



## Introduction

Respiratory infectious diseases can have dramatic impacts on businesses and organizations in Canada. Employers should consider adding infection prevention and control (IPC or IPAC) principles to their safety or business continuity plans to reduce the impact of these diseases.

Infection prevention and control is a set of principles, practices and procedures designed to prevent people from becoming infected with diseases, and to control disease spread if an infection occurs. Infection prevention and control was developed with the goal of preventing healthcare associated infections and has been implemented successfully in health care, long-term care, and livestock sectors.

This tip sheet briefly explains infection prevention and control principles and highlights how they can be implemented in all workplaces.

## Chain of Transmission

The chain of transmission is the cycle by which a disease spreads through a population or workplace. It is described as having six links, each connecting to the next:

- **Infectious Agent** - The cause of disease such as bacteria, or viruses
- **Source or Reservoir** - Where infectious agents can exist such as hosts (e.g., humans and animals), and high-touch surfaces and objects
- **Portals of Exit** - How infectious agents leave a source such as breathing, coughing, singing, sneezing, talking, and shouting
- **Modes of Transmission** - Ways that infectious agents transfer to a susceptible person. Respiratory infectious diseases are transmitted by respiratory particles in the air or on surfaces
- **Portals of Entry** - How infectious agents enter a susceptible person such as breathing in infectious respiratory particles or touching contaminated surfaces or objects, then touching the eyes, nose, or mouth with unclean hands
- **Susceptible Host** - Those at risk of infection. While many people can get sick with a contagious respiratory disease, some are at increased risk of experiencing more serious complications from infection, including older persons, people who are immunocompromised, pregnant, have lung disease, or are unvaccinated

Disease transmission occurs when an **infectious agent** leaves a **source** through a **portal of exit** and travels by a **mode of transmission** until it finds a **portal of entry** into a **susceptible host**.

It is important to understand and to assess how infectious diseases can be transmitted in the workplace. The chain of transmission can be [broken](#) by implementing multiple [layers of control measures](#) that incorporate infection prevention and control, including routine practices.

## Routine Practices

[Routine practices](#) are the foundation of effective infection prevention and control. They consist of rules and practices that prevent or control disease transmission and are based on the premise that all people are potentially infectious.

Elements of routine practices for protection from respiratory infectious diseases include:

- Assessing infection risk
- Hand hygiene and respiratory etiquette
- Control of the environment
- Administrative controls
- Personal protective equipment (PPE)

## Assessing infection risk

The first element is the act of identifying and assessing the risk of infection in a setting. Once identified, proper controls can be applied to minimize the risk. Trained and experienced workers are better able to identify and assess high risk work activities. Assessments should involve the health and safety committee or representative, workers, and supervisors. Workers can also continually assess work processes and procedures by asking themselves:

- Is this high-touch surface or object a potential source of an infectious agent?

# Infection Prevention and Control for Respiratory Infectious Diseases (RIDs)



- Do job tasks require exposure to infectious agents (e.g., assisting a co-worker or client who is ill)?
- Are people around me showing signs of illness?
- Are the proper control measures in place to perform the task safely?

Risk of infection is often based on the tasks workers are performing and local community disease outbreak conditions. Job task risks can be categorized as:

- Low risk
  - Working alone or in small teams
  - Little or no interaction with others
  - Well-ventilated workspace
  - Setting has many layered occupational health and safety controls and public health measures in place
  - High vaccination uptake for common diseases in the community and workplace
- High risk
  - Interaction with people who are ill or infected (e.g., COVID-19 or the flu)
  - Frequent contact with many people
  - Poorly ventilated workspace
  - Crowded workspaces and working close to others
  - Setting has no layered occupational health and safety controls and public health measures in place
  - Low vaccination uptake for common diseases in the community

Refer to [Risk Assessments for Respiratory Infectious Diseases](#) to learn more about conducting a risk assessment.

## Proper hand hygiene and respiratory etiquette

Proper [hand hygiene](#) is considered by public health experts to be the most important and effective IPC measure to prevent the spread of diseases. Many diseases are spread by hand contact with contaminated surfaces followed by the touching of eyes, mouth, or nose with unwashed hands. Common contaminated surfaces include:

- Handles (e.g., doorknobs, handrails, tools, or equipment)
- Controls (e.g., buttons, levers, or switches)
- Other people (e.g., handshakes, caring for others, performing personal services)

The risk of disease transmission is lowered when all people in a setting, including workers and visitors, perform effective hand hygiene.

Effective hand hygiene includes following the proper procedures at the correct times, such as:

- After touching high-touch surfaces and objects
- After touching your eyes, nose, or mouth
- Before and after eating or handling food, smoking, or taking oral medication
- After coughing, sneezing, or blowing your nose
- After shaking someone's hand
- After handling waste (e.g., used tissues, waste collection and removal)
- Before and after touching a mask or PPE
- After using the washroom

Two methods for [hand hygiene](#):

# Infection Prevention and Control for Respiratory Infectious Diseases (RIDs)



- Water and Soap (preferably liquid or foam soap)
  - Provides very thorough cleaning
  - Effective at removing germs and dirt if performed for at least 20 seconds
  - Preferred method if hands are contaminated or visibly soiled
- Alcohol-based hand rub (ABHR)
  - Must have at least 60% alcohol content
  - Convenient
  - Portable
  - Dispensers can be installed wherever needed
  - Preferred for certain settings

Many infectious diseases spread from person-to-person through respiratory particles. When diseases are prevalent in a community, workplaces should emphasize good respiratory etiquette. When people in a setting have good respiratory etiquette, the risk of disease spread is lowered. Respiratory etiquette involves:

- Covering up sneezes and coughs with tissue or elbow to avoid releasing germs into the air
- Properly disposing of tissues after each use, preferably in a no-touch lined waste container
- Wearing a mask if coughing or sneezing

## Control of the environment

Environmental control refers to controlling and minimizing the level of pathogens (germs) in the environment. Ensuring [optimal ventilation](#) can help reduce the concentration of potentially infectious particles in the air. This can be achieved by natural ventilation (opening windows or doors) or through mechanical ventilation (e.g., Heating, ventilation, and air conditioning systems).

[Cleaning and disinfecting](#) of environmental surfaces or specific tools and equipment is another form of control. Some germs can survive on surfaces for minutes to days, allowing them to spread from person to person. To prevent the spread of disease, clean and disinfect all high-touch surfaces (e.g., handles, switches, and controls) on a routine schedule, when visibly soiled or obviously contaminated. The number of times a surface should be cleaned depends on how often it is touched and by how many different people.

## Administrative Controls

Policies and procedures typically guide workplace control measures. Some of these administrative controls that can help with infection prevention and control include:

- General occupational health and safety policy
- Vaccination policy
- Wellness policy
- Cleaning and disinfecting procedure
- Emergency response plan

For infection prevention and control practices to be effective, workers should be [trained](#) on:

- Proper hand hygiene and respiratory etiquette
- The proper use and care of equipment (e.g., PPE, air purifiers)
- What to do if they or someone in the setting shows signs or symptoms of illness
- Cleaning and disinfecting procedures
- Vaccination against respiratory infectious diseases
- Workplace control measures

Other important factors necessary to maintain effective infection prevention and control:

- Review and adjust the practices as needed and in response to local disease conditions

# Infection Prevention and Control for Respiratory Infectious Diseases (RIDs)



- Review worker adherence to policies, practices, and procedures. Retrain workers if necessary
- Implement systems to maintain adequate supplies of hand sanitizer, soap, and PPE
- Post educational materials prominently for workers and visitors
- Make sure supervisors are trained and competent in infection prevention and control

## Use of personal protective equipment (PPE)

All [PPE](#) must be worn, handled, and disposed of properly. PPE should only be used where appropriate and by workers who are properly trained and fit tested as required. The most common PPE used in infection prevention and control programs are:

- **Eye protection (safety glasses, goggles, or face shields):** physical barrier that prevents germs from entering the body through the moist membranes of the eyes
- **Medical [masks](#):** barrier to help prevent the spread of respiratory particles
- **[Respirators](#) (e.g., N95):** filter most germs from the air while breathing. Wearers should be medically able to use respirators and fit tested to make sure the respirator has a good seal
- **Gloves:** made of materials that germs cannot penetrate. Best used for high-risk activities and must be used in conjunction with proper hand hygiene
- **Gowns:** made of materials that germs cannot penetrate. Often used when contact with infectious material is expected

## Integrating Infection Prevention and Control into a Business Continuity Plan

Integrating infection prevention and control into business continuity plans will help organizations continue to function during an infectious disease outbreak, such as a pandemic. Consider the following when developing a business continuity plan:

- Incorporate appropriate and compatible routine practices into workplace policies and training programs (e.g., create documents, forms, and tools)
- Educate the workforce. Provide workers with regular refresher training on common diseases and how to avoid exposure using personal hygiene practices, as well as how to make sure essential functions continue during an outbreak
- Provide information on vaccination against common diseases to workers. Some professions are more likely to be exposed to diseases (e.g., tattoo artist, correctional officer, veterinarian, or housekeeper)
- Assign program responsibilities to health and safety personnel and managers
- Purchase and maintain adequate PPE stock
- Consider having the work environment and tasks evaluated for infection risks by a professional, and create an [exposure control plan \(ECP\)](#) for all identified hazards
- Consider running an annual flu vaccine clinic for workers or providing paid time off for workers to get the vaccine
- Refer to available reputable resources (e.g., PHAC, local public health authority)
- Monitor infection prevention and control implementation effectiveness and make adjustments if necessary
- Develop a plan for monitoring guidance and requirements from local public health authorities
- Consider plans to quickly respond to outbreaks:
  - Rapid pivot to work-from-home
  - Switching to curbside pickup, online/virtual services, etc.
  - Revising sick leave policies to encourage employees to stay home when they are sick

## Designing a setting with IPC in mind

When renovating or designing new workspaces consider the following design elements to minimize the spread of disease:

- Floor and furniture surfaces that are easy to clean and do not degrade when frequently exposed to cleaning products
- Choosing antibacterial surface materials for high-touch surfaces (e.g., zinc or copper alloys)
- Installing hand sanitizer dispensers in key locations such as building entrances, reception, food consumption areas, outside elevators
- Reducing the number of high-touch points (e.g., washroom entrances without doors, motion activated faucets)

# Infection Prevention and Control for Respiratory Infectious Diseases (RIDs)



- Installing ventilation equipment with high air exchange rate and optimizing air flow patterns (i.e., not directing airflow from person to person)
- Installing in-ventilation or upper-room ultraviolet germicidal irradiation (UVGI) units

## Benefits of integrating IPC principles into a business continuity plan

- Prevents or minimizes the spread and outbreak of diseases
- Preserves the health of workers, visitors, participants, and their families
- Reduces the risk of business slowdown or closure due to absenteeism or public health order
- Boosts company reputation
- Saves labour costs

## Challenges of integrating infection prevention and control into business continuity or safety plans

- Requires organization leaders to monitor their workforce and community disease rates closely
- May create tension with workforce, visitors, or participants who do not want to follow the routine practices
- May increase operating costs for training, supplies, and equipment

## Stay informed, be prepared, and follow public health advice

In the event of an infectious disease outbreak, follow the advice of your local public health authority and [occupational health and safety regulator](#), and adjust your workplace plans and procedures accordingly.

## Resources

[Infection Prevention and Control](#) – Public Health Ontario

[Infection Control](#) – British Columbia Centre for Disease Control

[Infection Prevention and Control](#) – World Health Organization

[Infection Prevention and Control](#) – Government of Alberta

For further information on respiratory infectious diseases, including COVID-19, refer to the [Public Health Agency of Canada](#)

**Disclaimer:** As public and occupational health and safety information may continue to change, local public health authorities should be consulted for specific, regional guidance. This information is not intended to replace medical advice or legislated health and safety obligations. Although every effort is made to ensure the accuracy, currency, and completeness of the information, CCOHS does not guarantee, warrant, represent or undertake that the information provided is correct, accurate or current. CCOHS is not liable for any loss, claim, or demand arising directly or indirectly from any use or reliance upon the information.