



COLLEGE OF
PHYSICAL
THERAPISTS
OF ALBERTA

position statement

INFECTION CONTROL

INTRODUCTION

Appropriate infection control is an essential element of clinical practice management based on its importance to the health and safety of patients, practitioners and the broader community.

Knowledge of clinical infection control measures is continually growing, and specific clinical advice continues to evolve. As a self-regulated professional, physical therapists must be knowledgeable about the principles underlying infection control, and implement appropriate infection control procedures that will vary depending upon the specific practice environment.

In addition to the College of Physical Therapists of Alberta's practice standards¹⁰ that promote patient safety, this position statement describes expectations of members related to the incorporation of appropriate infection control measures.

POSITION STATEMENT

When providing professional services, physical therapists will ensure that they incorporate current, appropriate and generally accepted infection control measures consistent with written infection control guidelines, policies and procedures.ⁱ

PERFORMANCE EXPECTATIONS

A physical therapist should:

1. Maintain current knowledge of evidence-based infection control protocols and programs relevant to his or her professional practice.^{1,2,3,7,15,16}
2. Ensure that the practice environment/facility is equipped, operated and maintained to meet infection control guidelines and report identified deficiencies to the parties responsible for the management of the practice environment/facility.

Infection control measures in a physical therapy practice should include, as a minimum, requirements for:

- hand hygiene which should include the use of an alcohol-based cleaner before and after patient contact; or hand washing when hands are visibly soiled;
- use of protective barriers as standard practice whenever contact with blood and body fluids is likely to occur during patient contact. Barriers should also be used when the patient's environment or patient care equipment is likely to have been contaminated with potentially infected fluids;
- cleaning and disinfection or sterilization of equipmentⁱⁱ and facilities; and managing wastes, including sharps and materials contaminated by blood or body fluids.

3. Adopt appropriate infection control measures including contact management protocols and monitor their use and effectiveness to identify problems, outcomes and trends.
4. Be aware of, or if not otherwise available develop, incorporate and keep up-to-date, infection control policies to promote the use of infection control measures in his or her professional practice.
5. Apply his or her knowledge, skills and judgment to conduct ongoing assessments of the

ⁱ Alberta Health and Wellness Standards (2008), Health Canada Infection Control Guidelines (1998) and Canadian Standards Association are considered minimal standards, although some of the chemical disinfectants listed in the Health Canada publication are no longer used.

ⁱⁱ Refer to the Appendices for information on Cleaning, Disinfecting and Sterilizing equipment and Monitoring of the Sterilization page 1 of 9 Process.

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degree of current risks of infection and transmission to patients, staff, colleagues and other health professionals based on consideration of the following:

- the assessments or treatment interventions planned or conducted;
- the health conditions of patients being assessed or treated;
- the degree of infection risk currently present in the internal practice environment;
- the degree of infection risk currently present in the external practice environment;
- current best practice in infection control protocols relevant to his or her professional practice; and,
- the health and immunization status of people in the practice environment including him or herself, colleagues and patients.

6. Ensure self-immunization for common and/or preventable illness as appropriate.

COMMON DEFINITIONS

Infection control: Measures practiced by healthcare personnel intended to prevent spread, transmission and acquisition of agents or pathogens between patients, from healthcare workers to patients and from patients to healthcare workers in the healthcare setting. These measures are determined after an assessment of the facility and of the patient population. Infection control measures instituted are based on how an infectious agent is transmitted and include standard, contact, droplet and airborne precautions.

Cleaning: Involves the physical removal of foreign material such as dust, soil and organic material including blood, secretions, excretions and microorganisms. Cleaning physically removes rather than kills microorganisms. Removal of material is necessary to permit the effective disinfection or sterilization of equipment. It is accomplished with water, detergents and mechanical, scrubbing action. The terms “decontamination” and “sanitation” may be used for this process in certain settings, e.g. central service or dietetics. Cleaning reduces or eliminates the reservoirs of potential pathogenic organisms. Cleaning agents are the most common chemicals used in housekeeping activities.

Disinfection: The inactivation of disease-producing microorganisms. Disinfection does not destroy bacterial spores. Disinfection usually involves chemicals, heat or ultraviolet light. Varying levels of disinfection have been recommended based upon the nature of the procedure, infection risk and type of equipment. Disinfectants are used on inanimate objects while antiseptics are used on living tissue.

External practice environment: Any locale beyond the internal practice environment, and may extend to municipal, provincial, national or international borders depending on the nature of the infection risk being considered.

Internal practice environment: The physical location(s) where physical therapy services are provided to patients. These physical locations can include hospitals, private practice premises, long-term care facilities and patients’ homes.

Sterilization: Involves a multistep process that results in the destruction of all forms of microbial life including bacteria, viruses, spores and fungi. Items must be cleaned thoroughly before effective sterilization can take place. The decision to sterilize equipment is based upon the procedure, risk of infection and the type of equipment. Various methods of sterilization exist, the most common include steam and heat (autoclave), dry heat (dry heat sterilizer) or chemicals. Monitoring the effectiveness of sterilization procedures is essential. Monitoring can be achieved through the use of biologic, chemical and mechanical methods.



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The College of Physical Therapists of Alberta acknowledges the College of Physiotherapists of Ontario for their permission to adapt the Standard for Professional Practice – Infection Control.¹²

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APPENDIX A: CLEANING, DISINFECTING AND STERILIZING EQUIPMENT

This appendix supplements the CPTA position statement on infection control and broadly outlines parameters related to cleaning and disinfection or sterilization of equipment used by physical therapists. For further infection control information, physical therapists are advised to refer to information published by Alberta Health and Wellness¹, Health Canada¹⁵ or other resources as referenced.^{5, 16}

Most cleaners, disinfectants and sterilants used in healthcare are regulated and should have a Drug Identification Number (DIN). An exception is the domestic product hypochlorites i.e. household bleach. Follow the manufacturer's instructions and/or guidelines when cleaning, disinfecting, and sterilizing equipment and instruments.

The classification system (Table 1) for cleaning, disinfecting or sterilizing equipment, used in health care, is based on the use of the item and potential risk of infection.

Object Classification	Use of Item	Method of Decontamination after Cleaning
Non critical	Does not come in contact with skin/patient (e.g. furnishings, weigh scales)	Low levels of disinfection
	Comes in contact with intact skin (e.g. cups, beds, blood pressure cuff)	Intermediate level of disinfection
Semi critical	Comes in contact with mucous membranes or non intact skin but ordinarily does not penetrate tissues (e.g. intermediate level - thermometers; high level - vaginal probes, reusable peak flow meters)	Intermediate or high level disinfection
Critical	Enters the vascular system or body tissue or houses an instrument that will be entering the blood stream/body tissue (e.g. IMS plungers)	Sterilization
	Presents a high risk of infection if the item is contaminated with microorganisms	

Table 1: Cleaning, Disinfecting and Sterilizing Classification Guidelines

Adapted from Cleaning, Disinfecting and Sterilizing Office Instruments¹¹ and Health Canada Infection Control Guidelines^{15, 13}

CLEANING

All instruments undergoing disinfection or sterilization must first be thoroughly cleaned to remove organic material and/or foreign debris. Failure to adequately clean items may interfere with the disinfection and sterilization process. When cleaning instruments:

- ▶ use a stainless steel utility sink that is dedicated to the cleaning and handling of dirty instruments;
- ▶ ensure that the process is carried out using appropriate apparel – gloves, masks and gowns;
- ▶ wash articles in warm, sudsy detergent water using friction (rubbing or scrubbing) to clean surfaces, cracks, and crevices;
- ▶ rinse thoroughly in clean warm water; and
- ▶ air dry or dry with a lint free towel.



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DISINFECTION

The disinfection process eliminates many disease producing pathogens or microorganisms from inanimate objects with the exception of bacterial spores. Levels of disinfection are determined based upon the use of the healthcare instrument and the risk of infection. Time of submersion varies and should be checked against the manufacturer's guidelines.

Technology related to chemical disinfectants continually evolves. Physical therapists must keep up-to-date on the variables that change most frequently including submission times and hazards related to the chemical compound. Many products for disinfection are available and Table 2 includes the names of a few products as examples.

Level of Disinfection	Class of Disinfectant	Comments
Low level	Detergent-disinfection combination <ul style="list-style-type: none">▶ Quaternary ammonium compounds "quats" (e.g. 1492, Dimension III)▶ 3% hydrogen peroxide (e.g. Perdiem, Hydrox)▶ Hypochlorites (e.g. 5.25 % household bleach 1:500 dilution–14 ml per 4 litres)	Good for non-critical items (e.g. smooth surfaces, cups, patient beds)
Intermediate Level	<ul style="list-style-type: none">▶ Accelerated hydrogen peroxide 0.5% (e.g. Percept, Virox 5)▶ Alcohols 60-90% (e.g.70% isopropyl alcohol, Rubbing Alcohol)▶ Hypochlorites (e.g. 5.25 % household bleach solution 1:10 prepared daily 100 ml per litre)	Semi-critical items
High Level	<ul style="list-style-type: none">▶ Glutareldehyde 2%▶ Accelerated hydrogen peroxide 7% (e.g., Chemo 20)	Semi-critical and critical items (e.g. vaginal probes) that cannot be subject to sterilization processes (i.e. cold sterilization)

Table 2: Disinfection Guidelines

Adapted from: Health Canada Infection Control Guidelines^{15,13} Infection Control for Regulated Health Professionals⁹

STERILIZATION

Sterilization results in the destruction of all forms of microbial life. **When performing sterilization, ensure compatibility between the instruments and sterilization equipment used. Ensure that the sterilization equipment has been validated for the medical device being sterilized. Then, follow the manufacturer's instructions for cleaning, disinfecting and sterilizing the device.** The following are common methods for achieving sterilization.

STEAM AND PRESSURE

Autoclaves use steam under pressure to kill microorganisms. The common steam temperature is 121° C (250° F). Monitoring methods should be used to ensure critical parameters have been reached. Packaged items require the following settings:

- ▶ 133 °C (271°F); 15 minutes
- ▶ 121° C (250°F); 30 minutes



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DRY HEAT

Dry Heat Sterilizer uses heat alone to kill microorganisms. Only equipment approved by the Canadian Standards Association for dry heat sterilization should be usedⁱⁱⁱ. This method takes much longer than autoclave to produce sterility. Monitoring methods should be used to ensure critical parameters have been reached.

Recommended Settings	Time
▶ 171°C (339F)	60 minutes
▶ 160°C (320F)	120 minutes
▶ 149°C (300F)	150 minutes
▶ 141° C (286F)	180 minutes
▶ 121° C (250 F)	12 hours

CHEMICAL

Chemicals used for high level disinfection can also be used to achieve sterilization if the instruments are exposed for a longer time period. There are risks to those working with chemical sterilants and therefore dry heat or steam and pressure are the recommended methods.

STORAGE

Sterilized instruments should be handled and stored in a manner that promotes the integrity of the sterile state.

ⁱⁱⁱ Boiling, glass bead sterilizers, ovens, microwaves, or toaster ovens are not acceptable for sterilization of patient care equipment.

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APPENDIX B: MONITORING OF THE STERILIZATION PROCESS

Sterilization of health care equipment is a multi-step process which results in the destruction of all forms of microbial life including bacteria, viruses, spores and fungi. Routine monitoring of the effectiveness of the sterilization process is paramount to ensuring that the sterilization of equipment has been effective.

Methods for monitoring sterilization cycles are evolving with new products and technologies being introduced into sterilization practices on a routine basis. Monitoring methods can be divided into the following categories:

- ▶ **mechanical:** time and temperature graphs, charts or printouts;
- ▶ **chemical:** time/temperature and/or humidity sensitive tape, strips or pellets;
- ▶ **biologic:** spore-laden strips or vials.^{1,14,15, 16}

Generally, mechanical and chemical monitors provide a visible indicator that the critical parameters required for sterilization, such as time temperature and/or pressure, have been met. Presently, biologic indicators are the only available method to monitor the actual effectiveness of the sterilization process.¹⁴

BIOLOGICAL MONITORS

Biological Indicator

Biological monitors are to be used each day the sterilizer is used¹. Biological monitors are considered a reliable monitoring method because they confirm sterility has been achieved.

The biological indicator (a vial or strip containing bacterial spores) is exposed to the sterilization cycle and then incubated in conditions that would allow any surviving microorganism to grow. If the indicator shows “no growth” at the end of the incubation period, the condition for appropriate sterilization was achieved. However, a limitation of the biological indicator spore test is that the test must be sent to a lab for incubation and the results may not be available for up to seven days depending on the type of the indicator used. The spore test kits are available from both the Provincial Laboratory of Public Health¹⁴ and other laboratories in the private sector.

CHEMICAL MONITORS

Chemical Integrator/Indicator (Autoclave-Chemi-Clave)

Recommended to be used with every cycle¹⁵, the chemical integrator is a monitoring method that approximates the response of the biological indicator methods. Chemical indicators monitor all critical parameters of the sterilization process (i.e. time, temperature, vapour exposure – steam or chemical). Results are available immediately following the sterilization cycle. However, the chemical integrator does not detect and confirm the killing of microbial spore and therefore is supplemental to the biological spore test.^{14, 15}

Chemical Indicator (Dry Heat Sterilizer)

Used with every cycle, temperature specific chemical indicators are used to monitor dry heat sterilizers. They assure that the desired temperature in the dry heat sterilizer has been achieved.

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Chemical Color Indicators (For All Sterilizers)

To be used with each instrument package, chemical color indicators, such as heat sensitive tape, change color when exposed to a parameter of the sterilization process. Although these indicators react to temperature, they react at levels that are not sufficient for achieving sterility. Thus they are not reliable indicators that the adequate parameters to ensure sterilization have been achieved. The utility of this monitoring method is that it acts as an early warning signal. Failure to achieve a color change in the indicator means that a critical parameter of the sterilization process has not been met.

PHYSICAL MONITORS

Physical monitoring involves checking gauges for readouts of the time, temperature and pressure during the sterilization cycle. Currently there is not a convenient method to monitor all critical parameters of sterilization for the entire sterilization cycle. Routine calibration of gauges is essential to ensure the gauge readouts are a valid reflection of the critical parameters.¹²

RECORDING OF MONITORING PROCEDURES

Logs are used to track the sterilization process and should contain the date, temperature, time, pressure, pack number and results of the monitoring tests.¹



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