



Infection prevention and control for electrophysical agents

École de réadaptation
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Conflicts of interest statement

- I have no affiliation or financial interests or other interests with a commercial company.
- I don't receive remuneration or royalties from a commercial company

Objectives

- 1) Understand the latest recommendations and challenges for infection prevention and control (IPC) when applying electrophysical agents in physiotherapy
- 2) Develop the skills to assess infection risk and relevant preventive measures in daily clinical practice when applying electrophysical agents, regardless of setting and equipment.



Chain of nosocomial infection


Contact




Reservoir

Contact





Government
of Canada



Gouvernement
du Canada

Potential threats!

Jobs ▾

Immigration ▾

Travel ▾

Business ▾

Benefits ▾

Health ▾

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Infectious Diseases

[Infection Control Guidelines](#)

- [Antimicrobial Resistance](#)
- [Anthrax](#)
- [Avian Influenza](#)
- [Blood Safety](#)
- [Brucellosis](#)
- [Campylobacteriosis](#)
- [C. difficile](#)
- [Chikungunya](#)
- [Cholera](#)
- [Clostridium botulinum \(Botulism\)](#)
- [Clostridium perfringens](#)

- [Malaria](#)
- [Marburg virus disease](#)
- [Measles](#)
- [Meningococcal](#)
- [Methicillin-Resistant Staphylococcus aureus](#)
- [Middle East respiratory syndrome coronavirus](#)
- [Mumps](#)
- [Noroviruses](#)
- [Non-Tuberculous Mycobacterium](#)
- [Notifiable Diseases](#)

Examples of infectious agents that can survive a while on inanimate objects:

- Vancomycin-resistant Enterococci
- Sarcoptes scabiei (scabies)
- Human Papillomavirus (HPV)
- Fungi

<https://www.canada.ca/en/public-health/services/infectious-diseases.html>

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Spaulding classification of infection risk with medical devices

Object classification	Item use	Physiotherapy examples	Level of reprocessing
Non-critical	Contact with intact skin only and not mucous membranes, or does not directly touch the patient.	<ul style="list-style-type: none"> • Weigh scales • Stethoscopes • Beds and plinths • Blood pressure cuffs • Exercise equipment • Gait aids 	Cleaning followed by low level disinfection.
Semi-critical	Contact with mucous membranes or non-intact skin but ordinarily does not penetrate tissues.	<ul style="list-style-type: none"> • Vaginal probes • Reusable peak flow meters • Pessary fitting rings 	<p>Cleaning followed by high level disinfection at a minimum.</p> <p>Sterilization is required for heat tolerant semi-critical medical devices.</p>
Critical	<p>Enters sterile tissues including the vascular system, or houses an instrument that will be entering the blood stream/ body tissue.</p> <p>Presents a high risk of infection if contaminated.</p>	<ul style="list-style-type: none"> • IMS plungers • Wound care instruments 	Cleaning followed by sterilization.

Courtesy of Physiotherapy Alberta

Cleaning, disinfection and sterilisation

Disinfection level	Disinfectant class	Application
**Always follow manufacturer instructions regarding concentration and contact times.		
Low level	<ul style="list-style-type: none"> • Hydrogen Peroxide 3% (30 minutes) • Ethyl or isopropyl alcohol 60-95% (10 minutes) • Sodium hypochlorite household bleach (1,000 ppm) (10 minutes) • Enhanced action formulation hydrogen peroxide 0.5% (5 minutes) • Phenolic germicidal detergent solution (follow product label for use and dilution, do not use in nurseries) (10 minutes) • Quaternary ammonium compounds (10 minutes) (follow product label for use-dilution) (10 minutes) 	<p>Non-critical equipment/devices (e.g., weigh scales, stethoscopes, beds and plinths, blood pressure cuffs, exercise equipment, gait aids), and environmental surfaces.</p> <p>Surfaces are considered noncritical as they contact intact skin.</p>
High level	<ul style="list-style-type: none"> • Glutaraldehyde $\geq 2\%$ (20 minutes at 20° C) • Hydrogen peroxide $\geq 6\%$ (30 minutes) • Enhanced action formulation hydrogen peroxide (2%) (8 minutes at 20° C). 	<p>Semi-critical items (e.g., vaginal probes, reusable peak flow meters, pessary fitting rings) that cannot be subjected to the sterilization processes must be reprocessed using high-level disinfection.</p> <p>**Sterilization is the preferred method of decontamination for semi-critical devices.</p>

Courtesy of Physiotherapy Alberta

Cleaning, disinfection and sterilisation

- High level disinfection: > 95% destruction rate (inefficient for bacterial spores, some fungi...)
- Sterilization: 99.9% destruction rate infectious agents
- High level disinfection/sterilization
 - Thorough cleaning before proceeding (7 steps)
 - Must be performed by trained personnel in order to be effective and safe
 - Follow institutional protocols
 - Buy simple equipment to clean and disinfect
 - Highly corrosive: respect manufacturer recommendations

Point of care risk assessment

- Prior to each patient contact, determine
- Risk of infecting patient: consider Spaulding and patient susceptibility
 - Non-critical, semi-critical, critical
- Risk of contaminating equipment : consider Spaulding and exposure to organic fluids or infectious agents

Clinical decision making for preventive measures

- Reprocessing needed for reusable devices
 - Cleaning and low level disinfection
 - Cleaning and high level disinfection
 - Cleaning and sterilization
- Type of device needed
 - Single use (disposable): sterile or non sterile
 - Single patient-use
 - Reusable
- Avoid intervention

Reprocessing of non critical electrophysical reusable devices

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Contact with intact skin, free of organic fluid and for
Non infectious or non immunosuppressed patients

Basic hygiene

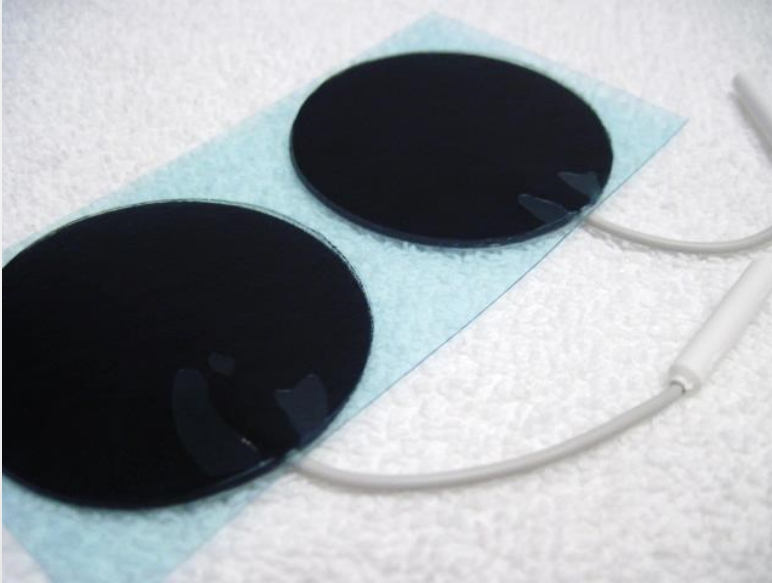
- Clean or disinfect skin in the treated area prior to application
- Patient must wash/disinfect his hands before manipulating equipment

Gel



- “Tips of containers or dispensing nozzles must not come in direct contact with a patient, staff, instrumentation or the environment. Gel should be dispensed into a medicine cup or on a clean disposable cloth and then to the patient's skin.
- If a medicine cup or a disposable cloth is not used, wipe the dispensing nozzle clean with an alcohol swab and wipe the outside of the container with a disinfectant between patients.”
 - Health Canada, 2004
 - <http://healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2004/14289a-eng.php>

Single-patient use electrodes



- Clean or disinfect skin prior to application
- Never use on another patient
- Store and maintain according to manufacturer's recommendations

Reusable electrodes



- Wash to remove any gel
- Disinfect with alcohol (ex.: 70% spray)
- Let air dry

Probes (US, LASER, SWT)



- Wash to remove any gel
- Disinfect (ex.: isopropyl alcohol pad)
- Let air dry

Fabrics



- Laundry
- Sponges should not be soaked in water between applications (with or without bicarbonate, salt ...)

Other devices with direct contact

- Wires
- Suction cups
- Apparatus
- ...
- **Disinfect it! And clean it priorly if soiled**
- Ex.: alcohol pads, disinfecting wipes

Reprocessing semi-critical electrophysical reusable devices

...

Contact with non-intact skin or organic fluids (other than sweat) or infected patients or feet

Basic hygiene + additional measures

- Clean or disinfect skin in the treated area prior to application
- **Wear gloves (but don't contaminate surrounding environment/equipment)**
- **Wash hands after glove removal**
- **Additional personal protective equipment according to situation: gowns, goggles ...**

Specific recommendations

- See problem solving case scenarios
- Develop protocols with IPC team
- Consider manufacturer's recommendations
- Consider efficiency, but also environmental risks

Problem solving skills

For the equipment of interest, determine

- What is the risk of infecting the patient?
Contaminating the reusable equipment?
- What would you recommend for solution
(reprocessing/type of device/additional
measures)?
- Innovations suggested to improve
feasability/safety?

#1



[Athlete's Foot | Teresa Trimm | Flickr](#)

- Setting: private practice
- Diagnosis: chronic plantar fasciitis
- Plan: exercises, orthotics, RSWT
- Skin condition: refer to picture
- IPC measures for the probe and gel

#2

- Setting: private practice
- Diagnosis: painful moderate Hallux valgus
- Plan: exercises, mobilizations, orthotics, education, Ultrasound
- Skin condition: seems intact
- IPC measures for probe and gel

#3

- Setting: hospital
- Diagnosis: 6 days post-surgery of the knee.
Insufficient relief with drugs
- Plan: mobilization, exercises, education, IFC
- Skin condition: scars almost completely closed
- IPC measures for sponges and suction cups

#4

- Setting: hospital.
- Diagnosis: acute disabling back pain
- Plan: mobilization, exercises, education, TENS
- Skin condition: looks intact
- Other: isolation for *C. difficile*, diarrhea
- IPC electrodes, wires, apparatus

Complementary resources

- Decision tree, equipment specific recommendations, updates on IPC for electrophysical agents, formation
 - <http://www.electrologic.umontreal.ca/>
- Formation: Infection Prevention and Control/Module 6: Cleaning, Sterilization and Disinfection of Equipment and Devices. Physiotherapy Alberta - eLearning Center
 - https://www.physiotherapyalberta.ca/xchange/continuing_professional_development/elearning_center
- Infection Control Guidelines and fact sheets of Infectious Diseases. Public Health Agency of Canada
 - <https://www.canada.ca/en/public-health/services/infectious-diseases.html>

Contributors on IPC for Eletrologic

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