

# Infection Prevention and Control

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THE STANDARD OF CARE.

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*Nursing standards are expectations that contribute to public protection. They inform nurses of their accountabilities and the public of what to expect of nurses. Standards apply to all nurses regardless of their role, job description or area of practice.*

— *College of Nurses of Ontario*

## Introduction

Ensuring the use of safe, effective and ethical infection prevention and control measures is an important component of nursing care. This practice standard is evidence-based and outlines practice expectations for all nurses<sup>1</sup> in all roles and practice settings.

A practice standard is an authoritative statement from the College of Nurses of Ontario (the College) that sets out the professional basis of nursing practice. All standards provide a guide to the knowledge, skills, judgment and attitudes that are needed to practise safely. They describe what each nurse is accountable and responsible for in practice.

Nurses are expected to be aware of College standards and relevant governmental directives concerning infection prevention and control practices. Public protection is achieved when nurses practise according to the standards.

Knowledge of clinical infection control practices is continually growing and changing. While the principles of infection control (prevention, transmission and control) do not change, specific clinical practices may evolve as a result of new evidence. For this reason, this practice standard provides broad statements and does not include specific clinical practice information. A nurse is expected to consult appropriate resources for clinical advice and access resources in a timely manner. These resources may include, but are not limited to, an infection control practitioner, relevant nursing resources and guidelines from Health Canada and the Ministry of Health and Long-Term Care.

All nurses, in all roles and settings, can demonstrate leadership in infection prevention and control by using their knowledge, skill and judgment to initiate appropriate and immediate infection control procedures.

This practice standard describes a nurse's role in infection prevention and control. There are six sections: standard statements and indicators that outline the basic expectations for nurses, a review of quality practice settings, case scenarios that illustrate how the standards can be applied, an appendix on infection transmission and management, a glossary of clinical terms and a reference list.

**Q. What is the simplest and most important practice a nurse can do to reduce contamination and spread of infection?**



**A. Proper hand hygiene is the single most-important infection prevention and control practice.**

<sup>1</sup> In this document, *nurse* refers to a Registered Practical Nurse (RPN), Registered Nurse (RN) and Nurse Practitioner (NP).

## Standard Statements

### Application of evidence-based measures

*Nurses understand and apply evidence-based measures to prevent and control transmission of micro-organisms that are likely to cause infection.*

#### Indicators

The nurse meets the standard by:

- adhering to appropriate hand hygiene protocols;
- using a systematic approach to care (for example, nursing process) based on current infection control principles and research;
- knowing her/his personal immunization status relevant to the practice setting and taking appropriate action to ensure client protection;
- knowing a client's immunization status relevant to the practice setting and taking appropriate action to ensure protection of clients, others and self (for example, information, referral, isolation, etc.);
- taking all measures necessary to prevent the transmission of infection from the nurse to client(s) or other health care providers;
- seeking advice from her/his primary health care provider regarding the potential for transmission to clients or other health care providers when the nurse has a potentially transmissible disease;
- maintaining competence in infection control practices by accessing appropriate resources (for example, infection control practitioners, current research);
- taking appropriate action when a co-worker has a potentially transmissible disease;
- advocating for an environment and equipment that reduce the risk for disease transmission; and
- advocating for the establishment of and compliance with infection control policies relevant to the practice setting.

### Application of professional judgment

*Nurses exercise professional judgment relevant to each client situation and infection prevention and control practices.*

#### Indicators

The nurse meets the standard by:

- assessing situations for potential or actual infectious disease transmission;
- selecting and using the appropriate prevention measures when micro-organisms are likely to come into contact with the nurse's skin, mucous membranes or clothing;
- modifying her/his practice appropriately when there is a risk of transmitting a disease to clients or other health care providers;
- selecting, in collaboration with the health care team, the appropriate agency, manufacturer and government guidelines regarding the use and fit of personal protective equipment (PPE); and
- advocating for change when agency, manufacturer or government guidelines do not meet infection control requirements regarding the appropriate use and fit of PPE.

**Risk reduction**

*Nurses reduce the risk to self and others by appropriately handling, cleaning and disposing of materials and equipment.*

**Indicators**

The nurse meets the standard by:

- participating in education on the use of safer medical devices and work practices relevant to the practice setting;
- adhering to best practices or manufacturer’s guidelines on the cleaning, disinfecting and disposal of wastes or hazardous material;
- using safety devices (for example, needle-less IV systems, sharps disposal containers, disposable stethoscopes, closed laundry systems) when available;
- following established guidelines when disposing of biomedical waste;
- identifying hazards and the potential for injury;
- intervening and providing appropriate care when an exposure has occurred to client(s), self or another health care provider;
- reporting a breach in infection control technique and taking action to limit damage;
- advocating for safety devices; and
- advocating for changes in practice based on an evaluation or evidence (for example, single-use items).

**Communication**

*Nurses use appropriate and timely communication strategies with clients and their significant others, the health care team and the community when discussing infection prevention and control issues.*

**Indicators**

The nurse meets the standard by:

- incorporating the psychosocial needs of clients and their significant others into the plan of care;
- using appropriate teaching strategies to communicate health information to clients;
- developing creative or innovative communication strategies to overcome factors that could inhibit the therapeutic nurse-client relationship (for example, isolation, masks);
- maintaining open communication with the health care team, including support staff;
- communicating safety concerns to the appropriate authority; and
- advocating for communication systems that protect client confidentiality.

## Maintaining a Quality Practice Setting

Quality nursing care includes safe and effective infection prevention and control practices. As partners, employers and nurses have a shared responsibility to create environments that support quality practice. The College encourages employers and nurses to use the following strategies to develop and maintain a quality practice setting that supports nurses in providing safe, effective and ethical care.

### Care delivery processes

Care delivery processes support the delivery of nursing care/services related to infection prevention and control.

#### Possible strategies include:

- ensuring there is a process to make assignment decisions that recognize work load, knowledge of infectious diseases, and infection prevention and control processes;
- providing accessible, current infection control resources;
- evaluating infection control measures;
- consulting with nurses to identify system problems;
- ensuring a client-centred focus in relation to infection prevention and control processes; and
- supporting nurses to intervene when client safety is threatened.

### Communication systems

Communication systems support information sharing and decision-making about client care and services.

#### Possible strategies include:

- implementing a system to promote information sharing about infection prevention and control among all health care team members;
- developing and maintaining effective conflict management processes; and
- providing opportunities for critical incident debriefing.

## Facilities and equipment

The physical environment and access to equipment can support and increase the efficiency and effectiveness of infection prevention and control practices.

#### Possible strategies include:

- ensuring supplies and equipment are available to support staff in infection prevention and control practices; and
- involving nurses in designing and implementing changes in infection prevention and control systems.

## Leadership

Leadership is the process of supporting others to improve client care and services by promoting professional practice.

#### Possible strategies include:

- involving nurses in planning, implementing and evaluating infection control processes;
- modelling the correct and appropriate use of personal protective equipment;
- designating a person to ensure that evidence-based infection prevention and control policies and procedures exist; and
- providing appropriate educational resources.

## Organizational supports

Organizations support infection prevention and control practices by using appropriate structures and processes.

#### Possible strategies include:

- ensuring that infection control policies and procedures are up-to-date; and
- implementing health and safety programs for all staff, including programs for surveillance, treatment for contacts, screening and immunization.

## Professional development systems

Professional development includes orientation and education related to infection prevention and control.

**Possible strategies include:**

- providing education on the correct use of equipment; and
- developing and using effective methods to inform nurses about new developments in infection prevention and control practices.

**Response systems to external demands**

The timely way in which an organization responds to changes in legislation, consumer demands, health care trends and government directives will impact the nurse's ability to provide care.

**Possible strategies include:**

- establishing policies to reflect government directives related to infection prevention control; and
- ensuring resources are available to follow emergency directives.

## Case Scenarios

These case scenarios illustrate how the principles of infection prevention and control and the standard statements in this document can be applied. They are not all-inclusive, and clinical advice should be sought from appropriate resources.

### Scenario 1

Fatima, a home-visiting nurse, has a client with an open draining wound on her abdomen. A recent culture of the wound found the micro-organism Methicillin-resistant *Staphylococcus aureus* (MRSA).

Fatima meets the standards and reduces the risk to her client, herself and others by:

- identifying the mode of transmission;
- applying hand hygiene principles;
- choosing the appropriate barrier(s) to prevent and control the transmission of the micro-organism;
- applying the principles for safely handling, cleaning and disposing of materials and equipment; and
- communicating effectively according to the College's *Therapeutic Nurse-Client Relationship, Revised 2006* practice standard.

### Scenario 2

A client enters a hospital emergency department complaining of nausea, vomiting, diarrhea and a low-grade fever. As Lisa, an ER nurse, begins to assess the client, he has an episode of diarrhea. In keeping with the hospital's protocol on infection control, Lisa puts on a pair of gloves and a gown before providing personal care and changing the bed linen. The ER is busy, and she finishes with the client by quickly disposing of the soiled laundry and removing her gloves and gown. She then begins to assess the vital signs of her next client. Lisa does not wash her hands before performing her assessment.

By not washing her hands, Lisa potentially transmitted micro-organisms from one client to another, and breached the facility's protocols on infection control. The nurse educator, who observed Lisa's actions, reinforced that **hand hygiene is the single most-important infection prevention and**

**control practice.** The educator highlighted the importance of using hand rinse stations located throughout the ER.

### Scenario 3

Shawn is a nurse in a long-term care facility and is assigned to a client with a respiratory infection. The client is symptomatic and requires various degrees of nursing care.

Shawn meets the standards and reduces the risk to the client, himself and others by:

- knowing that respiratory illnesses are transferred through airborne or droplet mechanisms;
- selecting the appropriate precautions;
- being sensitive to how the infection control barriers affect communication between him and his client;
- washing his hands before and after using personal protective equipment;
- adhering to hospital policies and manufacturer guidelines for the re-processing of equipment;
- ensuring any equipment removed from the client's room is cleaned with an appropriate disinfectant; and
- advocating for equipment that remains within the client's isolation room (not unit shared) or single-use items (for example, disposable stethoscopes).

## Appendix

This section provides information about general infection control practices. For more information, see References on page 12 and/or consult an infection control practitioner.

### Transmission of infection

The spread of infection requires an **infectious agent** — a pathogen that has the potential to cause infection. The pathogen may be viral, bacterial, fungal or parasitic.

The infectious agent needs a **reservoir** where it can live, grow and reproduce. Reservoirs are warm, moist places. Humans, animals or the inanimate environment (for example, water, food, soil and soiled medical equipment) are potential reservoirs. Human reservoirs include individuals with an acute infectious disease, and those who are in the incubation period of the disease and asymptomatic carriers.

The transmission of infection also requires a **susceptible host**. Susceptibility to an infectious agent varies among individuals. Factors that influence a person's susceptibility include age; general physical, mental and emotional health; the amount and duration of exposure to the agent; and the immune status and inherent susceptibility of the individual. Factors such as a chronic debilitating disease, shock, coma, traumatic injury, surgical procedures or treatment with irradiation or immunosuppressive agents increase a person's susceptibility to infection.

How the infectious agent is transmitted from the reservoir to the susceptible host is called the **mode of transmission**. Transfer requires a route for the infectious agent to exit the reservoir (a portal of exit), a mode of travel to the susceptible host (a mode of transmission) and a route to enter the susceptible host (a portal of entry). An infectious agent can exit the reservoir and enter the host through various body systems (for example, respiratory, gastrointestinal, genitourinary tracts, skin lesions) and through mucous membranes.

There are five main modes of transmission.

#### 1. Contact transmission

Direct contact transmission involves contact between the infectious agent and the susceptible host.

Indirect contact transmission involves contact between a susceptible host and a contaminated intermediate object such as a needle, instrument or other equipment.

#### 2. Droplet transmission

Droplet transmission involves contact of the conjunctivae or mucous membranes of the nose or mouth of a susceptible host with large particle droplets (larger than five microns) that contain an infectious agent. Droplets are released through talking, coughing or sneezing, and during procedures such as suctioning and bronchoscopy. Large particle droplets do not remain suspended in the air and generally travel less than one metre through the air.

#### 3. Vehicle transmission

Food, water or medication contaminated with an infectious agent can act as a vehicle for transmission when consumed. Contaminated instruments or devices that come in contact with body tissue or the vascular system can also act as a vehicle for transmission.

#### 4. Airborne transmission

Small particle residue (five microns or smaller) of evaporated droplets may remain suspended in the air for long periods of time, or dust particles may contain an infectious agent. Infectious agents carried in this manner can be widely dispersed by air currents and can become inhaled by, or deposited on, a susceptible host in the same room or over a longer distance, depending on environmental factors.

#### 5. Vectorborne

Vectors such as insects may harbour an infectious agent and transfer it to humans through bites (for example, West Nile virus).

### Preventing transmission of infection

Preventive practice focuses on interrupting the transmission of an infectious agent and includes four major elements. Practices will vary according to practice setting, the level of care that is being provided, and the inherent risk to the client and client population if transmission occurs.

The four major elements to preventive practice are:

1. Handwashing. ***Handwashing is the single most-important infection prevention and control practice.*** It is vital that nurses follow handwashing protocols that are appropriate for their clients and facility.
2. Protective barriers. Examples of protective barriers include gloves, masks, eyewear, gowns and plastic aprons. The appropriate barrier should be used when blood, secretions or bodily fluids are likely to come in contact with the nurse's skin or mucous membranes, or could penetrate clothing.
3. Care of equipment. This involves the appropriate disposal of waste, contaminated laundry and sharps; and the cleaning, sterilization and disinfection of equipment, instruments and devices. Nurses should follow manufacturer and facility protocols in all instances.
4. Health practices of the nurse. Nurses who believe they have been contaminated with an infectious agent should contact their primary health care provider or an occupational health department for follow-up and advice. The nurse should assess the risk of transmitting the infectious agent to others and take appropriate precautions. Nurses should also know and review their immunization status with their primary health care provider.

## Glossary of Clinical Terms

**Alcohol-based hand rinse:** a waterless antiseptic designed for application to the hands to reduce the number of viable micro-organisms. In Canada, such preparations usually contain 70 percent ethyl alcohol.

**Antiseptic:** a substance that destroys or stops the growth of micro-organisms on living tissue (for example, skin).

**Blood-borne pathogens (BBPs):** viruses found in blood which produce infection, such as hepatitis B virus (HBV), hepatitis C virus (HCV) or human immunodeficiency virus (HIV).

**Carrier:** an individual who is found to be colonized (culture-positive) for a particular organism, at one or more body sites, but has no signs or symptoms of infection.

**Disinfectant:** a chemical agent with a drug identification number (DIN) used on inanimate (non-living) objects to kill micro-organisms.

**Disinfection:** a process that destroys or kills some, but not all, disease-producing micro-organisms on an object or surface.

**Exposed:** a circumstance of being in contact with an infected person or item in a manner that may allow for the transfer of micro-organisms, either directly or indirectly, to another person.

**Germicide:** an agent that destroys micro-organisms, especially pathogenic organisms. A product with the suffix “-cide” indicates that it is an agent that destroys the micro-organism identified by the prefix (for example, virucide, fungicide, bactericide). Germicides may be used to inactivate micro-organisms in or on living tissue (antiseptic) or on environmental surfaces (disinfectants).

**Hand hygiene:** a general term that applies to handwashing, antiseptic handwash, antiseptic hand rub (for example, alcohol-based hand rinse) or surgical hand antisepsis.

**Isolation:** the physical separation of infected individuals from uninfected individuals for the period of communicability of a particular disease.

**Micro-organism:** microscopic organisms such as bacteria, virus or fungus, commonly known as germs, that can cause an infection in humans.

**Mucous membrane:** thin sheets of tissue that line various openings of the body, such as the mouth, nose, eyes and genitals.

**Nosocomial infection:** infection acquired in a health care setting.

**Personal protective equipment (PPE):** specialized clothing or equipment (for example, gloves, masks, protective eyewear, gowns) worn by an employee for protection against an infectious hazard. General work clothes (for example, uniforms, pants, shirts or blouses) are not intended to function as protection against a hazard and are not considered personal protective equipment.

**Precautions:** interventions implemented to reduce the risk of transmitting micro-organisms from client to client, client to health care worker, and health care worker to client. Precautions can include gloves, masks, eye protection, gowns and client accommodations. (For more information, refer to the Health Canada publication *Infection Control Guidance in a Non-Outbreak Setting*.)

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