - iii) After unexplained sterility failures;
 - iv) After changes in steam supply or delivery.

Methods of Disinfection/Sterilization Not Recommended for Routine Use

Flash Sterilization

13.8 *Flash sterilization shall only be used in emergency situations and must never be used for implantable equipment/devices.⁴⁵*

⁴² Environment Canada. *Guidelines for the Reduction of Ethylene Oxide Releases from Sterilization Applications*. October 1, 2005. Available [online](#). Accessed November 15, 2005.

⁴³ Canadian Standards Association. *CAN/CSA Z314.2-01. Effective Sterilization in Health Care Facilities by the Ethylene Oxide Process*. Toronto, Ont.: Canadian Standards Association; 2001.

⁴⁴ Canadian Standards Association. *CAN/CSA-Z314.3-01. Effective Sterilization in Hospitals by the Steam Process*. Toronto, Ont.: Canadian Standards Association; 2001.

⁴⁵ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep*. 1998; 24 Suppl 8: i-xi, 1-55.

- a) Operative scheduling and lack of instrumentation do not qualify as reasons to use flash sterilization. Sterilization is a process, not an event. Effective sterilization is impaired if all the necessary parameters of the process are not met. These include, but are not limited to, the following:
- i) Decontamination and sterilization areas must meet the requirements for processing space as noted in Appendix B;
 - ii) A record for each piece of equipment/device being subjected to flash sterilization that includes the name of the patient, procedure, physician/practitioner and equipment/device used. The patient record should also reflect this information;
 - iii) A biological monitor must be included daily with each type of cycle and every load configuration (i.e. open tray, rigid flash container, single wrapper) that will be used that day;⁴⁶
 - iv) The load printout must be signed to verify that the required time, temperature and pressure have been achieved;
 - v) Records must be retained according to the facility's policy;
 - vi) There must be a procedure for notification of the patient in the event of a recall (e.g. positive biological indicator). Records should be reviewed on a regular basis to correct issues relating to overuse of flash sterilization.

Boiling

13.9 Boiling is not an acceptable method of sterilization.⁴⁵

The use of boiling water to clean instruments and utensils is not an effective means of sterilization. Boiling water is inadequate for the destruction of bacterial spores and some viruses. In the home care environment, boiling may be used for high level disinfection for equipment/devices reused on the same client, following adequate cleaning.

Ultraviolet Radiation

13.10 The use of ultraviolet light is not an acceptable method of disinfection/sterilization.⁴⁵

The germicidal effectiveness of ultraviolet (UV) radiation is influenced by organic matter, wavelength, type of suspension, temperature, type of microorganism and UV intensity, which is affected by distance and dirty tubes. The application of UV light in the hospital is limited to the destruction of airborne organisms (e.g. ventilation ducts) or inactivation of microorganisms located on surfaces (e.g. laboratory hoods).

Glass Bead Sterilization

13.11 Glass bead sterilization is not an acceptable method of sterilization.⁴⁵

Glass bead sterilizers are difficult to monitor for effectiveness, have inconsistent heating resulting in cold spots, and often have trapped air which affects the sterilization process.

The U.S. Food and Drug Administration has determined that a risk of infection exists with this equipment because of their potential failure to sterilize dental instruments and has required their commercial distribution cease unless the manufacturer files a pre-market approval application.⁴⁷

⁴⁶ Canadian Standards Association. *CAN/CSA-Z314.13-01. Recommended Standard Practices for Emergency (Flash) Sterilization*. Toronto, Ont.: Canadian Standards Association; 2001.

⁴⁷ US Department of Health and Human Services, Food and Drug Administration. 21 CFR Part 872.6730. *Dental devices; endodontic dry heat sterilizer; final rule*. Federal Register 1997;62:2903.

Chemiclave

13.12 The use of a chemiclave for sterilization poses an environmental risk and must be closely monitored.⁴⁸

Unsaturated chemical-vapour sterilization ("chemiclave") involves heating a chemical solution of primarily alcohol with 0.23% formaldehyde in a closed pressurized chamber. Because of the environmental risks associated with formaldehyde, this method of sterilization is discouraged. Local regulations for hazardous waste disposal must be followed and air sampling for toxic vapours may be indicated.

Microwave Oven Sterilization

13.13 The use of microwave ovens for sterilization is not acceptable.⁴⁹

Microwave ovens are unreliable and difficult to monitor for effective sterilization. Home microwaves are unable to achieve sterilization.

14. Storage and Use of Reprocessed Medical Equipment/Devices

14.1 Sterility must be maintained until point of use.⁴⁹

The shelf life of a sterile package is event related rather than time related. Event related shelf life is based on the concept that items that have been properly decontaminated, wrapped, sterilized, stored and handled will remain sterile indefinitely, unless the integrity of the package is compromised (i.e. open, wet, dirty).

- a) Medical equipment/devices purchased as sterile must be used before the expiration date if one is given.
- b) Sterile packages that lose their integrity must be re-sterilized prior to use.

14.2 Reprocessed medical equipment/devices shall be stored in a clean, dry location in a manner that minimizes contamination or damage.

- a) Equipment/devices must be handled in a manner that prevents recontamination of the item.
- b) Containers used for storage of clean equipment/devices should be moisture-resistant and cleanable (i.e. cardboard boxes must not be used).
- c) Store equipment/device in a clean, dry, dust-free area (closed shelves), not at floor level, and at least one meter away from debris, drains, moisture and vermin to prevent contamination.
- d) Store equipment/device in an area where it is not subject to tampering by unauthorized persons.
- e) Transport processed equipment/device in a manner that avoids contamination or damage to the equipment/device.

14.3 At point of use, upon opening the reprocessed medical equipment/device, check for integrity of the packaging and the equipment/device; validate results of chemical monitors if present; and reassemble equipment/device if required.

- a) Provide education to those opening sterile items at point of use. Education should include inspection, interpretation of monitors and reassembly of equipment/devices.

⁴⁸ Kohn WG, Collins AS, Cleveland JL, Harte JA, Eklund KJ, Malvitz DM; Centers for Disease Control and Prevention (CDC). Guidelines for infection control in dental health-care settings – 2003. *MMWR Recomm Rep*. 2003; 52 (RR-17): 1-67.

⁴⁹ Health Canada. Hand washing, cleaning, disinfection and sterilization in health care. *Can Commun Dis Rep*. 1998; 24 Suppl 8: i-xi, 1-55.

- b) Validate results of chemical tape and internal monitors if present.
- c) Visually inspect the equipment/device for discolouration or soil. If present, remove from service and reprocess.
- d) Check for defective equipment/devices and remove from use.
- e) If sterile package has become damp or wet (e.g. high humidity), reprocessing may be required. Refer to Appendix B, section 7: "*Temperature and Humidity*".
- f) Reassemble equipment/device if required.

Summary of Best Practices for Cleaning, Disinfection and Sterilization in All Health Care Settings

(See complete text for rationale)

1. Single-Use Medical Equipment/Devices

- 1.1 *Critical and semi-critical medical equipment/devices labeled as single-use must not be reprocessed and reused unless the reprocessing is done by a licensed reprocessor.*
- 1.2 *Needles must be single-use and must not be reprocessed.*
- 1.3 *It is strongly recommended that catheters, drains and other medical equipment/devices with small lumens (excluding endoscopy equipment) be designated single-use and not be reprocessed and reused.*
- 1.4 *Home health care agencies may consider reusing single-use semicritical medical equipment/devices for a single client in their home when reuse is safe and the cost of discarding the equipment/device is prohibitive for the client.*
- 1.5 *The health care setting must have written policies regarding single-use medical equipment/devices.*

2. Purchasing and Assessing Medical Equipment/Devices and/or Products to be Subjected to Disinfection or Sterilization Processes

- 2.1 *Do not purchase medical equipment/devices that cannot be cleaned and reprocessed according to the recommended standards.*
- 2.2 *When purchasing reprocessing equipment or chemical products for reprocessing, consideration must be given to Occupational Health requirements, patient safety, and environmental safety issues.*
- 2.3 *All medical equipment/devices intended for use on a client/patient/resident that are being considered for purchase or will be obtained in any other way (e.g. loaned equipment/devices, trial or research equipment/devices, physician/practitioner-owned, etc.) must meet established quality reprocessing parameters.*
- 2.4 *Newly purchased non-sterile critical and semicritical medical equipment/devices must first be inspected and reprocessed according to their intended use.*
- 2.5 *The organization shall develop and maintain policies and procedures that apply to the sending, transporting, receiving, handling and processing of loaned, shared and leased medical equipment/devices, including endoscopes.*
- 2.6 *Because of the risks associated with Creutzfeldt-Jakob disease (CJD), surgical instruments that are used on high risk neurological and eye tissue from patients at high risk for CJD must be subjected to rigorous decontamination processes as detailed in the Health Canada/Public Health Agency of Canada infection control guideline, "Classic Creutzfeldt-Jakob Disease in Canada".*

3. Education and Training

- 3.1 *The policies of the health care setting shall specify the requirements for, and frequency of, education and training as well as competency assessment for all personnel involved in the reprocessing of medical equipment/devices.*
- 3.2 *All aspects of reprocessing shall be supervised and shall be performed by knowledgeable, trained personnel.*

- 3.3 *The program director and all supervisors involved in reprocessing must, as a minimum, have completed a recognized qualification/certification course in reprocessing practices. A plan must be in place for each person involved in reprocessing to obtain this qualification within five years.*

4. Written Policies and Procedures

- 4.1 *The health care setting will, as a minimum, have policies and procedures for all aspects of reprocessing that are based on current recognized standards/recommendations and that are reviewed at least annually.*
- 4.2 *Manufacturer's information for all medical equipment/devices must be received and maintained in a format that allows for easy access by personnel carrying out the reprocessing activities.*
- 4.3 *All policies and procedures for reprocessing medical equipment/devices require review by an individual with infection prevention and control expertise (e.g. facility's infection prevention and control professionals, Public Health staff with certification in infection prevention and control, regional infection control network).*
- 4.4 *There must be a procedure established for the recall of improperly reprocessed medical equipment/devices.*
- 4.5 *The recall procedure should include assessment of patient risk and a procedure for subsequent notification of clients/patients/residents, other facilities and/or regulatory bodies if indicated.*

5. Selection of Product/Process for Reprocessing

- 5.1 *Products used for any/all stages in reprocessing (i.e. cleaning, disinfection, sterilization) must be approved by the committee responsible for product selection, by an individual with reprocessing expertise and by an individual with infection prevention and control expertise (e.g. facility's infection prevention and control professionals, Public Health staff with certification in infection prevention and control, regional infection control network).*
- 5.2 *The reprocessing method and products required for medical equipment/devices will depend on the intended use of the equipment/device and the potential risk of infection involved in the use of the equipment/device.*
- 5.3 *Products used for decontamination must be appropriate to the level of reprocessing that is required for the use of the medical equipment/device.*
- 5.4 *The process and products used for cleaning, disinfection and/or sterilization of medical equipment/devices must be compatible with the equipment/devices.*
- 5.5 *All medical equipment/devices that will be purchased and will be reprocessed must have written device-specific manufacturer's cleaning, decontamination, disinfection, wrapping and sterilization instruction. If disassembly or reassembly is required, detailed instructions with pictures must be included. Staff training must be provided on these processes before the medical equipment/device is placed into circulation.*

6. Environmental Issues

- 6.1 *There must be a centralized area for reprocessing medical equipment/devices. Reprocessing done outside the centralized area must be kept to a minimum and must be approved by the reprocessing committee or those accountable for safe reprocessing practices and must conform to the requirements for reprocessing space.*

- 6.2** *Wherever chemical disinfection/sterilization is performed, air quality must be monitored when using products that produce toxic vapours.*

7. Occupational Health and Safety Issues

- 7.1** *Occupational Health and Safety for the health care setting will review all protocols for reprocessing medical equipment/devices to verify that worker safety measures are followed and in compliance with the Workers Compensation Act RSBC 1996, c.492 and the associated Occupational Health and Safety Regulation 296/97.*
- 7.2** *There is a policy that prohibits eating/drinking, storage of food, smoking, application of cosmetics and handling contact lenses in the reprocessing area.*
- 7.3** *Appropriate PPE must be worn for all reprocessing activities.*
- 7.4** *All personnel working in reprocessing must be immune to Hepatitis B or receive Hepatitis B immunization.*
- 7.5** *Procedures shall be written to prevent and manage injuries from sharp objects. In addition, procedures shall be in place for immediate response to worker exposure to blood and body fluids.*

8. Factors Affecting the Efficacy of the Reprocessing Procedure

- 8.1** *Procedures for Disinfection and Sterilization must include statements and information regarding the type, concentration and testing of chemical products; duration and temperature of exposure; and physical and chemical properties that might have an impact on the efficacy of the process. These procedures must be readily accessible to staff performing the function.*

9. Transportation and Handling of Contaminated Medical Equipment/Devices

- 9.1** *Disposable sharps such as needles and blades shall be removed and disposed of in an appropriate puncture-resistant sharps container at point of use, prior to transportation.*
- 9.2** *If cleaning cannot be done immediately, the medical equipment/device must be submerged in tepid water and/or detergent and enzymatic to prevent organic matter from drying on it.*
- 9.3** *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.*
- 9.4** *A process should be in place that will ensure that medical equipment/devices which have been reprocessed can be differentiated from equipment/devices which have not been reprocessed (e.g. colour coding).*

10. Disassembling and Cleaning Reusable Medical Equipment/Devices

- 10.1** *Reusable medical equipment/devices must be thoroughly cleaned before disinfection or sterilization.*
- 10.2** *Factors that affect the ability to effectively clean medical equipment/devices must be considered prior to cleaning.*
- 10.3** *The process for cleaning should include written protocols for disassembly, sorting and soaking, physical removal of organic material, rinsing, drying, physical inspection and wrapping.*

11. Disinfection of Reusable Medical Equipment/Devices

- 11.1** *Noncritical medical equipment/devices are to be decontaminated using a Low Level Disinfectant.*
- 11.2** *Semicritical medical equipment/devices must be decontaminated using, at a minimum, High Level Disinfection. Sterilization is the preferred method of decontamination.*
- 11.3** *Noncritical and semicritical medical equipment/devices that are owned by the client and reused by a single client in their home do not require disinfection between uses provided that they are adequately cleaned prior to reuse.*
- 11.4** *All disinfectants must have a Drug Identification Number (DIN) from Health Canada.*
- 11.5** *The chemical disinfectant used for disinfecting medical equipment/devices must be compatible with both the equipment/device manufacturer's instructions for disinfection and the cleaning products involved in the reprocessing of the equipment/device.*
- 11.6** *Disinfectant manufacturers must supply recommended usage for the disinfectant to ensure that it is compatible with the medical equipment/devices on which it will be used.*
- 11.7** *The process of high level disinfection requires monitoring and auditing. If a chemical product is used, the concentration of the active ingredient(s) must be verified and a logbook of daily concentration test results is to be maintained.*
- 11.10** *Manufacturer's instructions for installation, operation and ongoing maintenance of pasteurizing equipment must be followed to ensure that the machine does not become contaminated.*
- 11.11** *A preventive maintenance program for pasteurizing equipment must be implemented and documented.*
- 11.12** *Following the pasteurizing cycle, medical equipment/devices shall be thoroughly dried in a drying cabinet that is equipped with a HEPA filter and that is used exclusively for the drying of pasteurized equipment/devices.*
- 11.13** *A logbook of contents, temperature and time is to be maintained for pasteurizing equipment.*

12. Reprocessing Endoscopy Equipment/Devices

- 12.1** *Individuals responsible for reprocessing endoscopes shall be specially trained and shall meet the facility's written endoscope processing competency requirements, including ongoing education and training.*
- 12.2** *Each health care setting in which endoscopic procedures are performed shall have written detailed procedures for the cleaning and handling of endoscopes.*
- 12.3** *Ventilation shall be such as to remove toxic vapours generated by, or emitted from, cleaning or disinfecting agents.*
- 12.4** *Endoscopic cleaning shall commence immediately following completion of the clinical procedure.*
- 12.5** *Patency and integrity of the endoscope sheath should be verified through leak testing, performed after each use.*
- 12.6** *Endoscopic equipment/devices shall be rinsed and dried prior to disinfection or sterilization.*
- 12.7** *Semicritical endoscopes and accessories (excluding biopsy forceps and brushes) must receive at least high-level disinfection after each use.*

- 12.8** *Endoscopic accessories (e.g. biopsy forceps and brushes) that break the mucosal barrier must be sterilized after each use.*
- 12.9** *If an automated endoscope reprocessor (AER) is used, ensure that the endoscope and endoscope components are compatible with the AER.*
- 12.10** *Final drying of semicritical endoscopes shall be facilitated by flushing all channels with 70% isopropyl alcohol, followed by forced air purging of the channels.*
- 12.11** *Semicritical endoscopes shall be stored hanging vertically in well-ventilated areas in a manner that minimizes contamination or damage. Endoscopes shall not be coiled, allowed to touch the floor or bottom of the cabinet while hanging, or stored in their cases.*
- 12.12** *The water bottle and its connecting tube, used for cleaning the endoscope lens and irrigation during the procedure, should receive high level disinfection or sterilization at least daily.*
- 12.13** *A preventive maintenance program for automated endoscope reprocessor (AER) must be implemented and documented.*
- 12.14** *Healthcare settings shall have policies in place providing a permanent record of endoscope use and processing, as well as a system to track endoscopes and patients that includes recording the endoscope number in the patient record.*

13. Sterilization of Reusable Medical Equipment/Devices

- 13.1** *Critical medical equipment/devices must be sterilized.*
- 13.2** *Whenever possible, semicritical medical equipment/devices should be sterilized.*
- 13.3** *All sterilization processes must ensure that they follow the manufacturer's instructions for installation, operation and preventive maintenance of the equipment.*
- 13.4** *The sterilization process must be validated and documented with written policies and procedures.*
- 13.5** *The sterilization process requires testing, monitoring and auditing.*
- 13.6** *Infection Prevention and Control input must be obtained prior to the purchase of a new sterilizer (e.g. facility's infection prevention and control professionals, Public Health staff with certification in infection prevention and control, regional infection control network).*
- 13.7** *Sterilizers must be subjected to rigorous testing and monitoring on installation and following disruptions to their normal activity.*
- 13.8** *Flash sterilization shall only be used in emergency situations and must never be used for implantable equipment/devices.*
- 13.9** *Boiling is not an acceptable method of sterilization.*
- 13.10** *The use of ultraviolet light is not an acceptable method of disinfection/sterilization.*
- 13.11** *Glass bead sterilization is not an acceptable method of sterilization.*
- 13.12** *The use of a chemiclave for sterilization poses an environmental risk and must be closely monitored.*
- 13.13** *The use of microwave ovens for sterilization is not acceptable.*

14. Storage and Use of Reprocessed Medical Equipment/Devices

14.1 *Sterility must be maintained until point of use.*

14.2 *Reprocessed medical equipment/devices shall be stored in a clean, dry location in a manner that minimizes contamination or damage.*

14.3 *At point of use, upon opening the reprocessed medical equipment/device, check for integrity of the packaging and the equipment/device; validate results of chemical monitors if present; and reassemble equipment/device if required.*

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Appendix A – Reprocessing Decision Chart

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED			
Level of Processing/Reprocessing	Classification of Equipment/Device	Examples of Equipment/Devices	Products**
Cleaning Physical removal of soil, dust or foreign material. Chemical, thermal or mechanical aids may be used. Cleaning usually involves soap and water, detergents or enzymatic cleaners. Thorough cleaning is required before disinfection or sterilization may take place.	All reusable equipment/devices	• All reusable equipment/devices • Oxygen tanks and cylinders	** concentration and contact time are dependant on manufacturer's instructions • Quarternary ammonium compounds (QUATs) • Enzymatic cleaners • Soap and water • Detergents • 0.5% Accelerated hydrogen peroxide
Low level disinfection Level of disinfection required when processing noncritical equipment/devices or some environmental surfaces. Low level disinfectants kill most vegetative bacteria and some fungi as well as enveloped (lipid) viruses. Low level disinfectants do not kill mycobacteria or bacterial spores.	Noncritical equipment/devices	• Environmental surfaces touched by staff during procedures involving parenteral or mucous membrane contact (e.g. dental lamps, dialysis machines) • Bedpans, urinals, commodes • Stethoscopes • Blood pressure cuffs • Oximeters • Glucose meters • Electronic thermometers • Hydrotherapy tanks • Patient lift slings • ECG machines/leads/cups etc. • Sonography (ultrasound) equipment/probes that come into contact with intact skin only • Bladder scanners • Baby scales • Cardiopulmonary training mannequins • Environmental surfaces (e.g. IV poles, wheelchairs, beds, call bells) • Fingernail care equipment that is single-client/patient/resident use	** concentration and contact time are dependant on manufacturer's instructions • 3% Hydrogen peroxide (10 minutes) • 60-95% Alcohol (10 minutes) • Hypochlorite (1000 ppm) • 0.5% Accelerated hydrogen peroxide (5 minutes) • Quarternary ammonium compounds (QUATs) • Iodophors • Phenolics ** (should not be used in nurseries)
High level disinfection The level of disinfection required when processing semicritical equipment/devices. High level disinfection processes destroy vegetative bacteria, mycobacteria, fungi and enveloped (lipid) and non-enveloped (non-lipid) viruses, but not necessarily bacterial spores.	Semicritical equipment/devices	• Flexible endoscopes that do not enter sterile cavities or tissues • Laryngoscopes • Bronchoscopes (sterilization is preferred) • Respiratory therapy equipment • Nebulizer cups • Anesthesia equipment • Endotracheal tubes • Specula (nasal, anal, vaginal –	** concentration and contact time are dependant on manufacturer's instructions • 2% Glutaraldehyde (20 minutes at 20°C) • 6% Hydrogen peroxide (30 minutes) • 0.55% Ortho-phthalaldehyde (OPA) (10

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED			
Level of Processing/Reprocessing	Classification of Equipment/Device	Examples of Equipment/Devices	Products**
		disposable equipment is strongly recommended) • Tonometer foot plate • Ear syringe nozzles • Sonography (ultrasound) equipment/probes that come into contact with mucous membranes or non-intact skin (e.g. transrectal probes) • Pessary and diaphragm fitting rings • Cervical caps • Breast pump accessories • Glass thermometers • CPR face masks • Alligator forceps • Cryosurgery tips • Ear cleaning equipment, ear cures, otoscope tips • Fingernail care equipment used on multiple clients/patients/residents	minutes at 20°C) • Pasteurization (30 minutes at 75°C) • 7% Accelerated hydrogen peroxide (20 minutes) • 0.2% Peracetic acid (30-45 minutes)
Sterilization The level of reprocessing required when processing critical equipment/devices. Sterilization results in the destruction of all forms of microbial life including bacteria, viruses, spores and fungi.	Critical equipment/devices	• Surgical instruments • Foot care equipment • Implantable equipment/devices • Endoscopes that enter sterile cavities and spaces (e.g. arthroscopes, laparoscopes, cystoscopes) • Bronchoscopes • Colposcopy equipment • Electrocautery tips • Endocervical curettes • Fish hook cutters • Biopsy forceps, brushes and biopsy equipment associated with endoscopy (disposable equipment is strongly recommended) • Eye equipment including soft contact lenses • Transfer forceps • Kimura spatula • Dental equipment including high speed dental handpieces	** concentration and contact time are dependant on manufacturer's instructions • Dry heat • 100% Ethylene oxide • Formaldehyde • 2.5-3.5% Glutaraldehyde (10 hours at 20°C) • Hydrogen peroxide gas plasma (75 minutes at 50°C) • 6-25% Hydrogen peroxide liquid (6 hours) • 7% Accelerated hydrogen peroxide (6 hours at 20°C) • 0.2% Peracetic acid (30-45 minutes) • Steam • Ozone

**** concentration and contact time are dependant on manufacturer's instructions**

Appendix B – Recommendations for Physical Space for Reprocessing

Sources:

Canadian Standards Association. *Decontamination of Reusable Medical Devices*. CAN/CSA-Z314.8.

Update No. 2. January 2001.

Canadian Standards Association. *Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities*. February 2003.

The American Institute of Architects Academy of Architecture for Health. *Guidelines for Design and Construction of Hospital and Health Care Facilities*. 2006 edition (in print).

Personnel Recommendations:

1. Access to decontamination areas shall be restricted to authorized personnel as defined by departmental policies.
2. Eating, drinking, smoking, applying cosmetics or lip balm, and handling of contact lenses shall not take place in decontamination areas.

Space Recommendations:

1. **There must be clear separations between soiled and clean areas**
 - Decontamination work areas should be physically separated from clean and other work areas by walls or partitions to control traffic flow and to contain contaminants generated during the stages of decontamination
 - Soiled work areas must be physically separated from all other areas of the space.
 - Walls or partitions should be constructed of materials capable of withstanding frequent cleaning
 - Doors to all work areas should be kept closed at all times (self-closing doors are recommended) to restrict access and optimize ventilation control.
 - In healthcare facilities, doors should be pass-through, to ensure one-way movement by staff from contaminated areas to clean areas
 - Adequate space must be provided for decontamination equipment and materials used for cleaning and reprocessing
 - o Work surfaces and surrounding areas should be designed to minimize crowding of work space and to facilitate regular cleaning with disinfectants
 - o Stainless steel surfaces are recommended
 - o Sinks should be deep enough to immerse items to be cleaned
 - Storage of food, drink, or personal effects in decontamination areas shall be prohibited.
2. **There must be easy access to hand hygiene facilities**
 - Dedicated handwashing sinks must be provided
 - Handwashing sinks should be conveniently located in or near all decontamination and preparation areas
 - Handwashing facilities should also be located in all personnel support areas (e.g. change rooms)
 - “Hands-free” operating sinks are recommended
3. **There must be easy access to emergency supplies**
 - Eye-wash stations, deluge showers and spill equipment should be provided as necessary
 - Consult jurisdictional occupational health and safety statutes/regulations
4. **There must be an area for donning or removing Personal Protective Equipment**
 - If staff interchange is required between clean and contaminated areas, PPE shall be carefully removed and hands thoroughly washed.

5. **The reprocessing area is regularly and adequately cleaned**
 - There is an area for storage of dedicated housekeeping equipment and supplies
 - Wet-vacuuming or hand-mopping with a clean mop head and clean, fresh water should be done at least daily
 - Spills are cleaned up immediately
 - There is an area for waste
6. **There is adequate storage space**
 - There is an area for transportation equipment (e.g. carts, trolleys)
 - Clean supplies and PPE must be stored in a separate area from soiled items and cleaning processes
7. **In healthcare facilities ventilation, temperature and humidity of the area meets or exceeds CSA standards**
 - CSA requirements for ventilation:
 - o Minimum 10 air changes per hour
 - o Minimum 2 outdoor air changes per hour
 - o Soiled areas: negative pressure
 - o Clean areas: positive pressure
 - o Exhaust air vented outdoors and not recirculated
 - o Portable fans must not be used in any area of the central processing space
 - CSA recommendations for temperature and humidity
 - o Room temperature of all decontamination work areas should be between 18-20°C
 - o Relative humidity should be maintained between 30-60%
 - o If humidity increases such that sterile packages become damp or wet, the integrity of the package may be compromised and it should be reprocessed.
8. **Water used in the processing area should be tested and be free of contaminants.**

[Refer to Appendix C3 in: "Canadian Standards Association. *Decontamination of Reusable Medical Devices*. CAN/CSA-Z314.8. Update No. 2. January 2001."]

Water quality can be a significant factor in the success of decontamination procedures. In addition to issues of mineral content (hardness or softness), piped water supplies can also introduce pathogens and unwanted chemicals to decontamination processes. Manufacturers of medical equipment/devices, decontamination equipment and detergents should be consulted regarding their particular water quality requirements.

Limiting values of water contaminants:

- Hardness: ≤ 0.1 mmol/L
- pH: 6.5 to 8
- Iron: ≤ 0.2 mg/L
- Phosphate: ≤ 0.5 mg/L
- Chloride: ≤ 3 mg/L
- Lead: ≤ 0.05 mg/L
- Silica: ≤ 2 mg/L
- Evaporation residue: ≤ 15 mg/L
- Conductivity: ≤ 50 μ S/cm

Appendix C – Sample Audit Checklist for Reprocessing of Medical Equipment/Devices

NOTE: This checklist was adapted from Sunnybrook & Women's College Health Sciences Centre and is provided to assist health care settings in developing their own audit tools.

Purpose:

All medical equipment/devices used in health care settings in British Columbia is to be reprocessed in accordance with both the MoH "Best Practices for Cleaning, Disinfection and Sterilization", Public Health Agency of Canada infection control guidelines and current CSA standards.

Definition:

Reprocessing refers to the steps performed to prepare used medical equipment/devices for reuse.

Responsibility:

Each Physician Program Head and/or department manager is responsible to verify that all medical equipment/devices reprocessed in the area for which he/she is responsible is being reprocessed according to the Ministry of Health and Long Term Care Best Practices for Cleaning, Disinfection and Sterilization in Health Care Settings.

Checklist:

Department/Area to be Audited: _____

Item	Yes	No	Partial	Comments
Reprocessing occurs in the area (if no – sign off checklist is complete)				
Single-use medical equipment/devices are not reprocessed				
Personal protective equipment is worn when cleaning reprocessing (eye protection, mask, gown and gloves)				
Cleaning				
Equipment/devices are cleaned using an enzymatic cleaner prior to reprocessing				
Is cleaning done in a separate area from where the instrument will be used (i.e. designated dirty area)				
High Level Disinfection				
Equipment/devices are subjected to high-level disinfection according to manufacturer's instructions, using an approved high-level disinfectant (do not keep high-level disinfectant for more than 2 weeks even if test strip is still okay)				
High-level disinfectant concentration is checked daily				
Quality Control on test strips is carried out as per company guideline				
Test strip bottle is dated when opened				
Test strips are not used past the manufacturer's expiry date				
Log is kept of results of high-level disinfectant quality control				
Log is kept of instruments that receive high-level disinfection				
Log is kept of dates when high-level disinfectant is changed				
Two staff sign off that the correct solution was used when high-level disinfectant is changed				
Automated reprocessor has preventive maintenance program				
Log is kept of all preventive maintenance				
Log is kept of all maintenance associated with reprocessor malfunction				
Using checklist for reprocessing of endoscopes.				
Sterilization				
Equipment/devices are sterilized by an approved sterilization process				
Bowie Dick – done daily – high-vacuum sterilizer				
Sterilizer physical parameters are reviewed after each run				
Log is kept of physical parameters				
Sterilizers monitored with biologic monitor daily (each type of cycle i.e.				

Item	Yes	No	Partial	Comments
<i>flash, long loads)</i>				
Log is kept of biologic monitors				
Sterilizer has a preventive maintenance program				
Log is kept of preventive maintenance				
If biologic monitor is positive, loads are recalled and the positive test is investigated				
Log is kept of all maintenance associated with a positive biologic monitor				
Indicator tape is used on outside each wrapped package				
Multi-parameter indicator used on inside each wrapped package containing 2 or more instruments				
Log is kept of each load and items in load				
If flash sterilization is used, a log is kept of flash sterilizer use				
Flash sterilized equipment/devices are noted in the patient's chart along with reason.				
All logs are to be retained according to facility policy.				
All reprocessed equipment/devices are stored in a manner to keep them clean and dry				
Chemical indicators are checked before equipment/devices are used				
Is there a process in place that clearly identifies a non-reprocessed instrument from one that has been reprocessed to prevent use on a client/patient/resident				
Purchasing & Reprocessing Instructions				
Manager/purchaser is aware of purchasing policy for all medical equipment/devices requiring reprocessing.				
There are explicit written reprocessing instructions from the manufacturer on each equipment/device to be reprocessed.				
Policy & procedure for reprocessing are written. These are compatible with current published reprocessing standards and guidelines.				
Education & Core Competency				
Manager and staff are educated on how to reprocess instruments when: - o First employed - o Minimum of annually - o Any authorized change in process - o When new equipment is purchased – reprocessor - o When new equipment is purchased – medical equipment/devices requiring reprocessing				
Managers and staff have completed a recognized certification course in reprocessing or there is a plan to obtain this qualification within 5 years.				
There is an audit and follow up process in place for ongoing evaluation of reprocessing. Appropriate people and Infection Prevention & Control are notified when follow up is required.				
Compliance with the Occupational Health and Safety Act, R.S.O. 1990, c.O.1 and associated Regulations including the Health Care and Residential Facilities - O. Reg. 67/93 Amended to O. Reg. 631/05.				

Checklist Auditor:

Date:

Print name: _____

Dept: _____

Position: _____

Appendix D – Sample Task List for Cleaning and Disinfection/Sterilization of Flexible Endoscopes

NOTE: This checklist is designed for competency verification of staff involved in the reprocessing of flexible endoscopes. This tool was adapted from Sunnybrook & Women's College Health Sciences Centre and is provided to assist health care settings in developing their own audit tools.

Leak Testing	√	Comments
Wear appropriate personal protective equipment (PPE).		
Discard disposable valves.		
Place reusable valves and irrigation ports and removable parts in a beaker of enzymatic solution.		
Fill basin or sink with clean water for leakage testing.		
Perform leakage testing in the decontamination area, prior to reprocessing each endoscope.		
Attach the water resistant cap to cover the electrical socket on the scope (where applicable).		
Connect the leakage tester connector to the output socket on the MU-1 or light source/water resistant cap.		
Check that the leakage tester is emitting air and confirm that the connector cap is dry.		
Attach the leakage tester's connector to venting connector (on cap where applicable) and ensure connection is made.		
Immerse the entire endoscope in the water and observe for 30 sec. Visually inspect for potential leaks.		
Manipulate the angulation knobs to check for potential leaks.		
Remove the endoscope from the water and then turn off the air supply.		
Disconnect the leakage tester from the air supply and allow the endoscope to depressurize.		
Disconnect the leakage tester from the water resistant cap.		
Dry the leakage tester connector cap.		

Reprocessing Checklist for Flexible Endoscopes

Manual Cleaning	√	Comments
Prepare enzymatic solution as per manufacturer's recommendations with regard to dilution rate, temperature and time.		
Completely immerse the entire endoscope in freshly prepared enzymatic detergent solution in basin 16 inches by 16 inches or sink.		
Verify that instrument is totally immersed during entire cleaning process to prevent splashing or aerosolization.		
Verify that the bending section is straight so brushing does not damage endoscope.		
Clean the exterior of the endoscope with a soft brush or lint free cloth.		
Brush biopsy/suction channel in the insertion tube with the appropriate sized channel cleaning brush for the endoscope until all debris is removed.		
Continue brushing biopsy/suction channel with channel cleaning brush until all visible debris is removed. Clean brush in enzymatic each time brush is passed through channel.		
Brush suction valve housing & instrument channel port with channel opening brush until all debris is removed.		
Attach a 30ml. syringe to the adapter and send enzymatic into the channels at least three times.		
Soak the endoscope in the enzymatic solution as per manufacturer's instructions to ensure proper contact time for the enzymatic cleaner.		
Brush and flush the valves and removable parts until all debris is removed.		
Perform the final rinses in clear water followed by air purges using 30 ml. syringes.		
Thoroughly dry the exterior of the endoscope and all removable parts using a clean lint free cloth.		
Inspect the endoscope for residual debris and repeat the manual cleaning process if debris remains.		
Prepare compatible valves, removable parts and cleaning brush prior to HLD or ETO sterilization.		
Prepare endoscope for HLD or ETO sterilization.		

Reprocessing Checklist for Flexible Endoscopes

Manual Disinfection	√	Comments
Test the HLD dilution as per Hospital protocol.		
Immerse the entire endoscope, valves, cleaning brush & removable parts in a basin of HLD solution.		
Using a 30 cc syringe flush the HLD solution to purge air from all channels.		
Soak the endoscope in HLD solution for the recommended time and temperature.		
Flush air through the endoscope channels using adapters (suction cleaning adapters).		
Immerse the endoscope in fresh sterile/potable water.		
Rinse the endoscope and flush all channels with sterile/potable water as per manufacturer's instructions.		
Rinse the valves, brush & removable parts then flush with water as per manufacturer's instructions.		
Perform a channel air flush followed by an alcohol and an air purge. Dry the endoscope with a lint free cloth.		
Record scope number in patient record and logbook with date.		
Manipulate angulation knobs to test scope flexibility. Ensure optical clarity of telescope.		
Dry for ETO sterilization where required.		
Accessories, i.e. biopsy brushes, must be steam sterilized.		

Reprocessing Checklist for Flexible Endoscopes

Automated Disinfection	√	Comments
If applicable test the HLD dilution as per Hospital protocol.		
Properly place the endoscope, valves, cleaning brush & removable parts in the chamber (Note: Monitor endoscope stacking).		
Attach the endoscope connectors/adapters to the AER.		
Run the AER and ensure the endoscope is soaked in HLD solution for the recommended time and temperature.		
Remove the endoscope promptly after the final cycle has been completed.		
Sign off that all AER parameters have been met.		
Perform a channel air flush followed by an alcohol and an air purge. Dry the endoscope with a lint free cloth.		
Record scope number and AER number in patient record. Record scope number in AER logbook with date.		
Manipulate angulation knobs to test scope flexibility. Ensure optical clarity of telescope.		
Dry for ETO sterilization where required.		
Accessories, i.e. biopsy brushes, must be steam sterilized.		

Preparation for ETO Sterilization	√	Comments
Attach ETO cap to venting connector.		
Seal, wrap and label package for ETO gas sterilization according to Hospital protocol.		
Sterilize according to ETO parameters.		
Aerate following manufacturer's guidelines.		
Store on shelf.		

Reprocessing Checklist for Flexible Endoscopes

Handling	√	Comments
Ensure that the insertion tube is not coiled too tightly when handling the endoscope.		
Position the control portion upright, especially if the endoscope is placed on a counter.		
Transport the endoscope using both hands.		

Storage	√	Comments
Complete audit procedure before storage.		
Ensure the endoscope was dried thoroughly before storage.		
Remove all valves and removable parts from the endoscope to prevent the retention of moisture.		
If applicable store the endoscope with the bending section straight, in a ventilated cabinet/container.		
Hang the endoscope with the insertion tube and light guide tube placed vertical (support the body).		

Employee: _____

Auditor: _____

Date: _____

The above checklist was developed in conjunction with the Carsen Medical Imaging Group.

Appendix E – Sample Audit Tool for Reprocessing of Endoscopy Equipment/Devices

NOTE: This audit tool was adapted from Kingston Hospitals and is provided to assist health care settings in developing their own audit tools for endoscopy equipment.

	Recommendation	Specific Procedure	Yes / No/ Or N.A.	M.R.P.	Comment / Strategy for Improvement
1.	There is compliance with endoscope manufacturer's recommendations for cleaning	A. Endoscope is wiped and flushed immediately following procedure			
		B. Removal of debris collected in the scope (brushing)			
		C. Removal of debris collected on the scope (surface cleaning)			
		D. Perform a leak test			
		E. Visually inspect the scope to verify working properly			
2.	Verify that endoscope can be reprocessed in site's automated endoscope reprocessor (AER)	A. Documentation from endoscope manufacturer confirming compatibility of each scope with AER.			
		B. Documentation from AER manufacturer confirming testing of individual scope in system.			
		C. Specific steps before reprocessing endoscope in AER.			
3.	Compare reprocessing instructions provided by AER manufacturer and scope manufacturer and resolve conflicts.	A. Conflicts identified and resolved.			
4.	Adhere to endoscope manufacturer's instructions for manual reprocessing in the absence of specific technical information on AER reprocessing.	A. Manual procedures in place for endoscopes not compatible with AER.			
		B. Compliance with manufacturer's recommendations for hospital approved chemical germicide			
5.	Reprocessing protocol incorporates a final drying step.	A. All channels of reprocessed endoscopes are flushed with alcohol followed by purging with air.			
		B. Scopes are stored in a manner that minimized the likelihood of contamination or collection / retention of moisture.			

	Recommendation	Specific Procedure	Yes / No/ Or N.A.	M.R.P.	Comment / Strategy for Improvement
6.	Staff adhere to facility's procedures for preparing endoscope for client/patient/resident.	A. Confirm AER's processes are applicable to specific endoscope models.			
		B. Ensure endoscope-specific reprocessing instructions from AER mfg are correctly implemented.			
		C. Written, device-specific instructions for every endoscope model available to reprocessing staff.			
		D. Written instructions for reprocessing system are available to reprocessing staff.			
7.	Comprehensive and intensive training is provided to all staff assigned to reprocessing endoscopes.	A. New reprocessing staff receive thorough orientation with all procedures.			
		B. Competency is maintained by periodic (annual) hands on training with every endoscope model and AER used in the facility.			
		C. Competency is documented following supervision of skills and expertise with all procedures.			
		D. Frequent reminders and strict warnings are provided to reprocessing staff regarding adherence to written procedures.			
		E. Additional training with documented competency for new endoscope models (or AER).			
8.	A comprehensive quality control program is in place.	A. Periodic visual inspections (monthly) of the cleaning and disinfecting procedures.			
		B. A scheduled endoscope preventive maintenance program is in place and documented.			
		C. Preventive maintenance program for AER is in place and documented.			
		D. Preventive maintenance program for all reprocessing system filters is in place and documented.			
		E. AER process monitors are utilized and logged.			
		F. Chemical germicide effectiveness level is monitored and recorded in a logbook.			
		G. There are records documenting the use of each AER which include the operator identification, client/patient/resident's chart record number, physician code, endoscope serial # and the type of procedure.			

	Recommendation	Specific Procedure	Yes / No/ Or N.A.	M.R.P.	Comment / Strategy for Improvement
		H. There are records documenting the serial # of scopes leaving the endoscope reprocessing area (e.g. repairs, loaners, O.R. etc.)			
		I. There is a surveillance system that detects clusters of infections /pseudoinfections associated with endoscopic procedures.			
9.	Staff adhere to Routine Practices.	A. Ensure correct hand hygiene technique is performed in appropriate situations.			
		B. There is compliance with procedures for wearing clean, non-sterile gloves.			
		C. PPE (masks, eye protection, gown/plastic apron) is worn during procedures and client/patient/resident – care activities that are likely to generate splashes or sprays.			
		D. Appropriate PPE is worn during scope cleaning and reprocessing.			
		E. Heavily soiled linen is placed into plastic bag prior to depositing in linen hamper			
		F. Procedures are in place to prevent sharps injury.			
		G. Staff are knowledgeable regarding protocol for follow-up for blood / body fluid exposure.			
10.	Endoscope reprocessing policies and physical space are in compliance with workplace regulations and standards.	H. All procedures are in compliance with the <i>Workers Compensation Act RSBC 1996, c.492</i> and the associated <i>Occupational Health and Safety Regulation 296/97</i> .			
		I. The reprocessing physical space is in compliance with the Canadian Standards Association standards and with the <i>Workers Compensation Act RSBC 1996, c.492</i> and the associated <i>Occupational Health and Safety Regulation 296/97</i> .			

Appendix F - Advantages and Disadvantages of Currently Available Reprocessing Alternatives

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED				
PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
STERILIZATION	Critical equipment/devices Some semicritical equipment/devices	Effective sterilization must be monitored	Completely kills all forms of microbial life including spores	
Boiling	Not acceptable	None	Not acceptable	
Chemiclave	Dental equipment Sterilization is achieved after 20 minutes exposure. It is highly recommended that steam sterilization be used in place of chemiclaves.	- Mechanical – each cycle/load - Chemical – each pack - Biologic – daily (<i>Geobacillus stearothermophilus</i> spores)		Toxic chemicals used (chemicals may be considered hazardous waste in some jurisdictions)
Dry Heat Gravity convection Mechanical convection	- Anhydrous oil - Powders, creams - Glass - Foot care equipment - Heat tolerant equipment/devices <u>Temperatures – time</u> 171°C – 60 min 160°C – 120 min 149°C – 150 min 141°C – 180 min 121°C – 12 hours	- Mechanical – each cycle/load - Chemical – each pack - Biologic – daily (<i>Bacillus atrophaeus</i> spores)	- No corrosive or rusting effect on instruments - Reaches surfaces of instruments that cannot be disassembled - Inexpensive	- Lengthy cycle due to slowness of heating and penetration - High temperatures may be deleterious to material - Limited packing materials - Temperature and exposure times vary, depending on article being sterilized
Ethylene oxide (EtO) gas	- Heat sensitive equipment/devices - Lensed instruments that require sterilization EtO concentration based on manufacturer's	- Mechanical – each cycle/load - Chemical – each pack - Biologic – each cycle/load (<i>Bacillus atrophaeus</i> spores)	Not harmful to heat sensitive and lensed instruments	- Expensive - Toxic to humans - Requires monitoring of residual gas levels in environment - Requires aeration of sterilized

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
STERILIZATION	Critical equipment/devices Some semicritical equipment/devices	Effective sterilization must be monitored	Completely kills all forms of microbial life including spores	
Ethylene oxide (EtO) gas, con't.	recommendation Temperature – variable Humidity – 50% Time – extended processing time (several hours)	Routine testing shall include a biologic monitor placed in the centre of each load to be sterilized, and a chemical monitor in each pack. A rapid readout biologic monitor is available (4 hours).		products prior to use - Lengthy cycle required to achieve sterilization and aeration - Highly flammable and explosive and highly reactive with other chemicals - Causes structural damage to some medical equipment/devices
Flash sterilization	- Should be used only in an emergency Never use for implantable equipment/devices Sterilization of unwrapped objects at 132°C for 3 minutes at 27-28 lbs. pressure	- Mechanical – each cycle/load - Chemical – each pack - Biologic – daily (<i>Geobacillus stearothermophilus</i> spores) Testing should include every type of cycle and every load configuration (i.e. open tray, rigid flash container, single wrapper) that will be used that day. One biologic monitor and a chemical indicator shall be placed in a perforated or mesh bottom surgical tray of appropriate size for the sterilizer to be tested. The test tray shall be placed on the bottom shelf of an otherwise empty sterilizer.	Not recommended	- If medical equipment/devices are used before the results of biologic monitors are known, personnel must record which equipment/devices were used for specific clients/patients, so that they can be followed if the load was not processed properly - Difficult to monitor - Efficacy will be impaired if all the necessary parameters are not properly met - Sterility cannot be maintained if the medical equipment/device is not wrapped - Effectiveness is impaired if the medical equipment/device is contaminated with organic matter

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
STERILIZATION	Critical equipment/devices Some semicritical equipment/devices	Effective sterilization must be monitored	Completely kills all forms of microbial life including spores	
Formaldehyde	- Limited use as a chemosterilant - Sometimes used to reprocess hemodialyzers - Gaseous form used to decontaminate laboratory safety cabinets	- Biologic monitors are not available - Concentration must be monitored	Active in the presence of organic materials	- Toxic - Carcinogenic - Strong irritant - Pungent odour - Cannot be monitored for sterility
Glass bead sterilizers	Not acceptable	None	Not acceptable	
Glutaraldehyde (2.5%-3.5%)	- May be used on metals, plastics, rubber, equipment/devices with lens cement - May use on heat sensitive equipment/devices Sterilization may be accomplished in 10 hours at 20°C with some products. Refer to product label for time and temperature required to achieve sterilization. Sterilized equipment/devices must be rinsed with sterile water to remove all residual chemical. Sterilized equipment/devices must be handled in a manner that prevents contamination from process through storage to use	- Exposure time and temperature must be maintained - Monitors are available for pH and dilution concentration - Biologic monitors are not available Concentration is monitored using test strips provided by the product manufacturer. Testing must be done at least daily. Product is time limited following activation, usually maximum 14 days. During reuse, the concentration may drop as dilution of the product occurs. Chemical test strips are available for determining whether an effective concentration of active ingredients is present despite repeated use and dilution.	- Heat sensitive equipment/devices - Does not coagulate protein	- Toxic, sensitizing irritant - Need proper ventilation and closed containers- ceiling limit 0.05 ppm - Handling provides opportunities for contamination - Requires copious rinsing with sterile water - Unable to monitor sterility - Lengthy process (6-12 hours) - Shelf life of 14 days once mixed - During reuse, the concentration may drop as dilution of the product occurs

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
STERILIZATION	Critical equipment/devices Some semicritical equipment/devices	Effective sterilization must be monitored	Completely kills all forms of microbial life including spores	
Accelerated Hydrogen Peroxide (7%)	Heat sensitive equipment/devices Sterility is achieved after 6 hours of undiluted solution at 20°C. (refer to product label for time and temperature).	- Biologic monitors are not available - Chemical – test kits to monitor the concentration are available from the manufacturer and must be used for each load	- Safe for environment - Non-toxic - Rapid - Inexpensive - Active in the presence of organic materials	- Contraindicated for use on copper, brass, carbon-tipped devices and anodised aluminum - Cannot monitor for sterility
Hydrogen peroxide gas plasma	- Heat sensitive equipment/devices - Sterility is achieved after 75 minutes at 50°C	Follow manufacturer's instructions - Chemical – each pack - Biologic – daily (<i>Bacillus stearothermophilus</i> spores)	- Low heat good for heat sensitive equipment/devices - Rapid - Safe for environment (water and oxygen end products) - Non-toxic - Lack of corrosion to metals and other materials (except nylon) - Compatible with most medical equipment/devices	- Special wraps and trays required - Limitations on length and lumens of medical equipment/devices that can be effectively sterilized. Long (12") narrow lumens (1/8"/0.38 cm) require a booster - Cannot sterilize materials which absorb liquids (e.g. linen, gauze, cellulose/paper) - Not approved for flexible endoscopes
Hydrogen peroxide liquid (6-25%)	- Heat sensitive equipment/devices (e.g. eye equipment) - Costly equipment/devices that may be lost in transit - Sterility is achieved after 6 hours.	- Biologic monitors are not available - Concentration must be monitored	- Less toxic than other chemical sterilants - Safe for environment - Rapid	- Contraindicated for use on copper, zinc, brass, aluminium - Store in cool place, protect from light - Limitations on length and lumens of medical equipment/devices that can be effectively sterilized - Cannot monitor for sterility
Ozone Sterilization	- Heat sensitive equipment/devices - Sterility is achieved in 4.5 hours.	- Real time monitor built in to technology - Technology manages Ozone supply and verifies	- Low health and safety risk - Cycle done relatively quickly - Devices ready to use immediately after	- Not validated for the sterilization for flexible endoscopes. - Not validated for the sterilization of implants

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
STERILIZATION	Critical equipment/devices Some semicritical equipment/devices	Effective sterilization must be monitored	Completely kills all forms of microbial life including spores	
		performance of system	sterilization - No harmful environmental byproducts - Easy to use.	- Fluids and woven textiles should not be sterilized using this method. - Natural rubber and latex are not compatible with this process.
Microwave ovens	Not acceptable	None	Not acceptable	
Peracetic acid (0.2%)	Heat sensitive immersible equipment/devices (e.g. endoscopes, dental and surgical instruments) Sterilizes in 30-45 minutes at 50-56°C (time and temperature controlled by cycle and may vary due to water pressure, incoming water temperature, or filter status).	- Mechanical - diagnostic cycle should be performed each day to ensure that all mechanical components are functioning properly - with each cycle/load there are printouts that document the parameters of the cycle (e.g. temperature, exposure time, etc.) - Chemical – each pack - Biologic – daily (<i>Geobacillus stearothermophilus</i> spores)	- Rapid - Automated - Leaves no residue - Effective in presence of organic matter - Sporicidal at low temperatures	- Monitoring of efficacy of sterilization cycle with spore strips is questionable - Can be used for immersible instruments only - Corrosive - Material incompatibility with some materials - Unstable particularly when diluted In vapour form, PAA is volatile, has a pungent odour, is toxic and is a fire and explosion hazard.
Steam sterilization Small table top sterilizers Gravity displacement sterilizers High-speed vacuum sterilizers	First choice for critical equipment/devices - Heat tolerant instruments and accessories - Linen - Liquids - Foot care equipment Raised pressure (preset by manufacturer) to increase temperature to 121°C. Time varies with temperature, type of material and whether the instrument is wrapped or not. Steam must be saturated (narrow lumen	- Pre-vacuum sterilizers – include air removal test daily before first cycle of the day, in an empty sterilizer with no dry cycle - Mechanical – each cycle/load - Chemical – each pack - Biologic – daily and on every type of cycle to be used; and with each load of implantable equipment/devices; Place biologic monitor near the drain in a fully loaded	- Inexpensive - Rapid - Efficient - Non toxic	- Cannot use for heat or moisture sensitive equipment/devices - Unsuitable for anhydrous oils, powders, lensed instruments, heat and moisture sensitive materials - Some tabletop sterilizers lack a drying cycle

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
STERILIZATION	Critical equipment/devices Some semicritical equipment/devices	Effective sterilization must be monitored	Completely kills all forms of microbial life including spores	
	equipment/devices may require prehumidification)	sterilizer (<i>Geobacillus stearothermophilus</i> spores). Whenever possible, loads containing implantable devices shall be quarantined until the results of the biologic monitor testing are available.		

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
HIGH LEVEL DISINFECTION (HLD)	Semicritical equipment/devices	Monitoring for dilution is recommended	Kills all vegetative forms of microbial life including bacteria, viruses, fungi and mycobacteria.	Does not kill bacterial spores.
Glutaraldehyde (2%)	- Heat sensitive equipment/devices - Lensed instruments that do not require sterilization - Endoscopes - Respiratory therapy equipment - Anaesthesia equipment - Fingernail care equipment used on multiple clients/patients/residents High level disinfection is achieved after at least 20 minutes at 20°C. Refer to product label for time and temperature required to achieve high level disinfection.	- Exposure time and temperature must be maintained - Test strips for concentration are available from the manufacturer and must be used at least daily (preferably with each load). Product is time limited following activation, usually maximum 14 days. Chemical test strips are available for determining whether an effective concentration of	- Noncorrosive to metal, plastic, rubber, lens cements - Active in presence of organic material	- Extremely irritating to skin and mucous membranes - Need proper ventilation & closed containers- ceiling limit 0.05 ppm - Shelf life shortens when diluted (effective for 14-30 days depending on formulation) - During reuse, concentration may drop as dilution of the product occurs - Acts as a fixative

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
HIGH LEVEL DISINFECTION (HLD)	Semicritical equipment/devices	Monitoring for dilution is recommended	Kills all vegetative forms of microbial life including bacteria, viruses, fungi and mycobacteria.	Does not kill bacterial spores.
		active ingredients is present. During reuse, the concentration may drop as dilution of the product occurs.		
Accelerated Hydrogen Peroxide (7%)	- Heat sensitive equipment/devices - Delicate equipment/devices Achieves high level disinfection with undiluted 7% solution after at least 20 minutes at 20°C (refer to product label for time and temperature).	Test kits to monitor the concentration are available from the manufacturer and must be used with each load.	- Safe for environment - Non-toxic - Active in the presence of organic materials - Rapid - Inexpensive	Contraindicated for use on copper, brass, carbon-tipped devices and anodised aluminum
Hydrogen peroxide (6%)	- Semicritical equipment used for home health care - Disinfection of soft contact lenses Achieves high level disinfection after at least 30 minutes.	Not currently available	- Strong oxidant - Rapid action - Safe for the environment - Low cost	- Must be stored in cool place, protect from light - Contraindicated for use on copper, brass, carbon-tipped devices and aluminum
Ortho-phthalaldehyde (OPA) (0.55%)	- Endoscopy equipment/devices - Heat sensitive equipment/devices Achieves high level disinfection after at least 10 minutes at 20°C.	Test strips for concentration are available from the manufacturer and must be used at least daily (preferably with each load).	- Superior penetration - Rapid activity - Active in presence of organic materials - Non-irritating vapour - Does not require activation or dilution	- Stains protein, including hands, requiring gloves and gown for use - Expensive
Pasteurization	- Respiratory therapy equipment - Anaesthesia equipment Achieves high level disinfection at 75°C for 30 min.	The process must be monitored with <u>mechanical temperature gauges and timing mechanisms</u> for each load, with a paper printout record	- Rapid, simple, moderate cost - Alternative to chemicals - Non-toxic - Can be used for some plastics	- Dry well & store carefully to prevent contamination - Difficult to monitor efficacy of the process - Preventive maintenance required

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED				
PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
HIGH LEVEL DISINFECTION (HLD)	Semicritical equipment/devices	Monitoring for dilution is recommended	Kills all vegetative forms of microbial life including bacteria, viruses, fungi and mycobacteria.	Does not kill bacterial spores.
		- Water temperature within the pasteurizer should be verified weekly by <u>manually</u> measuring the cycle water temperature - Cycle time should be verified <u>manually</u> and recorded daily - Daily cleaning of pasteurizing equipment is required following the manufacturer's recommendations		

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED				
PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
LOW LEVEL DISINFECTION (LLD)	Noncritical medical equipment/devices	Monitoring not required	Inactivates vegetative bacteria and enveloped viruses	Not able to kill fungi, non-enveloped virus, mycobacteria, or bacterial spores.
Alcohols (60-95%)	- External surfaces of some equipment (e.g. stethoscopes) - Noncritical equipment used for home health care	Monitoring not required	- Non-toxic - Low cost - Rapid action - Non-staining	- Evaporates quickly - not a good surface disinfectant - Evaporation may diminish concentration

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MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED

PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
LOW LEVEL DISINFECTION (LLD)	Noncritical medical equipment/devices	Monitoring not required	Inactivates vegetative bacteria and enveloped viruses	Not able to kill fungi, non-enveloped virus, mycobacteria, or bacterial spores.
	<u>Blood spill – minor:</u> dilute 1:100 with tap water to achieve 0.05% or 500 ppm chlorine <u>Surface cleaning, soaking of items:</u> dilute 1:50 with tap water to achieve 0.1% or 1,000 ppm chlorine			
Accelerated Hydrogen Peroxide 0.5% (7% solution diluted 1:16)	- Isolation room surfaces - Clinic and procedure room surfaces Low level disinfection is achieved after 5 minutes of contact at 20°C.	Monitoring not required, however test kits are available from the manufacturer	- Safe for environment - Non-toxic - Rapid action - Available in a wipe - Active in the presence of organic materials - Excellent cleaning ability due to detergent properties	Contraindicated for use on copper, brass, carbon-tipped devices and anodised aluminum
Hydrogen peroxide 3%	- Noncritical equipment used for home health care - Floors, walls, furnishings Disinfection is achieved with a 3% solution after 10 minutes of contact.	Monitoring not required	- Low cost - Rapid action - Safe for the environment	- Contraindicated for use on copper, zinc, brass, aluminum - Store in cool place, protect from light
Iodophors (Non-antiseptic formulations)	- Hydrotherapy tanks - Thermometers - Hard surfaces and equipment that do not touch mucous membranes (e.g. IV poles, wheelchairs, beds, call bells) DO NOT use antiseptic iodophors as hard surface disinfectants	Monitoring not required	- Rapid action - Non-toxic	- Corrosive to metal unless combined with inhibitors - Inactivated by organic materials - May stain fabrics and synthetic materials
Phenolics	- Floors, walls and furnishings - Hard surfaces and equipment that do not touch mucous membranes (e.g. IV poles, wheelchairs, beds, call bells)	Monitoring not required	- Leaves residual film on environmental surfaces - Commercially available with added detergents to provide	Do not use in nurseries - Not recommended for use on food contact surfaces - May be absorbed through skin or

MANUFACTURERS' RECOMMENDATIONS FOR PRODUCT, CONCENTRATION AND EXPOSURE TIME MUST BE FOLLOWED				
PROCESS OPTION	USES/COMMENTS	MONITORING	ADVANTAGES/COMMENTS	DISADVANTAGES/COMMENTS
LOW LEVEL DISINFECTION (LLD)	<u>Noncritical medical equipment/devices</u>	<u>Monitoring not required</u>	Inactivates vegetative bacteria and enveloped viruses	Not able to kill fungi, non-enveloped virus, mycobacteria, or bacterial spores.
	DO NOT use phenolics in nurseries		one-step cleaning and disinfecting Slightly broader spectrum of activity than QUATs	by rubber - May be toxic if inhaled - Corrosive - Some synthetic flooring may become sticky with repetitive use
Quaternary ammonium compounds (QUATs)	- Floors, walls and furnishings - Blood spills prior to disinfection DO NOT use QUATs to disinfect instruments	Monitoring not required	- Non corrosive, non-toxic, low irritant - Good cleaning ability, usually have detergent properties - Rinsing not required - May be used on food surfaces	- NOT to be used to disinfect instruments - Limited use as disinfectant because of narrow microbicidal spectrum - Diluted solutions may support the growth of microorganisms - May be neutralized by various materials (e.g. gauze)

Appendix G – Resources for Education and Training

Resources for Infection Prevention and Control

Organizations and Publications

Canadian Standards Association (CSA)

Source for national standards in sterilization and sterilizing equipment.

www.csa.ca/Default.asp?language=english

PubMed

PubMed is the National Library of Medicine's search service that provides access to over 15 million citations in biomedical and life sciences journals.

www.pubmed.com

Provincial Infectious Diseases Advisory Committee (PIDAC)

PIDAC was established by the Ontario Ministry of Health and Long-term Care and provides advice on protocols to prevent and control infectious diseases, emergency preparedness for an infectious disease outbreak, and immunization programs. They are in the process of publishing a number of best practice guidelines.

www.health.gov.on.ca/english/providers/program/infectious/pidac/pidac_mn.html

Public Health Agency of Canada (PHAC)

Public Health Agency of Canada. Guidelines – Infectious Diseases. Infection Control Guidelines – Hand Washing, Cleaning, Disinfection and Sterilization in Health Care. Canada Communicable Disease Report. 1998; 27(Suppl 8): i-xi, 1-55.

www.phac-aspc.gc.ca/publicat/ccdr-rmtc/98pdf/cdr24s8e.pdf

Public Health Agency of Canada. Guidelines – Infectious Diseases. Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care – Revisions of Isolation and Precaution Techniques, 1999. Canada Communicable Disease Report 1999; 25(Suppl 4): 1-142.

www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/

U.S. Centers for Disease Control and Prevention (CDC)

Infection Control Guidelines.

www.cdc.gov/ncidod/dhqp/index.html

Professional Associations

APIC- Association for Professionals in Infection Control and Epidemiology (U.S.)

Association for Professionals in Infection Control and Epidemiology (APIC). APIC Text of Infection Control and Epidemiology, 2005 Edition. Available for purchase from [APIC online store](#).

www.apic.org/AM/Template.cfm?Section=Store

CHICA –Canada. Community and Hospital Infection Control Association - Canada

National association for infection prevention and control professionals in Canada. Offers a number of Position Statements and expertise in infection prevention and control.

www.chica.org

The College of Physicians and Surgeons of Ontario

Infection Control in Physician's Office, 2004.

www.cpso.on.ca/Publications/infectioncontrolv2.pdf

Resources for Reprocessing

Central Service Association of Ontario (CSAO)

Provincial association of hospital central service workers dedicated to standardization of central service practices in hospitals across the province. Offers the “Central Service Techniques Course” at chapters around the province.

www.csao.net/education.htm

Algonquin College (Ottawa)

Offers course on Sterile Supply Processing.

www.algonquincollege.com/PartTimeStudies/currentOfferings.htm

Centennial College (Toronto)

Offers certificate course in processing: Introduction to Sterile Supply Processing

db2.centennialcollege.ca/ce/coursedetail.php?CourseCode=AN-100

Fanshawe College (London)

Offers Sterile Processing Technician certificate course.

www.fanshawec.ca/ce/health.asp

Ontario Hospitals Association (OHA)

Offers courses for CSAO workers.

www.oha.com

Sterris

Offers online endoscope reprocessing training.

www.steris.com/healthcare/res_education.cfm



Canadian Committee on Antibiotic Resistance
Comité canadien sur la résistance aux antibiotiques

www.ccar-ccra.org

Infection Prevention and Control Best Practices

for Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics

June, 2007

Sponsored by

The Canadian Committee on Antibiotic Resistance





DISCLAIMER

This best practices document is intended to guide clinical practice only and provide decision-making on infection prevention and control issues. Its use should be flexible to accommodate family/client wishes and local circumstances while ensuring best practice in infection prevention and control. They neither constitute a liability nor discharge from liability. While every effort has been made to ensure accuracy of the contents at the time of publication, neither the authors nor CCAR give any guarantee as to the accuracy of information contained in them nor accept any liability, with respect to loss, damage, injury or expense arising from any such errors or omission in the contents of this work.

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Canadian Committee on Antibiotic Resistance (2007) *Infection Prevention and Control Best Practices for Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics*

First Printing, June, 2007. It is the intent of the authors to update this document every five years.

CANADIAN COMMITTEE ON ANTIBIOTIC RESISTANCE (CCAR)

The Canadian Committee on Antibiotic Resistance (CCAR) was formed in 1998 to co-ordinate Canadian efforts to control the development and spread of antimicrobial resistance. Working together on activities identified in the *National Action Plan to Address Antibiotic Resistance*, CCAR's main areas of interest are resistance surveillance, infection prevention and control, and optimal antibiotic use. We provide outreach to the health care and agricultural communities through a variety of activities, including professional seminars, a series of reports and informational documents for specific target audiences and managing one of the most comprehensive websites on resistance in Canada (www.ccar-ccra.org).

CCAR also works with various levels of government to develop policy and identify human and financial resources to address resistance. The Public Health Agency of Canada provides considerable financial support through a three-year contract for services which expires in March, 2008. Whenever possible, CCAR leverages these resources to undertake activities and specific projects with those partners dedicated to the same interest in reducing antimicrobial resistance.

PREPARED BY

Clare Barry, Ministry of Health and Long Term Care

Nora Boyd, Bluewater Health, Canadian Committee on Antibiotic Resistance

Nan Cleator, Victorian Order of Nurses, Canada

Brenda Dyck, Winnipeg Regional Health Authority

Agnes Morin Fecteau, Veterans Affairs Canada, Ste Anne's Hospital

Dr. Elizabeth Henderson, Calgary Regional Health Authority

Linda Kingsbury, Vancouver Coastal Health

Marg McKenzie, Emergency Response, Edmonton Alberta

Judy Morrison, Public Health Agency of Canada

Patsy Rawding, Infection Control, Nova Scotia

Liz Van Horne, Ministry of Health and Long Term Care

Rick Wray, Hospital for Sick Children

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'Clean Care is Safer Care' **WHO**

To fight the spread of health care-associated infections, the World Health Organization and its partners launched the Global Patient Safety Challenge with the theme "Clean Care is Safer Care" in October, 2005. As part of the launch, the WHO Guidelines on Hand Hygiene in Health Care were made available. For more information about these guidelines, please visit:

<http://www.who.int/en/>

Infection Prevention and Control Best Practices

for Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics

Stakeholder Review List

CCAR would like to acknowledge and express appreciation for the following stakeholders whose input was considered in the final product.

Donna Baker RN
Manager, Infection Prevention and Control
SCO Health Service
43 Bruyere St.
Ottawa. ON K1N 5C8

Risa Cashmore RN BScN CIC
Public Health Nurse
Peel Health Unit
Mississauga Ontario

Terry Charlebois RN
ICP/Nurse Manager/Staff Education
Oakwood Terrace
10 Mount Hope Ave.
Dartmouth NS B2Y 4K1

Dr. John Conly
Professor of Medicine
Microbiology
Foothills Hospital
9th Floor North Tower
1403- 29th St NW
Calgary AB T2N 2T9

Bruce Gamage RN BSN CIC
Infection Control Consultant
BC Centre for Disease Control
655 W. 12th Ave.
Vancouver BC

Denise Gravel RN MSc CIC
Senior Epidemiologist
Blood Safety and Health Care
Acquired Infections Division
Public Health Agency of Canada
2006 Rolling Brook Drive
Ottawa, ON K1W 1C7

Heather Hague RN M.Ed CIC
Manager, Infectious Diseases
Program
Niagara Region Public Health
Department
P.O.Box 1052
Thorold ON L2V 0A2

Gwen Hammonds RN
Clinical Nurse Educator
Care Partners
St. Thomas, ON

Bernice Heinrichs MN CIC
Project Manager Infection
Prevention and Control
Disease Control and Prevention
Branch
Public Health Division
Alberta Health and Wellness
23rd Floor Telus Plaza N Tower
10025 Jasper Ave. NW
Edmonton AB

Bonnie Henry MD
Physician Epidemiologist
BC Centre for Disease Control
655 West 12th Ave.
Vancouver BC

Charlene McMahon RN BScN DPHN
Public Health Nurse CD Department
Lambton Community Health
Services Department
160 Exmouth St.
Sarnia, ON N7T 7Z6

Sharon O'Grady RN CIC
Infection Control Practitioner
Riverside Long Term Care Centre
Toronto ON

June Pollett RN MN
Regional Manager of Infection
Control Services
Eastern Regional Health Authority
10 Escasoni Place
St John's NL A1A 3R6

Dr. John Roman DDS
Doctor of Dental Surgery
J. Roman Health Services Ltd.
217 Wellington St.
Sarnia ON N7T 1G9

Josie Ryan RN CIC
Corporate Director Organizational
Health
Northwoodcare Incorporated
2615 Northwood Terrace
Halifax, NS B3K 3S5

Marilyn Weinmaster RN BScN CIC
Extended Care/Veterans Program
Wascana Rehabilitation Centre
2-440 2180 23rd Ave.
Regina, SK

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INTRODUCTION

Health care associated infection impacts patient/resident/client outcomes across the continuum (Baker 2004). Impact includes both morbidity and decreased quality of life. Health care providers and clients/residents are exposed to infection through inadequate infection prevention and control practices. The World Health Organization (WHO) has launched its Global Safety Challenge promoting 'Clean Care is Safer Care', which identifies the dangers of health care associated infections. The WHO's 'Clean Care is Safer Care' focuses on clean hands, clean equipment, clean clinical procedures and clean environment. Additional information on WHO's document can be found at: <http://www.who.int/en/>.

The Canadian Committee on Antibiotic Resistance (CCAR) has sponsored the development of best practices for asepsis and hygiene for long term care (LTC) facilities and community health care settings. The trend toward shorter hospital stays has resulted in more complex care being provided outside the hospital in LTC facilities and in the community and home care. These clients often are sicker and more often have invasive devices, require invasive procedures which makes them more vulnerable to infections, which in turn can cause serious complications.

This document uses the Canadian Community and Hospital Infection Control Association's (CHICA-Canada) core competencies for health care providers as a framework to determine requirements for *Infection Prevention and Control in Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics* (**Appendix IV**). Reference: (Henderson et al, 2006).

This document will be reviewed and updated every two years and as new information is published.

PURPOSE

This document is to assist the health care provider by providing a succinct guide to clean care in the long term care setting, and home and community care settings. This document will focus on screening clients/residents, risk assessment, and risk reduction strategies including clean hands, clean equipment, clean environment and health care provider and client education.

SCOPE OF DOCUMENT

This document covers long term care facilities (such as nursing homes, homes for the aged, retirement homes, behavioural health facilities and group homes) and community settings (such as health care practitioner offices – doctors offices, rehabilitatin therapy clinics, laboratory and diagnostic clinics, dental clinics), community and home health care providers.

Health care providers are defined as:

An individual who may have the potential to acquire or transmit an infectious agent during the course of his or her work in the health care workplace.



GUIDING PRINCIPLES

1. Infection prevention and control strategies are designed to protect clients, health care providers and the community.
2. Health care associated infections cause significant morbidity and mortality and at least 30% of health care associated infections can be prevented by following infection prevention and control strategies. Reference: (Haley et al, 1984).
3. A systematic approach to infection prevention and control requires each health care provider to play a vital role in protecting everyone who utilizes the health care system, in all of its many forms: pre-hospital settings, hospitals, clinics, offices, home care and community programs, etc.
4. Health care providers follow infection prevention and control practices at all times and use critical thinking and problem solving in managing clinical situations.

Reference: Ontario Ministry of Health and Long Term Care Infection Prevention and Control Core Competencies Program, 2005.



BASIC INFECTION PREVENTION MEASURES

HIERARCHY OF INFECTION CONTROL MEASURES

(Adapted from BC Centre for Disease Control Document on Respiratory Outbreaks)

There are important concepts regarding infection prevention and control measures that have been clarified over the past decade. Working with occupational health and safety groups and building engineers has created a framework that includes three levels of control: engineering controls, administrative controls and personal protective measures.

1. Engineering controls are built into the design (private bathrooms, private rooms, HVAC systems) of a health care facility. Infection prevention and control professionals should be involved in the design and planning of new facilities. An Infection Control Risk assessment should be done to evaluate and mitigate potential risks for microorganism transmission by means of air, water and environmental sources.
2. Administrative controls include protocols for hand hygiene, immunization of residents and caregivers, protocols for managing caregivers and clients during an outbreak and protocols for caring for clients with communicable diseases.
3. Personal protective equipment is the least desirable way to control hazards as it does not eliminate them, it merely contains the hazard and is dependent on its appropriate use by educated, knowledgeable staff.

RATIONALE FOR ROUTINE PRACTICES

THE CHAIN OF TRANSMISSION

(Source: Public Health Agency of Canada. Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care. 1999. <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>)

Transmission of infection during the provision of health care requires three elements: a source of infecting microorganisms, a susceptible host, and a means of transmission for the microorganism. In health care settings, because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission.

SOURCE

Human sources of the infecting microorganisms in health care facilities may be clients, health care providers, visitors, care providers or family members 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 client's own endogenous flora, which may be difficult to control, food, water and inanimate environmental objects that have become contaminated, including equipment and medications. The microorganisms include bacteria, viruses, fungi and parasites transmitted through these means and also via vectors such as lice, mosquitoes, flies and vermin.

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. Other individuals exposed to the same agent may establish a comfortable or residential relationship with the infecting microorganism and become asymptomatic carriers. Others may develop clinical disease. Host factors such as: extremes of age; underlying diseases; certain treatments with antimicrobials, corticosteroids, or other immunosuppressive agents; irradiation; and breaks in the first line of defense mechanisms (e.g. those caused by such factors as surgical operations, anesthesia, invasive procedures and indwelling devices) may make clients more susceptible to infection. Client self-care practices can

INFECTION PREVENTION AND CONTROL BEST PRACTICES FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

FIGURE 1: HOW MICROORGANISMS ARE ACQUIRED



improve host susceptibility (e.g. good oral hygiene, proper hydration, nutrition, skin, hand hygiene, respiratory etiquette and environmental factors) and reduce risk of infection.

TRANSMISSION

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, and vectorborne. For the purpose of this manual, common vehicle and vectorborne will be discussed only briefly because neither play a significant role in typical health care associated infections.

- (1) **Contact transmission**, the most important and frequent mode of transmission of health care associated infections (HAI), is divided into direct and indirect contact transmission.
 - **direct contact transmission** involves a direct body surface-to-body surface contact and physical transfer of microorganisms between an infected or colonized person, such as occurs when a health care provider turns a client, gives a client a bath, or performs other client care activities that require direct personal contact. Direct contact transmission also can occur between two clients or a visitor, with one serving as the source of the infectious microorganisms and the other as a susceptible host. For example a visiting nurse must wash his or her hands at the beginning and end of their visit so they don't transfer organisms from one person to another.
 - **indirect contact transmission** involves contact between a susceptible host and usually a contaminated inanimate object, such as equipment, instruments, and environmental surfaces. This is often the result of contaminated hands that are not washed which contaminate the object or environment. For example, activation staff who use a ball to pass from resident to resident.
- (2) **Droplet transmission**, theoretically, is a form of contact transmission. However, the mechanism of transfer of the pathogen to the host is quite distinct from either direct or indirect contact transmission. Droplets are generated from the source person primarily during coughing, sneezing, and talking, and during the performance of certain procedures such as suctioning and administering nebulized medications. Transmission occurs when droplets containing microorganisms generated from the infected person are propelled a short distance through the air (usually less than one metre) and deposited on the host's conjunctivae, nasal mucosa, or mouth. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission; that is, droplet transmission *must not* be confused with airborne transmission. Droplets can also contaminate the surrounding environment and lead to indirect contact transmission.

INFECTION PREVENTION AND CONTROL BEST PRACTICES FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

- (3) **Airborne transmission** occurs by dissemination of either airborne droplet nuclei (small particle residue [five mm or smaller in size] of evaporated droplets containing microorganisms or dust particles containing the infectious agent (e.g. dust created by rotary powered foot care tools). Microorganisms carried in this manner remain suspended in the air for long periods of time and can be dispersed widely by air currents. These may become inhaled by a susceptible host within the same room or over a longer distance from the source client, depending on environmental factors. Environmental controls are important – special air handling and ventilation help reduce airborne transmission. Microorganisms transmitted by airborne transmission include *Mycobacterium tuberculosis*, *Rubeola* (Measles), *Varicella* (Chickenpox), and *Disseminated Zoster* (widespread shingles). In settings where environmental controls are not available, use a hierarchy of control which means using personal protective equipment. Immune individuals do not require PPE (*Varicella* and *Rubeola*).
- (4) **Common vehicle transmission** applies to microorganisms transmitted by contaminated items such as food, water and medications to multiple hosts and can cause explosive outbreaks. Control is through using appropriate standards for handling food and water and preparing medications.
- (5) **Vectorborne transmission** occurs when vectors such as mosquitoes, flies, rats, and other vermin transmit microorganisms; this route of transmission is of less significance in health care facilities in Canada than in other settings.



ROUTINE PRACTICES

Routine Practices are a way of thinking and acting that forms the foundation for limiting the transmission of microorganisms in all health care settings.

It is the standard of care for all patients/clients/residents.

Reference: Rick Wray, Hospital for Sick Children

Routine Practices have been used by the Public Health Agency of Canada since 1999 for the process of risk assessment and risk reduction strategies. They are used with all clients/residents at all times and include education of health care providers, clients, families and visitors. Routine Practices supercede, and are more encompassing, than previous bloodborne pathogen precautions or Universal Precautions.

Based on the assumption that all blood and certain body fluids (urine, feces, wound drainage, sputum) contain infectious organisms (bacteria, virus or fungus), Routine Practices reduce exposure (both volume and frequency) of blood/body fluid to the health care provider. The key to implementing Routine Practices is to assess the risk of transmission of microorganisms before any interaction with patients/clients/residents. The consistent use of Routine Practices will assist in reducing exposure (both volume and frequency) of all blood/body fluid to the health care provider and transmission to others and the environment.

THE ELEMENTS OF ROUTINE PRACTICES ARE:

- Hand hygiene
- Risk assessment related to client symptoms, care and service delivery, including screening for infectious diseases, fever respiratory symptoms, rash, diarrhea, excretions and secretions
- Risk reduction strategies through use of personal protective equipment (PPE), cleaning of environment, laundry, disinfection and sterilization of equipment or single use equipment, waste management, safe sharps handling, client placement and healthy workplace practices
- Education of health care providers, clients and families/visitors

Routine Practices prevent transmission of microorganisms in most settings and include the following requirements (see PIDAC Routine Practices Poster- Appendix IIB):

- 1. Hand hygiene** is the single most important thing to do to prevent transmission of infection. Although health care providers know the importance of hand hygiene, studies continue to show health care providers perform hand hygiene less than half the time they should. Hand hygiene should be performed:
 - Before providing care to the client
 - Between dirty and clean activities
 - When PPE is removed
 - When leaving the client
 - Use alcohol-based hand rub at 60-90% concentration ethyl or isopropyl or Hand washing with plain liquid soap and running water.
 - The use of alcohol-based hand rub is the preferred method of decontamination of hands that are not visibly soiled and should be available at the point of care.
 - Use hand hygiene after touching blood, body fluids, excretions and contaminated items in the client/ resident's environment.
 - Wash hands:
 - after removing gloves
 - between clients/residents
 - before contact with clean items
 - before aseptic practices on a patient

Hand hygiene also includes caring for hands to maintain intact skin. Regular use of hand lotion is recommended.

See attached Hand Hygiene Fact Sheet (Appendix IIA).

- 2a. Screening for communicable diseases** (coughs, colds and diarrhea). In the clinic setting, ask simple questions.
 - Do you have a new cough or shortness of breath?
 - If no – no further questions.
 - If yes – Do you have a new fever or chills in the last 24 hours?
 - Do you have new onset diarrhea?
 - Do you have a new undiagnosed rash?

See attached Sample Screening Poster and Example Screening Questionnaire (Appendix IIC&D).

- 2b. Risk Assessment:** there are two levels of assessment required.
 - i. Point of entry or while booking appointments over the phone, a screening for fever, cough or respiratory symptoms, rash or diarrhea is done.

Script for appointment booking:
If you have symptoms of fever and cough, diarrhea or rash within 24 hours of your next appointment or visit, then let this office (or health care provider) know before the scheduled appointment (or visit).
 - ii. Assessment should be standardized during the admission process to include the screening questions plus asking about recent exposures to infectious disease such as *Chickenpox, Measles or Tuberculosis* and recent travel depending on what is prevalent in your community. Other questions would include:
 - Do they have a cough and are not able to follow respiratory etiquette?

Respiratory etiquette includes covering a cough or sneeze and disposing of tissues in a waste receptacle (see attached Respiratory Etiquette poster in Appendix IIE).

- Do they have a fever?
- Do they have drainage or leakage? Is it contained?
- Are they incontinent?
- How susceptible is the client to infection? Is their immune system intact (not the very young or very old)? Do they have invasive devices, open areas or auto-immune diseases?
- What is the risk of exposure to blood, body fluids, mucous membranes, non-intact skin in the tasks about to be performed?
- How competent is the health care provider in performing this task?
- How cooperative will the client/resident be while the task is performed?

- 3. Risk Reduction Strategies** will assist the health care provider in minimizing his or her exposure to body fluids and mucous membranes. Once the risk assessment has been completed, strategies, including hand hygiene, use of personal protective equipment (PPE), client placement and cleaning and disinfection of equipment, should be used to reduce risk of transmission of microorganisms within the health care setting. Whenever you might come in contact with non intact skin, mucous membranes or body fluids, you need to put on a barrier or personal protective equipment (PPE).

a. Client Placement:

- i. Clinic Setting - maintain a three to five foot distance until initial triage is completed. Sit beside the client (as opposed to across from). Segregate if possible in waiting rooms.
- ii. Planning Visit - visit client with uncontained draining wound at the end of the day.
- iii. Long Term Care - place susceptible clients (with open areas or indwelling tubes) with low risk clients (continence, follows directions, maintain hygiene).

In long term care facilities (LTCF) it is important to assess and integrate clients into activities safely. The admission assessment will assist to identify which clients can participate in levels of interaction with other clients, for example participating in a sing-song is acceptable for a client with a covered, contained wound.

b. Personal Protective Equipment (PPE)

Protect yourself and others from body substances and mucous membranes. You will need to put on a barrier or personal protective equipment (PPE) whenever there is a risk of coming in contact with non-intact skin, mucous membranes or body fluids.

Gloves: The most commonly worn personal protective equipment is quality vinyl gloves. Choose glove material based on the risks for which you are wearing them (e.g. vinyl for personal care and wound care, latex for sterile invasive procedures, nitrile for exposure to chemicals). Wear them for likely hand exposure to blood and body fluids.

Put on clean gloves just before touching mucous membranes and non-intact skin.



Change gloves and perform hand hygiene when:

- Moving from dirty areas to clean areas on the same client
- Moving from dirty to clean procedures on the same client
- After contact with large amounts of blood and body fluids
- When in contact with blood and body fluids containing high concentrations of microorganisms

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Remove gloves promptly after use and perform hand hygiene before touching clean items and environmental surfaces; before touching your eyes, nose and mouth; and before going on to another client. Remove gloves as the first step in the removal of PPE.

WHEN TO WEAR GLOVES	WHEN NOT TO USE GLOVES
When there is a risk of exposure/splash/contact with blood, body fluids and non-intact skin. Examples: • Changing a dressing • Changing diapers • Cleaning up an incontinent resident/client • Performing mouth care	Examples: • Feeding a resident/client • Social touch • Pushing a wheelchair • Delivering meals, mail, laundry • Providing care to residents with intact skin such as taking temperature

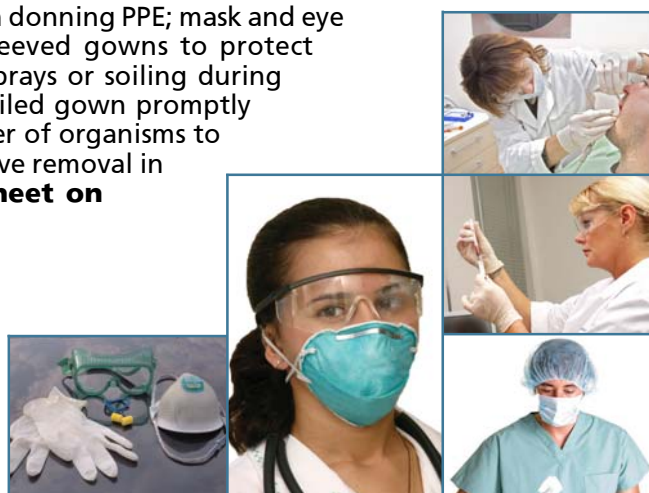
Masks (Surgical) Face Protection/Face Shields: Wear masks to provide protection of the health care provider's nose and mouth from likely splashes and sprays of blood or body fluids. Face shields and eye protection guard the eyes of health care providers against likely splashes and sprays of blood or body fluids. Choose eye gear that protects the eye from all directions. Splashes and sprays can be generated from a client's behaviour (e.g. coughing or sneezing) or during procedures (e.g. suctioning, wound irrigation, cleaning soiled equipment, using a spray hose). Surgical masks with ear loops are the easiest to put on and remove. Apply masks after donning the gown and eye protection next. Apply before performing a procedure and wear within three to five feet of the coughing, sneezing client. This prevents the transmission of microorganisms to the health care provider's mucous membranes in their eyes, nose and mouth to reduce infection.

N95 Respirators: For additional information, please visit: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtcl/99vol25/25s4/index.html>.

A fit tested N95 respirator is required to protect the airways of the health care provider. It is intended to seal tightly to the face and filters airborne organisms. Wear a fit tested N95 respirator if:

- The client has a known or suspected airborne infection (e.g. *Tuberculosis*, *Chickenpox*, *Measles*, *Disseminated Zoster* or *hantavirus*)
- Performing aerosolizing procedures with a client with droplet infection (e.g. open suctioning, nebulized medications, BIPAP)
- Directed by public health officials with a new or emerging disease where the route of spread is not known

Gowns: Put on the gown as the first procedure when donning PPE; mask and eye protection is the second procedure. Wear long sleeved gowns to protect uncovered skin and clothing from likely splashes, sprays or soiling during procedures and client care activities. Remove the soiled gown promptly after use and perform hand hygiene to avoid transfer of organisms to clients and the environment. Remove gown after glove removal in the PPE removal sequence. **See attached Fact Sheet on Gowns, Aprons and Lab Coats (Appendix IIJ)**



INFECTION PREVENTION AND CONTROL BEST PRACTICES FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

c. Safe handling of sharps

Safe handling of sharps reduces exposure to bloodborne pathogens. Use appropriate barriers and safe work practices when using sharp instruments and devices (e.g. needles, scalpels, etc.), after procedures and when cleaning used instruments. Use point of use disposal receptacles for sharps and use puncture resistant containers with clear labels, a handle and tight fitting lid to reduce risk in the work area.

Dispose of sharps immediately in a clearly labelled, puncture resistant container. Do not recap, bend or manipulate needles in any way for disposal. The container should have a tightly fitting lid that seals and prevents leakage. This reduces risk to you, other health care providers, clients and others in the environment (e.g. waste disposal handlers). Fill containers only to $\frac{3}{4}$ full, close the lid securely and tape closed.

Replace the used container. Safety of placement of the sharps container in the client's home/mobile clinics should be a top priority in consideration of children, confused adults, drug abusers, etc.



Used sharps are considered **biomedical waste** in health care offices, labs and long term care facilities. Dispose of used sharps containers in accordance with regulations from municipal, provincial/territorial authorities. For home care, follow municipal regulations for disposal as some municipalities allow used needles from domestic waste to be disposed of as general waste.

- Never uncap a needle or sharp unless you know where you will dispose immediately after use
- Always carry a small sharps container in your car
- Local pharmacies often have an exchange program for sharps containers
- Check the Canadian Diabetes Website for recommendations (<http://www.diabetes.ca/>)
- Ensure the safety of waste handlers by disposing of sharps in sealed puncture resistant containers

(For more information on sharps safety, please visit the Ontario Safety Association for Community and Health Care website: <http://www.osach.ca/new/SaftyInfo/SEMS.html>.)

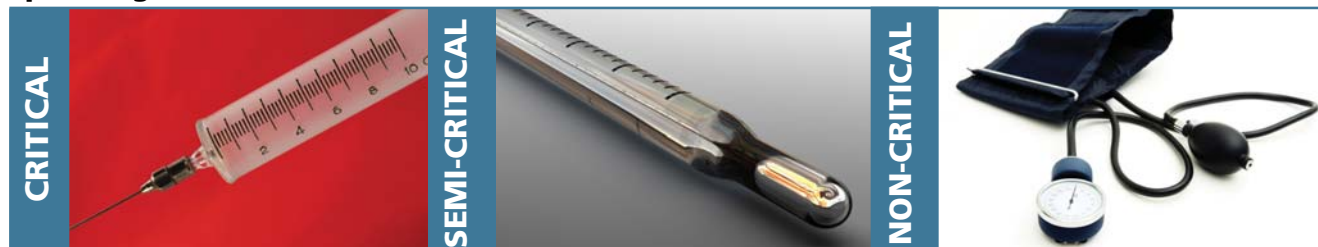
d. Clean Client Care Equipment

Ensure multi-use equipment is not used in the care of another client until it has been properly cleaned and re-processed. Do not re-use single use items. Use clean hands to handle clean equipment. Any equipment or device that comes in contact with mucous membranes, open areas or beneath the skin in sterile sites must be re-processed correctly. Single use items, such as a tourniquet or needle, are one-client use only and are disposed of properly.

There are three categories of client equipment (each category defines how it must be cleaned to prevent infection transmission).

- **Critical** – comes into contact with sterile sites (e.g. needles)
- **Semi Critical** – comes into contact with mucous membranes or non-intact skin (e.g. scopes, thermometers)
- **Non Critical** – comes into contact with intact skin (e.g. Blood pressure cuff)

Spaulding classification



When does re-useable medical equipment require cleaning?

- For maintenance requirements (everyday accumulation of dust and dirt) the pieces of equipment in this category include blood pressure cuffs, scissors, stethoscopes, digital cameras, ultrasound machines and electronic equipment
- To remove blood and body fluids (before disinfecting and sterilizing)
- When equipment has been exposed to an infectious organism (before disinfecting or sterilizing)

If re-useable medical equipment doesn't touch the client's skin, does it require cleaning, disinfection or sterilization?

There is no requirement for routine disinfection or sterilization as those pieces of equipment carry little risk of spreading infection. However, there is a requirement to disinfect or sterilize those pieces of equipment if they become contaminated with blood or body fluids or if they have been exposed to a client with an infectious organism.

What other strategies should be used to reduce risk when using medical equipment with a client who has an infectious organism?

Single use items (e.g. tourniquet) are used for one client only and are properly discarded after use. Re-useable medical equipment used to assess clients and provide care must be appropriately cleaned, disinfected or sterilized based on how it is used and whether it has come into contact with known or suspected infectious organisms. Re-useable medical equipment is not used in the care of another client until it has been properly cleaned. **Use clean hands or clean gloves to handle clean equipment.**

In a health care office or long term care facility, most critical items will be disposable, one time use. **See attached sheet on Sterilization and Disinfection (Appendix III).**

Sterile medicines

Multidose vials must be labelled with the date, time and initials of when the vial was opened to ensure potency. Use sterile needles and clean the stopper when withdrawing medications to ensure the vial maintains sterility. There have been cases of contamination of multidose vials if syringes or needles are re-used. Avoid multidose vials if possible due to the risk of contamination.

Medications, including vaccines that require refrigeration, must be stored in a manner that ensures they remain safe (e.g. cold chain for vaccines). This requires daily monitoring and documenting of fridge storage temperature. Separate fridge storage just for medications is required.

e. Clean Environment (Housekeeping Routines):

In long term care facilities, community agencies and health care offices, horizontal/high touch surfaces need to be cleaned daily and when visibly soiled. Housekeeping Routines should involve cleaning and disinfecting surfaces, toys and objects with a low level disinfectant (**See Table 1 for types of disinfectants**). Encourage clients and their caregivers to perform regular cleaning of frequently touched surfaces (e.g. taps, sinks, toilets, bedside tables) as one way to prevent the spread of infection to others in the home.



INFECTION PREVENTION AND CONTROL BEST PRACTICES FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

TABLE 1: **LOW LEVEL DISINFECTANTS (LLD)**

Chemical	Action	Application	Exposure Time	Comments
Quaternary ammonium compounds	LLD	Daily cleaning and sanitizing of surfaces and equipment	Use as directed on the label	Fairly inexpensive, releases volatile organic compounds
Accelerated hydrogen peroxide products	LLD	Daily cleaning and sanitizing of surfaces and equipment	As directed on the label	Safe and effective
Sodium hypochlorite (1:100 dilution of household bleach)	LLD	Daily cleaning and sanitizing of surfaces and equipment	Until dry	Disinfectant but no cleaning properties

TABLE 2: **CLEANING PROCEDURES FOR COMMON ITEMS**

SURFACE / OBJECT	PROCEDURE	SPECIAL CONSIDERATIONS
Horizontal surfaces such as overbed tables, work counters, baby weigh scales, beds, cribs, mattresses, bedrails, call bells	1. regular cleaning with detergent 2. cleaning when soiled 3. cleaning between clients and after discharge	Special procedures called carbolizing are not necessary. Some environmental surfaces may require low level disinfection depending on the type of invasive procedure being done (nurseries, pediatric offices, procedure rooms)
Walls, blinds, curtains	Should be cleaned regularly with a detergent and as splashes/visible soil occur	
Floors	1. regular cleaning 2. cleaning when soiled 3. cleaning between patients 4. damp mopping preferred	Detergent is adequate in most settings Blood/body spill should be cleaned with disposable cloths followed by disinfection with low level disinfectant
Carpets/ upholstery	Should be vacuumed regularly and shampooed as necessary	
Toys	Should be regularly cleaned, disinfected with a low level disinfectant, thoroughly rinsed and dried	For pediatric settings, toys should be constructed of smooth non-porous materials to facilitate cleaning. Do not use phenolics.
Toilets and commodes	1. regular cleaning 2. cleaning when soiled 3. clean between clients/after discharge 4. use a low level disinfectant	Dedicated equipment is best

Source: PHAC Handwashing, Cleaning Disinfection and Sterilization Guideline – 1998, Page 30.

Cleaning of surfaces requires the removal of body substances by staff wearing the appropriate PPE and then disinfecting the area. Appropriate routine cleaning and removal of soil are essential. Body fluid spills or equipment used by a client requires use of PPE (usually gloves when cleaning, removing the soil) and then disinfecting the area or equipment. WHMIS sheets (MSDS) must be available for the disinfectant being used. Commercial spill kits are useful for clinics and offices.

Cleaning is accomplished with water, detergents and mechanical action. Skin antiseptics should not be used for disinfecting inanimate objects. Detergents are adequate for most surface cleaning.

1. Using friction, clean equipment with soap and water to remove any soil, dust, blood or body fluids from the surface of the equipment. A brush may be necessary.
2. Dismantle equipment to clean in crevices when possible
3. Rinse and dry

Regular schedules for daily cleaning are required. Client contact areas must be cleaned between each client. Responsibility for cleaning must be clearly assigned.

How to clean up (and disinfect) after a blood or body fluid spill:

1. Put on a pair of disposable gloves
2. Clean up the spill using paper towels, then wash the area with detergent and water
3. Wipe the surface with a fresh solution of 1:10 bleach (50ml of bleach to 450 ml of water)
4. Leave the solution in contact with the surface until dry
5. Dispose of used paper towel in garbage, remove gloves, wash hands

f. Laundry

Microbial counts on soiled linens are significantly reduced during mechanical action and dilution of washing and rinsing. With the high cost of energy and use of cold water detergents (which do not require heat to be effective), hot water washes (>71 degrees C for 25 minutes) may not be necessary. Several studies show low temperature laundering will effectively eliminate residual bacteria to a level comparable to high temperature laundering. (Reference: *PHAC Handwashing, Cleaning, Sterilization and Disinfection in Health Care*, 1998, page 34.)

Linens used in the health care setting can be laundered together using detergent and dried in a hot air dryer to ensure killing of microorganisms. Linens with organic material left on them will require pre-treating to remove the material. It is impossible to clean laundry when organic material is present.

In health care settings, linen may be cleaned within the setting or sent to a commercial laundry facility. **See the attached Laundry Fact Sheet in Appendix IIG for details on proper handling of laundry.**

Although soiled linen has been identified as a source of microorganisms, the risk of actual disease transmission appears negligible providing hygienic handling, storage and processing of clean and soiled linen are carried out. Clean laundry must be stored apart from soiled linens.

In homes, health care providers should handle any laundry soiled with blood or body fluids with gloves and avoid touching it to their clothes or skin; position the laundry basket nearby to reduce handling (keep off the floor and upholstered furniture); handle with minimal agitation and do not shake; remove fecal material into the toilet. Teach family or caregivers how to handle contaminated laundry safely. Wash heavily soiled laundry separately and add bleach to wash water according to manufacturers' instructions if material is bleach tolerant.



INFECTION PREVENTION AND CONTROL BEST PRACTICES FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS



g. Waste is divided into three categories; **general**, **biomedical** and **pathological**. Legislation requires that biomedical waste be handled and disposed of in such a way as to avoid transmission of potential infections.

The most obvious **biomedical waste** generated in a long term care facility, health office or community health agency are sharps. Use puncture resistant sharps containers to remove, store and dispose of used sharps such as needles, blades, razors and other items capable of causing punctures.

Some municipalities may allow needles used in the home to be disposed of as **general waste**. Sometimes they may require decontamination by adding bleach first and then sealing the lid. Check with local authorities for the appropriate disposal method. Teach clients and their caregivers in homes how to handle and dispose of sharps and sharps containers safely. If legally discarding a sealed container of sharps in the garbage, place it in the middle of the garbage bag to reduce risk of injury to the waste handlers.

Non-anatomical waste, such as liquid blood or body fluid drainage (e.g. chest tube drainage containers, IV blood filled tubing), must also be packaged as **biomedical waste**.

See Local, Regional, Provincial and Federal regulations on waste. Licensed medical waste handlers must be used to remove biomedical and pathological waste.

Anatomical waste such as body parts is classified as **pathological waste** and must be disposed of according to the regulations for handling pathological waste.

All other waste, such as general office waste, used gloves or non-sharp medical equipment, may be disposed of in regular waste and requires no special handling other than containment during disposal and removal.

This does not include waste that is “domestic waste”. The Canadian definition of biomedical waste does not include domestic waste. For more information, please visit: http://www.ene.gov.on.ca/envision/env_reg/er/documents/2001/RAOIE0023_g2.pdf.

Recommendations for waste handling:

1. Local municipal regulations on waste segregation must be followed
2. Waste generated in health care settings is no more hazardous than household waste
3. Segregating sharps waste and packaging it in a puncture resistant container according to municipal regulations is required so it does not result in injuries by waste industry workers or community members
4. Package waste to contain it in a leak-proof container that can be disposed of or cleaned after emptying
5. Empty waste frequently and store in a manner that protects it prior to pick up/disposal
6. Waste handlers should wear protective apparel and be offered Hepatitis B vaccination

Source: PHAC: *Handwashing, Cleaning, Disinfection and Sterilization Guideline*. 1998.

Liquid waste such as urine, feces, providine iodine, irrigating solutions, suctioned fluids, excretions and secretions may be poured carefully down the client's toilet, which is connected to a sanitary sewer or septic tank. Body fluids in small amounts such as blood in a syringe withdrawn from a CVAD before a blood sample is obtained may be discarded in a puncture proof sharps container. Provincial and territorial regulations may dictate the maximum volume of blood or body fluids that is permitted to be poured in the sanitary sewer (e.g. 300mls). If there is likely to be splashes or sprays from disposing of blood or body fluids, apply PPE.

h. Healthy Workplace – Keeping your staff and clients safe

All staff working in health care should have a two-step tuberculin skin test at the beginning of employment unless they have documentation of a negative skin test in the past 12 months. The local Medical Officer of Health can advise on the need for routine testing depending on the prevalence of Tuberculosis in your community. Health care providers need to know their history of childhood communicable diseases.

Organizations should commit to promoting vaccine preventable diseases. Documentation of immune status will be considered when assigning a health care provider to a particular case.

For additional information, please review Health Canada's *Canadian Immunization Guideline* at: http://www.phac-aspc.gc.ca/publicat/cig-gci/pdf/cdn_immuniz_guide-2002-6.pdf.

Recommended immunization of staff includes:

- Annual influenza immunization
- Measles, Mumps and Rubella (MMR) – two doses
- Tetanus Diphtheria and Polio (TDP)
- Hepatitis B (full series with follow up blood work to determine conversion)
- For susceptible health care providers, varicella vaccine is recommended (history negative, IgG negative)

Staff should receive education on when to stay home from work in a health care setting. This includes:

- Febrile respiratory illness
- Dermatitis on their hands (consult your physician about your risk)
- Cold sores or shingles that can't be covered
- The initial days of a respiratory illness
- Diarrhea
- Eye infections until treated

Most employers of health care providers will have policies in this regard.

If sharps are used in the practice setting, you will need to know where, when and how to obtain follow up after a potential bloodborne pathogen exposure.

Health care providers and volunteers practice healthy behaviours by self screening for fever, new cough, diarrhea and new rashes, and staying home when sick.

INFECTION PREVENTION AND CONTROL BEST PRACTICES FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

Follow-up for punctures or mucous membrane exposures to bloodborne pathogens

- Ensure you know the procedure at your facility
- First Aid: Rinse, wash and clean involved area after exposure
- Recognize importance of medical follow-up (use of Post-Exposure Prophylaxis [PEP] within one to two hours can reduce HIV transmission by 90%)
- Medical follow-up at appropriate agency to be assessed for bloodborne pathogens: Hepatitis B, Hepatitis C and HIV
- Proper follow-up includes;
 - Significance of exposure
 - Risk factors
 - Prophylactic medication if indicated
 - Education and counselling for informed consent and testing if required
 - Precautions necessary

If testing is required – serial testing should be conducted at time of exposure, then at three and six months.

i. Education

Educate health care providers regarding infection prevention and control strategies.

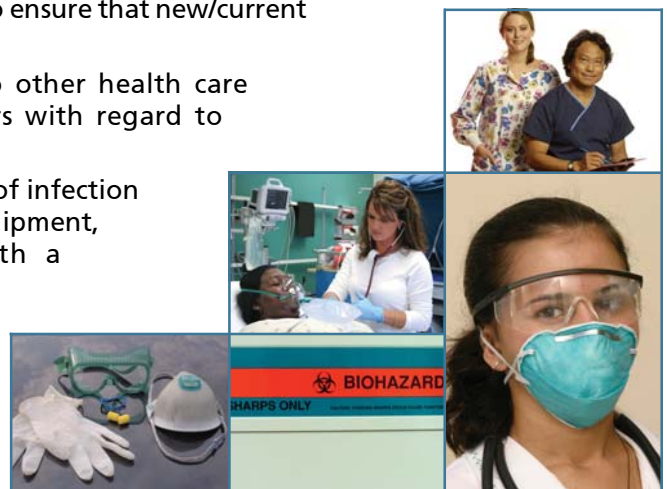
- Who provides infection prevention and control expertise to your setting? Who would you call for help?
- In most long term care facilities, there is a pre-existing relationship with the local health unit. For community agencies and health care offices, regional infection control networks and local health units have the expertise to answer infection prevention and control questions. The Public Health Agency of Canada (PHAC) Infection Control Guidelines, Centres for Disease Control and provincial guidelines provide written support.
- Provide leadership and act as a role model to other health care providers, clients/residents and families/visitors with regard to infection prevention and control strategies
- Demonstrate work practices that reduce the risk of infection – e.g. use hand hygiene, use proper PPE, be immunized, do not come to work with a communicable disease

Educate clients/residents/families about hygiene and infection prevention strategies such as hand hygiene.

- Health care providers should have access to standardized client education materials on infection reduction strategies such as: hand hygiene, respiratory etiquette, flu vaccination, 'what to do when you're sick' material appropriate to their client population
- Be able to identify unusual clusters or illnesses (e.g. respiratory, gastrointestinal, skin); and be aware of person, time, place tracking; and report to the appropriate person

Infection prevention and control health promotion

- Communicate between all sectors of health care to ensure that new/current material is available
- Provide leadership and act as a role model to other health care providers, patients/residents/clients and visitors with regard to infection prevention and control principles
- Demonstrate work practices that reduce the risk of infection (e.g. use hand hygiene, use proper protective equipment, be immunized, do not come to work with a communicable disease)



SUMMARY OF INFECTION PREVENTION AND CONTROL BEST PRACTICES

FOR LONG TERM CARE, HOME AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

(See complete text for rationale)

1. Basic infection prevention measures are based on a knowledge of the chain of transmission and the application of Routine Practices in all settings at all times
2. The elements of Routine Practices include:
 - Hand Hygiene
 - Risk Assessment of clients
 - Risk Reduction Strategies through use of personal protective equipment, cleaning the environment and equipment, laundry, disinfection and sterilization of equipment or use of single use equipment, waste management, sharps handling, client placement and healthy workplace initiatives
 - Education of health care providers, clients and families/visitors/caregivers
- 2.1 Hand Hygiene includes handwashing and use of alcohol-based hand rub (greater than 60% alcohol) before client care, between dirty and clean and when leaving the client
- 2.2 Screening and assessing clients must be done to identify any communicable disease risks with the client contact
 - Clients are prompted to self assess when booking appointments
 - Clients are educated about respiratory etiquette
- 2.3 Risk Reduction Strategies that provide reduced exposure in the presence of communicable diseases must be used. Those strategies include the following:
 - client placement (segregation)
 - personal protective equipment – proper use and removal
 - safe handling of sharps
 - clean client equipment including sterile medications
 - clean environment
 - clean laundry
 - proper handling of waste
 - healthy workplace practices that keep staff and clients safe including the need for immunization and education on when to stay home from work in a health care setting plus clear follow up protocol for exposure to blood and body fluids
- 2.4 Providing health care provider and client education on infection prevention and control strategies is required

APPENDIX I

DEFINITIONS

ARO – ANTIBIOTIC RESISTANT ORGANISMS

An individual form of life (i.e. bacteria) that can withstand the effects of an antibiotic.

BACTERIA

Any of the unicellular, prokaryotic microorganisms of the class Schizomycetes, which vary in terms of morphology, oxygen and nutritional requirements, and motility, and may be free-living, saprophytic, or pathogenic, the latter causing disease in plants or animals.

COLONIZED

When a person has bacteria living on their skin or in their throat but is not ill because of it.

COMPETENCY

The individual should demonstrate proficient application of the skills and knowledge required to function capably, effectively and safely.

Having the capacity to behave or work in a way that promotes a safe environment under usual circumstances by demonstrating knowledge and skills related to hygiene and asepsis.***

***This process must be audited on a routine basis to verify standards have been met.

FUNGUS

Any of numerous eukaryotic organisms that reproduce by spores. The spores of most fungi grow a network of slender tubes called hyphae that spread into and feed off of dead organic matter or living organisms. The hyphae often produce specialized reproductive bodies, such as mushrooms.

HEALTH CARE WORKER

Individual providing or supporting health care services that will bring them into contact with patients/clients/residents.

This includes, but is not limited to:

- Emergency service workers, physicians, dentists, chiropractors, nurses, podiatrists, respiratory therapists and other allied health professionals, students, support services (e.g. housekeeping, dietary, maintenance, hairdressers), and volunteers

HIERARCHY OF CONTROL MEASURES

(Adapted from BC Centre for Disease Control Document on Respiratory Outbreaks)

There are important concepts regarding infection prevention and control measures that have been clarified over the past decade. Working with occupational health and safety groups and building engineers has created a framework that includes three levels of control: engineering controls, administrative controls and personal protective measures.

1. Engineering controls are built into the design (private bathrooms, private rooms, HVAC systems) of a health care facility. Infection prevention and control professionals should be involved in the design and planning of new facilities. An Infection Control Risk assessment should be done to evaluate and mitigate potential risks for microorganism transmission by means of air, water and environmental sources.
2. Administrative controls include protocols for hand hygiene, immunization of residents and caregivers, protocols for managing caregivers and clients during an outbreak and protocols for caring for clients with communicable diseases.
3. Personal protective equipment is the least desirable way to control hazards as it does not eliminate them, it merely contains the hazard and is dependent on its appropriate use by educated, knowledgeable staff.

IMMUNE

Of, relating to, or having immunity to infection by a specific pathogen.

INFECTED

Entry of a pathogenic organism resulting in clinical signs and symptoms of infection such as redness, swelling, heat.

INFECTIVITY

The ability of a pathogen to establish an infection.

NORMAL FLORA

The human body contains a large number of bacteria, most of them performing tasks that are useful or even essential to human survival. Those that are expected to be present, and that under normal circumstances do not cause disease, are termed “normal flora”.

PARASITE

An organism that grows, feeds, and is sheltered on or in a different organism while contributing nothing to the survival of its host.

PATHOGENIC

Having the capability to cause disease; producing disease.

ROUTINE PRACTICES

Routine Practices is the term used by Health Canada/Public Health Agency of Canada to describe the system of infection prevention and control practices recommended in Canada to prevent and control transmission of microorganisms in health care settings. **Consistent use of Routine Practices with all clients/residents/patients is critical to preventing transmission of microorganisms from client to client and client to staff.**

The full description of Routine Practices to prevent and control transmission of health care acquired infections can be found on the Public Health Agency of Canada website: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>. **See attached Routine Practices Poster (Appendix IIB).**

RESPIRATORY ETIQUETTE (CDC DEFINITION)

Measures to contain respiratory secretions for all individuals with signs and symptoms of a respiratory infection and include:

- Cover nose/mouth when coughing or sneezing – cough into elbow or sleeve
- Use tissues to contain respiratory secretions and dispose of them in nearest waste receptacle after use
- Perform hand hygiene (e.g. hand washing or use alcohol-based hand rub) after having contact with respiratory secretions and contaminated objects.

SUSCEPTIBILITY

Likelihood to be affected with a disease, infection, or condition.

VIRUS

Any of a large group of submicroscopic agents that act as parasites and consist of a segment of DNA or RNA surrounded by a coat of protein. Because viruses are unable to replicate without a host cell, they are not considered living organisms in conventional taxonomic systems. Nonetheless, they are described as “live” when they are capable of replicating and causing disease.

APPENDIX II – FACT SHEET (A)

HAND HYGIENE FOR HEALTH CARE SETTINGS

Source: PIDAC Provincial Infectious Diseases Advisory Committee

In health care settings, hand hygiene is the single most important way to prevent infections.

Hand hygiene is the responsibility of all individuals involved in health care. Hand hygiene refers to removing or killing microorganisms on the hands as well as maintaining good skin integrity. There are two methods of removing/killing microorganisms on hands: washing with soap and running water or using an alcohol-based hand rub. Generally, the focus is on microorganisms that have been picked up by contact with clients/health care providers, contaminated equipment, or the environment (transient or contaminating bacteria).

Effective hand hygiene kills or removes microorganisms on the skin and maintains hand health.

ALCOHOL-BASED HAND RUB

Alcohol-based hand rub is the preferred method for decontaminating hands. Using alcohol-based hand rub is better than washing hands (even with an antibacterial soap) when hands are not visibly soiled.

However, hand washing with soap and running water must be performed when hands are visibly soiled. If running water is not available, use moistened towelettes to remove the visible soil, followed by alcohol-based hand rub.

HAND WASHING

Most transient bacteria present on the hands are removed during the mechanical action of washing, rinsing and drying hands. Hand washing with soap and running water must be performed when hands are visibly soiled.

WHEN SHOULD HAND HYGIENE BE PERFORMED?

Hand hygiene must be performed:

- Before and after contact with a client
- Before performing invasive procedures
- Before preparing, handling, serving or eating food
- After care involving the body fluids of a client (e.g. assisting client to blow nose, toileting the client or doing wound care) and before moving to another activity
- Before putting on and after taking off gloves
- After personal body functions, such as using the toilet or blowing one's nose
- Whenever a health care provider is in doubt about the necessity for doing so
- When hands accidentally come into contact with secretions, excretions, blood and body fluids (hands must be washed with soap and running water)
- After contact with items in the client's environment

FACTORS THAT INFLUENCE HAND HYGIENE

The following factors influence the effectiveness of hand hygiene:

- Condition of the skin – intact skin vs. presence of dermatitis, cracks, cuts or abrasions
- Nails: natural nails more than 3-4 mm (1/4-inch) long are difficult to clean, can pierce gloves and harbour more microorganisms than short nails
- Only nail polish in good condition is acceptable
- Artificial nails or nail enhancements are not to be worn by those giving patient care as they have been implicated in the transfer of microorganisms
- Jewellery – rings and bracelets hinder hand hygiene, and should not be worn for patient contact; rings increase the number of microorganisms present on hands and increase the risk of tears in gloves

APPENDIX II – FACT SHEET (A)

HAND HYGIENE FOR HEALTH CARE SETTINGS (*CONTINUED*)

HAND HYGIENE AGENTS

Alcohol-based hand rubs:

- are recommended to routinely decontaminate hands in clinical situations when hands are not visibly soiled
- provide for a rapid kill of most transient microorganisms
- contain a variety of alcohols in concentrations from 60 – 90%
- are not used with water
- contain emollients to reduce skin irritation
- are less time consuming than washing with soap and water

Liquid or Foam Soap:

- Soap must be dispensed in a disposable pump dispenser
- Soap containers are not to be topped up, as there is a risk of contamination
- Bar soaps are not acceptable in health care settings except for individual client/patient/resident personal use
- Antibacterial soaps may be used in critical care areas such as ICU, or in other areas where invasive procedures are performed

TECHNIQUES

Alcohol-based hand rub:

- Remove hand and arm jewellery. Jewellery is very hard to clean, and hides bacteria and viruses from the antiseptic action of the alcohol.
- Ensure hands are visibly clean (if soiled, follow hand washing steps).
- Apply between 1 to 2 full pumps of product, or squirt a loonie-sized amount, onto one palm.
- Spread product over all surfaces of hands, concentrating on finger tips, between fingers, back of hands, and base of thumbs. These are the most commonly missed areas.
- **Rub hands until product is dry*. This will take a minimum of 15 to 20 seconds if sufficient product is used.**

Hand Washing:

- Remove hand and arm jewellery. Jewellery is very hard to clean, and hides bacteria and viruses from the mechanical action of the washing.
- Wet hands with warm (not hot) water. Hot water is hard on the skin, and will lead to dryness.
- Apply liquid or foam soap. Do not use bar soap in health care settings as it may harbour bacteria that can then be spread to other users.
- Vigorously lather all surfaces of hands for a minimum of 15 seconds. Removal of transient or acquired bacteria requires a minimum of 15 seconds mechanical action. Pay particular attention to finger tips, between fingers, backs of hands and base of the thumbs. These are the most commonly missed areas.
- Using a rubbing motion, thoroughly rinse soap from hands. Residual soap can lead to dryness and cracking of skin.
- Dry hands thoroughly by blotting hands gently with a paper towel. Rubbing vigorously with paper towels can damage the skin.
- Turn off taps with paper towel to avoid recontamination of your hands (NOTE: If hand air dryers are used, hands-free taps are necessary).

Other Issues

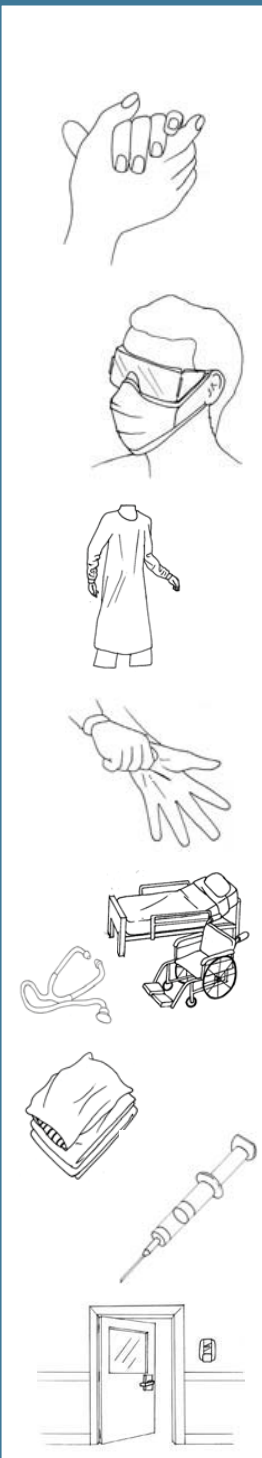
- Intact skin is the first line of defence, therefore careful attention to skin care is an essential part of the hand hygiene program.
 - o A hand hygiene skin care program should be in place. Choice of products should also be “user-friendly.”
 - o If integrity of skin is an issue, the individual should be referred to Occupational Health for assessment.
- Use a skin lotion that does not interfere with glove integrity.
- Note: It is reassuring to the client to see that the health care provider performs hand hygiene, as clients have an increased awareness of the importance of hand hygiene.

* Hands must be fully dry before touching the client or client’s environment/equipment for the hand rub to be effective and to eliminate the extremely rare risk of flammability in the presence of an oxygen-enriched environment.

APPENDIX II – FACT SHEET (B)

ROUTINE PRACTICES POSTER

Source: PIDAC Provincial Infectious Diseases Advisory Committee

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

Images developed by: Kevin Rostant

APPENDIX II – FACT SHEET (C)

SAMPLE SCREENING POSTER

IMPORTANT NOTICE TO OUR PATIENTS



Stop the spread of
germs that make you
and others sick

Tell staff if you have a:

- Cough
- Sneeze
- Fever
- Cold
- Flu



Clean your hands with
alcohol-based hand cleaner:

- when you arrive and before
you leave
- after coughing or sneezing

 **Region of Peel**
Working for you
Public Health

APPENDIX II – FACT SHEET (D)

SCREENING QUESTIONNAIRE FOR FEBRILE RESPIRATORY ILLNESS (FRI)

EXAMPLE OF CLIENT/ RESIDENT SCREENING QUESTIONNAIRE

Date: _____ Time: _____

Name: _____

- ☐ Y ☐ N New or worsening cough
☐ Y ☐ N Shortness of breath (worse than usual)
☐ Y ☐ N Fever within the past 24 hours

CLINICIAN SHOULD CONSIDER DONNING PERSONAL PROTECTION EQUIPMENT IF FEVER, PLUS ONE OR TWO ABOVE CLIENT SYMPTOMS, ARE PRESENT.

Client has reported the following symptoms:

- ☐ Y ☐ N Muscle aches
☐ Y ☐ N Severe fatigue, feeling unwell
☐ Y ☐ N Severe headache, (worse than usual)
☐ Y ☐ N New rash associated with fever
☐ Y ☐ N Recent travel to: _____
☐ Y ☐ N Contact with sick person with Hx of recent travel

Notes:

Completed by:

Download at:

<http://www.peelregion.ca/health/professionals/index.htm>

© 2005 Adapted from BC Centre for Disease Control

APPENDIX II – FACT SHEET (E)

RESPIRATORY ETIQUETTE POSTER

Cover your cough or sneeze



When you cough or sneeze...
Cover your mouth and nose with
a tissue or your upper sleeve.

**Do not use
your hand!**



You may be asked to
put on a surgical mask
to protect others.



Put your used tissue or
mask in the waste
basket after use



You may be asked to sit in a
'cough corner' to stop the
spread of germs.

APPENDIX II – FACT SHEET (F)

INFECTION CONTROL CRITERIA FOR PURCHASE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR ROUTINE PRACTICES



The employer has the responsibility to provide employees, clients and visitors with protection against infectious materials. They are specifically designed for use when there is contact with blood, body fluids, secretions and excretions, draining wounds, mucous membrane and non-intact skin.

Choosing products should be based on the following criteria:

- (a) availability
- (b) safety and reliability
- (c) uniformity
- (d) cost-effectiveness

Educational materials and in-servicing when appropriate for proper use of the purchased PPE should be considered mandatory for all personal protective equipment. The extent of the education materials and in-servicing required is dictated by the particular equipment selected.

GLOVES

Gloves are not needed for every client care activity. Purchase of gloves is a major expense for any care facility. It is important to consider reliability, supply and suitability for the task. The cheapest glove is not always the most economical. Conversely, the most expensive glove is not always the highest quality.

Health Canada (1998) outlines criteria that should be considered when purchasing gloves. Gloves must be:

- Disposable, single use
- Approved for medical use to protect against exposure of blood, body fluids any other contaminants
- Available in multiple sizes: small, medium and large. Sizing must be appropriate to provide adequate protection. An ill-fitted glove can be a hazard for the health care worker resulting in impaired dexterity and possible needle stick injury
- Good quality (have a leakage rate of < 5%)
- Appropriate for the intended use – non-sterile for routine practices and sterile for invasive procedures

- Available in dispensers that can be wall mounted for quick and easy access by health care workers, clients and visitors

Serious consideration should be given to the universal use of non-latex (vinyl or nitrile) and powder-free gloves to protect patients and staff against possible anaphylactic reactions to latex.

Separate purchase of sterile surgical gloves or re-useable general purpose gloves that are commonly used for cleaning and disinfection of environmental surfaces or for equipment cleaning (i.e. rubber gloves) should be considered.

Procedure gloves are meant to be an additional protective measure and are not a substitute for hand hygiene. Gloves need to be changed and hand hygiene practiced between clients, or when moving from one area on the body to another.

Gloves should be changed based on time and usage. They are used for a task with a client and then removed immediately to prevent transmission of disease-causing organisms. The risk of not only transmission but also contamination of surfaces within the environment exists with the improper use of gloves.

GOWNS

Disposable gowns may be preferable in a centre lacking laundry facilities, but cost may be prohibitive elsewhere.

The requirements for disposable or re-useable, washable gowns are similar.

Gowns used for routine client care must prevent contamination of uniforms and protect the skin of health care provid-



INFECTION CONTROL CRITERIA FOR PPE (CONTINUED)

ers from exposures to blood and body substances. Therefore, the gowns purchased must have the following features:

- Long sleeves with elasticized cuffs that fit snugly at the wrist
- Gowns must be long enough to cover front of clothing; multiple sizes
- Closures must be at the back to prevent accidental contamination if the gown falls open
- Closures at waist and neck
- If non-disposable, colour should differ from that of gowns used in the operating room for differentiation by laundry personnel
- Fluid resistant
- Re-useable gowns must be made of a fabric that can withstand washing at high temperatures

MASKS

Health Canada Guideline: *"Masks and eye protection should be worn where appropriate to protect the mucous membranes of the eyes, nose and mouth during procedures and client care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions."*

Masks must be:

- Products recommended by provincial and/or regional health authorities
- Large enough to cover nose and mouth with visor where appropriate (and eyes where appropriate)
- Available in several sizes
- Clearly labelled for use: Large Droplet: procedure mask, "surgical"
- Packaged with instructions that match Routine Practices and Transmission Based Protection terminology; colour coding to aid with distinction of use
- Comfortable
- In a supply format easily accommodated on isolation carts
- Latex-free
- Fluid resistant (most inclusive product)
- Easy to use (i.e. loops vs strings)
- User friendly: allows easy access to product with minimal hand contact with packaging and other contents
- Disposable

A variety of products may be necessary to accommodate different clinical environments.

EYE PROTECTION AND FACE SHIELDS

Eye protection and face shields are used to protect the mucous membranes of the eyes, nose and mouth during procedures and client care activities likely to generate splashes or sprays of blood, body fluids, secretions and excretions. Two types of product are generally available: goggles or eye shields which cover only the eyes and face shields which cover the entire face.

Eye/face protection must be:

- Comfortable
- Easy to use
- Durable during regular use
- Must fit over prescription glasses
- Compatible with masks used
- Without visual distortion
- Resistant to fogging
- Curved around the head to prevent side splashes
- Of sufficient length of shield that prevents splashing/spraying into the mouth (for face shields)
- Available in several sizes for good fit

In addition to the above, re-useable eye/face protection (Fine & Valenti, 2004) must:

- be easily maintained/disinfected
- be able to withstand the use of disinfectants without reducing visibility
- Have a clear protocol for cleaning and disinfection

Paediatric users must consider a product that doesn't "frighten" children such as goggles that are smaller while still being efficient, and having brightly coloured earpieces.

Different uses of the goggles/face shields must be considered. Several products may be necessary to meet the needs of all users – different departments such as dietary (the dish room where splashing is a problem), laundry, SPD, etc.

APPENDIX II – FACT SHEET (G)

LAUNDRY



COLLECTION AND HANDLING

Except for linen from persons with a diagnosis of rare, viral, hemorrhagic fevers, all soiled linen should be handled in the same way for all clients/residents.

Linen should be handled with a minimum of agitation and shaking. Never place soiled linen on the floor.

If the clothes or linens are not soiled with blood or body fluids, sorting of clothes and linen may take place in the client/resident care area.

Heavily soiled linen should be rolled or folded to contain the heaviest soil in the centre of the bundle without contaminating your clothing. Large amounts of solid soil, feces or blood clots should be removed from linen with a gloved hand and toilet tissue and placed into a bedpan or toilet for flushing. Excrement should not be removed by spraying with water.

BAGGING AND CONTAINMENT

- Soiled linen should be bagged or put in a laundry cart/hamper at the site of collection
- Bags should be tied securely and not over-filled when transported by chute, cart, or hand
- Laundry carts or hampers used to collect or transport soiled linen need not be covered from an infection prevention perspective. Carts/hampers should be cleaned after each use.
- After emptying them, linen bags should be washed after each use and can be washed in the same cycle as the linen contained in them

TRANSPORT

When a laundry chute is used, all soiled linen must be securely bagged and tightly closed.

Linen transported by cart should be moved in such a way that the risk of cross-contamination is minimized.

Clean linen should be transported and stored in a manner that prevents its contamination and ensures its cleanliness. Separate carts should be used for dirty and clean linens.

When linens are commercially laundered, adequate separation of clean and dirty laundry in the truck is essential to ensure that there is no opportunity for mixing clean and dirty linens.

WASHING AND DRYING

High temperature (> 71.1°C) washes are necessary if cold water detergents are not used. An alternative is to use cold water and a cold water detergent. If low temperature water is used for laundry cycles, chemicals suitable for low temperature washing, at the appropriate concentrations, should be used.

Use complete wash and rinse cycles.

Use of a commercial laundry detergent with household bleach (according to product instructions and where suitable for fabrics) and a normal machine wash and machine dry are sufficient to clean soiled linen in a community living or home care setting.

Machine drying or hanging clothing and linens on a clothes line at the home care site are suitable methods for drying.

DRY CLEANING

Clothing containing blood, body fluids or excrement that is sent to a community dry cleaner should be appropriately labelled. Dry cleaning personnel should be knowledgeable of procedures to handle soiled clothing.

PROTECTION OF LAUNDRY WORKERS AND OTHERS HANDLING LAUNDRY

Workers should protect themselves from potential cross infection from soiled linen by wearing appropriate protective equipment (e.g. gloves and gowns or aprons) when handling soiled linen.

Personnel should wash their hands whenever gloves are changed or removed.

All caregivers and laundry workers should be trained in procedures for handling soiled linens.

Laundry workers, as other health care providers, should be offered Hepatitis B immunization.

APPENDIX II – FACT SHEET (H)

PERSONAL CARE SUPPLIES - LONG TERM CARE RELATED



Residents can be reservoirs of pathogens such as antibiotic resistant organisms, bloodborne pathogens (Hepatitis B, C, and HIV) and others.

Personal care supplies, if shared, can result in transmission of these microorganisms to other residents and health care providers.

Prevention of transmission is of prime importance. The importance of ensuring that personal care supplies are **not shared** and are **kept clean** contributes to residents' safety and well-being.

Personal care supplies include items used for bathing, skin care, nail care, oral hygiene and denture care.

Included are the following items: lotions, creams, soaps, razors, toothbrush, toothpaste, denture box, comb and hairbrush, nail file and nail clippers and any other articles needed for personal hygiene.

PERSONAL CARE SUPPLIES SHOULD NOT BE SHARED BETWEEN RESIDENTS.

Each resident's personal care supplies should be identified with his/her name and kept at his/her bedside in a clean container (e.g. in a washable cosmetic bag or plastic container). Toothbrush and oral hygiene products should be kept in a separate bag.

Residents' personal care items must be sent with the resident when discharged.

PERSONAL CARE ITEMS SHOULD BE CLEANED REGULARLY

LOTIONS

Preferably, use lotions in a bottle with a pump and labelled with resident's name.

SOAPS

Bar soap must be kept in a clean, dry soap dish that allows the bar to drain between uses.

Personal liquid body wash is preferred because it is more easily stored between uses.

Each resident using an incontinence brief should have a personal incontinence care cleanser.

CREAMS

Use a tongue depressor to dispense cream from jar to avoid contaminating the cream.

TOOTHBRUSH

Change every three months and after an illness, keep in a plastic toothbrush container. Ensure it is stored protected from toilet aerosols.

DENTURE BOX

Label, rinse and dry daily.

COMB AND HAIRBRUSH

Label, clean at the same time as hair is washed. Clean in hot soapy water, rinse and allow to air dry.

NAIL FILE AND CLIPPER

Label, clean and dry after each use.

RAZORS

Clean **electric razors** after each use with a personal razor brush. Don't share.

Personal **disposable razors** can be used and must be disposed of in biomedical waste receptacles.

Sharing an electric razor between residents is not considered an acceptable practice in a health care facility because it doesn't respect the basic personal hygiene care measures and can expose the residents to the transmission of microorganisms and infection.

BEDPANS

Label with client's name and clean and disinfect after each use. Never place on the floor.

Disposable bedpans are acceptable.

BOWL FOR WASHING

Label with client's name, clean with soap and water and dry after each use.

APPENDIX II – FACT SHEET (I)

STERILIZATION AND DISINFECTION



One of the most current guides to Sterilization and Disinfection of Medical Equipment and Devices is the publication: Best Practices for Cleaning, Disinfection and Sterilization In All Health Care Settings initially published April 2006 by Provincial Infectious Diseases Advisory Committee (PIDAC) MOHLTC.

To view this document in its entirety, please visit:

http://www.health.gov.on.ca/english/providers/program/infectious/diseases/best_prac/bp_cds_2.pdf

The document provides a composite of the CSA standards, Public Health Agency of Canada Guidelines and CSAO recommendations with an audit tool to review practice in your area.

CONTENTS

1. Single-Use Medical Equipment/Devices
2. Purchasing and Assessing Medical Equipment/Devices and/or Products to be Subjected to Disinfection or Sterilization Processes
3. Education and Training
4. Written Policies and Procedures
5. Selection of Product/Process for Reprocessing
6. Environmental Issues
7. Occupational Health and Safety Issues
8. Factors Affecting the Efficacy of the Reprocessing Procedure
9. Transportation and Handling of Contaminated Medical Equipment/Devices
10. Disassembling and Cleaning Re-useable Medical Equipment/Devices
11. Disinfection of Re-useable Medical Equipment/Devices
12. Reprocessing Endoscopy Equipment/Devices
13. Sterilization of Re-useable Medical Equipment/Devices
14. Storage and Use of Reprocessed Medical Equipment/Devices

APPENDIX II – FACT SHEET (J)

THE USE OF GOWNS, APRONS, AND LAB COATS



WHY WEAR A GOWN, APRON OR LAB COAT?

Gowns, aprons or lab coats are used to help protect the skin and or clothing from coming in contact with blood /body fluids and secretions or excretions during client care or procedures. They are also used to reduce the risk of transmitting germs from client to client.

Choosing a gown, apron or lab coat depends on the type of exposure you will be having to a client or their environment.

WHAT IS THE DIFFERENCE BETWEEN GOWNS, APRONS OR LAB COATS?

Gowns are worn to protect uncovered skin and prevent soiling of clothing during procedures and client care activities that will likely generate splashes or sprays of blood, body fluids, secretions or excretions. Gowns should be long sleeved and can be re-useable or disposable. They should be washed or thrown out between clients.

Aprons are used when limited contamination is likely, for example providing foot care. They are disposable and should be thrown out between clients.

Lab Coats are used to help protect street clothes, uniforms or skin. They provide good coverage when they are properly fastened. They should not be worn outside the area they are being used in, for example the lab. They should be cleaned on a regular basis.

HOW DO I CHOOSE WHICH PROTECTIVE APPAREL TO USE IN MY PRACTICE?

You should always assess the type of exposure you will be having and be prepared for all circumstances. Remember if you are unsure of your exposure it is better to be overprotected and wear a long sleeve gown!

TIPS TO REMEMBER WHEN WEARING A GOWN, APRON OR LAB COAT.

GOWNS

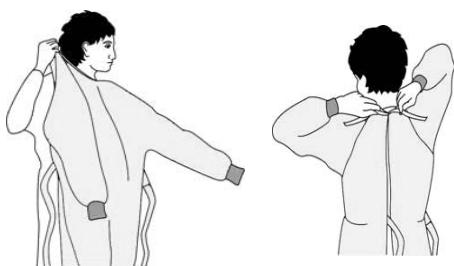
- Long enough to cover your clothing or uniform
- Should be long sleeved and cuffed
- Worn when contamination of the arms can be anticipated or in contact with clients who have epidemiological significant bacteria to reduce the risk of transmitting pathogens from clients or items in their environment to other clients or environments
- Put on with opening at back, tied at the waist and neck
- Remove IMMEDIATELY if wet
- Made of water resistant material and can be re-useable or disposable
- Use only once

APRONS

- Worn for short periods of time
- Limited exposure is anticipated
- Disposable
- Water proof
- Protects clothes

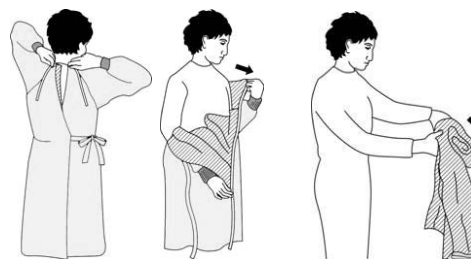
LAB COATS

- Worn to prevent contamination of street clothing and to protect the skin
- In labs, coats are worn to cover uniforms and must not be worn outside the lab
- Should have a regular cleaning schedule



HOW TO PUT ON A GOWN

The above diagrams are available to download from the CDC <http://www.cdc.gov/incidodldhqpippe.html>



HOW TO REMOVE A GOWN

APPENDIX II – FACT SHEET (K)

MEDICATION SAFETY POSTER



Contaminated Medication Vials Spread Infection

Did you know that contaminated medication vials can transmit Hepatitis B, Hepatitis C, HIV, Staph aureus and more?

Help prevent infection by following proper aseptic practices!

- **Perform hand hygiene** (use alcohol based hand rub or wash hands) before preparing and administering an injection.
- Use a **sterile, single-use, disposable needle and syringe each time** solution is to be withdrawn from a vial.
- **Disinfect vial diaphragm** with 70% alcohol and allow to air dry prior to inserting needle.
- If vial labelled as **single use only**, discard after first use.
- **Store medication vial according to manufacturer's directions** – in refrigerator or at room temperature.
- Do not administer medication from single-dose vials to multiple patients.
- Discard vial if sterility/stability of vial or its contents are in doubt or if breaks in aseptic technique occur.



Used with permission.

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT

AUDIT PERFORMED BY _____ DATE: _____
 AREA AUDITED: _____

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
ENTRY TO FACILITY			N/A	
Infection Control Signage at Entry (related to screening for communicable diseases)				
Hand Hygiene Station at entrance				
UNIT LEVEL				
Client assessed before entry for risk factors (fever, cough, diarrhea, rash, drainage)				
Written policy and procedure for client assessment Includes: drainage, cough, fever, continence, ability to follow hygiene measures				
Protective equipment available				
Gloves				
Masks				
Gowns				
Alcohol-based hand rub stations				
Goggles/eye protection				
Cleaner for client equipment				
Written Policies for Dress Code:				
Includes no jewellery (rings or bracelets)				
No nail enhancements				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Signage for hand washing			N/A	
Signage for alcohol-based hand rub				
Signs showing how to wash hands				
Signs showing How to use alcohol-based hand rub				
Staff can identify when to use hand hygiene:				
Before resident care				
Before aseptic practices				
After resident care				
After contact with body fluids or mucous membranes				
After contact with contaminated equipment				
Resident equipment has regular cleaning schedule				
Commodes				
BP Cuffs				
Slings				
Glucometers				
Cleaners used are appropriate and used according to manufacturer's recommendations concentration contact time				
Clean procedures use sterile supplies e.g. Wound care				
Catheterization				
Resident Personal Care Equipment is labeled and stored safely				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
LAUNDRY			N/A	
Laundry is transported in a clean manner				
Soiled laundry in sealed bags				
Clean in segregated manner				
Laundry is sorted by staff wearing PPE				
Hand hygiene is available in laundry area				
Education is provided to laundry workers on protective practice				
Immunization is offered to laundry workers for Hepatitis B				
WASTE				
Puncture Resistant Sharps containers are used				
Written policies reflect waste segregation				
Sharps containers not more than 3/4 filled				
Sharps containers are accessible and safe				
HEALTHY WORKPLACE				
Documentation of staff tuberculin skin tests are kept				
Documentation of staff immunization is kept:				
Flu Shots				
MMR				
TDP				
Hep B				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Written policies outline work exclusions:			N/A	
Dermatitis on hands				
Disseminated shingles				
Initial days of a cold				
Diarrhea				
Eye infection until treated				
Written policy outlines Bloodborne Pathogen Follow-up (Sharps injury or blood splash)				
Education is provided to staff annually on Infection prevention and Control				
Education is provided on risk assessment, routine practices and equipment cleaning				
Rate of Staff Flu vaccination year _____				
Rate of Resident Flu vaccination				
OUTBREAK MANAGEMENT				
Written policies identify notification process for clusters of symptoms or outbreaks				
Written policies and procedures exist for managing outbreaks				
Including tools for tracking cases				
and a communication plan				

INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

APPENDIX III – AUDIT TOOL (B)

EMERGENCY RESPONSE FACILITIES (EMS) AUDIT

AUDIT PERFORMED BY _____ DATE: _____
AREA AUDITED: _____

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Biological risk assessment taught			N/A	
Hand wash sinks available in station				
Hand hygiene stations available in field				
PPE- appropriate gloves (Nitrile or work)				
Masks surgical/N95				
Face shields				
Protective clothing				
Sharps safety: containers available				
Safety engineered IV				
Safety engineered syringes				
CLEAN EQUIPMENT				
Cleaning protocols for pt. Equipment				
Disinfectant or germicide available				
Single use items for critical devices				
Medication vials accessed safely and labelled				
Cleaning protocol for vehicles				
CLEAN ENVIRONMENT				
Refrigerator cleaned monthly and documented				
Separate refrigerator for meds and food				
Protocol for cleaning soiled protective gear if re-useable				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (B)

EMERGENCY RESPONSE FACILITIES (EMS) AUDIT (CONTINUED)

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
WASTE			N/A	
Sharps are disposed of properly in puncture proof containers				
HEALTHY WORKPLACE				
Documentation of staff mantoux tests kept				
Documentation of staff immunization kept				
Flu Shots				
MMR				
Hep B				
TDP				
Chickenpox Immunity				
Written work exclusion policy for: Dermatitis on hands Disseminated shingles Diarrhea				
Written policy on Bloodborne Pathogen Follow-up				
STAFF TRAINING				
Annual staff training or updating completed on Infection Prevention				
Annual staff training on proper PPE use				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

**APPENDIX III – AUDIT TOOL (C)
HEALTH CARE OFFICE AUDIT**

AUDIT PERFORMED BY _____ **DATE:** _____
AREA AUDITED: _____

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	N/A	COMMENTS
WAITING ROOM					
Infection control signs at entry					
Infection Control Signs at reception desk					
Alcohol-based hand cleaner at Reception with signage					
Tissue Boxes available					
Garbage Cans available					
Patient Segregation Area					
Clean Toy and soiled toy bins available					
No office toy policy signs					
RECEPTION					
Personal Protective Equipment (PPE) available					
Patient Masks					
Staff fluid resistant masks					
Staff gloves					
Reception staff can maintain 1 metre distance with patients					
Telephone screening protocol has been developed and implemented					
EXAMINATION/CONSULTATION ROOMS					
Handwashing sinks with soap available in all rooms					
Exam rooms only have essential supplies					

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (C)

HEALTH CARE OFFICE AUDIT (CONTINUED)

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Exam room air exchange meets or exceeds six internal and two outside air exchanges per hour			N/A	
Written policies exist for decontaminating exam rooms between patients and at the end of the day				
No supplies stored under the handwash sink				
CLEANING PROCEDURES				
Written protocols and procedures for cleaning the office setting have been provided by the cleaning contractor				
Approved and appropriate disinfectant products are available for patient surfaces				
Approved and appropriate disinfectant products are available for equipment and instruments				
PROTOCOL DEVELOPMENT AND STAFF TRAINING				
Annual staff training or updating completed on Infection Prevention				
Annual staff training on proper PPE use				
DISINFECTION/STERILIZATION OF MEDICAL DEVICES				
Manufacturer's instructions are followed				
Process for cleaning semi-critical and critical devices including written protocols for: disassembly sorting and soaking physical removal or organic material rinsing drying physical inspection and wrapping				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (C)

HEALTH CARE OFFICE AUDIT (CONTINUED)

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	N/A	COMMENTS
Sterilization must follow manufacturer's recommendations					
Internal and external indicators must be used with sterilization					
Biological indicators must be used daily					
Recording of indicators must be done					
High level disinfection must be done according to manufacturer's recommendations					
Product used for high level disinfection must have a DIN number					

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (D)

HOME HEALTH CARE AUDIT

AREAS AND ITEMS		FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
RISK ASSESSMENT				N/A	
Screening done before visits (FRI)					
Phone script available for use					
Standardized client assessment used					
RISK REDUCTION					
Hand Hygiene products available and used					
Written policy on hand hygiene requires no hand jewellery					
No nail enhancements					
Supplies that may be required for risk reduction					
Alcohol-based hand rub (60-90% alcohol)					
Hand lotion or cream					
One way valve resuscitation mask (only if staff required to be CPR certified)					
Non sterile exam gloves					
Impermeable gown or apron					
Surgical mask (with visor)					
Sharps container					
Sterile gloves if required					
70% ethyl alcohol wipes or other disinfectant					
Antimicrobial soap if required					
Blood spill kit					

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (D)

HOME HEALTH CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Written guidelines available on:			N/A	
When to wear protective equipment				
Cleaning and disinfection of equipment if moving client to client				
Waste disposal				
Sharps handling				
Laundry				
Requiring mantoux testing of staff based on local recommendations				
Maintaining cold chain on vaccines and multidoes vials				
Sterilization if autoclave used for foot care instruments or other patient equipment				
Documentation of staff/volunteers mantoux status and immunization status (or natural immunity as required)for:				
Influenza				
MMR				
TDP				
Hepatitis B				
Written Guidelines on work exclusions:				
Dermatitis on hands				
Disseminated shingles				
Initial days of respiratory infection				
Fever				
Diarrhea				
Eye infection until treated				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (D)

HOME HEALTH CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	N/A	COMMENTS
Verify employee immunity before assigning to client with communicable disease.					
Written guideline outlining Bloodborne pathogen follow up (eg. Sharps injury or bodyfluid splash).					
Documentation of annual education programs on:					
Hand Hygiene					
Risk assessment and risk reduction including proper use of PPE					
Documentation of education on cleaning and disinfection of patient equipment					
Standardized Client education information available on:					
Hand Hygiene					
Hygiene in the home					
Safe Sharps disposal					
AROs					
Managing Diarrhea					
Respiratory Etiquette					
Immunization					
Self screening					
Safe disposal of waste					
Written guideline of what needs to be reported to Health Unit (identify reportable diseases for your area)					
Identify resources available to manage infectious diseases and staff safety					

APPENDIX IV

CORE COMPETENCIES FOR INFECTION PREVENTION AND CONTROL FOR HEALTH CARE PROVIDERS

SOURCE: CHICA-CANADA ENDORSED

TARGET AUDIENCE

Individuals who are accountable for the quality of health care delivered in Canada.

TABLE 2:

CORE COMPETENCIES IN INFECTION PREVENTION AND CONTROL FOR ALL HEALTH CARE PROVIDERS

AREA OF COMPETENCY	DETAILED CORE COMPETENCY
Critical Assessment Skills <i>These skills are the under-pinning for the other five core competencies</i>	Critical assessment skills related to exposure to infectious agents, awareness to local outbreaks and use of infectious disease specific protocols
Basic Rationale for Routine Practices	Understands basic microbiology and how infections can be transmitted in health care settings
Personal Safety	Knows how to appropriately manage sharps, blood and body fluids and recognizes the appropriate first aid activities for exposures to blood and body fluids
	Understands the role of vaccines in preventing certain infections, including annual influenza immunizations for health care workers
Routine Practices	Understands the importance of hand hygiene/hand washing
	Understands the activities of Routine Practices/ Standard Precautions
	Respiratory Etiquette
	Knows and selects appropriate Personal Protective Equipment (PPE) for their job(s)
	Demonstrates appropriate use of PPE

INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

CORE COMPETENCIES TABLE (*CONTINUED*)

AREA OF COMPETENCY	DETAILED CORE COMPETENCY
Cleaning, Disinfection, Sterilization/ Waste Management	Maintains safe clean environment
	Understands importance of using PPE when sorting laundry
	Recognizes that re-useable equipment that has been in direct contact with a patient should be cleaned and reprocessed before use in the care of another patient
	Appreciates the differences between clean, disinfected (low, medium, and high-level) and sterile items
Additional Precautions	Knows the difference between regular and biohazard wastes
	Understands Transmission Based Precautions (Additional Precautions): why and when they are used

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Canadian Committee on Antibiotic Resistance
Comité canadien sur la résistance aux antibiotiques

www.ccar-ccra.org

Infection Prevention and Control Best Practices

for Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics

June, 2007

Sponsored by

The Canadian Committee on Antibiotic Resistance





DISCLAIMER

This best practices document is intended to guide clinical practice only and provide decision-making on infection prevention and control issues. Its use should be flexible to accommodate family/client wishes and local circumstances while ensuring best practice in infection prevention and control. They neither constitute a liability nor discharge from liability. While every effort has been made to ensure accuracy of the contents at the time of publication, neither the authors nor CCAR give any guarantee as to the accuracy of information contained in them nor accept any liability, with respect to loss, damage, injury or expense arising from any such errors or omission in the contents of this work.

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First Printing, June, 2007. It is the intent of the authors to update this document every five years.

CANADIAN COMMITTEE ON ANTIBIOTIC RESISTANCE (CCAR)

The Canadian Committee on Antibiotic Resistance (CCAR) was formed in 1998 to co-ordinate Canadian efforts to control the development and spread of antimicrobial resistance. Working together on activities identified in the *National Action Plan to Address Antibiotic Resistance*, CCAR's main areas of interest are resistance surveillance, infection prevention and control, and optimal antibiotic use. We provide outreach to the health care and agricultural communities through a variety of activities, including professional seminars, a series of reports and informational documents for specific target audiences and managing one of the most comprehensive websites on resistance in Canada (www.ccar-ccra.org).

CCAR also works with various levels of government to develop policy and identify human and financial resources to address resistance. The Public Health Agency of Canada provides considerable financial support through a three-year contract for services which expires in March, 2008. Whenever possible, CCAR leverages these resources to undertake activities and specific projects with those partners dedicated to the same interest in reducing antimicrobial resistance.

PREPARED BY

Clare Barry, Ministry of Health and Long Term Care

Nora Boyd, Bluewater Health, Canadian Committee on Antibiotic Resistance

Nan Cleator, Victorian Order of Nurses, Canada

Brenda Dyck, Winnipeg Regional Health Authority

Agnes Morin Fecteau, Veterans Affairs Canada, Ste Anne's Hospital

Dr. Elizabeth Henderson, Calgary Regional Health Authority

Linda Kingsbury, Vancouver Coastal Health

Marg McKenzie, Emergency Response, Edmonton Alberta

Judy Morrison, Public Health Agency of Canada

Patsy Rawding, Infection Control, Nova Scotia

Liz Van Horne, Ministry of Health and Long Term Care

Rick Wray, Hospital for Sick Children

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'Clean Care is Safer Care' **WHO**

To fight the spread of health care-associated infections, the World Health Organization and its partners launched the Global Patient Safety Challenge with the theme "Clean Care is Safer Care" in October, 2005. As part of the launch, the WHO Guidelines on Hand Hygiene in Health Care were made available. For more information about these guidelines, please visit:

<http://www.who.int/en/>

Infection Prevention and Control Best Practices

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Stakeholder Review List

CCAR would like to acknowledge and express appreciation for the following stakeholders whose input was considered in the final product.

Donna Baker RN
Manager, Infection Prevention and Control
SCO Health Service
43 Bruyere St.
Ottawa. ON K1N 5C8

Risa Cashmore RN BScN CIC
Public Health Nurse
Peel Health Unit
Mississauga Ontario

Terry Charlebois RN
ICP/Nurse Manager/Staff Education
Oakwood Terrace
10 Mount Hope Ave.
Dartmouth NS B2Y 4K1

Dr. John Conly
Professor of Medicine
Microbiology
Foothills Hospital
9th Floor North Tower
1403- 29th St NW
Calgary AB T2N 2T9

Bruce Gamage RN BSN CIC
Infection Control Consultant
BC Centre for Disease Control
655 W. 12th Ave.
Vancouver BC

Denise Gravel RN MSc CIC
Senior Epidemiologist
Blood Safety and Health Care
Acquired Infections Division
Public Health Agency of Canada
2006 Rolling Brook Drive
Ottawa, ON K1W 1C7

Heather Hague RN M.Ed CIC
Manager, Infectious Diseases
Program
Niagara Region Public Health
Department
P.O.Box 1052
Thorold ON L2V 0A2

Gwen Hammonds RN
Clinical Nurse Educator
Care Partners
St. Thomas, ON

Bernice Heinrichs MN CIC
Project Manager Infection
Prevention and Control
Disease Control and Prevention
Branch
Public Health Division
Alberta Health and Wellness
23rd Floor Telus Plaza N Tower
10025 Jasper Ave. NW
Edmonton AB

Bonnie Henry MD
Physician Epidemiologist
BC Centre for Disease Control
655 West 12th Ave.
Vancouver BC

Charlene McMahon RN BScN DPHN
Public Health Nurse CD Department
Lambton Community Health
Services Department
160 Exmouth St.
Sarnia, ON N7T 7Z6

Sharon O'Grady RN CIC
Infection Control Practitioner
Riverside Long Term Care Centre
Toronto ON

June Pollett RN MN
Regional Manager of Infection
Control Services
Eastern Regional Health Authority
10 Escasoni Place
St John's NL A1A 3R6

Dr. John Roman DDS
Doctor of Dental Surgery
J. Roman Health Services Ltd.
217 Wellington St.
Sarnia ON N7T 1G9

Josie Ryan RN CIC
Corporate Director Organizational
Health
Northwoodcare Incorporated
2615 Northwood Terrace
Halifax, NS B3K 3S5

Marilyn Weinmaster RN BScN CIC
Extended Care/Veterans Program
Wascana Rehabilitation Centre
2-440 2180 23rd Ave.
Regina, SK

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for Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics

INTRODUCTION

Health care associated infection impacts patient/resident/client outcomes across the continuum (Baker 2004). Impact includes both morbidity and decreased quality of life. Health care providers and clients/residents are exposed to infection through inadequate infection prevention and control practices. The World Health Organization (WHO) has launched its Global Safety Challenge promoting 'Clean Care is Safer Care', which identifies the dangers of health care associated infections. The WHO's 'Clean Care is Safer Care' focuses on clean hands, clean equipment, clean clinical procedures and clean environment. Additional information on WHO's document can be found at: <http://www.who.int/en/>.

The Canadian Committee on Antibiotic Resistance (CCAR) has sponsored the development of best practices for asepsis and hygiene for long term care (LTC) facilities and community health care settings. The trend toward shorter hospital stays has resulted in more complex care being provided outside the hospital in LTC facilities and in the community and home care. These clients often are sicker and more often have invasive devices, require invasive procedures which makes them more vulnerable to infections, which in turn can cause serious complications.

This document uses the Canadian Community and Hospital Infection Control Association's (CHICA-Canada) core competencies for health care providers as a framework to determine requirements for *Infection Prevention and Control in Long Term Care, Home and Community Care including Health Care Offices and Ambulatory Clinics* (**Appendix IV**). Reference: (Henderson et al, 2006).

This document will be reviewed and updated every two years and as new information is published.

PURPOSE

This document is to assist the health care provider by providing a succinct guide to clean care in the long term care setting, and home and community care settings. This document will focus on screening clients/residents, risk assessment, and risk reduction strategies including clean hands, clean equipment, clean environment and health care provider and client education.

SCOPE OF DOCUMENT

This document covers long term care facilities (such as nursing homes, homes for the aged, retirement homes, behavioural health facilities and group homes) and community settings (such as health care practitioner offices – doctors offices, rehabilitatin therapy clinics, laboratory and diagnostic clinics, dental clinics), community and home health care providers.

Health care providers are defined as:

An individual who may have the potential to acquire or transmit an infectious agent during the course of his or her work in the health care workplace.



GUIDING PRINCIPLES

1. Infection prevention and control strategies are designed to protect clients, health care providers and the community.
2. Health care associated infections cause significant morbidity and mortality and at least 30% of health care associated infections can be prevented by following infection prevention and control strategies. Reference: (Haley et al, 1984).
3. A systematic approach to infection prevention and control requires each health care provider to play a vital role in protecting everyone who utilizes the health care system, in all of its many forms: pre-hospital settings, hospitals, clinics, offices, home care and community programs, etc.
4. Health care providers follow infection prevention and control practices at all times and use critical thinking and problem solving in managing clinical situations.

Reference: Ontario Ministry of Health and Long Term Care Infection Prevention and Control Core Competencies Program, 2005.



BASIC INFECTION PREVENTION MEASURES

HIERARCHY OF INFECTION CONTROL MEASURES

(Adapted from BC Centre for Disease Control Document on Respiratory Outbreaks)

There are important concepts regarding infection prevention and control measures that have been clarified over the past decade. Working with occupational health and safety groups and building engineers has created a framework that includes three levels of control: engineering controls, administrative controls and personal protective measures.

1. Engineering controls are built into the design (private bathrooms, private rooms, HVAC systems) of a health care facility. Infection prevention and control professionals should be involved in the design and planning of new facilities. An Infection Control Risk assessment should be done to evaluate and mitigate potential risks for microorganism transmission by means of air, water and environmental sources.
2. Administrative controls include protocols for hand hygiene, immunization of residents and caregivers, protocols for managing caregivers and clients during an outbreak and protocols for caring for clients with communicable diseases.
3. Personal protective equipment is the least desirable way to control hazards as it does not eliminate them, it merely contains the hazard and is dependent on its appropriate use by educated, knowledgeable staff.

RATIONALE FOR ROUTINE PRACTICES

THE CHAIN OF TRANSMISSION

(Source: Public Health Agency of Canada. Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care. 1999. <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>)

Transmission of infection during the provision of health care requires three elements: a source of infecting microorganisms, a susceptible host, and a means of transmission for the microorganism. In health care settings, because agent and host factors are more difficult to control, interruption of transfer of microorganisms is directed primarily at transmission.

SOURCE

Human sources of the infecting microorganisms in health care facilities may be clients, health care providers, visitors, care providers or family members 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 client's own endogenous flora, which may be difficult to control, food, water and inanimate environmental objects that have become contaminated, including equipment and medications. The microorganisms include bacteria, viruses, fungi and parasites transmitted through these means and also via vectors such as lice, mosquitoes, flies and vermin.

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. Other individuals exposed to the same agent may establish a comfortable or residential relationship with the infecting microorganism and become asymptomatic carriers. Others may develop clinical disease. Host factors such as: extremes of age; underlying diseases; certain treatments with antimicrobials, corticosteroids, or other immunosuppressive agents; irradiation; and breaks in the first line of defense mechanisms (e.g. those caused by such factors as surgical operations, anesthesia, invasive procedures and indwelling devices) may make clients more susceptible to infection. Client self-care practices can

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FIGURE 1: HOW MICROORGANISMS ARE ACQUIRED



improve host susceptibility (e.g. good oral hygiene, proper hydration, nutrition, skin, hand hygiene, respiratory etiquette and environmental factors) and reduce risk of infection.

TRANSMISSION

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, and vectorborne. For the purpose of this manual, common vehicle and vectorborne will be discussed only briefly because neither play a significant role in typical health care associated infections.

- (1) **Contact transmission**, the most important and frequent mode of transmission of health care associated infections (HAI), is divided into direct and indirect contact transmission.
 - **direct contact transmission** involves a direct body surface-to-body surface contact and physical transfer of microorganisms between an infected or colonized person, such as occurs when a health care provider turns a client, gives a client a bath, or performs other client care activities that require direct personal contact. Direct contact transmission also can occur between two clients or a visitor, with one serving as the source of the infectious microorganisms and the other as a susceptible host. For example a visiting nurse must wash his or her hands at the beginning and end of their visit so they don't transfer organisms from one person to another.
 - **indirect contact transmission** involves contact between a susceptible host and usually a contaminated inanimate object, such as equipment, instruments, and environmental surfaces. This is often the result of contaminated hands that are not washed which contaminate the object or environment. For example, activation staff who use a ball to pass from resident to resident.
- (2) **Droplet transmission**, theoretically, is a form of contact transmission. However, the mechanism of transfer of the pathogen to the host is quite distinct from either direct or indirect contact transmission. Droplets are generated from the source person primarily during coughing, sneezing, and talking, and during the performance of certain procedures such as suctioning and administering nebulized medications. Transmission occurs when droplets containing microorganisms generated from the infected person are propelled a short distance through the air (usually less than one metre) and deposited on the host's conjunctivae, nasal mucosa, or mouth. Because droplets do not remain suspended in the air, special air handling and ventilation are not required to prevent droplet transmission; that is, droplet transmission *must not* be confused with airborne transmission. Droplets can also contaminate the surrounding environment and lead to indirect contact transmission.

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- (3) **Airborne transmission** occurs by dissemination of either airborne droplet nuclei (small particle residue [five mm or smaller in size] of evaporated droplets containing microorganisms or dust particles containing the infectious agent (e.g. dust created by rotary powered foot care tools). Microorganisms carried in this manner remain suspended in the air for long periods of time and can be dispersed widely by air currents. These may become inhaled by a susceptible host within the same room or over a longer distance from the source client, depending on environmental factors. Environmental controls are important – special air handling and ventilation help reduce airborne transmission. Microorganisms transmitted by airborne transmission include *Mycobacterium tuberculosis*, *Rubeola* (Measles), *Varicella* (Chickenpox), and *Disseminated Zoster* (widespread shingles). In settings where environmental controls are not available, use a hierarchy of control which means using personal protective equipment. Immune individuals do not require PPE (*Varicella* and *Rubeola*).
- (4) **Common vehicle transmission** applies to microorganisms transmitted by contaminated items such as food, water and medications to multiple hosts and can cause explosive outbreaks. Control is through using appropriate standards for handling food and water and preparing medications.
- (5) **Vectorborne transmission** occurs when vectors such as mosquitoes, flies, rats, and other vermin transmit microorganisms; this route of transmission is of less significance in health care facilities in Canada than in other settings.



ROUTINE PRACTICES

Routine Practices are a way of thinking and acting that forms the foundation for limiting the transmission of microorganisms in all health care settings.

It is the standard of care for all patients/clients/residents.

Reference: Rick Wray, Hospital for Sick Children

Routine Practices have been used by the Public Health Agency of Canada since 1999 for the process of risk assessment and risk reduction strategies. They are used with all clients/residents at all times and include education of health care providers, clients, families and visitors. Routine Practices supercede, and are more encompassing, than previous bloodborne pathogen precautions or Universal Precautions.

Based on the assumption that all blood and certain body fluids (urine, feces, wound drainage, sputum) contain infectious organisms (bacteria, virus or fungus), Routine Practices reduce exposure (both volume and frequency) of blood/body fluid to the health care provider. The key to implementing Routine Practices is to assess the risk of transmission of microorganisms before any interaction with patients/clients/residents. The consistent use of Routine Practices will assist in reducing exposure (both volume and frequency) of all blood/body fluid to the health care provider and transmission to others and the environment.

THE ELEMENTS OF ROUTINE PRACTICES ARE:

- Hand hygiene
- Risk assessment related to client symptoms, care and service delivery, including screening for infectious diseases, fever respiratory symptoms, rash, diarrhea, excretions and secretions
- Risk reduction strategies through use of personal protective equipment (PPE), cleaning of environment, laundry, disinfection and sterilization of equipment or single use equipment, waste management, safe sharps handling, client placement and healthy workplace practices
- Education of health care providers, clients and families/visitors

Routine Practices prevent transmission of microorganisms in most settings and include the following requirements (see PIDAC Routine Practices Poster- Appendix IIB):

- 1. Hand hygiene** is the single most important thing to do to prevent transmission of infection. Although health care providers know the importance of hand hygiene, studies continue to show health care providers perform hand hygiene less than half the time they should. Hand hygiene should be performed:
 - Before providing care to the client
 - Between dirty and clean activities
 - When PPE is removed
 - When leaving the client

 - Use alcohol-based hand rub at 60-90% concentration ethyl or isopropyl or
Hand washing with plain liquid soap and running water.

 - The use of alcohol-based hand rub is the preferred method of decontamination of hands that are not visibly soiled and should be available at the point of care.

 - Use hand hygiene after touching blood, body fluids, excretions and contaminated items in the client/ resident's environment.

 - Wash hands:
 - after removing gloves
 - between clients/residents
 - before contact with clean items
 - before aseptic practices on a patient

Hand hygiene also includes caring for hands to maintain intact skin. Regular use of hand lotion is recommended.

See attached Hand Hygiene Fact Sheet (Appendix IIA).

- 2a. Screening for communicable diseases** (coughs, colds and diarrhea). In the clinic setting, ask simple questions.
 - Do you have a new cough or shortness of breath?
 - If no – no further questions.
 - If yes – Do you have a new fever or chills in the last 24 hours?
 - Do you have new onset diarrhea?
 - Do you have a new undiagnosed rash?

See attached Sample Screening Poster and Example Screening Questionnaire (Appendix IIC&D).

- 2b. Risk Assessment:** there are two levels of assessment required.
 - i. Point of entry or while booking appointments over the phone, a screening for fever, cough or respiratory symptoms, rash or diarrhea is done.

Script for appointment booking:
If you have symptoms of fever and cough, diarrhea or rash within 24 hours of your next appointment or visit, then let this office (or health care provider) know before the scheduled appointment (or visit).
 - ii. Assessment should be standardized during the admission process to include the screening questions plus asking about recent exposures to infectious disease such as *Chickenpox, Measles or Tuberculosis* and recent travel depending on what is prevalent in your community. Other questions would include:
 - Do they have a cough and are not able to follow respiratory etiquette?

Respiratory etiquette includes covering a cough or sneeze and disposing of tissues in a waste receptacle (see attached Respiratory Etiquette poster in Appendix IIE).

- Do they have a fever?
- Do they have drainage or leakage? Is it contained?
- Are they incontinent?
- How susceptible is the client to infection? Is their immune system intact (not the very young or very old)? Do they have invasive devices, open areas or auto-immune diseases?
- What is the risk of exposure to blood, body fluids, mucous membranes, non-intact skin in the tasks about to be performed?
- How competent is the health care provider in performing this task?
- How cooperative will the client/resident be while the task is performed?

- 3. Risk Reduction Strategies** will assist the health care provider in minimizing his or her exposure to body fluids and mucous membranes. Once the risk assessment has been completed, strategies, including hand hygiene, use of personal protective equipment (PPE), client placement and cleaning and disinfection of equipment, should be used to reduce risk of transmission of microorganisms within the health care setting. Whenever you might come in contact with non intact skin, mucous membranes or body fluids, you need to put on a barrier or personal protective equipment (PPE).

a. Client Placement:

- i. Clinic Setting - maintain a three to five foot distance until initial triage is completed. Sit beside the client (as opposed to across from). Segregate if possible in waiting rooms.
- ii. Planning Visit - visit client with uncontained draining wound at the end of the day.
- iii. Long Term Care - place susceptible clients (with open areas or indwelling tubes) with low risk clients (continence, follows directions, maintain hygiene).

In long term care facilities (LTCF) it is important to assess and integrate clients into activities safely. The admission assessment will assist to identify which clients can participate in levels of interaction with other clients, for example participating in a sing-song is acceptable for a client with a covered, contained wound.

b. Personal Protective Equipment (PPE)

Protect yourself and others from body substances and mucous membranes. You will need to put on a barrier or personal protective equipment (PPE) whenever there is a risk of coming in contact with non-intact skin, mucous membranes or body fluids.

Gloves: The most commonly worn personal protective equipment is quality vinyl gloves. Choose glove material based on the risks for which you are wearing them (e.g. vinyl for personal care and wound care, latex for sterile invasive procedures, nitrile for exposure to chemicals). Wear them for likely hand exposure to blood and body fluids.

Put on clean gloves just before touching mucous membranes and non-intact skin.



Change gloves and perform hand hygiene when:

- Moving from dirty areas to clean areas on the same client
- Moving from dirty to clean procedures on the same client
- After contact with large amounts of blood and body fluids
- When in contact with blood and body fluids containing high concentrations of microorganisms

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Remove gloves promptly after use and perform hand hygiene before touching clean items and environmental surfaces; before touching your eyes, nose and mouth; and before going on to another client. Remove gloves as the first step in the removal of PPE.

WHEN TO WEAR GLOVES	WHEN NOT TO USE GLOVES
When there is a risk of exposure/splash/contact with blood, body fluids and non-intact skin. Examples: • Changing a dressing • Changing diapers • Cleaning up an incontinent resident/client • Performing mouth care	Examples: • Feeding a resident/client • Social touch • Pushing a wheelchair • Delivering meals, mail, laundry • Providing care to residents with intact skin such as taking temperature

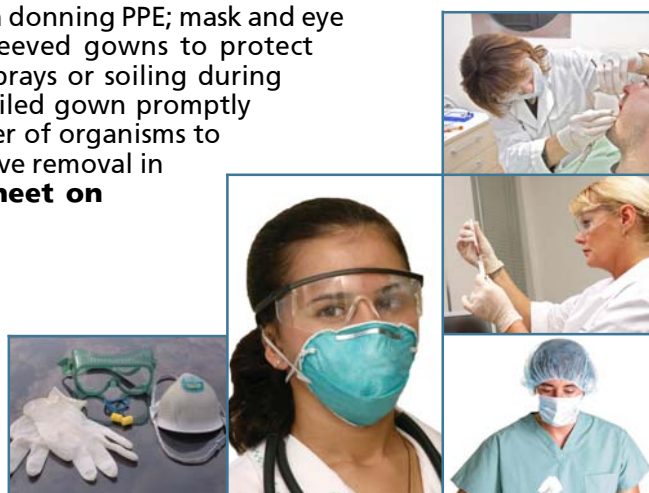
Masks (Surgical) Face Protection/Face Shields: Wear masks to provide protection of the health care provider's nose and mouth from likely splashes and sprays of blood or body fluids. Face shields and eye protection guard the eyes of health care providers against likely splashes and sprays of blood or body fluids. Choose eye gear that protects the eye from all directions. Splashes and sprays can be generated from a client's behaviour (e.g. coughing or sneezing) or during procedures (e.g. suctioning, wound irrigation, cleaning soiled equipment, using a spray hose). Surgical masks with ear loops are the easiest to put on and remove. Apply masks after donning the gown and eye protection next. Apply before performing a procedure and wear within three to five feet of the coughing, sneezing client. This prevents the transmission of microorganisms to the health care provider's mucous membranes in their eyes, nose and mouth to reduce infection.

N95 Respirators: For additional information, please visit: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtcl/99vol25/25s4/index.html>.

A fit tested N95 respirator is required to protect the airways of the health care provider. It is intended to seal tightly to the face and filters airborne organisms. Wear a fit tested N95 respirator if:

- The client has a known or suspected airborne infection (e.g. *Tuberculosis*, *Chickenpox*, *Measles*, *Disseminated Zoster* or *hantavirus*)
- Performing aerosolizing procedures with a client with droplet infection (e.g. open suctioning, nebulized medications, BIPAP)
- Directed by public health officials with a new or emerging disease where the route of spread is not known

Gowns: Put on the gown as the first procedure when donning PPE; mask and eye protection is the second procedure. Wear long sleeved gowns to protect uncovered skin and clothing from likely splashes, sprays or soiling during procedures and client care activities. Remove the soiled gown promptly after use and perform hand hygiene to avoid transfer of organisms to clients and the environment. Remove gown after glove removal in the PPE removal sequence. **See attached Fact Sheet on Gowns, Aprons and Lab Coats (Appendix IIJ)**



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c. Safe handling of sharps

Safe handling of sharps reduces exposure to bloodborne pathogens. Use appropriate barriers and safe work practices when using sharp instruments and devices (e.g. needles, scalpels, etc.), after procedures and when cleaning used instruments. Use point of use disposal receptacles for sharps and use puncture resistant containers with clear labels, a handle and tight fitting lid to reduce risk in the work area.

Dispose of sharps immediately in a clearly labelled, puncture resistant container. Do not recap, bend or manipulate needles in any way for disposal. The container should have a tightly fitting lid that seals and prevents leakage. This reduces risk to you, other health care providers, clients and others in the environment (e.g. waste disposal handlers). Fill containers only to $\frac{3}{4}$ full, close the lid securely and tape closed.

Replace the used container. Safety of placement of the sharps container in the client's home/mobile clinics should be a top priority in consideration of children, confused adults, drug abusers, etc.



Used sharps are considered **biomedical waste** in health care offices, labs and long term care facilities. Dispose of used sharps containers in accordance with regulations from municipal, provincial/territorial authorities. For home care, follow municipal regulations for disposal as some municipalities allow used needles from domestic waste to be disposed of as general waste.

- Never uncup a needle or sharp unless you know where you will dispose immediately after use
- Always carry a small sharps container in your car
- Local pharmacies often have an exchange program for sharps containers
- Check the Canadian Diabetes Website for recommendations (<http://www.diabetes.ca/>)
- Ensure the safety of waste handlers by disposing of sharps in sealed puncture resistant containers

(For more information on sharps safety, please visit the Ontario Safety Association for Community and Health Care website: <http://www.osach.ca/new/SaftyInfo/SEMS.html>.)

d. Clean Client Care Equipment

Ensure multi-use equipment is not used in the care of another client until it has been properly cleaned and re-processed. Do not re-use single use items. Use clean hands to handle clean equipment. Any equipment or device that comes in contact with mucous membranes, open areas or beneath the skin in sterile sites must be re-processed correctly. Single use items, such as a tourniquet or needle, are one-client use only and are disposed of properly.

There are three categories of client equipment (each category defines how it must be cleaned to prevent infection transmission).

- **Critical** – comes into contact with sterile sites (e.g. needles)
- **Semi Critical** – comes into contact with mucous membranes or non-intact skin (e.g. scopes, thermometers)
- **Non Critical** – comes into contact with intact skin (e.g. Blood pressure cuff)

Spaulding classification



When does re-useable medical equipment require cleaning?

- For maintenance requirements (everyday accumulation of dust and dirt) the pieces of equipment in this category include blood pressure cuffs, scissors, stethoscopes, digital cameras, ultrasound machines and electronic equipment
- To remove blood and body fluids (before disinfecting and sterilizing)
- When equipment has been exposed to an infectious organism (before disinfecting or sterilizing)

If re-useable medical equipment doesn't touch the client's skin, does it require cleaning, disinfection or sterilization?

There is no requirement for routine disinfection or sterilization as those pieces of equipment carry little risk of spreading infection. However, there is a requirement to disinfect or sterilize those pieces of equipment if they become contaminated with blood or body fluids or if they have been exposed to a client with an infectious organism.

What other strategies should be used to reduce risk when using medical equipment with a client who has an infectious organism?

Single use items (e.g. tourniquet) are used for one client only and are properly discarded after use. Re-useable medical equipment used to assess clients and provide care must be appropriately cleaned, disinfected or sterilized based on how it is used and whether it has come into contact with known or suspected infectious organisms. Re-useable medical equipment is not used in the care of another client until it has been properly cleaned. **Use clean hands or clean gloves to handle clean equipment.**

In a health care office or long term care facility, most critical items will be disposable, one time use. **See attached sheet on Sterilization and Disinfection (Appendix III).**

Sterile medicines

Multidose vials must be labelled with the date, time and initials of when the vial was opened to ensure potency. Use sterile needles and clean the stopper when withdrawing medications to ensure the vial maintains sterility. There have been cases of contamination of multidose vials if syringes or needles are re-used. Avoid multidose vials if possible due to the risk of contamination.

Medications, including vaccines that require refrigeration, must be stored in a manner that ensures they remain safe (e.g. cold chain for vaccines). This requires daily monitoring and documenting of fridge storage temperature. Separate fridge storage just for medications is required.

e. Clean Environment (Housekeeping Routines):

In long term care facilities, community agencies and health care offices, horizontal/high touch surfaces need to be cleaned daily and when visibly soiled. Housekeeping Routines should involve cleaning and disinfecting surfaces, toys and objects with a low level disinfectant (**See Table 1 for types of disinfectants**). Encourage clients and their caregivers to perform regular cleaning of frequently touched surfaces (e.g. taps, sinks, toilets, bedside tables) as one way to prevent the spread of infection to others in the home.



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TABLE 1: **LOW LEVEL DISINFECTANTS (LLD)**

Chemical	Action	Application	Exposure Time	Comments
Quaternary ammonium compounds	LLD	Daily cleaning and sanitizing of surfaces and equipment	Use as directed on the label	Fairly inexpensive, releases volatile organic compounds
Accelerated hydrogen peroxide products	LLD	Daily cleaning and sanitizing of surfaces and equipment	As directed on the label	Safe and effective
Sodium hypochlorite (1:100 dilution of household bleach)	LLD	Daily cleaning and sanitizing of surfaces and equipment	Until dry	Disinfectant but no cleaning properties

TABLE 2: **CLEANING PROCEDURES FOR COMMON ITEMS**

SURFACE / OBJECT	PROCEDURE	SPECIAL CONSIDERATIONS
Horizontal surfaces such as overbed tables, work counters, baby weigh scales, beds, cribs, mattresses, bedrails, call bells	1. regular cleaning with detergent 2. cleaning when soiled 3. cleaning between clients and after discharge	Special procedures called carbolizing are not necessary. Some environmental surfaces may require low level disinfection depending on the type of invasive procedure being done (nurseries, pediatric offices, procedure rooms)
Walls, blinds, curtains	Should be cleaned regularly with a detergent and as splashes/visible soil occur	
Floors	1. regular cleaning 2. cleaning when soiled 3. cleaning between patients 4. damp mopping preferred	Detergent is adequate in most settings Blood/body spill should be cleaned with disposable cloths followed by disinfection with low level disinfectant
Carpets/ upholstery	Should be vacuumed regularly and shampooed as necessary	
Toys	Should be regularly cleaned, disinfected with a low level disinfectant, thoroughly rinsed and dried	For pediatric settings, toys should be constructed of smooth non-porous materials to facilitate cleaning. Do not use phenolics.
Toilets and commodes	1. regular cleaning 2. cleaning when soiled 3. clean between clients/after discharge 4. use a low level disinfectant	Dedicated equipment is best

Source: PHAC Handwashing, Cleaning Disinfection and Sterilization Guideline – 1998, Page 30.

Cleaning of surfaces requires the removal of body substances by staff wearing the appropriate PPE and then disinfecting the area. Appropriate routine cleaning and removal of soil are essential. Body fluid spills or equipment used by a client requires use of PPE (usually gloves when cleaning, removing the soil) and then disinfecting the area or equipment. WHMIS sheets (MSDS) must be available for the disinfectant being used. Commercial spill kits are useful for clinics and offices.

Cleaning is accomplished with water, detergents and mechanical action. Skin antiseptics should not be used for disinfecting inanimate objects. Detergents are adequate for most surface cleaning.

1. Using friction, clean equipment with soap and water to remove any soil, dust, blood or body fluids from the surface of the equipment. A brush may be necessary.
2. Dismantle equipment to clean in crevices when possible
3. Rinse and dry

Regular schedules for daily cleaning are required. Client contact areas must be cleaned between each client. Responsibility for cleaning must be clearly assigned.

How to clean up (and disinfect) after a blood or body fluid spill:

1. Put on a pair of disposable gloves
2. Clean up the spill using paper towels, then wash the area with detergent and water
3. Wipe the surface with a fresh solution of 1:10 bleach (50ml of bleach to 450 ml of water)
4. Leave the solution in contact with the surface until dry
5. Dispose of used paper towel in garbage, remove gloves, wash hands

f. Laundry

Microbial counts on soiled linens are significantly reduced during mechanical action and dilution of washing and rinsing. With the high cost of energy and use of cold water detergents (which do not require heat to be effective), hot water washes (>71 degrees C for 25 minutes) may not be necessary. Several studies show low temperature laundering will effectively eliminate residual bacteria to a level comparable to high temperature laundering. (Reference: *PHAC Handwashing, Cleaning, Sterilization and Disinfection in Health Care*, 1998, page 34.)

Linens used in the health care setting can be laundered together using detergent and dried in a hot air dryer to ensure killing of microorganisms. Linens with organic material left on them will require pre-treating to remove the material. It is impossible to clean laundry when organic material is present.

In health care settings, linen may be cleaned within the setting or sent to a commercial laundry facility. **See the attached Laundry Fact Sheet in Appendix IIG for details on proper handling of laundry.**

Although soiled linen has been identified as a source of microorganisms, the risk of actual disease transmission appears negligible providing hygienic handling, storage and processing of clean and soiled linen are carried out. Clean laundry must be stored apart from soiled linens.

In homes, health care providers should handle any laundry soiled with blood or body fluids with gloves and avoid touching it to their clothes or skin; position the laundry basket nearby to reduce handling (keep off the floor and upholstered furniture); handle with minimal agitation and do not shake; remove fecal material into the toilet. Teach family or caregivers how to handle contaminated laundry safely. Wash heavily soiled laundry separately and add bleach to wash water according to manufacturers' instructions if material is bleach tolerant.



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g. Waste is divided into three categories; **general**, **biomedical** and **pathological**. Legislation requires that biomedical waste be handled and disposed of in such a way as to avoid transmission of potential infections.

The most obvious **biomedical waste** generated in a long term care facility, health office or community health agency are sharps. Use puncture resistant sharps containers to remove, store and dispose of used sharps such as needles, blades, razors and other items capable of causing punctures.

Some municipalities may allow needles used in the home to be disposed of as **general waste**. Sometimes they may require decontamination by adding bleach first and then sealing the lid. Check with local authorities for the appropriate disposal method. Teach clients and their caregivers in homes how to handle and dispose of sharps and sharps containers safely. If legally discarding a sealed container of sharps in the garbage, place it in the middle of the garbage bag to reduce risk of injury to the waste handlers.

Non-anatomical waste, such as liquid blood or body fluid drainage (e.g. chest tube drainage containers, IV blood filled tubing), must also be packaged as **biomedical waste**.

See Local, Regional, Provincial and Federal regulations on waste. Licensed medical waste handlers must be used to remove biomedical and pathological waste.

Anatomical waste such as body parts is classified as **pathological waste** and must be disposed of according to the regulations for handling pathological waste.

All other waste, such as general office waste, used gloves or non-sharp medical equipment, may be disposed of in regular waste and requires no special handling other than containment during disposal and removal.

This does not include waste that is “domestic waste”. The Canadian definition of biomedical waste does not include domestic waste. For more information, please visit: http://www.ene.gov.on.ca/envision/env_reg/er/documents/2001/RAOIE0023_g2.pdf.

Recommendations for waste handling:

1. Local municipal regulations on waste segregation must be followed
2. Waste generated in health care settings is no more hazardous than household waste
3. Segregating sharps waste and packaging it in a puncture resistant container according to municipal regulations is required so it does not result in injuries by waste industry workers or community members
4. Package waste to contain it in a leak-proof container that can be disposed of or cleaned after emptying
5. Empty waste frequently and store in a manner that protects it prior to pick up/disposal
6. Waste handlers should wear protective apparel and be offered Hepatitis B vaccination

Source: PHAC: *Handwashing, Cleaning, Disinfection and Sterilization Guideline*. 1998.

Liquid waste such as urine, feces, providine iodine, irrigating solutions, suctioned fluids, excretions and secretions may be poured carefully down the client's toilet, which is connected to a sanitary sewer or septic tank. Body fluids in small amounts such as blood in a syringe withdrawn from a CVAD before a blood sample is obtained may be discarded in a puncture proof sharps container. Provincial and territorial regulations may dictate the maximum volume of blood or body fluids that is permitted to be poured in the sanitary sewer (e.g. 300mls). If there is likely to be splashes or sprays from disposing of blood or body fluids, apply PPE.

h. Healthy Workplace – Keeping your staff and clients safe

All staff working in health care should have a two-step tuberculin skin test at the beginning of employment unless they have documentation of a negative skin test in the past 12 months. The local Medical Officer of Health can advise on the need for routine testing depending on the prevalence of Tuberculosis in your community. Health care providers need to know their history of childhood communicable diseases.

Organizations should commit to promoting vaccine preventable diseases. Documentation of immune status will be considered when assigning a health care provider to a particular case.

For additional information, please review Health Canada's *Canadian Immunization Guideline* at: http://www.phac-aspc.gc.ca/publicat/cig-gci/pdf/cdn_immuniz_guide-2002-6.pdf.

Recommended immunization of staff includes:

- Annual influenza immunization
- Measles, Mumps and Rubella (MMR) – two doses
- Tetanus Diphtheria and Polio (TDP)
- Hepatitis B (full series with follow up blood work to determine conversion)
- For susceptible health care providers, varicella vaccine is recommended (history negative, IgG negative)

Staff should receive education on when to stay home from work in a health care setting. This includes:

- Febrile respiratory illness
- Dermatitis on their hands (consult your physician about your risk)
- Cold sores or shingles that can't be covered
- The initial days of a respiratory illness
- Diarrhea
- Eye infections until treated

Most employers of health care providers will have policies in this regard.

If sharps are used in the practice setting, you will need to know where, when and how to obtain follow up after a potential bloodborne pathogen exposure.

Health care providers and volunteers practice healthy behaviours by self screening for fever, new cough, diarrhea and new rashes, and staying home when sick.

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Follow-up for punctures or mucous membrane exposures to bloodborne pathogens

- Ensure you know the procedure at your facility
- First Aid: Rinse, wash and clean involved area after exposure
- Recognize importance of medical follow-up (use of Post-Exposure Prophylaxis [PEP] within one to two hours can reduce HIV transmission by 90%)
- Medical follow-up at appropriate agency to be assessed for bloodborne pathogens: Hepatitis B, Hepatitis C and HIV
- Proper follow-up includes;
 - Significance of exposure
 - Risk factors
 - Prophylactic medication if indicated
 - Education and counselling for informed consent and testing if required
 - Precautions necessary

If testing is required – serial testing should be conducted at time of exposure, then at three and six months.

i. Education

Educate health care providers regarding infection prevention and control strategies.

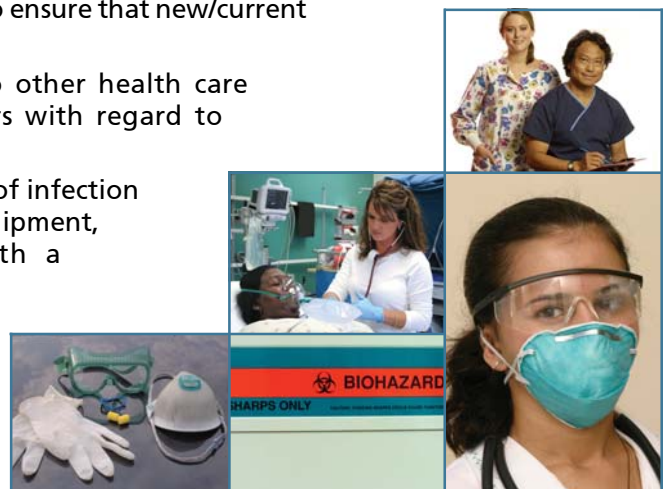
- Who provides infection prevention and control expertise to your setting? Who would you call for help?
- In most long term care facilities, there is a pre-existing relationship with the local health unit. For community agencies and health care offices, regional infection control networks and local health units have the expertise to answer infection prevention and control questions. The Public Health Agency of Canada (PHAC) Infection Control Guidelines, Centres for Disease Control and provincial guidelines provide written support.
- Provide leadership and act as a role model to other health care providers, clients/residents and families/visitors with regard to infection prevention and control strategies
- Demonstrate work practices that reduce the risk of infection – e.g. use hand hygiene, use proper PPE, be immunized, do not come to work with a communicable disease

Educate clients/residents/families about hygiene and infection prevention strategies such as hand hygiene.

- Health care providers should have access to standardized client education materials on infection reduction strategies such as: hand hygiene, respiratory etiquette, flu vaccination, 'what to do when you're sick' material appropriate to their client population
- Be able to identify unusual clusters or illnesses (e.g. respiratory, gastrointestinal, skin); and be aware of person, time, place tracking; and report to the appropriate person

Infection prevention and control health promotion

- Communicate between all sectors of health care to ensure that new/current material is available
- Provide leadership and act as a role model to other health care providers, patients/residents/clients and visitors with regard to infection prevention and control principles
- Demonstrate work practices that reduce the risk of infection (e.g. use hand hygiene, use proper protective equipment, be immunized, do not come to work with a communicable disease)



SUMMARY OF INFECTION PREVENTION AND CONTROL BEST PRACTICES

FOR LONG TERM CARE, HOME AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

(See complete text for rationale)

1. Basic infection prevention measures are based on a knowledge of the chain of transmission and the application of Routine Practices in all settings at all times
2. The elements of Routine Practices include:
 - Hand Hygiene
 - Risk Assessment of clients
 - Risk Reduction Strategies through use of personal protective equipment, cleaning the environment and equipment, laundry, disinfection and sterilization of equipment or use of single use equipment, waste management, sharps handling, client placement and healthy workplace initiatives
 - Education of health care providers, clients and families/visitors/caregivers
- 2.1 Hand Hygiene includes handwashing and use of alcohol-based hand rub (greater than 60% alcohol) before client care, between dirty and clean and when leaving the client
- 2.2 Screening and assessing clients must be done to identify any communicable disease risks with the client contact
 - Clients are prompted to self assess when booking appointments
 - Clients are educated about respiratory etiquette
- 2.3 Risk Reduction Strategies that provide reduced exposure in the presence of communicable diseases must be used. Those strategies include the following:
 - client placement (segregation)
 - personal protective equipment – proper use and removal
 - safe handling of sharps
 - clean client equipment including sterile medications
 - clean environment
 - clean laundry
 - proper handling of waste
 - healthy workplace practices that keep staff and clients safe including the need for immunization and education on when to stay home from work in a health care setting plus clear follow up protocol for exposure to blood and body fluids
- 2.4 Providing health care provider and client education on infection prevention and control strategies is required

APPENDIX I

DEFINITIONS

ARO – ANTIBIOTIC RESISTANT ORGANISMS

An individual form of life (i.e. bacteria) that can withstand the effects of an antibiotic.

BACTERIA

Any of the unicellular, prokaryotic microorganisms of the class Schizomycetes, which vary in terms of morphology, oxygen and nutritional requirements, and motility, and may be free-living, saprophytic, or pathogenic, the latter causing disease in plants or animals.

COLONIZED

When a person has bacteria living on their skin or in their throat but is not ill because of it.

COMPETENCY

The individual should demonstrate proficient application of the skills and knowledge required to function capably, effectively and safely.

Having the capacity to behave or work in a way that promotes a safe environment under usual circumstances by demonstrating knowledge and skills related to hygiene and asepsis.***

***This process must be audited on a routine basis to verify standards have been met.

FUNGUS

Any of numerous eukaryotic organisms that reproduce by spores. The spores of most fungi grow a network of slender tubes called hyphae that spread into and feed off of dead organic matter or living organisms. The hyphae often produce specialized reproductive bodies, such as mushrooms.

HEALTH CARE WORKER

Individual providing or supporting health care services that will bring them into contact with patients/clients/residents.

This includes, but is not limited to:

- Emergency service workers, physicians, dentists, chiropractors, nurses, podiatrists, respiratory therapists and other allied health professionals, students, support services (e.g. housekeeping, dietary, maintenance, hairdressers), and volunteers

HIERARCHY OF CONTROL MEASURES

(Adapted from BC Centre for Disease Control Document on Respiratory Outbreaks)

There are important concepts regarding infection prevention and control measures that have been clarified over the past decade. Working with occupational health and safety groups and building engineers has created a framework that includes three levels of control: engineering controls, administrative controls and personal protective measures.

1. Engineering controls are built into the design (private bathrooms, private rooms, HVAC systems) of a health care facility. Infection prevention and control professionals should be involved in the design and planning of new facilities. An Infection Control Risk assessment should be done to evaluate and mitigate potential risks for microorganism transmission by means of air, water and environmental sources.
2. Administrative controls include protocols for hand hygiene, immunization of residents and caregivers, protocols for managing caregivers and clients during an outbreak and protocols for caring for clients with communicable diseases.
3. Personal protective equipment is the least desirable way to control hazards as it does not eliminate them, it merely contains the hazard and is dependent on its appropriate use by educated, knowledgeable staff.

IMMUNE

Of, relating to, or having immunity to infection by a specific pathogen.

INFECTED

Entry of a pathogenic organism resulting in clinical signs and symptoms of infection such as redness, swelling, heat.

INFECTIVITY

The ability of a pathogen to establish an infection.

NORMAL FLORA

The human body contains a large number of bacteria, most of them performing tasks that are useful or even essential to human survival. Those that are expected to be present, and that under normal circumstances do not cause disease, are termed “normal flora”.

PARASITE

An organism that grows, feeds, and is sheltered on or in a different organism while contributing nothing to the survival of its host.

PATHOGENIC

Having the capability to cause disease; producing disease.

ROUTINE PRACTICES

Routine Practices is the term used by Health Canada/Public Health Agency of Canada to describe the system of infection prevention and control practices recommended in Canada to prevent and control transmission of microorganisms in health care settings. **Consistent use of Routine Practices with all clients/residents/patients is critical to preventing transmission of microorganisms from client to client and client to staff.**

The full description of Routine Practices to prevent and control transmission of health care acquired infections can be found on the Public Health Agency of Canada website: <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>. **See attached Routine Practices Poster (Appendix IIB).**

RESPIRATORY ETIQUETTE (CDC DEFINITION)

Measures to contain respiratory secretions for all individuals with signs and symptoms of a respiratory infection and include:

- Cover nose/mouth when coughing or sneezing – cough into elbow or sleeve
- Use tissues to contain respiratory secretions and dispose of them in nearest waste receptacle after use
- Perform hand hygiene (e.g. hand washing or use alcohol-based hand rub) after having contact with respiratory secretions and contaminated objects.

SUSCEPTIBILITY

Likelihood to be affected with a disease, infection, or condition.

VIRUS

Any of a large group of submicroscopic agents that act as parasites and consist of a segment of DNA or RNA surrounded by a coat of protein. Because viruses are unable to replicate without a host cell, they are not considered living organisms in conventional taxonomic systems. Nonetheless, they are described as “live” when they are capable of replicating and causing disease.

APPENDIX II – FACT SHEET (A)

HAND HYGIENE FOR HEALTH CARE SETTINGS

Source: PIDAC Provincial Infectious Diseases Advisory Committee

In health care settings, hand hygiene is the single most important way to prevent infections.

Hand hygiene is the responsibility of all individuals involved in health care. Hand hygiene refers to removing or killing microorganisms on the hands as well as maintaining good skin integrity. There are two methods of removing/killing microorganisms on hands: washing with soap and running water or using an alcohol-based hand rub. Generally, the focus is on microorganisms that have been picked up by contact with clients/health care providers, contaminated equipment, or the environment (transient or contaminating bacteria).

Effective hand hygiene kills or removes microorganisms on the skin and maintains hand health.

ALCOHOL-BASED HAND RUB

Alcohol-based hand rub is the preferred method for decontaminating hands. Using alcohol-based hand rub is better than washing hands (even with an antibacterial soap) when hands are not visibly soiled.

However, hand washing with soap and running water must be performed when hands are visibly soiled. If running water is not available, use moistened towelettes to remove the visible soil, followed by alcohol-based hand rub.

HAND WASHING

Most transient bacteria present on the hands are removed during the mechanical action of washing, rinsing and drying hands. Hand washing with soap and running water must be performed when hands are visibly soiled.

WHEN SHOULD HAND HYGIENE BE PERFORMED?

Hand hygiene must be performed:

- Before and after contact with a client
- Before performing invasive procedures
- Before preparing, handling, serving or eating food
- After care involving the body fluids of a client (e.g. assisting client to blow nose, toileting the client or doing wound care) and before moving to another activity
- Before putting on and after taking off gloves
- After personal body functions, such as using the toilet or blowing one's nose
- Whenever a health care provider is in doubt about the necessity for doing so
- When hands accidentally come into contact with secretions, excretions, blood and body fluids (hands must be washed with soap and running water)
- After contact with items in the client's environment

FACTORS THAT INFLUENCE HAND HYGIENE

The following factors influence the effectiveness of hand hygiene:

- Condition of the skin – intact skin vs. presence of dermatitis, cracks, cuts or abrasions
- Nails: natural nails more than 3-4 mm (1/4-inch) long are difficult to clean, can pierce gloves and harbour more microorganisms than short nails
- Only nail polish in good condition is acceptable
- Artificial nails or nail enhancements are not to be worn by those giving patient care as they have been implicated in the transfer of microorganisms
- Jewellery – rings and bracelets hinder hand hygiene, and should not be worn for patient contact; rings increase the number of microorganisms present on hands and increase the risk of tears in gloves

APPENDIX II – FACT SHEET (A)

HAND HYGIENE FOR HEALTH CARE SETTINGS (*CONTINUED*)

HAND HYGIENE AGENTS

Alcohol-based hand rubs:

- are recommended to routinely decontaminate hands in clinical situations when hands are not visibly soiled
- provide for a rapid kill of most transient microorganisms
- contain a variety of alcohols in concentrations from 60 – 90%
- are not used with water
- contain emollients to reduce skin irritation
- are less time consuming than washing with soap and water

Liquid or Foam Soap:

- Soap must be dispensed in a disposable pump dispenser
- Soap containers are not to be topped up, as there is a risk of contamination
- Bar soaps are not acceptable in health care settings except for individual client/patient/resident personal use
- Antibacterial soaps may be used in critical care areas such as ICU, or in other areas where invasive procedures are performed

TECHNIQUES

Alcohol-based hand rub:

- Remove hand and arm jewellery. Jewellery is very hard to clean, and hides bacteria and viruses from the antiseptic action of the alcohol.
- Ensure hands are visibly clean (if soiled, follow hand washing steps).
- Apply between 1 to 2 full pumps of product, or squirt a loonie-sized amount, onto one palm.
- Spread product over all surfaces of hands, concentrating on finger tips, between fingers, back of hands, and base of thumbs. These are the most commonly missed areas.
- **Rub hands until product is dry*. This will take a minimum of 15 to 20 seconds if sufficient product is used.**

Hand Washing:

- Remove hand and arm jewellery. Jewellery is very hard to clean, and hides bacteria and viruses from the mechanical action of the washing.
- Wet hands with warm (not hot) water. Hot water is hard on the skin, and will lead to dryness.
- Apply liquid or foam soap. Do not use bar soap in health care settings as it may harbour bacteria that can then be spread to other users.
- Vigorously lather all surfaces of hands for a minimum of 15 seconds. Removal of transient or acquired bacteria requires a minimum of 15 seconds mechanical action. Pay particular attention to finger tips, between fingers, backs of hands and base of the thumbs. These are the most commonly missed areas.
- Using a rubbing motion, thoroughly rinse soap from hands. Residual soap can lead to dryness and cracking of skin.
- Dry hands thoroughly by blotting hands gently with a paper towel. Rubbing vigorously with paper towels can damage the skin.
- Turn off taps with paper towel to avoid recontamination of your hands (NOTE: If hand air dryers are used, hands-free taps are necessary).

Other Issues

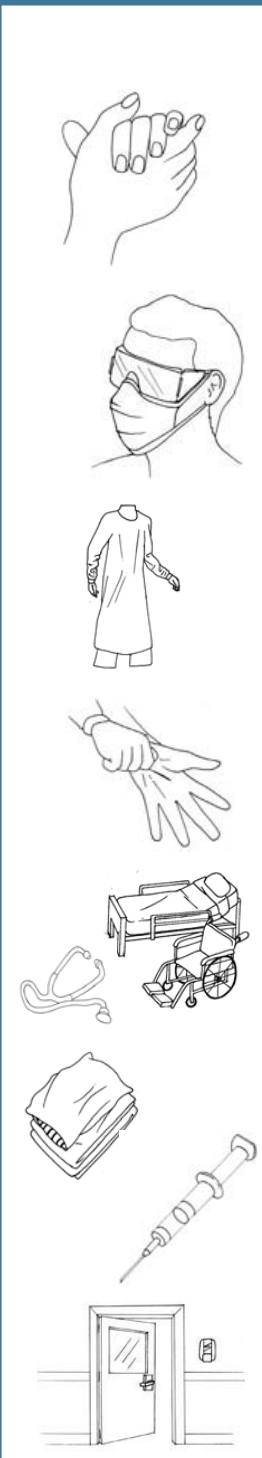
- Intact skin is the first line of defence, therefore careful attention to skin care is an essential part of the hand hygiene program.
 - o A hand hygiene skin care program should be in place. Choice of products should also be “user-friendly.”
 - o If integrity of skin is an issue, the individual should be referred to Occupational Health for assessment.
- Use a skin lotion that does not interfere with glove integrity.
- Note: It is reassuring to the client to see that the health care provider performs hand hygiene, as clients have an increased awareness of the importance of hand hygiene.

* Hands must be fully dry before touching the client or client’s environment/equipment for the hand rub to be effective and to eliminate the extremely rare risk of flammability in the presence of an oxygen-enriched environment.

APPENDIX II – FACT SHEET (B)

ROUTINE PRACTICES POSTER

Source: PIDAC Provincial Infectious Diseases Advisory Committee

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

Images developed by: Kevin Rostant

APPENDIX II – FACT SHEET (C)

SAMPLE SCREENING POSTER

IMPORTANT NOTICE TO OUR PATIENTS



Stop the spread of
germs that make you
and others sick

Tell staff if you have a:

- Cough
- Sneeze
- Fever
- Cold
- Flu



Clean your hands with
alcohol-based hand cleaner:

- when you arrive and before
you leave
- after coughing or sneezing

 **Region of Peel**
Working for you
Public Health

APPENDIX II – FACT SHEET (D)

SCREENING QUESTIONNAIRE FOR FEBRILE RESPIRATORY ILLNESS (FRI)

EXAMPLE OF CLIENT/ RESIDENT SCREENING QUESTIONNAIRE

Date: _____ Time: _____

Name: _____

- ☐ Y ☐ N New or worsening cough
☐ Y ☐ N Shortness of breath (worse than usual)
☐ Y ☐ N Fever within the past 24 hours

CLINICIAN SHOULD CONSIDER DONNING PERSONAL PROTECTION EQUIPMENT IF FEVER, PLUS ONE OR TWO ABOVE CLIENT SYMPTOMS, ARE PRESENT.

Client has reported the following symptoms:

- ☐ Y ☐ N Muscle aches
☐ Y ☐ N Severe fatigue, feeling unwell
☐ Y ☐ N Severe headache, (worse than usual)
☐ Y ☐ N New rash associated with fever
☐ Y ☐ N Recent travel to: _____
☐ Y ☐ N Contact with sick person with Hx of recent travel

Notes:

Completed by:

Download at:

<http://www.peelregion.ca/health/professionals/index.htm>

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APPENDIX II – FACT SHEET (E)

RESPIRATORY ETIQUETTE POSTER

Cover your cough or sneeze



When you cough or sneeze...
Cover your mouth and nose with
a tissue or your upper sleeve.

**Do not use
your hand!**



You may be asked to
put on a surgical mask
to protect others.



Put your used tissue or
mask in the waste
basket after use



You may be asked to sit in a
'cough corner' to stop the
spread of germs.

APPENDIX II – FACT SHEET (F)

INFECTION CONTROL CRITERIA FOR PURCHASE OF PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR ROUTINE PRACTICES



The employer has the responsibility to provide employees, clients and visitors with protection against infectious materials. They are specifically designed for use when there is contact with blood, body fluids, secretions and excretions, draining wounds, mucous membrane and non-intact skin.

Choosing products should be based on the following criteria:

- (a) availability
- (b) safety and reliability
- (c) uniformity
- (d) cost-effectiveness

Educational materials and in-servicing when appropriate for proper use of the purchased PPE should be considered mandatory for all personal protective equipment. The extent of the education materials and in-servicing required is dictated by the particular equipment selected.

GLOVES

Gloves are not needed for every client care activity. Purchase of gloves is a major expense for any care facility. It is important to consider reliability, supply and suitability for the task. The cheapest glove is not always the most economical. Conversely, the most expensive glove is not always the highest quality.

Health Canada (1998) outlines criteria that should be considered when purchasing gloves. Gloves must be:

- Disposable, single use
- Approved for medical use to protect against exposure of blood, body fluids any other contaminants
- Available in multiple sizes: small, medium and large. Sizing must be appropriate to provide adequate protection. An ill-fitted glove can be a hazard for the health care worker resulting in impaired dexterity and possible needle stick injury
- Good quality (have a leakage rate of < 5%)
- Appropriate for the intended use – non-sterile for routine practices and sterile for invasive procedures

- Available in dispensers that can be wall mounted for quick and easy access by health care workers, clients and visitors

Serious consideration should be given to the universal use of non-latex (vinyl or nitrile) and powder-free gloves to protect patients and staff against possible anaphylactic reactions to latex.

Separate purchase of sterile surgical gloves or re-useable general purpose gloves that are commonly used for cleaning and disinfection of environmental surfaces or for equipment cleaning (i.e. rubber gloves) should be considered.

Procedure gloves are meant to be an additional protective measure and are not a substitute for hand hygiene. Gloves need to be changed and hand hygiene practiced between clients, or when moving from one area on the body to another.

Gloves should be changed based on time and usage. They are used for a task with a client and then removed immediately to prevent transmission of disease-causing organisms. The risk of not only transmission but also contamination of surfaces within the environment exists with the improper use of gloves.

GOWNS

Disposable gowns may be preferable in a centre lacking laundry facilities, but cost may be prohibitive elsewhere.

The requirements for disposable or re-useable, washable gowns are similar.

Gowns used for routine client care must prevent contamination of uniforms and protect the skin of health care provid-



INFECTION CONTROL CRITERIA FOR PPE (CONTINUED)

ers from exposures to blood and body substances. Therefore, the gowns purchased must have the following features:

- Long sleeves with elasticized cuffs that fit snugly at the wrist
- Gowns must be long enough to cover front of clothing; multiple sizes
- Closures must be at the back to prevent accidental contamination if the gown falls open
- Closures at waist and neck
- If non-disposable, colour should differ from that of gowns used in the operating room for differentiation by laundry personnel
- Fluid resistant
- Re-useable gowns must be made of a fabric that can withstand washing at high temperatures

MASKS

Health Canada Guideline: *"Masks and eye protection should be worn where appropriate to protect the mucous membranes of the eyes, nose and mouth during procedures and client care activities likely to generate splashes or sprays of blood, body fluids, secretions or excretions."*

Masks must be:

- Products recommended by provincial and/or regional health authorities
- Large enough to cover nose and mouth with visor where appropriate (and eyes where appropriate)
- Available in several sizes
- Clearly labelled for use: Large Droplet: procedure mask, "surgical"
- Packaged with instructions that match Routine Practices and Transmission Based Protection terminology; colour coding to aid with distinction of use
- Comfortable
- In a supply format easily accommodated on isolation carts
- Latex-free
- Fluid resistant (most inclusive product)
- Easy to use (i.e. loops vs strings)
- User friendly: allows easy access to product with minimal hand contact with packaging and other contents
- Disposable

A variety of products may be necessary to accommodate different clinical environments.

EYE PROTECTION AND FACE SHIELDS

Eye protection and face shields are used to protect the mucous membranes of the eyes, nose and mouth during procedures and client care activities likely to generate splashes or sprays of blood, body fluids, secretions and excretions. Two types of product are generally available: goggles or eye shields which cover only the eyes and face shields which cover the entire face.

Eye/face protection must be:

- Comfortable
- Easy to use
- Durable during regular use
- Must fit over prescription glasses
- Compatible with masks used
- Without visual distortion
- Resistant to fogging
- Curved around the head to prevent side splashes
- Of sufficient length of shield that prevents splashing/spraying into the mouth (for face shields)
- Available in several sizes for good fit

In addition to the above, re-useable eye/face protection (Fine & Valenti, 2004) must:

- be easily maintained/disinfected
- be able to withstand the use of disinfectants without reducing visibility
- Have a clear protocol for cleaning and disinfection

Paediatric users must consider a product that doesn't "frighten" children such as goggles that are smaller while still being efficient, and having brightly coloured earpieces.

Different uses of the goggles/face shields must be considered. Several products may be necessary to meet the needs of all users – different departments such as dietary (the dish room where splashing is a problem), laundry, SPD, etc.

APPENDIX II – FACT SHEET (G)

LAUNDRY



COLLECTION AND HANDLING

Except for linen from persons with a diagnosis of rare, viral, hemorrhagic fevers, all soiled linen should be handled in the same way for all clients/residents.

Linen should be handled with a minimum of agitation and shaking. Never place soiled linen on the floor.

If the clothes or linens are not soiled with blood or body fluids, sorting of clothes and linen may take place in the client/resident care area.

Heavily soiled linen should be rolled or folded to contain the heaviest soil in the centre of the bundle without contaminating your clothing. Large amounts of solid soil, feces or blood clots should be removed from linen with a gloved hand and toilet tissue and placed into a bedpan or toilet for flushing. Excrement should not be removed by spraying with water.

BAGGING AND CONTAINMENT

- Soiled linen should be bagged or put in a laundry cart/hamper at the site of collection
- Bags should be tied securely and not over-filled when transported by chute, cart, or hand
- Laundry carts or hampers used to collect or transport soiled linen need not be covered from an infection prevention perspective. Carts/hampers should be cleaned after each use.
- After emptying them, linen bags should be washed after each use and can be washed in the same cycle as the linen contained in them

TRANSPORT

When a laundry chute is used, all soiled linen must be securely bagged and tightly closed.

Linen transported by cart should be moved in such a way that the risk of cross-contamination is minimized.

Clean linen should be transported and stored in a manner that prevents its contamination and ensures its cleanliness. Separate carts should be used for dirty and clean linens.

When linens are commercially laundered, adequate separation of clean and dirty laundry in the truck is essential to ensure that there is no opportunity for mixing clean and dirty linens.

WASHING AND DRYING

High temperature (> 71.1°C) washes are necessary if cold water detergents are not used. An alternative is to use cold water and a cold water detergent. If low temperature water is used for laundry cycles, chemicals suitable for low temperature washing, at the appropriate concentrations, should be used.

Use complete wash and rinse cycles.

Use of a commercial laundry detergent with household bleach (according to product instructions and where suitable for fabrics) and a normal machine wash and machine dry are sufficient to clean soiled linen in a community living or home care setting.

Machine drying or hanging clothing and linens on a clothes line at the home care site are suitable methods for drying.

DRY CLEANING

Clothing containing blood, body fluids or excrement that is sent to a community dry cleaner should be appropriately labelled. Dry cleaning personnel should be knowledgeable of procedures to handle soiled clothing.

PROTECTION OF LAUNDRY WORKERS AND OTHERS HANDLING LAUNDRY

Workers should protect themselves from potential cross infection from soiled linen by wearing appropriate protective equipment (e.g. gloves and gowns or aprons) when handling soiled linen.

Personnel should wash their hands whenever gloves are changed or removed.

All caregivers and laundry workers should be trained in procedures for handling soiled linens.

Laundry workers, as other health care providers, should be offered Hepatitis B immunization.

APPENDIX II – FACT SHEET (H)

PERSONAL CARE SUPPLIES - LONG TERM CARE RELATED



Residents can be reservoirs of pathogens such as antibiotic resistant organisms, bloodborne pathogens (Hepatitis B, C, and HIV) and others.

Personal care supplies, if shared, can result in transmission of these microorganisms to other residents and health care providers.

Prevention of transmission is of prime importance. The importance of ensuring that personal care supplies are **not shared** and are **kept clean** contributes to residents' safety and well-being.

Personal care supplies include items used for bathing, skin care, nail care, oral hygiene and denture care.

Included are the following items: lotions, creams, soaps, razors, toothbrush, toothpaste, denture box, comb and hairbrush, nail file and nail clippers and any other articles needed for personal hygiene.

PERSONAL CARE SUPPLIES SHOULD NOT BE SHARED BETWEEN RESIDENTS.

Each resident's personal care supplies should be identified with his/her name and kept at his/her bedside in a clean container (e.g. in a washable cosmetic bag or plastic container). Toothbrush and oral hygiene products should be kept in a separate bag.

Residents' personal care items must be sent with the resident when discharged.

PERSONAL CARE ITEMS SHOULD BE CLEANED REGULARLY

LOTIONS

Preferably, use lotions in a bottle with a pump and labelled with resident's name.

SOAPS

Bar soap must be kept in a clean, dry soap dish that allows the bar to drain between uses.

Personal liquid body wash is preferred because it is more easily stored between uses.

Each resident using an incontinence brief should have a personal incontinence care cleanser.

CREAMS

Use a tongue depressor to dispense cream from jar to avoid contaminating the cream.

TOOTHBRUSH

Change every three months and after an illness, keep in a plastic toothbrush container. Ensure it is stored protected from toilet aerosols.

DENTURE BOX

Label, rinse and dry daily.

COMB AND HAIRBRUSH

Label, clean at the same time as hair is washed. Clean in hot soapy water, rinse and allow to air dry.

NAIL FILE AND CLIPPER

Label, clean and dry after each use.

RAZORS

Clean **electric razors** after each use with a personal razor brush. Don't share.

Personal **disposable razors** can be used and must be disposed of in biomedical waste receptacles.

Sharing an electric razor between residents is not considered an acceptable practice in a health care facility because it doesn't respect the basic personal hygiene care measures and can expose the residents to the transmission of microorganisms and infection.

BEDPANS

Label with client's name and clean and disinfect after each use. Never place on the floor.

Disposable bedpans are acceptable.

BOWL FOR WASHING

Label with client's name, clean with soap and water and dry after each use.

APPENDIX II – FACT SHEET (I)

STERILIZATION AND DISINFECTION



One of the most current guides to Sterilization and Disinfection of Medical Equipment and Devices is the publication: Best Practices for Cleaning, Disinfection and Sterilization In All Health Care Settings initially published April 2006 by Provincial Infectious Diseases Advisory Committee (PIDAC) MOHLTC.

To view this document in its entirety, please visit:

http://www.health.gov.on.ca/english/providers/program/infectious/diseases/best_prac/bp_cds_2.pdf

The document provides a composite of the CSA standards, Public Health Agency of Canada Guidelines and CSAO recommendations with an audit tool to review practice in your area.

CONTENTS

1. Single-Use Medical Equipment/Devices
2. Purchasing and Assessing Medical Equipment/Devices and/or Products to be Subjected to Disinfection or Sterilization Processes
3. Education and Training
4. Written Policies and Procedures
5. Selection of Product/Process for Reprocessing
6. Environmental Issues
7. Occupational Health and Safety Issues
8. Factors Affecting the Efficacy of the Reprocessing Procedure
9. Transportation and Handling of Contaminated Medical Equipment/Devices
10. Disassembling and Cleaning Re-useable Medical Equipment/Devices
11. Disinfection of Re-useable Medical Equipment/Devices
12. Reprocessing Endoscopy Equipment/Devices
13. Sterilization of Re-useable Medical Equipment/Devices
14. Storage and Use of Reprocessed Medical Equipment/Devices

APPENDIX II – FACT SHEET (J)

THE USE OF GOWNS, APRONS, AND LAB COATS



WHY WEAR A GOWN, APRON OR LAB COAT?

Gowns, aprons or lab coats are used to help protect the skin and or clothing from coming in contact with blood /body fluids and secretions or excretions during client care or procedures. They are also used to reduce the risk of transmitting germs from client to client.

Choosing a gown, apron or lab coat depends on the type of exposure you will be having to a client or their environment.

WHAT IS THE DIFFERENCE BETWEEN GOWNS, APRONS OR LAB COATS?

Gowns are worn to protect uncovered skin and prevent soiling of clothing during procedures and client care activities that will likely generate splashes or sprays of blood, body fluids, secretions or excretions. Gowns should be long sleeved and can be re-useable or disposable. They should be washed or thrown out between clients.

Aprons are used when limited contamination is likely, for example providing foot care. They are disposable and should be thrown out between clients.

Lab Coats are used to help protect street clothes, uniforms or skin. They provide good coverage when they are properly fastened. They should not be worn outside the area they are being used in, for example the lab. They should be cleaned on a regular basis.

HOW DO I CHOOSE WHICH PROTECTIVE APPAREL TO USE IN MY PRACTICE?

You should always assess the type of exposure you will be having and be prepared for all circumstances. Remember if you are unsure of your exposure it is better to be overprotected and wear a long sleeve gown!

TIPS TO REMEMBER WHEN WEARING A GOWN, APRON OR LAB COAT.

GOWNS

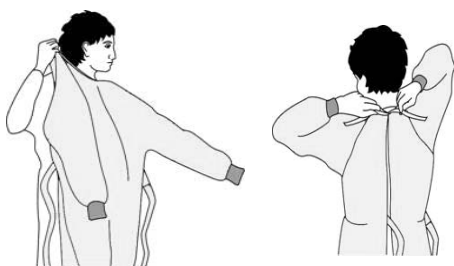
- Long enough to cover your clothing or uniform
- Should be long sleeved and cuffed
- Worn when contamination of the arms can be anticipated or in contact with clients who have epidemiological significant bacteria to reduce the risk of transmitting pathogens from clients or items in their environment to other clients or environments
- Put on with opening at back, tied at the waist and neck
- Remove IMMEDIATELY if wet
- Made of water resistant material and can be re-useable or disposable
- Use only once

APRONS

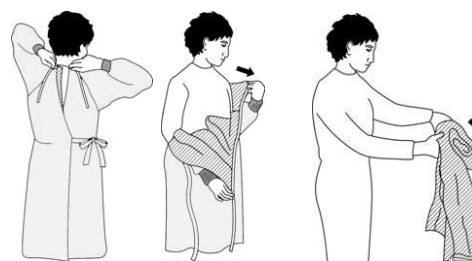
- Worn for short periods of time
- Limited exposure is anticipated
- Disposable
- Water proof
- Protects clothes

LAB COATS

- Worn to prevent contamination of street clothing and to protect the skin
- In labs, coats are worn to cover uniforms and must not be worn outside the lab
- Should have a regular cleaning schedule



HOW TO PUT ON A GOWN



HOW TO REMOVE A GOWN

The above diagrams are available to download from the CDC <http://www.cdc.gov/incidodldhqpjppe.html>

APPENDIX II – FACT SHEET (K)

MEDICATION SAFETY POSTER



Contaminated Medication Vials Spread Infection

Did you know that contaminated medication vials can transmit Hepatitis B, Hepatitis C, HIV, Staph aureus and more?

Help prevent infection by following proper aseptic practices!

- **Perform hand hygiene** (use alcohol based hand rub or wash hands) before preparing and administering an injection.
- Use a **sterile, single-use, disposable needle and syringe each time** solution is to be withdrawn from a vial.
- **Disinfect vial diaphragm** with 70% alcohol and allow to air dry prior to inserting needle.
- If vial labelled as **single use only**, discard after first use.
- **Store medication vial according to manufacturer's directions** – in refrigerator or at room temperature.
- Do not administer medication from single-dose vials to multiple patients.
- Discard vial if sterility/stability of vial or its contents are in doubt or if breaks in aseptic technique occur.



Used with permission.

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT

AUDIT PERFORMED BY _____ DATE: _____
 AREA AUDITED: _____

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
ENTRY TO FACILITY			N/A	
Infection Control Signage at Entry (related to screening for communicable diseases)				
Hand Hygiene Station at entrance				
UNIT LEVEL				
Client assessed before entry for risk factors (fever, cough, diarrhea, rash, drainage)				
Written policy and procedure for client assessment Includes: drainage, cough, fever, continence, ability to follow hygiene measures				
Protective equipment available				
Gloves				
Masks				
Gowns				
Alcohol-based hand rub stations				
Goggles/eye protection				
Cleaner for client equipment				
Written Policies for Dress Code:				
Includes no jewellery (rings or bracelets)				
No nail enhancements				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Signage for hand washing			N/A	
Signage for alcohol-based hand rub				
Signs showing how to wash hands				
Signs showing How to use alcohol-based hand rub				
Staff can identify when to use hand hygiene:				
Before resident care				
Before aseptic practices				
After resident care				
After contact with body fluids or mucous membranes				
After contact with contaminated equipment				
Resident equipment has regular cleaning schedule				
Commodes				
BP Cuffs				
Slings				
Glucometers				
Cleaners used are appropriate and used according to manufacturer's recommendations concentration contact time				
Clean procedures use sterile supplies e.g. Wound care				
Catheterization				
Resident Personal Care Equipment is labeled and stored safely				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
LAUNDRY			N/A	
Laundry is transported in a clean manner				
Soiled laundry in sealed bags				
Clean in segregated manner				
Laundry is sorted by staff wearing PPE				
Hand hygiene is available in laundry area				
Education is provided to laundry workers on protective practice				
Immunization is offered to laundry workers for Hepatitis B				
WASTE				
Puncture Resistant Sharps containers are used				
Written policies reflect waste segregation				
Sharps containers not more than 3/4 filled				
Sharps containers are accessible and safe				
HEALTHY WORKPLACE				
Documentation of staff tuberculin skin tests are kept				
Documentation of staff immunization is kept:				
Flu Shots				
MMR				
TDP				
Hep B				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (A)

LONG TERM CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Written policies outline work exclusions:			N/A	
Dermatitis on hands				
Disseminated shingles				
Initial days of a cold				
Diarrhea				
Eye infection until treated				
Written policy outlines Bloodborne Pathogen Follow-up (Sharps injury or blood splash)				
Education is provided to staff annually on Infection prevention and Control				
Education is provided on risk assessment, routine practices and equipment cleaning				
Rate of Staff Flu vaccination year _____				
Rate of Resident Flu vaccination				
OUTBREAK MANAGEMENT				
Written policies identify notification process for clusters of symptoms or outbreaks				
Written policies and procedures exist for managing outbreaks				
Including tools for tracking cases				
and a communication plan				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (B)

EMERGENCY RESPONSE FACILITIES (EMS) AUDIT

AUDIT PERFORMED BY _____ **DATE:** _____
AREA AUDITED: _____

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Biological risk assessment taught			N/A	
Hand wash sinks available in station				
Hand hygiene stations available in field				
PPE- appropriate gloves (Nitrile or work)				
Masks surgical/N95				
Face shields				
Protective clothing				
Sharps safety: containers available				
Safety engineered IV				
Safety engineered syringes				
CLEAN EQUIPMENT				
Cleaning protocols for pt. Equipment				
Disinfectant or germicide available				
Single use items for critical devices				
Medication vials accessed safely and labelled				
Cleaning protocol for vehicles				
CLEAN ENVIRONMENT				
Refrigerator cleaned monthly and documented				
Separate refrigerator for meds and food				
Protocol for cleaning soiled protective gear if re-useable				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (B)

EMERGENCY RESPONSE FACILITIES (EMS) AUDIT (CONTINUED)

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
WASTE			N/A	
Sharps are disposed of properly in puncture proof containers				
HEALTHY WORKPLACE				
Documentation of staff mantoux tests kept				
Documentation of staff immunization kept				
Flu Shots				
MMR				
Hep B				
TDP				
Chickenpox Immunity				
Written work exclusion policy for: Dermatitis on hands Disseminated shingles Diarrhea				
Written policy on Bloodborne Pathogen Follow-up				
STAFF TRAINING				
Annual staff training or updating completed on Infection Prevention				
Annual staff training on proper PPE use				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

**APPENDIX III – AUDIT TOOL (C)
HEALTH CARE OFFICE AUDIT**

AUDIT PERFORMED BY _____ **DATE:** _____
AREA AUDITED: _____

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	N/A	COMMENTS
WAITING ROOM					
Infection control signs at entry					
Infection Control Signs at reception desk					
Alcohol-based hand cleaner at Reception with signage					
Tissue Boxes available					
Garbage Cans available					
Patient Segregation Area					
Clean Toy and soiled toy bins available					
No office toy policy signs					
RECEPTION					
Personal Protective Equipment (PPE) available					
Patient Masks					
Staff fluid resistant masks					
Staff gloves					
Reception staff can maintain 1 metre distance with patients					
Telephone screening protocol has been developed and implemented					
EXAMINATION/CONSULTATION ROOMS					
Handwashing sinks with soap available in all rooms					
Exam rooms only have essential supplies					

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (C)

HEALTH CARE OFFICE AUDIT (CONTINUED)

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Exam room air exchange meets or exceeds six internal and two outside air exchanges per hour			N/A	
Written policies exist for decontaminating exam rooms between patients and at the end of the day				
No supplies stored under the handwash sink				
CLEANING PROCEDURES				
Written protocols and procedures for cleaning the office setting have been provided by the cleaning contractor				
Approved and appropriate disinfectant products are available for patient surfaces				
Approved and appropriate disinfectant products are available for equipment and instruments				
PROTOCOL DEVELOPMENT AND STAFF TRAINING				
Annual staff training or updating completed on Infection Prevention				
Annual staff training on proper PPE use				
DISINFECTION/STERILIZATION OF MEDICAL DEVICES				
Manufacturer's instructions are followed				
Process for cleaning semi-critical and critical devices including written protocols for: disassembly sorting and soaking physical removal or organic material rinsing drying physical inspection and wrapping				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

**APPENDIX III – AUDIT TOOL (C)
HEALTH CARE OFFICE AUDIT (CONTINUED)**

ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Sterilization must follow manufacturer's recommendations			N/A	
Internal and external indicators must be used with sterilization				
Biological indicators must be used daily				
Recording of indicators must be done				
High level disinfection must be done according to manufacturer's recommendations				
Product used for high level disinfection must have a DIN number				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (D)

HOME HEALTH CARE AUDIT

AREAS AND ITEMS		FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
RISK ASSESSMENT				N/A	
Screening done before visits (FRI)					
Phone script available for use					
Standardized client assessment used					
RISK REDUCTION					
Hand Hygiene products available and used					
Written policy on hand hygiene requires no hand jewellery					
No nail enhancements					
Supplies that may be required for risk reduction					
Alcohol-based hand rub (60-90% alcohol)					
Hand lotion or cream					
One way valve resuscitation mask (only if staff required to be CPR certified)					
Non sterile exam gloves					
Impermeable gown or apron					
Surgical mask (with visor)					
Sharps container					
Sterile gloves if required					
70% ethyl alcohol wipes or other disinfectant					
Antimicrobial soap if required					
Blood spill kit					

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (D)

HOME HEALTH CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Written guidelines available on:			N/A	
When to wear protective equipment				
Cleaning and disinfection of equipment if moving client to client				
Waste disposal				
Sharps handling				
Laundry				
Requiring mantoux testing of staff based on local recommendations				
Maintaining cold chain on vaccines and multidoes vials				
Sterilization if autoclave used for foot care instruments or other patient equipment				
Documentation of staff/volunteers mantoux status and immunization status (or natural immunity as required)for:				
Influenza				
MMR				
TDP				
Hepatitis B				
Written Guidelines on work exclusions:				
Dermatitis on hands				
Disseminated shingles				
Initial days of respiratory infection				
Fever				
Diarrhea				
Eye infection until treated				

**INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS**

APPENDIX III – AUDIT TOOL (D)

HOME HEALTH CARE AUDIT (CONTINUED)

AREAS AND ITEMS	FULLY IMPLEMENTED	PARTLY IMPLEMENTED	NOT IMPLEMENTED	COMMENTS
Verify employee immunity before assigning to client with communicable disease.			N/A	
Written guideline outlining Bloodborne pathogen follow up (eg. Sharps injury or bodyfluid splash).				
Documentation of annual education programs on:				
Hand Hygiene				
Risk assessment and risk reduction including proper use of PPE				
Documentation of education on cleaning and disinfection of patient equipment				
Standardized Client education information available on:				
Hand Hygiene				
Hygiene in the home				
Safe Sharps disposal				
AROs				
Managing Diarrhea				
Respiratory Etiquette				
Immunization				
Self screening				
Safe disposal of waste				
Written guideline of what needs to be reported to Health Unit (identify reportable diseases for your area)				
Identify resources available to manage infectious diseases and staff safety				

APPENDIX IV

CORE COMPETENCIES FOR INFECTION PREVENTION AND CONTROL FOR HEALTH CARE PROVIDERS

SOURCE: CHICA-CANADA ENDORSED

TARGET AUDIENCE

Individuals who are accountable for the quality of health care delivered in Canada.

TABLE 2:

CORE COMPETENCIES IN INFECTION PREVENTION AND CONTROL FOR ALL HEALTH CARE PROVIDERS

AREA OF COMPETENCY	DETAILED CORE COMPETENCY
Critical Assessment Skills <i>These skills are the under-pinning for the other five core competencies</i>	Critical assessment skills related to exposure to infectious agents, awareness to local outbreaks and use of infectious disease specific protocols
Basic Rationale for Routine Practices	Understands basic microbiology and how infections can be transmitted in health care settings
Personal Safety	Knows how to appropriately manage sharps, blood and body fluids and recognizes the appropriate first aid activities for exposures to blood and body fluids
	Understands the role of vaccines in preventing certain infections, including annual influenza immunizations for health care workers
Routine Practices	Understands the importance of hand hygiene/hand washing
	Understands the activities of Routine Practices/ Standard Precautions
	Respiratory Etiquette
	Knows and selects appropriate Personal Protective Equipment (PPE) for their job(s)
	Demonstrates appropriate use of PPE

INFECTION PREVENTION AND CONTROL BEST PRACTICES
FOR LONG TERM CARE AND COMMUNITY CARE INCLUDING HEALTH CARE OFFICES AND AMBULATORY CLINICS

CORE COMPETENCIES TABLE (*CONTINUED*)

AREA OF COMPETENCY	DETAILED CORE COMPETENCY
Cleaning, Disinfection, Sterilization/ Waste Management	Maintains safe clean environment
	Understands importance of using PPE when sorting laundry
	Recognizes that re-useable equipment that has been in direct contact with a patient should be cleaned and reprocessed before use in the care of another patient
	Appreciates the differences between clean, disinfected (low, medium, and high-level) and sterile items
Additional Precautions	Knows the difference between regular and biohazard wastes
	Understands Transmission Based Precautions (Additional Precautions): why and when they are used

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Infection Prevention and Control Best Practices for Personal Services Settings

**Infection Prevention and Control Unit
Public Health Division
Ministry of Health and Long-Term Care
January 2009**

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Infection Prevention and Control Best Practices in Personal Services Settings

1. INTRODUCTION

Purpose

This document has been developed for public health inspectors to educate personal service workers (PSWs) to reduce the risk of transmission of blood borne and other types of infection for both clients and PSWs during the delivery of personal services. Percutaneous exposure (through penetration of skin) or mucous membrane exposure to blood or body fluids can lead to infection with blood-borne pathogens including Hepatitis B (HBV), Hepatitis C (HCV), Human Immunodeficiency Virus (HIV), other human retroviruses, bacteria and other pathogens of concern, such as mycobacteria. For this reason, infection prevention and control precautions must be taken in every personal service setting. It is the responsibility of the owner/operator to ensure all PSWs are educated in regards to infection control requirements specified in this protocol; both the client and the operator may be at risk of infection. ***It is important to recognize that blood and body fluids do not have to be visible on instruments or other surfaces for an infection to be transmitted.***

Applicability

This best practice document applies to any facility, service or person offering services where there is a risk of exposure to blood, such as, **but not limited to:** hairdressing and barber shops, tattoo and body piercing studios, electrolysis, acupuncture and various aesthetic services. The following guidelines comprise general recommendations for all personal service settings and equipment. Requirements specific to each area of practice are presented in summarized formats following the general guidelines.

Statutory Basis

This document is to be used in conjunction with the Infection Prevention and Control in Personal Services Settings Protocol, 2008. This protocol is named in requirement No. 10 under the Infectious Diseases Prevention and Control Standard of the *Ontario Public Health Standards*, 2008, published by the Minister of Health and Long-Term Care as authorized by Section 7 of the *Health Protection and Promotion Act* (HPPA), Revised Statutes of Ontario, 1990.

Note: The *Regulated Health Professions Act* (RHPA) provides that no person shall perform a controlled act (e.g. a surgical procedure) in the course of providing health care services to an individual unless:

- (a) the person is a member authorized by a health profession Act to perform the controlled act; or

- (b) the performance of the controlled act has been delegated to the person by a member of a regulated health profession.

Any regulated health professional under the RHPA does not require their practice to undergo routine inspections by health unit staff as delineated below.

Inspection of Personal Services Settings by Board of Health Staff

Routine inspections are required for all personal services settings at least once a year by the Medical Officer of Health for each health unit or their designate. These guidelines also apply to “special events” such as trade shows, conventions, fairs or exhibitions.

Personal Services Settings that serve food must be in compliance with the HPPA in regards to Food Premises.

Background

The use of personal service settings has become a way of life for many individuals.

The range of services offered varies from hair care to invasive procedures such as tattooing and piercing. A 2002 study conducted with university undergraduates found that tattoos were present in 22% of men and 26% of women with an average of one to three sites per person. Piercing was found to be more common with 42% of men and 60% of women reporting that they were pierced. The popularity of personal services has also highlighted the risk of infection in many of these services. Mycobacterial infections related to inadequate cleaning and disinfection of footbaths have been reported. However the lack of formal surveillance of infections related to personal service settings makes it difficult to provide accurate information on the actual risk of these procedures.

Lack of infection prevention and control practice in personal service settings, can affect the health of the client as well as present a risk to the operator. Infections may be spread during procedures even when skin penetration does not occur. Staff who are knowledgeable and consistently practice infection prevention and control will significantly reduce the risk of infections being transmitted within the personal service setting. Public health staff must be knowledgeable resources for personal service staff and assist them in providing a safe environment.

2. GLOSSARY

The following definitions apply throughout this protocol:

Approved sharps container	A dedicated, puncture resistant, tamper-resistant, leak-proof container, which is impenetrable by sharps. It should have a tight-fitting lid and bear a clearly identifiable biological hazard label.
Acquired Immunodeficiency Syndrome (AIDS)	A broad spectrum of disease caused by HIV ranging from asymptomatic infection to advanced clinical disease, which is characterized by acquired immunosuppressant.
Acupuncture	The remedial use of long thin needles that are inserted into the skin on specific “energy points” of the body. After shallow insertion, they may be gently rotated as part of the process.
Antiseptic	A chemical agent that destroys micro-organisms on human skin or mucosa
Applicator	A device for applying a substance. Includes a single-use, disposable spatula or a similar device.
Aseptic technique	The absence of pathogenic (disease producing) organisms.
Bacteria	A single cell micro-organism that may cause disease in plants, animals or humans.
Blood-borne infections	Infections (e.g., HIV, HBV, HCV infections) spread through contaminated blood or other body fluids, including semen, vaginal secretions or saliva.
Body fluid	Human body fluids include such things as blood, semen, saliva, sputum and body tissue. Persons who come into contact with human body fluids may be exposed to a number of potential health risks. Of particular concern are HBV, HCV and HIV.

Classification of Devices	
Critical equipment/devices:	Equipment/devices that enter sterile tissues, including the vascular system (e.g. needles, etc.). Critical equipment/devices present a high risk of infection if the equipment/device is contaminated with any microorganisms, including bacterial spores. Reprocessing critical equipment/devices involves meticulous cleaning followed by sterilization.
Noncritical equipment/device:	Equipment/device that either touches only intact skin (but not mucous membranes) or does not directly touch the client. Reprocessing of noncritical equipment/devices involves cleaning and may also require low-level disinfection (e.g. cupping equipment, etc.).
Semicritical equipment/device:	Equipment/device that comes in contact with nonintact skin or mucous membranes but ordinarily does not penetrate them (e.g. tweezers used to remove ingrown hairs, etc.). Reprocessing semicritical equipment/devices involves meticulous cleaning followed by, at a minimum, intermediate level disinfection.
Cleaning	The physical removal of organic matter or debris from objects, usually done using water, detergent and friction. This process removes microorganisms primarily by mechanical action but does not destroy those remaining on the object.
Contamination	The presence of an infectious agent on a surface, clothes, instruments, dressings or other inanimate articles or substances including water.
Controlled Act	Under the RHPA (refer to glossary) a controlled act includes but is not limited to : performing a procedure on tissue below the dermis or below the surface of a mucous membrane and applying or ordering the application of a form of energy on any part of the body. For further information refer to: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_91r18_e.htm#BK23
Cross-contamination	The transfer of an infectious agent from a

contaminated source to a non-contaminated source.

Disinfectant

A substance used on inanimate objects that destroys bacteria, fungi, viruses and some bacterial spores depending on the level of the disinfectant and the contact time used.

Disinfection

A process that kills or destroys most disease-producing micro-organisms, with the exception of high numbers of bacterial spores. There are different levels of disinfection.

High-level disinfection

The level of disinfection required when processing some semicritical equipment/devices. High level disinfection processes destroy vegetative bacteria, mycobacteria, fungi and enveloped (lipid) and non-enveloped (non-lipid) viruses, but not necessarily bacterial spores. Equipment/devices must be thoroughly cleaned prior to high level disinfection

Intermediate-level disinfection

Level of disinfection required when processing some semicritical equipment/devices. Intermediate-level disinfection kills mycobacteria, most viruses, and bacteria. Equipment/devices must be thoroughly cleaned prior to intermediate level disinfection.

Low-level disinfection

Level of disinfection required when processing noncritical equipment/devices or some environmental surfaces. Low-level disinfectants kill most vegetative bacteria and some fungi as well as enveloped (lipid) viruses. Low-level disinfectants do not kill mycobacteria or bacterial spores. Equipment/devices must be thoroughly cleaned prior to low-level disinfection.

Electrolysis

The removal of hair from the body by inserting a solid needle into the hair follicle where the hair shaft emerges. An electric current is passed through the needle to destroy the hair follicle and the hair is removed with tweezers.

Hand Hygiene

A process to remove or destroy micro-organisms on hands. Can be done with soap and running

	water or an alcohol-based waterless agent, provided hands are not visibly soiled.
Hepatitis B virus (HBV)	An infection of the liver caused by the hepatitis B virus.
Hepatitis C virus (HCV)	An infection of the liver caused by the hepatitis C virus.
Human immunodeficiency virus (HIV)	The virus that causes AIDS.
Infection	Entry into and multiplication of infectious microorganisms within the body.
Infection prevention and control	The process of minimizing the risks of spreading infection.
Infectious disease agent	Microorganisms such as viruses, bacteria, or fungi that are capable of producing disease. (Also referred to as “pathogens”).
Infectious waste	All waste which could potentially be contaminated with disease-causing microorganisms, (i.e. bacteria, and/or viruses).
Instrument	An item or piece of equipment used during the process of carrying out personal services. This also applies to implements.
Invasive instrument	Any instrument designed to penetrate the skin.
Invasive procedure	Any procedure intended to break the skin (e.g. tattooing, micro pigmentation, piercing, electrolysis, acupuncture etc.).
Micro pigmentation	The permanent imprinting of cosmetic shading also known as “permanent makeup” or “cosmetic tattooing” using different coloured inks or pigments. The process is similar to tattooing and may be done using either a traditional tattoo machine or an implanter.
Mucous membrane	Moist tissue that lines some organs and body cavities (such as nose, mouth, lungs) and secretes mucous (a thick fluid).

Mycobacterium	A bacteria with over 50 species, of which at least 20 have been reported to cause disease in humans. This bacteria has been isolated from various sources including water, birds, animals and soil.
Personal service settings	Settings in which aesthetic services such as body piercing, tattooing, hairdressing salons (etc.) are delivered.
Personal service worker (PSW)	A person who operates or practices in a business offering personal services.
Piercing	The perforation or piercing of a client's body and the attachment or insertion of jewelry. It can be done with a piercing needle, a piercing gun, a trocar and cannula, a dermal punch, or a scalpel.
Puncture	Accidental or intentional penetration (break) through the skin or other body tissue.
<i>Regulated Health Professions Act (RHPA)</i>	The Act governing certain self-regulated groups of healthcare professionals. The PSSP does not cover services, such as mole or ingrown nail removals, provided by professionals regulated under this Act. This would include services provided by physicians, nurses, physiotherapists, registered massage therapists, chiropractors, etc.
Routine Practices	The Health Canada/Public Health Agency of Canada term to describe the system of infection prevention and control practices recommended in Canada to prevent and control transmission of microorganisms. In the United States these are called Standard Precautions. These practices describe prevention and control strategies to be used with all clients during all care.
Sharps	Any item that may penetrate the skin (e.g. needles, blades, lancets, razors, scalpel, etc.).
Single-use (disposable) items	Any instruments or items that are designed to be used once and then discarded as they cannot be adequately cleaned and disinfected or sterilized.

Spores	A form assumed by some bacteria that is resistant to heat, drying and chemicals. Under the right environmental conditions, the spore may revert to the actively multiplying form of the disease.
Sterilization	The level of reprocessing required when processing critical equipment/devices. Sterilization results in the destruction of all forms of microbial life including bacteria, viruses, spores and fungi. Equipment/devices must be cleaned thoroughly before effective sterilization can take place.
Styptic pencil	A medicated stick, often made of alum, that may be applied to a wound or cut to stop bleeding. The stick must never come into contact with the wound or open cut. Coagulant products must be applied so that the applicator is either disposable or the reusable applicator is not contaminated.
Tattooing	The permanent or indelible imprinting of a decorative design into the skin. Tattoo needles on the end of a reciprocating needle bar are used to puncture the skin or mucosa and introduce different coloured inks or pigments.
Virus	A micro-organism that can only replicate within living host cell.

2.1 ROUTINE PRACTICES FOR PERSONAL SERVICE SETTINGS

Guidelines for the control of infections are needed to assist in developing policies and procedures to ensure an optimal level of care is provided. These guidelines should be seen as directing principles and indications or outlines of the expected practice.

The goal of infection prevention and control is to provide service in a manner that reduces the risk of transmission of microorganisms to the client and the personal service worker. Service should be provided in a manner that prevents disease transmission. Infection prevention practices must be tailored to the services being provided.

Routine Practices describe prevention and control strategies to be used with all clients during all service delivery and include:

- Hand Hygiene
 - o Hand hygiene should be performed
 - Between clients
 - Before performing invasive procedures
 - After contact with blood, body fluids, secretions and excretions
 - After contact with items known or considered likely to be contaminated with blood, body fluids, secretions, or excretions
 - Immediately prior to and after removing gloves
 - Between procedures on the same client in which soiling of hands is likely, to avoid cross-contamination of body sites
 - When hands are visibly soiled
 - o Plain dispensable soap may be used for routine hand washing
 - o When hands are visibly soiled, hands must be washed with soap and water
 - o Alcohol-based hand rubs are an acceptable method of hand hygiene especially when access to hand washing facilities is limited.
 - o Adequate facilities for hand washing in PSSs need to be ensured.
- Gloves
 - o Gloves are not required for routine procedures in which contact is limited to a client's intact skin
 - o Gloves are not a substitute for hand hygiene
 - o Clean, non-sterile gloves should be worn
 - For contact with blood, body fluids, secretions and excretions, mucous membranes, or non-intact skin
 - When handling items visibly soiled with blood, body fluids, secretions and excretions
 - When the PSW has non-intact skin on the hands
 - o Gloves should be changed between procedures with the same clients and between clients
 - o Gloves should be removed immediately after completion of the procedure, at the point of use and before touching clean environmental surfaces
 - o Hand hygiene should be performed immediately after removing gloves
 - o Single-use disposable gloves should not be reused or washed.

- Face Protection
 - o Face protection should be worn to protect mucous membranes of the eyes, nose and mouth during procedures likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.

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

- Equipment and Environment
 - o Articles that touch the client's intact skin should be clean.
 - o Equipment touching mucous membranes or non-intact skin, should be appropriately disinfected between clients
 - o Chairs, cabinets, counters and charts should be cleaned on a regular basis.
 - o Soiled client care equipment should be handled in a manner that prevents exposure of skin and mucous membranes and contamination of clothing and the environment.
 - o Used needles and other sharp instruments should be handled with care to avoid injuries during disposal. Used sharp items should be disposed of in an approved puncture-resistant container located in the area where the sharps item are used.
 - o All equipment that is being used by more than one client must be cleaned or cleaned and disinfected or sterilized as appropriate between client according to recommendations.

3. GENERAL GUIDELINES FOR EQUIPMENT, INSTRUMENTS AND SUPPLIES

3.1 Physical Setting Requirements

The work site must be appropriate to the personal service activity.

Contact surface(s) (counters, tables, trays, lamps, magnifiers, etc.) must have a smooth and non-absorbent finish.

The work area(s) must be well lit to facilitate cleaning and prevention of injuries.

All personal services settings must be equipped with a sink(s) for hand washing.

The hand washing sink(s) must be:

conveniently located near the work area(s) but at least one metre away from where sterile or clean supplies are located.

accessible for use while personal services procedures are being performed (i.e. sink is free of cleaning equipment) and continuously supplied with potable hot and cold running water, dispensable liquid soap from a single-use disposable container and single-use (cloth or paper) hand towels in a dispenser. If the soap container is refilled, it must first be cleaned, disinfected with low-level disinfectant, rinsed and allowed to thoroughly air dry.

Note: A washroom hand sink(s) within the PSS premises may be used for hand washing as long as it satisfies the requirements in section 3.1 (v).

Hand washing sinks used by more than one premise are not acceptable (i.e. hand washing sinks in a public washroom within a mall).

All personal services settings must be equipped with a sink(s) for cleaning of equipment/instruments.

The cleaning sink(s) must be:

conveniently located near the work area(s)
continuously supplied with potable hot and cold running water and of adequate size to accommodate the largest instrument/item of equipment to be cleaned.

If there is only one sink available within the PSS premises, the same sink may be used for both hand washing and cleaning of equipment/instruments providing that it satisfies the requirements of 3.1 (v) and (viii). The PSS water supply should be tested in accordance with local water regulations, unless the water is from a municipally-controlled water source (e.g. tap water in a city or town).

Note: In the event that a plumbing system cannot be installed in an existing personal service setting (e.g. premises is located in an older building), the PSS must seek approval from their local health department in order to use a portable sink. Such sinks must be inspected and approved by the health unit to ensure a health hazard does not exist.

4. OPERATIONAL REQUIREMENTS FOR PERSONAL SERVICES SETTINGS

- i. All equipment/instruments or items used must be of durable construction, maintained in good repair, and be in a clean and sanitary condition. All cracked chipped, rusted or otherwise damaged instruments not suitable for use shall not be used and shall be discarded.
- ii. All reusable equipment/instruments or items and work contact surfaces (e.g. chairs, tables, equipment trays, etc.) used in the delivery of personal service procedures must be thoroughly cleaned and then disinfected or sterilized after each use in accordance with Tables 1 to 3 and following the requirements detailed in the cleaning, disinfection and/or sterilization sections that follow. Working surfaces, where invasive procedures are performed, must be cleaned and disinfected with a low-level disinfectant between clients.
- iii. All equipment/instruments or items that cannot be easily or thoroughly cleaned, disinfected or sterilized between each use shall be considered as single-use, disposable items. If an item cannot be cleaned, there is no way to adequately sterilize or disinfect it.
- iv. All single-use disposable equipment/instruments or items shall be appropriately discarded immediately after use. Single-use covers such as table covers, paper towels or dental bibs are single-use items and must be disposed after each client. Reusable towels are to be laundered after each use. All items are to be stored in a manner that prevents contamination.
- v. Elastic bands used on equipment/instruments must be discarded after each client.
- vi. Re-usable equipment/instruments, items and work contact surfaces that cannot be easily or adequately cleaned, disinfected or sterilized between each use (i.e. tattoo or pigmentation machines, electrolysis control panels, pigment or spray bottles used during service, etc.) shall be covered with single-use, disposable covers (e.g. plastic wrap or plastic bags) and the cover shall be discarded after each use.
- vii. Any equipment/instruments or item that is touched or handled during a procedure (even if not used during the procedure) shall be considered contaminated. If the item is single-use disposable, the item shall be discarded. If the item is re-usable, it must be cleaned and then disinfected or sterilized before the next use.

- viii. During any procedure, routine infection prevention and control practices must be followed to prevent contamination of disinfected or sterilized equipment through contact with work surfaces, clothing or hands (refer to 2.1).
- ix. Sterile instruments (e.g. needles, piercing jewelry, forceps, or other items) that become contaminated (i.e. that touch a person, or that come into contact with any other surface or item prior to use) shall not be used and shall be immediately replaced with another sterile instrument.
- x. All products (i.e. wax, pigment, creams, lotion, or cotton balls) must be dispensed in a manner that does not contaminate the remaining portion.
- xi. Any styptic product used must be single-use and discarded after each client. Styptic pencils cannot be used to stop bleeding on clients. Powder or liquid form is acceptable provided that if direct contact with the skin is required, that it be applied by use of a disposable applicator.
- xii. Prior to a PSW performing any invasive procedure, the client site shall be cleansed with a skin antiseptic (e.g. iodine, 70% isopropyl alcohol, 2% chlorhexidine gluconate, 0.5% chlorhexidine gluconate with 70% alcohol, etc.)
- xiii. Whenever a surface anaesthetic is used on a client site, it shall be applied using a clean, single-use, disposable swab. The site must first be cleaned with an approved skin antiseptic, then marked with a (iodine) felt tip/marketing pen prior to the procedure. After one minute, once the pen mark has dried, the site is to be cleaned again with the approved skin antiseptic just prior to the procedure. (Refer to 6.2 ii) Injectable anesthetics are not to be used.
- xiv. Clean linen must be stored in a manner that protects it from contamination. All linen must be laundered or discarded after each client use.
- xv. It is recommended that the personal service settings' first aid/safety kit be equipped with a magnet for retrieval of broken or dropped needles, if needles are used in the premise.
- xvi. Personal items belonging to personal service worker/s (e.g. food, medication, aesthetic items) shall not be stored with client supplies.

4.1 Sharps and Approved Sharps Containers

- i. All sharps that are intended for use to penetrate the skin and/or mucous membranes (e.g. needles, scalpel, etc.) must be provided as sterile, single-use disposable items. Never re-use needles or scalpels.
- ii. Needles shall not be tested for sharpness or defects (e.g. damaged or blunt points) on the client or PSWs skin before use but shall be visually inspected.
- iii. Needles that require modification or attachment to other items (e.g. tattoo needles) shall be cleaned in an ultrasonic cleaner, packaged and then sterilized prior to being used.
- iv. Used disposable, sharps shall be discarded into an approved sharps container immediately after each single use. Full (3/4 of capacity) sharps containers must be securely closed and shall not be discarded with the regular garbage. They must be discarded in accordance with biomedical waste regulations.
- v. Needles and other sharps shall not be saved for future use on any person (even on the same client).
- vi. Needles/needle bars and other sharps (e.g. lancets, razor blades, scalpel, etc.) shall not be taken apart, bent, recapped re-covered or otherwise manipulated after use prior to disposal.
- vii. Approved sharps containers are required for the safe disposal of used, disposable sharps (e.g. razor blades, needles, lancets, scalpel, etc.).

5. CLEANING, DISINFECTION AND STERILIZATION

5.1 Classification of Equipment/Instruments

The rationale for cleaning and disinfecting or sterilizing equipment and instruments is based on the intended use of the item. For the purposes of this document, equipment/instruments used in PSSs can be divided into three general categories: **critical, semi-critical and non-critical**.

Table A gives some general guidance regarding cleaning, disinfection and sterilization requirements for equipment and instruments based on their classification.

Note: The intended use of an item guides requirements for its appropriate cleaning and disinfection or sterilization, rather than the name of the item.

Table A: Classification for Methods of Disinfection/Sterilization

Adapted from Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis. Health Canada, July 1999.

Classification	Definition	Method to be Used
Critical Items	• Instruments that penetrate the skin (used for an invasive procedure) and • Instruments that hold sterile items. In some cases, high-level disinfection may be acceptable.	• Thorough cleaning followed by sterilization is required. Refer to Table 3 <i>Note:</i> Some equipment must be supplied sterile and discarded following use as it cannot be adequately cleaned or reused.
Semi-critical	• Instruments that come in contact with non intact skin or mucous membranes, but are not intended to penetrate them.	• Thorough cleaning followed by intermediate or high-level disinfection is required. Refer to Table 1 and Table 2 for more detailed information.
Non-critical	• Instruments that come in contact with intact skin.	• Thorough cleaning followed by low-level disinfection is required. Refer to Table 1 and Table 2 for more detailed information.

5.2 Cleaning

If an item or surface is not clean it cannot be disinfected or sterilized. Cleaning is a process that removes visible dirt (organic matter) and some microorganisms from work surfaces, instruments and equipment, allowing the disinfection or sterilization processes to work effectively.

Cleaning must always occur as a first step before disinfection or sterilization. Manual cleaning involves the use of a detergent and water solution and scrubbing (the use of friction) to remove soil. Mechanical cleaning of equipment/instruments involves the use of an ultrasonic cleaner and an appropriate cleaning solution.

Detergents shall be rinsed off instrument/equipment surfaces prior to disinfection to prevent neutralization of the disinfectant. Refer to Table 2 (in regards to disinfection).

5.2.1 General Cleaning Requirements

- i. Prior to disinfection or sterilization, all equipment/instruments and environmental surfaces must be thoroughly cleaned either:
 - a) manually using lukewarm water, an enzymatic cleaner/detergent and a scrub brush
 - b) or in conjunction with manual cleaning, mechanically, using an ultrasonic cleaner and an appropriate cleaning solution.

5.2.2 Cleaning of Equipment/Instruments

- i. PSWs shall always wear appropriate personal protective equipment (PPE) according to Routine Practices when cleaning and disinfecting contaminated equipment/instruments and other surfaces in an attempt to prevent any potential for penetration of the skin or splashing of mucous membranes (such as eyes) during the cleaning and disinfection process.
- ii. Routine Practices include the use of:
 - a) a pair of thick rubber (utility) gloves to protect hands and lower arms

If there is a risk of splashing, the following PPE should also be used in addition to utility gloves:

- b) non-absorbent (i.e. plastic or vinyl) aprons or gowns to protect work clothing and the upper body
- c) safety glasses or goggles to protect the eyes. Prescriptive eyewear does not provide appropriate protection.

- iii. The PSW shall scrub the equipment/instruments below the water surface to prevent splashing into the eyes or onto clothing.
- iv. Dirty equipment/instruments shall be kept separate from clean equipment/instruments at all times to prevent cross contamination.
- v. Whenever possible, dirty/contaminated equipment/instruments shall be cleaned immediately after use on each client in order to prevent drying of debris or blood proteins on their surfaces.
- vi. When it is not possible to clean dirty/contaminated reusable equipment/instruments immediately after each use, they shall be placed to soak in clean, lukewarm water (with or without detergent) to prevent drying of debris/blood proteins onto their surfaces. The sink designated for cleaning may generally be used for this purpose. See section (viii and ix) below for exception.
- vii. Other materials used for cleaning equipment/instruments (e.g. rubber utility gloves, scrub brushes, etc.), must be cleaned and low-level disinfected after each cleaning session. When not in use, they must be stored dry.

Exception to Paragraph 5.2.2 (vi) – Use of Designated Cleaning Sink for Cleaning of Equipment/Instruments

- viii. If only one sink is available within the premises for both hand washing and cleaning of instruments/equipment, precautions shall be in place to ensure that this single sink is always available for hand washing while procedures are being performed. In this instance, a puncture-resistant container with a tight-fitting lid, containing water or water and detergent, must be used to store dirty/contaminated instruments until they are ready to be cleaned.
- ix. The designated cleaning sink and/or dirty instruments container (if required) must be of adequate size to accommodate the largest instrument/equipment to be cleaned. If a container is used, it must be appropriately labelled “dirty instruments” and must only used for this purpose. Equipment used for soaking (i.e. sink, containers) must be cleaned and then disinfected after each use.
- x. If an ultrasonic cleaner is used for cleaning instruments, the device shall:
 - a) be operated with the lid on to prevent any microorganisms present in the cleaning solution from splashing or becoming airborne and potentially contaminating surfaces

- b) be operated and maintained according to the manufacturer's instructions
- c) be cleaned and disinfected at the end of each day's use in accordance with manufacturer's directions
- d) be stored dry after the unit is cleaned and disinfected and
- e) be operated such that the cleaning solution is changed daily (when in use) and more often when the cleaning solution is visibly dirty.

Note: Ultrasonic cleaners do not disinfect or sterilize equipment/instruments. However, when properly used, they do provide a very safe and effective means of cleaning instruments prior to disinfection or sterilization.

5.3 General Cleaning Frequencies

- i. Work contact surfaces, such as manicure/pedicure tables, tattooing/piercing equipment trays, magnifying lamps, clip cords, electrolysis units, etc. must be either:
 - a) cleaned between each client using a detergent and water solution and friction and then disinfected or sterilized or
 - b) covered with a single-use cover that must be disposed of after each client.

Note: If a single-use disposable covering is used, work contact surfaces must still be cleaned (at a minimum) at the end of each day and as often as necessary when they become visibly soiled.

- ii. Other PSW or client contact surfaces within the premises (i.e. counters, client chairs, washroom surfaces, etc.) shall be cleaned (at a minimum) at the end of each day or more frequently if necessary when they become visibly soiled.
- iii. Floors, walls, cupboards, shelving and other structural surfaces that are not routinely contacted during the course of service delivery must be cleaned when visibly soiled and daily (at a minimum) when they are not visibly soiled.

Note: If, at any time, any surface within the premises become contaminated with blood or body fluids, these surfaces should be immediately cleaned and then disinfected as detailed below.

5.3.1 Cleaning Work Surfaces Contaminated with Blood/Body Fluids

- i. Single-use gloves must be worn during cleaning and disinfection processes.

- ii. Surfaces that have become contaminated with blood or other body fluids must be wiped up as soon as possible while wearing gloves using a disposable cloth or paper towel and then immediately clean the surface. The surface must then be disinfected with a high-level disinfectant, ensuring sufficient contact time. Refer to Table 1 and 2.
- iii. Cloths, gauze or paper towels used for wiping up blood or other body fluids must be discarded in a plastic bag to be placed in regular garbage (refer to section 5.6).

5.4 Disinfection

Disinfectants destroy bacteria, fungi, viruses and some bacterial spores depending on the level of the disinfectant and the contact time used. Disinfectants are categorized as high-level, intermediate-level and low-level; please refer to the disinfectant chart Table 2.

The Ministry of Health and Long-Term Care recommends that product labels of disinfectants have a drug identification number (DIN) (with the exception of hypochlorite). The presence of a DIN indicates that, upon a Health Canada review, it has been established to be safe and effective for its intended use. The designation germicidal, virucidal or tuberculocidal is not sufficient.

As well, distributors of products should provide Material Safety Data Sheets (MSDS), which list ingredients and first aid measures, according to Workplace Hazard Information and Material Information Safety (WHMIS) guidelines.

5.4.1 General Disinfection Principles

- i. In order for a disinfectant to work properly, instruments and equipment must **first** be thoroughly dismantled (if appropriate) and cleaned.
- ii. Follow manufacturer's instructions for product dilution, use, reuse and contact time in line with recommendations from Health Canada.
- iii. Do not store equipment or instruments in disinfectants for longer than the required contact time.
- iv. All solutions must be prepared, maintained (e.g. dilution, ventilation and storage) and disposed of according to the manufacturer's instructions.

- v. All solutions used for high-level disinfection must be tested daily at a minimum when such test strips exist to ensure that the concentration is within acceptable limits.

5.5 Sterilization

Operators should consult with their local public health unit when considering the purchase of a sterilizer.

Sterilization is a process of destroying all microorganisms including bacterial spores. Sterilization is accomplished by using an autoclave, chemical autoclave, or a dry heat sterilizer, based on time and/or temperature of exposure.

Pressure cookers, glass-bead sterilizers, microwaves, ultraviolet light, immersion in boiling water and domestic ovens are NOT approved methods of disinfecting or sterilizing equipment.

Autoclave sterilization is dependent on temperature, pressure, duration of exposure, packaging of the instruments and size of the load. The unit must achieve a sufficiently high temperature for a required length of time. It is important that the sterilizing chamber be loaded correctly and not overloaded. Autoclaves use pressure in combination with heat and time to achieve sterilization. All autoclaves must meet with Canadian Standards Association specifications for use in health care or allied health facilities. As per Canadian Standards Association Guidelines, a drying cycle is required for all sterilization cycles for wrapped or packaged goods. The autoclave should be equipped with a print-out that provides details of the mechanical parameters reached during each cycle

Dry heat sterilization is dependent on the sterilizer unit achieving a sufficiently high temperature for a prescribed duration of exposure. Functioning thermometers must be in place to verify temperatures; sterilization time does not start until the appropriate temperature is attained. Ensure instrument packaging can withstand the temperature needed to achieve sterilization. Refer to Table 9 for times and temperatures for dry heat sterilization.

Chemical autoclaves utilize a disinfectant in combination with heat, pressure and time.

Manufacturer's instructions regarding packaging, loading, temperature, pressure and time requirements must be followed. The sterilizer unit manufacturer's instruction manual shall be kept accessible for reference within the premises at all times.

Some chemical (cold) sterilants (e.g. glutaraldehyde) are not recommended for personal service settings because of issues concerning toxicity, disposal, ventilation, lack of training and the long contact times required to achieve sterilization. Additionally it is difficult to monitor and confirm that sterilization has been achieved and the packaging of items to maintain sterility is not possible when chemical sterilants are used. These products must always be diluted, used and disposed of according to the manufacturer's directions.

5.5.1 General Sterilization Requirements

- i. Instruments that penetrate the skin or mucous membranes (critical items) shall be sterile prior to use. These items may either be supplied sterile as pre-packaged, single-use disposable items or they may be provided as reusable items that must be cleaned, sealed in appropriate packaging and then sterilized on site before each use.

The use of pre-packaged, sterile, single-use, disposable items are recommended. Critical items must be sterilized.

- ii. For items purchased as pre-packaged and sterile the PSS must maintain a record of all information required for tracking purposes (e.g. name of company that manufactures/sterilizes the needles).
- iii. Following sterilization, instruments must be stored in a manner that protects them from contamination. Therefore:
 - a) Items/instruments that are intended to pierce skin or penetrate sterile tissue shall be maintained in sterile packaging until time of use.
 - b) The best means of avoiding contamination is appropriate packaging of instruments prior to the sterilization procedure or the use of sterile single-use (pre-packaged, disposable) supplies.
 - c) Packaging shall be specific to the sterilizer being used. Use only packaging materials that are specifically designed and manufactured for use in sterilization. Incorrect packaging can inhibit sterilization or fail to properly protect the contents after sterilization.
 - d) **Sterility must be maintained until point of use.**

- e) The shelf life of a sterile package is event related rather than time related. Event related shelf life is based on the concept that items that have been properly decontaminated, wrapped, sterilized, stored and handled will remain sterile indefinitely, unless the integrity of the package is compromised (i.e. open, wet, dirty).
- f) Equipment/devices purchased as sterile must be used before the expiration date if one is given.
- g) Sterile packages that lose their integrity must be re-sterilized prior to use.
- h) **Reprocessed equipment/devices shall be stored in a clean, dry location in a manner that minimizes contamination or damage.**
- i) Equipment/devices must be handled in a manner that prevents contamination of the item.
- j) Containers used for storage of clean equipment/devices should be moisture-resistant and cleanable (i.e. cardboard boxes must not be used).
- k) Store equipment/device in a clean, dry, dust-free area (closed shelves), not at floor level. Equipment/instruments should be at least one meter away from debris, drains, moisture and vermin to prevent contamination.
- l) Store equipment/device in an area where it is not subject to tampering by unauthorized persons.
- m) Transport processed equipment/device in a manner that avoids contamination or damage to the equipment/device.
- n) **At point of use, upon opening the reprocessed equipment/device, check for integrity of the packaging and the equipment/device; validate results of chemical monitors if present; and reassemble equipment/device if required.**
- o) Provide education to those opening sterile items at point of use. Education should include inspection, interpretation of monitors and reassembly of equipment/devices.

- p) Validate results of chemical tape and internal monitors if present.
 - q) Visually inspect the equipment/device for discoloration or soil. If present, remove from service and reprocess.
 - r) Check for defective equipment/devices and remove from use.
 - s) If sterile package has become damp or wet (e.g. high humidity), reprocessing may be required.
- iv. Sterilized, reusable instruments/ items, that become contaminated must be cleaned and re-sterilized prior to use.
 - v. Contaminated disposable items must be appropriately discarded and not reused.
 - vi. If a package of reusable sterilized instruments is damaged/compromised, that instrument must be reprocessed. If the instruments are single-use, they must be discarded.
 - vii. Autoclaves, chemical autoclaves and dry heat sterilizers must be serviced on a regular basis according to the manufacturer's operating instructions and their operation monitored routinely. Always follow the sterilizer manufacturer's instructions for installation, operation, testing and maintenance. Manufacturer's instructions must be kept on site and be readily accessible.

There are three forms of monitoring required to ensure sterilization is achieved:

a. Physical (Mechanical) Monitoring

- i) a record/log must be maintained on site for monitoring each load, including recording the temperature, duration, pressure, date, initials of the individual who is responsible for sterilization of the load. It is recommended that the autoclave be equipped with a print-out that provides details of the mechanical parameters reached during each cycle. This print-out must be signed and dated by the operator and kept in the log book.
- ii) monitoring records must be held in a secure location on site for a minimum of one year, and on file for five years.

b. Chemical Monitoring (Process monitoring)

- i) during each sterilization cycle, every instrument/package must have a temperature sensitive indicator, (e.g. tape or label) which changes colour if the packaged item was processed.
- ii) the indicator must be specific to the type of sterilizer being used

- iii) solely reaching the required temperature does not ensure sterilization. While the colour change provides an instant visual verification that each package has been processed, chemical indicators do not provide proof that sterilization has occurred as other essential parameters (i.e. time and/or pressure) must be taken into account
- iv) in accordance with (iii) above, biological monitoring must also be carried out

c. Biological Monitoring

- i) each sterilizer actively used must pass a spore test challenge bi-weekly (i.e. every other week) at a minimum.
- ii) results must be accessible on site for a minimum of one year and kept on file for 5 years.
- iii) prior to using a new sterilizer, or after repair of a used machine, the operator must demonstrate the sterilizer is working properly through three consecutive negative tests (i.e. no spore colony growth) with a commercially available preparation of heat resistant spores. The three tests may be run one after another on the same day (i.e. three different loads). The sterilizer must not be used until results of the spore testing are available.
- iv) if back up sterilizers are used they shall demonstrate three consecutive negative spore strip test results prior to use.
- v) if spore strips are used, they must be packaged in the same manner as equipment prior to inserting into the sterilizer.
- vi) after exposure in the sterilizer, the spore strips must be sent to an accredited laboratory as defined by the *Laboratory and Specimen Collection Centre Licensing Act* for testing.
- vii) results must be returned to the owner/operator responsible for the personal services setting for follow-up action as required. The owner is responsible for following up with the laboratory in order to obtain spore testing results in a timely manner.
- viii) test results shall be stored on the personal services settings for a minimum of one year, and on file for 5 years.
- ix) personal services settings should be prepared in the event the mechanical sterilizer malfunctions.
- x) personal services settings should provide alternate means of sterilization, or stop services that are invasive in nature, or use single-use disposable instruments.
- xi) written back up plans may include: always having an adequate supply of packaged, sterilized equipment; purchasing of an additional autoclave; or a pre-arranged agreement with the autoclave manufacturer to loan the premise an autoclave while the original is being repaired. Back up plans are to be reviewed annually.
- xii) prior to re-use of a repaired sterilizer, or use of a new sterilizer, you

- must obtain three consecutive negative (no growth) spore strip test results from an accredited laboratory.
- xiii) reprocess all instruments/items that were sterilized during the time of the failed test prior to re-use.
- xiv) test results must be provided to the local health unit for review, prior to resuming use of the sterilizer.

Note: Geobacillus (formerly Bacillus) stearothermophilus spores are used to test steam sterilizers and Bacillus atrophaeus (formerly Bacillus subtilis) spores are used for dry heat sterilizers.

“Negative” test results (no spore growth) indicate that the mechanical sterilizer is operating properly. “Positive” test (spore growth observed) results mean the sterilizer has failed and is not operating effectively. Discontinue use of this sterilizer until it has been serviced and demonstrates three consecutive negative tests prior to being used to sterilize instruments again. An alternative method of sterilization or single-use/disposable sterile instruments must be used in the interim. Sterilizers must then continue to be challenged with a spore test once bi-weekly (at a minimum). If a control strip is used, it must demonstrate growth (non-sterile).

What to do in the event of a positive (failed) spore test:

- i) **The PSS Owner/operator shall contact their local health unit for every sterilizer failure (positive test) immediately upon notification from the laboratory.**
- ii) Repeat the test. Do not release any items that were processed since the last negative test. If this repeat test is negative, and there is not an indication of a system malfunction – continue as normal. If it has been determined that the sterilizer malfunctioned, have it repaired and then biologically tested until negative results are obtained
- iii) If the repeat biological indicator test is positive again, review all items that were processed since the last negative test. Review the process to ensure this is not a false positive. Complete a report that includes time, date, load description, results of mechanical and chemical monitoring and **contact the local health unit** to facilitate the conduction of a risk assessment.

Chemical Integrators

Integrators respond to critical parameters (e.g. time and temperature) and provide immediate results enabling PSSs to respond more quickly to sterilizer problems. While integrators can provide results between bi- weekly use of

biological indicators, use of chemical integrators **do not** replace the routine use of biological indicators.

5.6 Disposal of Equipment and Waste

Waste material and other garbage must be placed in receptacles and disposed of in the regular garbage in a sealed bag. Waste that is contaminated with blood or body fluids must be placed in a single, leak proof bag. Sharps including needles, needles attached to syringes, and blades, broken glass or other materials capable of causing punctures or cuts and which have come into contact with human blood or body fluids must be placed into an approved sharps container and disposed of as biomedical waste. Local waste management authorities should be consulted to determine any additional requirements for waste handling.

5.7 Record Keeping

Documentation of procedures and clients is essential to allow the PSS owner to conduct investigations.

Client records must be kept on site for settings that offer invasive procedures such as body piercing, tattooing, micro-pigmentation, electrolysis and acupuncture. The records are to include:

- i) date of procedure and full name (first and last) of personal service worker
- ii) client name (first and last), complete mailing address and telephone number,
and
- iii) details of the procedure carried out.

The PSS owner must keep records on site for a minimum of one year, and on file for a minimum of 5 years. Information is to be collected and stored in accordance with local and provincial privacy legislation.

6. HEALTH AND PERSONAL HYGIENE

6.1 Occupational Health and Safety

- i. The PSW must ensure that their own health does not in any way endanger the health of clients. If you have a potentially transmissible disease, it is recommended that you seek an assessment from your health care provider regarding the potential for transmission to clients. For example, if the PSW has a febrile respiratory illness (cough or sore throat and fever) or a gastrointestinal illness (diarrhea and/or vomiting), this is usually a good indication that they should stay home.
- ii. The PSW must follow the principles of Routine Practices at all time. Hand hygiene must be performed before and after each client or as necessary during the procedure or interruptions in service (glove changes, etc.).
- iii. The PSW must refrain from eating, smoking or drinking while providing the service in the service area and must comply with local smoking regulations.
- iv. The PSW should wear clean outer clothing when providing personal services.
- v. Health and safety concerns that a PSW may have about workplace conditions should first be brought to the attention of their employer or supervisor. Employers are required under the *Occupational Health and Safety Act* (OHSA) to take reasonable precautions in the circumstances for the protection of workers. Precautions would depend upon the hazards associated with the work. Ministry of Labour inspectors will investigate workplace specific occupational health and safety concerns that remain unresolved by the employer to ensure that workplaces are in compliance with the OHSA and its regulations.

Immunization to protect against Hepatitis B and yearly influenza immunization should be considered for all PSWs. Hepatitis B immunization is strongly recommended for those providing invasive procedures.

6.1.1 General Hand Hygiene Principles

- i. PSWs must perform hand hygiene and then put on single-use gloves prior to providing services to each client.

- ii. Single-use gloves must be worn for invasive procedures, (i.e. tattooing, piercing, acupuncture or electrolysis, etc.) and where there is a risk of exposure to blood or body fluids.
- iii. Single-use gloves must be changed between clients, and between breaks in treatment of the same client.
- iv. Hands must be washed thoroughly for at least 15 seconds with soap and warm running water once service is completed and after gloves are removed. Alternatively, an alcohol-based hand rub (60-90% alcohol) may be used if hands are not visibly soiled.
- v. Hand lotion (emollients) should be available for PSWs to prevent dry or cracked skin. Lotions should not be petroleum based, as such products could affect glove integrity.

6.2 Health of the Client

The PSW must ensure that any part of the client's body to be treated is clean and free from cuts, wounds, rash, fungus or visible skin disease.

For invasive procedures, the area to be treated must be cleaned before treatment with an approved skin antiseptic (i.e. povidone-iodine solution, chlorhexidine 2-4% chlorhexidine gluconate, 0.5% chlorhexidine gluconate with 70% alcohol or 70% alcohol) and a single-use applicator. Once applied, the skin antiseptic must be allowed to contact the skin for an appropriate contact time before beginning any procedure.

The PSW must wear single-use gloves prior to dressing the wound. Document any such incident and retain records on site for one year, and on file for a minimum of 5 years. The client must be advised to consult a physician should signs of an infection appear.

Note: If a non-sterile instrument accidentally punctures a client's skin, allow the wound to bleed freely, apply a skin antiseptic and treat the wound as described in 7.2

7. BLOOD AND BODY FLUID EXPOSURE RESPONSE PROCEDURES

7.1 Causes of Exposure

Blood and body fluids may contain pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV).

The following could result in exposure to blood-borne pathogens:

- i) a needle stick or cut from a sharp object contaminated with blood and/or body fluid
- ii) blood and/or body fluid contact with broken skin (open cut, wound, dermatitis), or
- iii) blood and/or body fluid contact with a mucous membrane (eyes, nose, mouth).

7.2 Procedure for blood and body fluid exposure

Care must be taken to prevent accidental puncture wounds and abrasions to the PSW and clients from needles, razors, glassware or other instruments not intended to pierce the skin. Should such an incident occur:

- i) wear single-use gloves prior to handling or dressing the wound
- ii) wash the exposed skin surface with water and soap. If the area is bleeding, allow it to bleed freely. After cleaning the wound, apply a skin antiseptic and cover with a clean dressing or bandage.
- iii) If there has been a splash on to a mucous membrane, flush the area thoroughly with water
- iv) the person exposed must **immediately** contact a physician for assessment of the need to receive post-exposure treatment or prophylaxis
- v) the PSW shall document all incidents and keep records on site for a minimum of one year, and on file for 5 years.

Accidental exposures to blood or body fluids to the client or operator shall be documented for PSS. A record of the incident must be kept by the owner or operator of the settings including:

- i) name (first and last), complete mailing address and phone number of the person exposed
- ii) name of PSW (first and last) involved in the incident
- iii) date of injury
- iv) site of injury
- v) circumstances surrounding the injury; and

- vi) action taken.

The PSS owner must keep records on site for a minimum of one year, and on file for a minimum of 5 years.

Management of equipment inadvertently exposed to blood

The following process should be used whenever equipment is inadvertently exposed to blood and or body fluids.

- i) Clean to remove organic material
- ii) Disinfect the equipment using the appropriate level of disinfection ensuring adequate contact time.

8. ADDITIONAL GUIDELINES FOR SPECIFIC PERSONAL SERVICES

All specific personal services described must also refer to general guidelines. For specific requirements, refer to tables 4 to 7 as applicable. Appropriate aftercare should be available for all personal services.

8.1 Manicures, Pedicures and Nail Treatments

8.1.1 Nail Fungus, Nail “Mould”

Client’s nails must be carefully examined prior to providing nail services. Nail fungus usually appears as a discoloration in the nail that spreads toward the cuticle. Nail “mould” can often be identified in the early stages as a yellow-green spot that becomes darker with time.

Nail services must not be provided for a client who has this type of discoloration on his or her nails. PSWs should not provide the client with any fungal ointment or treatment. Clients with this condition must be advised to see their doctor for appropriate treatment.

8.1.2 Additional Requirements to the General Guidelines

Recirculation systems (e.g. foot spa/bath) may be predisposed to development of a biofilm layer, hence cleaning and disinfectant solutions must be circulated through the system. Improper cleaning and disinfection processes have been linked with several mycobacterial outbreaks.

- i. Nail service equipment and instruments (including re-circulation systems) must be cleaned and then intermediate to high-level disinfected between clients.
- ii. Footbaths: After each use, the foot bath must be cleaned with a detergent and water solution, rinsed and then disinfected with an intermediate to high-level disinfectant solution. Each (cleaning and disinfectant) solution must be circulated through the footbath’s circulating system.
- iii. The disinfectant solution must be circulated for the minimum specified contact time as per the manufacturer’s recommendations. For bleach solutions refer to Table 8.
- iv. Footbaths that are equipped with a screen and recirculation systems require additional maintenance. The screen must

be removed daily and cleaned to remove any debris that has accumulated, followed by intermediate to high-level disinfection.

- v. Pedicure blades must be discarded in an approved sharps container immediately after use on each client.
- vi. Any styptic product used must be single-use and discarded after each client. Styptic pencils cannot be used to stop bleeding on clients. Powder or liquid form is acceptable provided that if direct contact with the skin is required, that it be applied by use of a disposable applicator.

8.2 Electrolysis and Laser Hair Removal

Electrolysis is a method of permanent hair removal. Common areas treated include the chin, legs and eye brows. During electrolysis, an electric current is conducted through a needle inserted into the hair follicle, destroying hair growth cells.

The heat produced by the current passing through an electrolysis needle will not cause the needle to become hot enough to be sterilized. The temperature is only likely to reach 70-80°C and the period that the current passes through the needle is too short (1-2 seconds only) for sterilization to occur.

8.2.1 Additional Requirements to the General Guidelines

- i. Needles used for electrolysis must be single-use, disposable, sterile. **Never re-use needles.**
- ii. The removable tip/cap of the epilator needle/probe holder must be cleaned and at a minimum, disinfected with a high-level disinfectant after each client. Refer to Tables 1 and 2.
- iii. The epilator cord may come in contact with the client's treated skin. The cord must be protected with a non absorbent single-use disposable cover and changed between each client or cleaned then disinfected with an intermediate or high-level disinfectant between clients.
- iv. Equipment/instruments used in laser hair removal must be cleaned then either disinfected or sterilized or disposed of as appropriate after each client. Refer to Cleaning (Section 5.2), Sterilization (Section 5.5), and Tables 1 and 3.

- v. Reusable equipment/instruments used to remove ingrown hairs must be cleaned and then sterilized after each use. Equipment/instruments used to hold sterile items (e.g. tweezers) shall be high-level disinfected at a minimum. Single-use sterile needles are to be used to expose the ingrown hairs. Equipment/instruments NOT used to remove ingrown hairs, but used only to pull the hair, must be cleaned and then disinfected with an intermediate or high-level disinfectant between use.

8.3 Tattooing and Micropigmentation

8.3.1 Additional Requirements to the General Guidelines Before Tattooing and micropigmentation

To prevent cross-contamination of the work environment:

- i. Only single-use, disposable, sterile needles may be used.
- ii. All supplies required for tattooing or micropigmentation are to be assembled and set-up immediately prior to starting the procedure.
- iii. Prior to using disposable ink caps that are supplied in bulk quantities (e.g. many caps are contained in a bag), individual ink caps must be cleaned and then disinfected with an intermediate level disinfectant (e.g. 70%-90% isopropyl alcohol) for 10 minutes.
- iv. After needles are attached to the needle bar, they must be cleaned (i.e. using an ultrasonic cleaner) before sterilization.
- v. Disposable ink caps must be discarded immediately after each client. Any leftover ink must be discarded. If additional ink is required a new ink cap is required.
- vi. All reusable ink caps must be sterilized between clients. Single-use ink caps are preferred. Ink cap holders are to be high-level disinfected.
- vii. Liquid used for rinsing between colors must be placed in disposable cups. The liquid and cups must be discarded after each client.
- viii. A sufficient number of tissues or wipes required for use during a tattoo or micropigmentation procedure must be

dispensed prior to the service. Any assembled unprotected or unused tissues and wipes not used during the procedure must be discarded after each client.

- ix. Do not tattoo or micropigment within six inches of inflamed or infected skin, or skin with a rash.

8.3.2 Additional Requirements to the General Guidelines After Tattooing and micro-pigmentation

Note: Any handling and manipulation of used needles in any manner, such as disassembling the needle bar from the needles, increases the risk of needle stick injury for the PSW.

- i. The entire needle bar assembly (i.e. needle bar with attached needles) must be discarded into an approved sharps container immediately after each tattoo or micropigmentation procedure. Used needles and needle bars must not be handled or manipulated prior to being discarded.
- ii. If a tattoo machine is not used for micropigmentation, the needle holder device on the pen/instrument must be single-use disposable or cleaned and then sterilized before it can be used again.
- iii. Any leftover products must be discarded. They may not be returned to their original containers and must not be used on another client.
- iv. If stencils are used they must be single-use and discarded at the end of the procedure.
- v. Reusable tubes must be disassembled, if appropriate, prior to cleaning.
- vi. The tattoo must be covered with an individually packaged dressing or bandage intended for covering wounds
- vii. Clients must be given verbal and written information regarding tattooing after-care, such as:
 - a) discuss appropriate aftercare for tattooing and micropigmentation
 - b) clean hands immediately before touching tattooed area

- c) discuss the expected healing time of the site with the client
- d) describe possible complications and their signs and symptoms
- e) advise on how to deal with slight redness, pain or swelling and
- f) recommend consultation with a family physician if the problem does not improve within 24 hours.

8.4 Body Piercing

8.4.1 Additional Requirements to the General Guidelines

- i. All jewellery used for body piercing must be sterile. If piercing jewellery is made or modified by a piercer prior to use, it may be cleaned manually, although use of an ultrasonic cleaner is preferred, and then packaged and sterilized by an acceptable method (refer to section 5.5).
- ii. As per section 6.2 i, the site/s to be pierced must first be cleaned with an approved skin antiseptic, then marked with a (iodine) felt tip pen to mark all body sites prior to piercing. After one minute, once the pen mark has dried, the site/s are to be cleaned again with the approved skin antiseptic just prior to piercing. Single-use items (i.e. toothpicks, etc.) can be used to mark such areas.
- iii. If using dermal punch method, (biopsy) tools must be purchased as sterile, single-use disposable items. These devices cannot be re-used and must be disposed of in an approved sharps container immediately after use.
- iv. Closed ended receiving tubes must be sterile, single-use and disposable. Open ended receiving tubes can be cleaned with a wire brush and sterilized between uses.
- v. Following each piercing, all non-disposable equipment must be cleaned and then sterilized.
- vi. Clients must be given verbal and written information regarding body piercing aftercare, such as:
 - a) normal bathing and showering are permitted but otherwise keep the pierced area dry
 - b) cleaning hands immediately before touching jewellery

- c) turning jewellery when wound is not dry
- d) allowing access of the wound to air by using a loose covering
- e) the expected healing time of the wound possible complications and their signs and symptoms
- f) how to deal with slight redness, pain or swelling and recommend consulting a family physician if the problem does not improve within 24 hours, and
- g) advising not to remove the jewellery from a potentially infected piercing and to contact the piercer and seek medical advice.

Note: Any antiseptic may become contaminated if not handled using aseptic technique. Recent studies have demonstrated persistent contamination of an aftercare solution of benzalkonium chloride used for cartilage piercing sites. Please note that Pseudomonas aeruginosa is resistant to this antiseptic.

8.5 Ear Lobe Piercing

8.5.1 Additional Requirements to the General Guidelines

Ear piercing instruments shall not be used on any other part of the body except the ear lobes (fleshy part only).

- i. If a needle or dermal punch method is used for piercing the ear lobe refer to Body Piercing (Section 8.4).
- ii. The person performing the ear piercing must wear single-use disposable gloves on both hands during the procedure.
- iii. Ear piercing instruments without disposable adapters or cartridges are not recommended.
- iv. Ear piercing instruments without sterile, single-use disposable plastic adapters or cartridges that come in direct contact with the ear during the piercing procedure must be cleaned and then sterilized between each client use. Refer to Cleaning and Sterilization (Section 5.2 and 5.5) and Tables 1 and 3. Many of the old style instruments (i.e. those that do not have disposable single-use sterile cartridges or plastic adapters or cartridges, but rather a fixed stud adapter and/or a fixed clasp retainer) have plastic components that are not capable of withstanding the sterilization process without incurring damage. **If the gun/instrument cannot be sterilized, it must not be used.**

- v. Ear piercing instruments must be loaded without touching either the sterile jewellery or the stud-holding sterile, (disposable) devices on the gun.
- vi. The piercing instrument equipped with disposable parts must be cleaned and then disinfected with an intermediate to high-level disinfectant after each client. Refer to Tables 1 and 2.
- vii. Jewellery must be supplied prepackaged and sterile. Jewellery cannot be sampled or returned.
- viii. Do not spray sterile earrings with disinfectant solution prior to piercing.
- ix. As per section 6.2 ii, the ear lobe must first be cleaned with an approved skin antiseptic, then marked with a (iodine) felt tip/marketing pen prior to piercing. After one minute, once the pen mark has dried, the site is to be cleaned again with the approved skin antiseptic just prior to piercing.
- x. After each client, all disposable parts must be discarded. Previously opened packages of jewellery can no longer be considered sterile. Any jewellery stored in opened or damaged packages may no longer be used to pierce the skin.
- xi. Store the piercing instrument in a sanitary manner to prevent contamination. Instruments that are sterilized must be stored in a manner that maintains their sterility (refer to section on sterilization and storage). Avoid touching the piercing instrument unless hands are washed and single-use gloves are worn.
- xii. Clients must be given verbal and written ear piercing after-care, as in 8.4.1 section vi above.

8.6 Acupuncture

- i) Needles used to pierce the skin in acupuncture treatments are critical items.
- ii) These needles must be supplied pre-packaged and sterile, and discarded immediately after use since they cannot be adequately cleaned. **Never re-use needles.**
- iii) Needles must not be saved to be reused on the same client.

- iv) If the acupuncture treatment is performed by a regulated health professional, their practice does not require routine inspections by health unit staff.

8.6.1 Additional Requirements to the General Guidelines

- i. All acupuncture needles that pierce the skin must be supplied as prepackaged, single-use, disposable and sterile. It is recommended the needles with plastic sheaths (guiding tube) be used for acupuncture treatments. Do not remove the plastic sheath prior to insertion in client.
- ii. Any item used to manipulate a sterile needle prior to insertion must also be sterile.
- iii. Each individual needle must only be used on one site on the same client.
- iv. The reusable handles for seven-star or plum-blossom needles must be cleaned and then disinfected using a high-level disinfectant after each client use.
- v. Sterile needles must not be placed on or in any non-sterile environment (i.e. solution, cotton, foam, tray, etc.) before use. It is recommended that needles be removed from sealed packages in view of clients, just prior to insertion in the client.
- vi. Care must be taken to touch only the upper part of the needle (called the 'handle') when removing them from the packaging, particularly when the needles are bundled together. Any unused bundled needles must be discarded after each client.
- vii. Instruments (i.e. tweezers, forceps) coming in contact with the needle(s) after insertion into the client, must be cleaned and then high-level disinfected between clients. Electro-stimulation metal clips/hoops must be cleaned then thoroughly wiped using an intermediate or high-level disinfectant after each client.
- viii. Items used for cupping intact skin must be cleaned and then low-level disinfected between clients.
- ix. Acupuncture should not be performed on non-intact skin.

8.7 Hairdressing/Barbering

- i. Any reusable surface cover that is not cleaned/laundered between each client use must be used in conjunction with a single-use, disposable sheet.
- ii. When a reusable protective cover is used around a client's neck, a sanitary strip or clean towel must be used to keep the protective cover from coming into direct contact with the client's neck. The neck strip or towel must be discarded/laundered after each use.
- iii. Items, which only contact hair and not skin, are considered to be non-critical and require, at a minimum, cleaning with soap or detergent and a brush under running water between uses. A low-level disinfectant solution can be used to disinfect pre-cleaned, non-critical items.
- iv. If a non-critical item, such as scissors or clippers, nicks the skin, it must be processed as a semi-critical item before it can be reused. Low-level disinfectant solutions cannot be used to disinfect semi-critical items. An intermediate to high-level disinfectant is required to process semi-critical items.
- v. Any blades used for shaving skin, must be single-use and discarded in an approved sharps container immediately after use.
- vi. The handle and cradle of the razor, which holds the blade in place, must be cleaned and disinfected as a semi-critical item after each use. It is recommended to use razors that allow for easy cleaning of the cradle.
- vii. A straight razor with a fixed blade (all in one piece, so the blade is reusable and not disposable) is not recommended, as cleaning sharps is hazardous to the PSW. If using a straight razor, it must be cleaned and sterilized between uses.
- viii. Styptic pencils cannot be used to stop bleeding on clients. Powder or liquid forms are acceptable provided that if direct contact with the skin is required that it be applied by use of a disposable applicator.
- ix. Razors used for cutting hair must have a proper guard in place to prevent the blade from coming in contact with the skin. Razors are to be disposed of in an approved sharps container.

- x. The handle and cradle of razors used for cutting hair require no processing and the blade can be reused, if only used for cutting hair.
- xi. "Crochet hooks" used for cap highlights are considered semi-critical items as they may scratch the scalp, and must be processed accordingly after each use.
- xii. All disinfectant solutions must be made fresh daily, or according to the manufacturers' specification.
- xiii. All items must be cleaned and dried with a clean towel before they can be placed in a disinfectant solution. Placing a soiled item in a disinfectant solution contaminates the entire solution and therefore contaminates all items placed in it.
- xiv. To achieve disinfection, items require full immersion in the solution for the appropriate contact time instructed by the manufacturer.
- xv. Most hair salons and barbershops use a low-level disinfectant solution, which is a quaternary ammonium compound. Since items to be placed in quaternary ammonium compounds require cleaning prior to immersion and rinsing after contact time in the solution, it is recommended that the disinfectant solution be placed next to a sink, as opposed to a workstation, to encourage proper use of the disinfectant.
- xvi. Clean items must be stored separately to prevent cross contamination with soiled items or surfaces. Never store clean items and dirty items together. Do not store any item in a container in which contaminated objects were placed or into a container that cannot be cleaned due to the nature of its surface material.
- xvii. Any needles used for hair weaves and extensions that contact the client or operator must be discarded in an approved sharps container immediately after contact.

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Table 1 : Steps to Clean Instruments

Adapted from *Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis*. Health Canada, July 1999.

	Cleaning Process	Comments
1.	Soak items that cannot be immediately cleaned in a container of clean warm water with or without detergent in a clean sink or in a labelled “dirty instruments” container.	Soaking instruments prevents blood and other organic matter from drying on the item. Do not soak dirty items in hot water or in a disinfectant before cleaning, as this can cause organic matter (dirt) to stick to the surface of the object.
2.	Put on thick rubber gloves (non-medical gloves).	Thick rubber gloves suitable for cleaning have a wider bib at the wrist to help prevent water from entering the inside of the glove.
3.	Take instruments apart and rinse in a sink filled with lukewarm water.	Hot water may cause organic matter (dirt) to stick to objects.
4.	Prepare cleaning sink by adding warm water and detergent .	To reduce the risk of injury, ensure that sharp objects are visible by using low sudsing detergent according to directions.
5.	Clean instrument surfaces by using friction (washing and scrubbing motions). Use a brush to clean any crevices or seams in instruments.	Scrub below the water surface to prevent splashing into the eyes or onto clothing. An ultrasonic cleaner may be used for cleaning. When using this device, the lid should be closed to prevent aerosolization.
6.	Inspect instruments to ensure removal of all visible organic matter.	Organic matter prevents disinfection from occurring.
7.	Drain dirty water. Rinse cleaned instruments under running water.	Rinsing removes residual detergent and soil that may impair the function of the instrument or interfere with the action of disinfectants.
8.	Either air dry or dry with a disposable towel.	If wet items are not dried a film may be left on the surface which may contain pathogens.
9.	Store cleaned instruments in a covered container (can be towel or clean storage area) until disinfected or sterilized, as required.	Uncovered, clean instruments may become contaminated by dust or moisture.
10.	Clean and disinfect the sink .	Sinks become contaminated during use, therefore, cleaning and disinfection is required to reduce microorganisms prior to reuse.
11.	Remove rubber gloves and wash, rinse and, hang to dry.	Cleaned rubber gloves may be used again as long as the rubber is not torn or punctured.
12.	Perform hand hygiene .	Hand hygiene should be performed after removing gloves.

Table 2 : Disinfection Chart *

Adapted from *Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis*. Health Canada, July 1999. This chart is not intended to be inclusive of all approved high, intermediate and low-level disinfectants.

Level of Disinfection	When to Use	Disinfectant Active Ingredients	Contact Times (Approximately)	Advantages	Disadvantages
HIGH-LEVEL Kills all microorganisms (bacteria, fungi and viruses) except bacterial spores	Use on semi-critical items Items that come into contact with nonintact skin or mucous membranes but do not penetrate them	1:50 chlorine bleach** solution (1 part bleach and 49 parts water) 1,000 ppm (parts per million)	≥ 20 minutes	<u>Inexpensive, fast acting</u>	Corrodes metal, may destroy adhesives with prolonged soaking
		2% glutaraldehyde (not recommended for personal service settings)	45 minutes Follow Manufacturer's instructions	Non-corrosive to metal, rubber or plastics, reusable	Toxic fumes, expensive. (Not recommended for PS settings)
		6% hydrogen peroxide	45 minutes Follow Manufacturer's instructions	Environmentally friendly, no residue	Oxidizing properties may be destructive to some equipment (brass, zinc, copper and nickel/silver).
		7% stabilized hydrogen peroxide	30 minutes Follow Manufacturer's instructions	Environmentally friendly, no residual, irritant to skin or to respiratory tract	Oxidizing properties may be destructive to some equipment (brass, zinc, copper and nickel/silver).
		0.55% ortho-phthalaldehyde (OPA)	10 minutes Follow Manufacturer's instructions	Fast acting, no mixing needed	Stains proteins
INTERMEDIATE- LEVEL Kills most bacteria, fungi, viruses and mycobacteria (tuberculous)	Use on semi-critical items As above	70-90% isopropyl alcohol	10 minutes	Fast acting, leaves no residue	Can damage rubber and plastics
		70-90% Ethyl alcohol	10 minutes	Fast acting, leaves no residue	Can damage rubber and plastics. Flammable
		1:50 chlorine bleach** (1 part bleach and 49 parts water)	≥10 minutes	Inexpensive, fast acting	Corrodes metal, may destroy adhesives with prolonged soaking
LOW-LEVEL Kills some viruses bacteria, and fungi	Use on non-critical items. Items that contact intact skin and not mucous membranes, or items that do not ordinarily touch the client. May be used for routine housekeeping	Quaternary ammonium	Follow manufacturer's instructions	Good cleaning agent for environmental surfaces	Cannot be used on instruments, not recommended as an antiseptic
		1:500 chlorine bleach** solution (1 part bleach and 499 parts water) or 100 ppm	≥10 minutes	Inexpensive, fast acting	Corrodes metal, may destroy adhesives with prolonged soaking
		3% hydrogen peroxide	10 minutes	Environmentally safe	Oxidizing properties may be destructive to some equipment (brass, zinc, copper and nickel/silver).
		Phenols	Follow manufacturer's instructions	Easy to obtain, cleans and disinfects	Residual phenols on porous materials may cause tissue irritation even when thoroughly rinsed. For environmental surfaces only

* Please adhere to manufacturer's instructions for use, some disinfectants may require rinsing after use ** Based on 5.25% chlorine bleach

Figure 1: Cleaning, disinfection and sterilization flowchart

Adapted from Durham Region Health Department

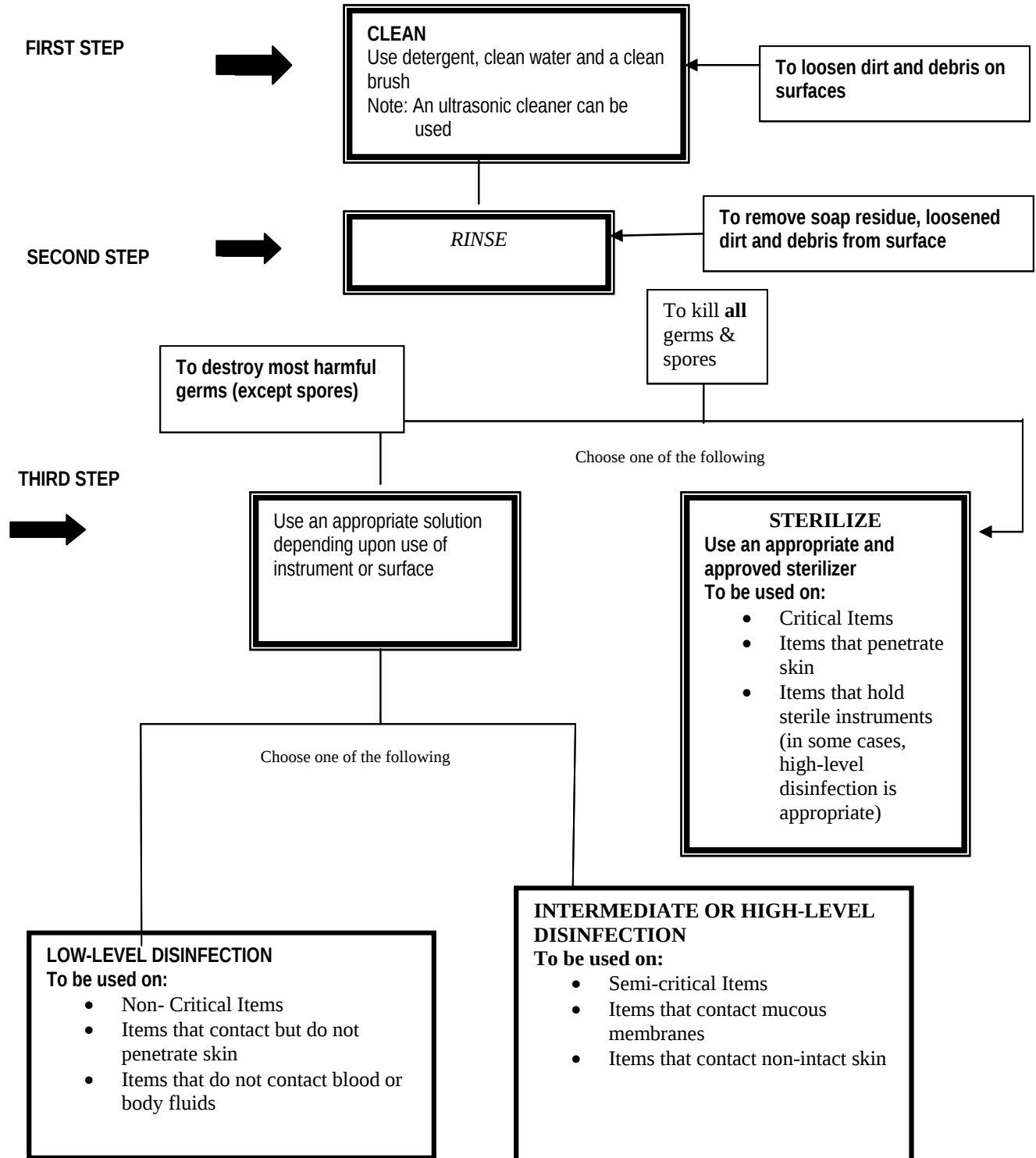


Table 3: Steps to Sterilization of Instruments

Adapted from *Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis*. Health Canada, July 1999.

	Steps	Comments
1.	Clean instruments as per Table 1: Steps to clean instruments.	Instruments that are not clean cannot be sterilized.
2.	Perform hand hygiene and apply gloves.	Hands should be as clean as possible to prevent contamination of clean instruments/equipment.
3.	Clean instruments/equipment must be placed in the appropriate sterilization package and sealed.	Sealed packaged items will maintain sterility after sterilization has been achieved until opened for use. If packaging becomes wet or damaged, sterility cannot be ensured. Instruments in damaged packages must be resterilized or discarded. Ensure packaging is appropriate for type of sterilizer used.
4.	Temperature sensitive chemical indicators must be used with each package.	Temperature sensitive chemical indicators provide an immediate visual check to ensure package has been processed. Note: The colour change demonstrated by a chemical indicator does not ensure that the processed items have been sterilized. Only an appropriate biological indicator can confirm that the sterilization cycle has been successful.
5.	Load the sterilizer evenly and avoid overloading the chamber. Follow manufacturer's directions for loading the chamber.	Overloading the sterilizer will prevent effective sterilization; allow space between the packages.
6.	Start the sterilization process.	Sterilizing time, temperature, pressure and cycles may vary depending on the type of sterilizer used. Follow manufacturer's instructions at all times. With dry heat and autoclave sterilization, time does not start until the appropriate temperature has been reached.
7.	After the sterilization cycle has been completed, remove instruments.	Ensure items are dry before removing from the unit. Sterilized instruments may become contaminated when wet packaging is handled.
8.	Store sterilized items in a clean, dry place that is protected from dust, dirt, and moisture. Sterile items must be stored off the floor.	Handling increases the chances of punctures of sterilized bags. Sterilized items must be stored separately from dirty equipment/instruments.
9.	Record information about each sterilization cycle in the log book.	Monitor each load, recording temperature, pressure, cycle length, etc.

Table 4: Detailed Infection Prevention and Control Procedures for Electrolysis

Adapted from *Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis*. Health Canada, July 1999.

		Equipment/ Supplies	Use During Electrolysis	Procedures for Infection Prevention
1	Client preparation	single-use paper or laundered towel	Drape the towel around electrolysis treatment area of the client.	The towel offers added protection for supplies and equipment that may touch surfaces near the treatment area, e.g. the client's clothes.
		eye shields	Protect client's eyes from injury and lamp glare during electrolysis involving the face.	After each client service, detergent and water must be used to clean the eye shields, followed by low-level disinfection.
		wet sponge pad with holder	Hold in client's hand to complete the electrical circuit in the galvanic/blend (not thermolysis) method.	The sponge pad should be cleaned in detergent and water after client use. The single-use conductive gel pad must be discarded after client service.
		dental lip rolls	Lip rolls may be used to create a taut skin surface for electrolysis, e.g. the upper lip.	Dental lip rolls shall be discarded after each client service.
2	Skin preparation	topical anesthetic (optional)	A topical anesthetic may be used to decrease client discomfort during electrolysis.	Whenever a topical anesthetic is used on a client site, it must be applied with a clean, single-use, disposable swab. The anesthetic should be applied on the site before the skin is cleansed with an antiseptic.
		skin antiseptic	A non-irritating antiseptic is used to cleanse the skin before electrolysis.	Antiseptic should be applied to the clean swab using a pump pack. Pre-packaged antiseptic swabs may be used.
		clean swabs, e.g. cotton balls, gauze or single- use cotton applicators		Care should be taken to avoid the antiseptic coming into contact with the eyes and mouth during electrolysis. Cotton applicators moistened with water may be used to clean the treatment area near the eyes.
		pump pack containing the antiseptic		

		Equipment/ Supplies	Use During Electrolysis	Procedures for Infection Prevention
3	Epilator	client sponge holder cord needle holder and cord button/knob controls	Conducts the electric current for electrolysis. Button/knobs are to control current intensity and times.	The epilator button/knob controls shall be cleaned then wiped with a low-level disinfectant after each client service or covered with single-use plastic. Since the cords may come in contact with the area being worked on, the cords shall be covered with single-use plastic or cleaned then disinfected with an intermediate to high-level disinfectant.
4	Instruments	electrolysis needle or needle and cap combination unit	An electric current is passed through a specialized needle that has been inserted along the hair follicle.	Pre-packaged sterile, single- use, solid needles or a combination unit (sterile needle permanently attached to the plastic cap) must be used. Needles must not be tested on the practitioner's skin. Needles must not be saved for reuse for future treatments on the same client. The needle must not be recapped prior to disposal in an approved sharps container. Used electrolysis needles must be discarded into an approved sharps container immediately after each client.
		hypodermic needle or lancet	The hypodermic needle/lancet should be used to lift or remove ingrown hairs.	Sterile, single-use pre- packaged hypodermic needles/lancets should be used to lift or remove ingrown hairs and shall be discarded into the sharps container after use on each client. Never re-use needles or lancets. This procedure breaks the skin tissue and usually draws some blood; therefore the electrologist shall wear single-use gloves.

		Equipment/ Supplies	Use During Electrolysis	Procedures for Infection Prevention
		tweezers or forceps	Tweezers should be used to lift and hold the hair during electrolysis and may be used to lift ingrown hair.	Tweezers must be sterile if used to break skin and remove ingrown hairs or high-level disinfected if used to load a sterile needle into the epilator. Tweezers must be cleaned and packaged before sterilization.
		scissors	Scissors may be used to cut hair before electrolysis.	Scissors shall be cleaned and disinfected with an intermediate-level disinfectant after each client service.
5	Needle holder	metal pin device	The electrolysis needle is inserted or screwed into the prongs of the metal pin device.	The permanently attached pin device must be cleaned then disinfected with a high-level disinfectant, after each client service.
		reusable plastic needle holder tip or single-use combination unit, i.e. needle and needle holder tip or cap in one unit	The reusable, plastic needle holder tip that is screwed on or the cap of the single-use combination unit that covers the pin device to prevent electric shocks to the practitioner.	The reusable, screw-on, plastic needle holder tip should be cleaned with a pipe cleaner after each client service and must be disinfected with a high-level disinfectant, and stored dry. The needle shall not be recapped prior to disposal in an approved sharps container to reduce the risk of needle injury to the practitioner.
6	Additional supplies	tray, e.g. metal or glass	Rest instruments/ supplies on the tray during the procedure.	Trays shall be cleaned then low-level disinfected after each client service.
		magnifying lamp and the arm holding it/glasses or microscope and light source, e.g. lamp	Permits visualization of the treatment area.	Equipment surfaces touched by the practitioner shall be cleaned then disinfected with a low-level disinfectant after each client. Alternatively, surfaces may be covered with single-use plastic that is discarded and changed between each client.
		"dirty instrument" container with lid (containing water or detergent and water)	Used instruments are stored in water or a detergent and water solution to prevent drying of body proteins onto instrument prior to manual or ultrasonic cleaning.	The dirty instrument container must be cleaned daily and then subjected to low-level disinfection. The solution in the container must be changed daily.

		Equipment/ Supplies	Use During Electrolysis	Procedures for Infection Prevention
		ultrasonic cleaner/manual cleaning	An ultrasonic cleaner that contains detergent and water may be used to clean instruments.	The ultrasonic cleaner must be cleaned daily with detergent and water. A fresh solution of detergent and water shall be placed in the device each day. If solution becomes visibly dirty ultrasonic cleaner should be emptied, cleaned and filled with fresh solution. The ultrasonic cleaner does not sterilize the instruments. If manual cleaning is done, follow the instructions outlined in 5.2.2
		sharps container	Electrolysis needles or lancets must be discarded into an approved sharps container immediately after use.	Puncture-resistant sharps containers must be used to help prevent needle injuries.
7	Client aftercare	skin antiseptic swabs	An antiseptic that cleanses the skin.	Antiseptic should be applied with a clean swab dispensed from a pump pack containing the antiseptic or pre- packaged single-use antiseptic swabs should be used.
		ointment or mild astringent	Ointment/astringent may be used to soothe the skin and promote skin healing.	A single-use wooden tongue depressor or spatula should be used to remove ointment from a bulk container to apply to the skin. If removing a large amount of ointment, use a single-use spatula/tongue depressor and dispense into a smaller single-use container. The spatula must be discarded into a waste bin after single- use. Do not double dip. Apply astringent or ointment with a clean swab or clean gloved hands. Clients shall be instructed to avoid touching skin that has undergone electrolysis or to touch only with washed hands. The client should avoid using make-up or any cosmetic products in the area that has been worked on according to the practitioner's advice. Clients shall be given written aftercare instructions.

		Equipment/ Supplies	Use During Electrolysis	Procedures for Infection Prevention
8	Practitioner supplies	hand washing soap alcohol-based hand rubs hand lotion	Soap is used to remove dirt and some microorganisms from the practitioner's hands. Alcohol-based hand rubs containing between 60-90% alcohol can be used to perform hand hygiene when hands are not visibly soiled. Lotions are used to prevent skin from drying and cracking and to keep the skin in good condition.	Refer to general recommendations Section 6.1.1
		single-use gloves (e.g., latex, neoprene, nitrile, or vinyl)	Single-use gloves must be worn when hands are expected to come in contact with blood or body fluids. Gloves shall also be worn when working on an infected hair follicle, or if the practitioner has cuts or other breaks in the skin.	Single-use gloves must be worn for all procedures involving: • breaking through skin • expected contact with mucous membranes • expected contact with blood or body fluids. Single-use gloves act as a barrier and reduce the potential transfer of microorganisms between the client and the electrologist. Hand hygiene must be performed before gloves are applied and after glove removal. Gloves are not a substitute for hand hygiene Cuts/breaks in the skin shall be covered with a waterproof dressing before the gloves are applied.

Table 5: Detailed Infection Prevention and Control Procedures for Body Piercing

Adapted from Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis. Health Canada, July 1999.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
1	Client preparation	single use towel	A towel may be used to drape the piercing site.	The towel should be used to protect the client from any soiling during the procedure. The towel must be laundered after each client.
2	Skin preparation	skin antiseptic, e.g. 70% alcohol or an iodine, such as betadine. The antiseptic selected should be appropriate for the piercing site according to the manufacturer's instructions, e.g. 70% alcohol is suitable for application to skin but should not be used on mucous membranes. clean swabs, e.g. gauze or cotton balls	Swabs moistened with an antiseptic are used to disinfect the skin piercing sites. Warm water is used to cleanse areas around the eyes.	The skin antiseptic should be applied with a moist swab, using a circular motion. If alcohol is used it should be stored in a pump pack which is used to moisten the swab with alcohol. Other antiseptics, e.g. betadine, may be poured into a disposable cup. If betadine is used to prepare the skin before genital piercing, any excess antiseptic should be removed to avoid irritation to mucous membranes.
		antibacterial mouth wash	Mouthwash is used as an antiseptic before piercing the tongue.	Antibacterial mouthwash cleans the mouth prior to tongue piercing if used for several minutes.
3	Skin marking	calipers	Calipers are used to measure skin piercing sites to create a symmetrical appearance.	Calipers shall be cleaned then disinfected with a low-level disinfectant if the skin is intact. Calipers used on mucous membranes shall be high-level disinfected.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
		tooth picks and ink, e.g. gentian violet	Tooth picks, dipped in ink mark the piercing site(s).	A few drops of ink should be placed on a clean surface, e.g. the inner surface of the wrapper used for a sterilized item, to avoid dipping the tooth pick into the ink container itself. The site/s to be pierced must first be cleaned with an approved skin antiseptic, then marked with a (iodine) felt tip pen to mark all body sites prior to piercing. After one minute, once the pen mark has dried, the site/s are to be cleaned again with the approved skin antiseptic just prior to piercing.
		forceps	Forceps should be used to hold the marked skin taut for the needle piercing. They may become contaminated with blood during the procedure.	Forceps must be cleaned and sterilized after use on each client.
		elastic bands	Elastic bands are used to hold the handles of the forceps closed to ensure secure gripping of the skin surface.	Clean elastic bands should be stored in a covered container and discarded after use. Forceps should be used to remove the elastics from the container at the outset of the procedure to avoid contamination of other elastic bands in the container.
4	Service tray	a tray that is smooth, nonporous and easy to clean, e.g. metal	The tray is covered with a clean towel. Sterile instruments and other supplies, e.g. lubricant, cork, elastic bands, and any additional required items should be placed on the towel. The sterile needle, jewellery, and forceps should be left in the opened packages until just before use. The tip of the needle must not be touched prior to insertion.	The tray must be cleaned then wiped with a low-level disinfectant after use. The towel shall be a single use disposable or freshly laundered cloth.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
5	Instruments	single use hollow skin piercing needles, e.g. stainless steel	The needle pierces the skin/tissue and the jewellery is inserted in the channel created by the needle.	One new, sterilized piercing needle should be used for each client and each procedure. The needle/s must be discarded into the sharps container after use. Because the needle is hollow it cannot be properly cleaned or sterilized, therefore must be discarded.
		needle pushers (plastic)	The practitioner may use needle pushers to push the blunt end of the needle through tissue.	Needle pushers should undergo sterilization because of contact with the sterile needle that will be inserted through skin/tissue.
		insertion tapers	Insertion tapers are most often used to upgauge or put in a thicker piece of jewellery into already healed piercing.	Insertion tapers are to be cleaned and sterilized after use on each client.
		connectors (solid metal)	Connectors are used to facilitate the insertion of internally threaded barbells by providing a link between the hollow needle and the hollow jewellery.	Specialized connectors are to be cleaned with small brushes in a solution of detergent and water and sterilized after use on each client.
		receiving tubes	Receiving tubes are used when piercing difficult to reach areas, such as the nostril or the glands of the penis. The tube forms a drum of skin into which the piercing needle is received.	Closed ended receiving tubes must be sterile, single-use and disposable. Open ended receiving tubes can be cleaned with a wire brush and sterilized between use.
		corks (single-use)	Corks are used to cover the sharp end of the needle after it has pierced through tissue to prevent a needlestick injury to the practitioner.	Clean, single-use corks are to be discarded after one piercing. It is not necessary to sterilize the cork prior to use as it does not come in contact with open skin areas. The needle tip, which is inserted into the cork, should not be pulled back through the freshly pierced tissue. Instead, the cork and needle shall be placed in the sharps container.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
6	Jewellery	rings, studs, and barbells are common forms the composition of jewellery is primarily 14-18 carat gold, titanium, niobium or stainless steel (some steel contains nickel)	Sterile jewellery is inserted through the needle channel and secured.	Jewellery must be sterilized before use. Jewellery should be smooth to avoid skin irritation, which delays healing and increases infection risk.
		ring opening pliers ring closing pliers	Sterile ring pliers are to be used to open and close jewellery, taking care not to scratch or nick the metal.	Pliers are to be cleaned and sterilized after each use.
7	Additional supplies:	container, e.g. metal, with lid cool water and detergent	The container is used to store used instruments prior to cleaning. Soaking instruments prevents drying of body proteins.	The container shall be cleaned and then to low-level disinfected daily. The solution in the container shall be changed daily.
		Sharps container with secure lid	For the disposal of piercing needles and cork	Approved sharps containers must be used to help prevent sharps injuries.
8	Client aftercare	soap	Clients should be instructed to wash their hands before washing the pierced area with soap on a daily basis and to rotate the jewellery to help with the cleaning process.	The skin piercing site must be cleaned to promote healing and reduce the chance of infection. Oral and written instructions for aftercare are to be provided to the client.
		antibacterial ointment	Ointment may be applied to the freshly pierced skin area and the jewellery should be rotated.	If ointment is used, single-use ointment applications are recommended. Ointment also acts as a lubricant and may reduce the chance of infection. If ointment is taken from a bulk container it is to be removed with a single-use spatula or tongue depressor. Some people develop an allergic reaction to the ointment, and so some practitioners do not use it.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
9	Practitioner supplies	hand washing soap alcohol-based hand rubs hand lotion	Soap is used to clean the practitioner's hands of microorganisms. Alcohol-based hand rubs containing between 60-90% alcohol can be used to perform hand hygiene when hands are not visibly soiled. Lotions are used to keep the skin in good condition as frequent hand washing may dry out the skin.	Refer to recommendations in section 6 of the main document.
		clean medical gloves, e.g. latex, vinyl, neoprene, or nitrile	Gloves shall be used as a protective barrier on hands after cleaning of the skin with an antiseptic and opening the package that contains the sterile needle. Gloves or forceps are to be used to remove the needle from the package. If the gloves are contaminated, they shall be removed, hand hygiene performed, and a new pair put on.	Gloves shall be worn to reduce the number of organisms on the hands and offer some protection from sharps injuries. Gloves should be used to touch only the objects needed to do the procedure. Hand hygiene must be performed before gloves are applied and after glove removal.

Table 6: Detailed Infection Prevention and Control Procedures for Tattooing and Micropigmentation

Adapted from Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis. Health Canada, July 1999.

		Equipment/ Supplies	Use During Tattooing	Procedures for Infection Prevention
1	Skin preparation	spray bottle with a solution of soap and water	The skin area to be shaved is sprayed with the solution for lubrication purposes.	The spray bottle shall be covered with a single-use plastic sheath (e.g. plastic bag). This plastic shall be discarded after each client service. At the end of each day, or when soiled, the spray bottle shall be cleaned then disinfected with a low- level disinfectant. The solution should not be “topped up” with more solution. The inside of the bottle should be washed and dried prior to adding new solution.
		single-use disposable razor	The skin is shaved prior to tattoo placement.	Razors are to be discarded in an approved sharps container immediately after use on each client.
		topical anesthetic (optional)	A topical anesthetic may be used to decrease client discomfort during the procedure.	Whenever a topical anesthetic is used on a client site, it must be applied with a clean, single- use, disposable swab. The anesthetic should be applied on the site before the skin is cleansed with an antiseptic.
		skin antiseptic	Antiseptic is used to cleans the skin prior to tattooing.	The skin antiseptic is to be applied with a clean swab using a circular motion. If alcohol is used, it should be stored in a pump pack that is used to moisten the cotton balls. Alternatively, the swab may be moistened by pouring the antiseptic from the original container into a disposable paper cup. The disposable cup is to be discarded in the waste bin after use. Skin antiseptics should not be sprayed onto clients skin For cosmetic tattooing of areas around the eye, (e.g. eyeliner), potable water should be used and an antiseptic should be avoided .

		Equipment/ Supplies	Use During Tattooing	Procedures for Infection Prevention
2	Stencil and image transferring solution	lotion or spray bottle with solution as above, skin antiseptic	Lotion or other solution moistens the skin prior to application of the stencil.	Lotion should be applied in the same way as skin antiseptics OR with spray bottle. Deodorant sticks are not recommended instead of lotion since they can become contaminated with microorganisms and are usually not discarded after each client.
		single-use stencil transfers or plastic stencils	Stencils are used to outline the design of the tattoo on the skin.	Single-use stencils shall be discarded after use.
3	Lubricating product	e.g. gel or petroleum jelly	The lubricating product is placed on the skin with a single-use spatula or a piece of clean gauze prior to tattooing.	The lubricating product shall be removed from the bulk container with a single-use wooden spatula or dispensed from a pump container onto a single-use applicator. Any remaining product must be discarded and never used on another client. Alternatively, a single-use preparation may be used.
4	Tattoo dyes	pigments/ink	Sterile needles, which have been dipped into pigments, pierce the tissue below the skin to create the permanent marks forming the tattoo	Currently, commercially prepared pigments are not sterile. Contamination of pigment bulk containers should be avoided by placing pigment into smaller, clean containers, (e.g. plastic squeeze bottles).
		pigment/ink caps/cups	Each unique pigment is placed in an individual cap/cup into which the tattoo needles are dipped.	Pigments to be dispensed in a manner that prevents contamination.
		pigment/ink cap holding tray	Trays are sometimes used to hold the pigment/ink caps.	The pigment/ink cap trays shall be cleaned and high-level disinfected as a minimum after use for each client or preferably are to be discarded.
		disposable cup with tap water	Tap water is used to rinse pigment/ink from the needles prior to using another colour.	Water should be poured into the sink at the completion of the procedure. Discard disposable single-use cups into a plastic lined waste bin.

		Equipment/ Supplies	Use During Tattooing	Procedures for Infection Prevention
5	Cleaning the skin during tattooing/micro pigmentation	spray bottle containing a solution of soap and water as in #1.	The skin is cleaned to enable the practitioner to see it clearly and to avoid the mixing of colours.	Care should be taken to avoid contamination of the soap solution when it is being prepared and during use. The spray bottle shall be covered and cleaned then disinfected as in #1.
		single-use disposable paper towels	Single-use disposable paper towels are used to wipe the treated area during the procedure.	All paper towels shall be discarded into a plastic lined waste bin, including any unused paper towel in the immediate work area.
6	Tattoo machine	motor frame clipcord	The motor frame is connected to an electrical source by the clipcord. The clipcord may be touched multiple times during tattooing, especially if more than one machine is used on the client .	The clipcord and the motor frame shall be covered with a disposable plastic sheath. The plastic sheath shall be discarded after each client service. The clipcord and motor frame shall be cleaned and then disinfected with a low-level disinfectant after each use. Alternatively, surfaces may be covered with single-use plastic that is discarded and changed between each client
		chuck or clamp	The chuck/clamp attaches the needle bar/tube to the motor frame.	After each client service the clamp shall be cleaned then disinfected with an intermediate-level disinfectant.
		elastic bands	The elastic bands apply pressure on the needlebar so that the needles can rest in the bottom of the tube tip.	Elastic bands are single-use and disposable.
7	Instruments	needles, e.g. stainless steel needle bars	Needles are soldered onto needle bars. The needles place pigments in tissue under the skin.	Any flux residue produced by soldering should be removed with a solution of baking soda and water or an alternate appropriate chemical prior to cleaning. New needles and the needle bar shall be cleaned, in an ultrasonic cleaner, rinsed, air dried, then sterilized or packaged for sterilization. Needles must not be tested on the practitioner's skin.

		Equipment/ Supplies	Use During Tattooing	Procedures for Infection Prevention
				Needles that have been cleaned in the ultrasonic cleaner between colours are not sterile. Used needle bar combination shall not be disassembled. Instead the intact needle bar unit should be discarded.
		metal tube and grip (as one unit or as separate parts)	The metal tube and grip assembly surrounds the needle and needle bar and is attached to the motor frame,	Metal tubes and grip shall be cleaned and sterilized for each client use. Because the grip is grooved metal, a brush should be used during cleaning. Tubes that can be disassembled must be taken apart to facilitate cleaning.
8	Other equipment	metal container with lid or puncture resistant container	The container for used instruments is kept in an area designated for dirty items/instruments, and is partially filled with water, or water and detergent to prevent drying of body proteins on soiled instruments before cleaning.	The metal container shall be cleaned and disinfected with a low- level disinfectant daily.
		ultrasonic cleaner	The ultrasonic cleaner contains detergent and water to clean reusable instruments after use on a client prior to sterilization. The ultrasonic cleaner is also used to clean the needles and needle bar after the new unused needles have been soldered onto the needle bar. Cover the device with a lid when in use.	The ultrasonic cleaner shall be emptied and cleaned daily with detergent and water. The ultrasonic cleaner cannot be used to disinfect or sterilize instruments. Needles cleaned in this manner, (i.e. critical items), shall not be reused.
		approved sharps container	For disposal of needles and razors after each client service (needles and attached bar),	Approved sharps containers shall be sealed and discarded in accordance with local regulations.

		Equipment/ Supplies	Use During Tattooing	Procedures for Infection Prevention
9	Client aftercare products	dry clean dressing ointment/cream/ lotion	The ointment or lotion and dry dressing are applied to freshly tattooed skin to help prevent infection and protect the client's clothing.	Ointment shall be applied with single-use applicator and gloved hands in a manner to prevent contamination. The tattooed skin is to be covered with a dry clean dressing. The client shall be given oral and written instructions about care of the tattooed area, and signs of infection that may require medical treatment.
10	Practitioner supplies	liquid hand washing soap in a dispenser	Soap is used to wash the practitioner's hands to remove organic matter and transient microorganisms.	Refer to recommendations in section 6.1.1
		alcohol-based hand rubs	Alcohol-based hand rubs containing between 60- 90% alcohol can be used to perform hand hygiene when hands are not visibly soiled.	
		hand lotion	Lotion is used to prevent skin from cracking and to keep the skin in good condition.	After the skin has been cleaned with an antiseptic agent and the packages containing the sterile needlebar(s)/sterile needles have been opened, gloves shall be put on to remove the needlebar(s)/sterile needles from the package and to assemble them on the grip and tube assembly. Gloves shall be removed and changed during the tattooing process if, at any time, the practitioner touches any device or surface that may be contaminated. Hand hygiene must be performed before gloves are applied and after glove removal.
		clean medical gloves	Single-use gloves are to be used as a protective barrier on hands.	
		lap pad (single- use paper or reusable cloth)	Worn on the lap of the practitioner to protect clothing.	Single-use, disposable lap pads be used. If the lap pad is cloth, it shall be laundered after each client service.

Table 7: Detailed Infection Prevention and Control Procedures for Ear Lobe Piercing

Adapted from *Infection Prevention and Control Practices for Personal Services: Tattooing, Ear/Body piercing, and Electrolysis*. Health Canada, July 1999.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
1	Client preparation	single-use towel	A towel may be used to drape the piercing site.	The towel should be used to protect the client from any soiling during the procedure.
2	Skin preparation	Skin antiseptic, (e.g. 70% alcohol or an iodine, such as betadine). The antiseptic selected must be appropriate for the piercing site and must be used according to the manufacturer's instructions. Clean swabs, (e.g. gauze or cotton balls).	Swabs moistened with an antiseptic are used to disinfect the skin piercing sites.	The skin antiseptic shall be applied with a moist single-use swab, using a circular motion. If alcohol is used it should be stored in a pump pack which is used to moisten the swab with alcohol. Other antiseptics, such as betadine, may be poured into a disposable cup. The ear lobe must first be cleaned with an approved skin antiseptic, then marked with a (iodine) felt tip/marketing pen prior to piercing. After one minute, once the pen mark has dried, the site is to be cleaned again with the approved skin antiseptic just prior to piercing.
3	Jewellery	studs are the common form		Jewellery used for piercing must be sterile. Jewellery must be smooth to avoid skin damage, which delays healing and increases the risk of infection.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
4	Ear piercing instrument	single-use pre- packaged stud and butterfly clasp	The stud is pierced through the lobe of the ear by the practitioner through activation of the spring mechanism in the instrument or by squeezing the instrument. The butterfly clasp at the back of the ear lobe holds the stud in place.	Studs must be sterile and pre-packaged.
		head of piercing instrument	The piercing instrument is used to hold the sterile stud. Blood may be splattered onto the instrument as the stud is pierced through ear tissue.	
		a single-use removable cartridge is strongly recommended.		The removable cartridge must be discarded after single-use. The piercing instrument surface must be cleaned then soaked in an intermediate to high level disinfectant, (e.g. 70% alcohol) between clients.
5	Client aftercare	soap alcohol-based hand rubs	Clients shall be instructed to perform hand hygiene before washing the pierced area with soap on a daily basis and to rotate the jewellery to help with the cleaning process.	The skin piercing site shall be cleaned to promote healing and to prevent the chance of infection. Oral and written instructions for aftercare shall be provided to the client.
		antibacterial ointment	Ointment may be applied to the freshly pierced skin area and the jewellery should be rotated.	If ointment is used, single-use ointment applications are recommended in a manner to prevent contamination. Ointment acts as a lubricant and may reduce the chance of infection. If ointment is taken from a bulk container it must be removed with a single- use spatula or tongue depressor.

		Equipment/ Supplies	Use During Skin Piercing	Procedures for Infection Prevention
6	Practitioner supplies	hand washing soap alcohol-based hand rubs hand lotion	Soap is used to remove microorganisms on the practitioner's hands. Alcohol-based hand rubs containing between 60-90%. Alcohol can be used to perform hand hygiene when hands are not visibly soiled. Lotion is used to keep the skin in good condition as frequent hand washing may dry out the skin.	Refer to recommendations in section 6.1.1.
		single-use gloves	Single-use gloves must be used as a protective barrier on hands after cleaning of the skin with an antiseptic and before opening the package that contains the sterile jewellery. If the gloves are contaminated, they must be removed, hand hygiene must be performed and a new pair put on.	Single-use gloves must be worn to reduce the number of organisms on the hands and offer some protection from sharps injuries. Gloves must be used to touch only the objects needed to do the procedure. Hand hygiene must be performed before gloves are applied and after glove removal.

Table 8: Preparing Household Bleach as a Disinfectant

Adapted from APIC Guideline for Selection and Use of Disinfectants

The solution must be made fresh daily to preserve strength.

Household Bleach Solution is 5.25% sodium hypochlorite solution (50,000 ppm available chlorine)

Level required	When to be used—see Table 2 on disinfection	How to mix the bleach solution
High-level Disinfection 1:50 dilution of bleach (1 part bleach: 49 parts water)	Use on semi-critical items: items that may accidentally penetrate skin and /or come into contact with blood or body fluids. Also use to clean surfaces following contact with blood or body fluids or where sterilization is not possible. Contact time $\geq$ 20 minutes	10 ml bleach with 495 ml water or 2 tsp. bleach with 2 cups water
Intermediate-Level Disinfection 1:50 dilution of bleach (1 part bleach: 49 parts water)	Use on semi-critical items: items that may accidentally penetrate skin and/or come into contact with blood or body fluids (e.g. hair clippers, cuticle scissors). Contact time $\geq$ 10 minutes	10 ml bleach with 495 ml water or 2 tsp. bleach with 2 cups water
Low-Level Disinfection 1:500 dilution of bleach (1 part bleach: 499 parts bleach)	Use on non-critical items: items that come in contact but do not penetrate intact skin, or those that do not ordinarily touch the client. These items do not contact blood or body fluids. May be used for routine housekeeping (e.g. floors or surfaces). Contact time $\geq$ 10 minutes	5 ml bleach with 2½ litres water or 1 tsp bleach with 10 cups water

Table 9: Times and Temperatures required for dry heat sterilization

<i>Times and Temperatures Required for Dry Heat Sterilization</i>	
Temperature	Time
171 C (340 F)	60 minutes
160 C(320 F)	120 minutes
149 C (300 F)	150 minutes
141 C (285 F)	180 minutes
121 C (250 F)	12 hours

Appendices

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Appendix 1: Methyl Methacrylate (MMA)

On May 22, 2003, Health Canada released a health advisory warning against the use of MMA. The strong adhesive properties of MMA can cause painful tearing and possible permanent loss of the natural nail, should the artificial nail be jammed or caught. Allergic reactions to MMA include red skin rashes, contact dermatitis, itching and/or small oozing blisters in the affected area. MMA may also cause irritation to the nose and throat, as well as headaches.

For the PSW, there is a risk that ongoing exposure to this substance can cause irritation to the nose and throat, headaches as well as adverse skin reactions. Masks worn to reduce exposure to dust are not designed to reduce the effect of the MMA vapours.

No cosmetic products containing MMA are to be sold in Canada. Ethyl methacrylate, polymethyl methacrylate and other methacrylate polymers are all alternatives to MMA which are currently permitted by Health Canada for use in cosmetic products. However, some cosmetic products containing MMA may still be available on the Canadian marketplace.

For further information, contact your nearest Health Canada Product Safety Office:

http://www.hc-sc.gc.ca/home-accueil/contact/hecs-dgsesc/pso-bsp_ncr-rcn_e.html

For further information you may also refer to Health Canada's website at:

http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl1-lsp1/methyl_methacrylate_methyle/methyl_methacrylate_methyle_synopsis_e.html

Appendix 2: Ear Candling

Ear Candling refers to a variety of procedures that are associated with placing a hollow cone-shaped device in the ear for the supposed purpose of extracting earwax and other impurities. The cone is soaked in beeswax or paraffin that is then hardened. During ear candling, the client lies on his/her side while another person inserts the point of the cone into the ear. The top of the cone is then set on fire and allowed to burn for a few minutes.

The health claim made for these products is that the flame creates warmth and suction, to draw earwax out of the ear canal. Since earwax is sticky, significant negative pressure would be required in order to pull the wax from the ear canal. Health Canada has conducted laboratory tests that showed that ear candling produced no significant heating or suction in the ear canal.

There are significant dangers posed by ear candling. It can result in a risk of fire, and can cause serious burns or other injuries should the hot wax drip into the ear, skin or hair. A number of cases of ear injury have been reported in Canada.

Ear candles cannot be legally sold in Canada. The Medical Devices Regulations of Canada's *Food and Drugs Act* states that medical devices, such as ear candles, must be licensed by the Therapeutic Products Program of Health Canada before this product can be legally sold. No licenses have been granted for ear candles to be used for therapeutic purposes.

For further information you may also refer to Health Canada's website at:
http://www.hc-sc.gc.ca/iyh-vsv/med/ear-oreille_e.html

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