

Chapter 9: Infection Control

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Chapter 9 Infection Control

1.0 Introduction

This chapter outlines the basic principles of infection control related to influenza. General information on influenza is presented, including modes of transmission, communicability, incubation period and symptoms. Infection control practices are outlined for the general public. In addition, infection control references for health care and community settings are provided. Adherence to infection control practices is essential to minimize the transmission of influenza. Frequent and careful hand washing is emphasized as a key infection control strategy and may be the only significant preventive measure available, particularly early in a pandemic. If the pandemic virus behaves differently (e.g., different routes of transmission, longer incubation period or period of communicability) infection control practices will be adjusted accordingly.

2.0 General Information on Influenza

2.1 Influenza

Influenza, or the "flu", is a highly contagious and common respiratory illness caused by a virus. Understanding how influenza is spread can help people take precautions to prevent or minimize its transmission. See Chapter 2 for more information about influenza.

2.2 Modes of Transmission

Influenza spreads when infected respiratory secretions from the mouth or nose of one person come into contact with the mucous membranes (eyes, mouth or nose) of another person. The vast majority of influenza is spread from person to person by droplet spread or direct contact. Outside the body the influenza virus may persist for sometime, especially in conditions of low relative humidity and cooler temperatures. Specifically, the influenza virus can survive for 1-2 days on hard surfaces, 8-12 hours on soft surfaces, and 5 minutes on hands, resulting in some spread by indirect contact.

- **Droplet spread** refers to spray with relatively large, short range droplets produced by sneezing, coughing, talking or singing. These droplets may spray a distance of up to one meter (about three feet) before dropping to the ground.
- **Direct contact** occurs when there is immediate transfer of the virus through skin to skin contact or kissing. For example, an infected person may cough into his hand and then shake hands with another person who may then rub his/her eyes.
- **Indirect contact** occurs when the virus is transmitted from an infected person on to an inanimate object and then on to another person. For example, an infected person may blow their nose, then touch an elevator button and then another person touches the same elevator button and touches his/her eyes.

There is controversy over the role of airborne transmission in spreading influenza.

- **Airborne transmission** occurs when aerosolized, infected droplets of a small size (< 5 µm in diameter) remain suspended in air for long periods of times.

2.3 Communicability

Communicability refers to the time period during which the influenza virus can be spread from an infected person to another person. Most adults infected with influenza can transmit the virus from 1 day before and up to 3-5 days after the onset of symptoms. This period may be longer (7 or more days) in children and some adults.

2.4 Incubation Period

The incubation period for influenza is 1-3 days. This means that a person may develop symptoms of influenza 1-3 days after coming into contact with a person with the influenza virus.

2.5 Symptoms

Infection with influenza can result in a wide range of illness. Some people do not have any symptoms. About half of infected people experience some symptoms. These include:

- Sudden onset of fever, headache, chills, muscle aches, physical exhaustion, and a dry cough.
- Subsequent onset of sore throat, stuffy or runny nose, and worsening cough.
- Children may also feel sick to their stomach, vomit or have diarrhea.
- Elderly and immune compromised people may not develop a fever.
- Most people recover in 7-10 days.

3.0 Infection Control Practices for the General Public

There are a number of things people can do to prevent or reduce the risk of getting influenza. These are called "Infection Control Practices":

3.1 Hand Hygiene

Clean your hands frequently with an alcohol-based hand sanitizer or soap and water, especially after you cough, sneeze, or blow your nose. A 60% to 90% alcohol-based hand sanitizer is the preferred agent for hand hygiene unless your hands are visibly soiled. If your hands are visibly soiled you should wash them with soap and water. If you are not near water and your hands are visibly soiled, clean your hands with a moist towelette to remove visible debris. Then use an alcohol-based hand sanitizer. The influenza virus is easily killed by soap, hand wash or hand sanitizer products, and household cleaning products. Therefore gloves or special antibacterial hand wash products are not needed. Hand washing/sanitizing is a very important method to prevent the spread of pandemic influenza before a vaccine becomes available.

Hand Washing Procedure

1. Wet hands and wrists.
2. Apply soap.
3. Lather for 15 seconds. Rub in between fingers, the back of your hands, wrists, and fingertips.
4. Rinse thoroughly.
5. Dry with paper towel or hot air blower.
6. Turn taps off with paper towel, if available.
7. Open bathroom door using paper towel.
8. Discard paper towel in wastebasket.

Hand Sanitizing Procedure

1. Follow the manufacturer's recommendations on the amount of hand sanitizer to use.
2. Apply the alcohol-based sanitizer to the palm of one hand.
3. Rub hands together.
4. Work the sanitizer in between fingers, the back of your hands, wrists and fingertips (covering all parts of the hands and fingers).
5. Keep rubbing your hands until dry.

3.2 Respiratory Etiquette

Cover your mouth and nose when you cough or sneeze. This will help stop the spread of germs that can make people sick. It is important to keep your distance from people who are coughing or sneezing.

Cover Your Cough Procedure

1. Cover your mouth and nose with a tissue when you cough or sneeze, or if no tissues are available, cough or sneeze into your upper sleeve, not your hands.
2. Put your used tissue into the waste basket.
3. Wash your hands with soap and water or clean with alcohol-based hand sanitizer.

3.3 Avoid Touching Your Eyes, Mouth and Nose

Influenza spreads when the infected respiratory secretions from the mouth or nose of one person come into contact with the mucous membranes (mouth, nose or eyes) of another person. Without even realizing it, you may touch the infected nose and mouth secretions of someone who has influenza (e.g. pushing an elevator button). If you go on to touch your mouth, nose or eyes, the influenza virus may gain entry into your body, causing infection.

3.4 Stay Home if You are Ill to Avoid Infecting Others

Most adults infected with influenza can transmit the virus from 1 day before and up to 3 to 5 days after the onset of symptoms. This period may last for 7 or more days in young children and some adults. Some experts believe that the highest concentration of viral shedding occurs early on and decreases quite a bit after 3 days of illness. However there is no clear data on how long a person should wait before returning to their usual activities (e.g. school, work) in order to minimize the risk of infecting others. The best

advice at this time is that adults should return to their usual activities at least 5 days after the onset of symptoms (7 days for young children) or when they feel well enough to return to their duties, whichever is longer. Please see Chapter 10 for information regarding Pandemic Self Care.

3.5 Use of Masks

The use of masks is a difficult and unresolved issue. There is no evidence that the use of masks in general public settings will be protective when the influenza virus is circulating widely in the community. However it is acknowledged that individual people who are wearing a surgical mask properly at the time of an exposure to influenza may benefit from the barrier that a mask provides. The Canadian and provincial plans recommend the use of surgical masks and eye protection for health care workers providing direct care (face-to-face contact) to patients with influenza-like illness. As well, the plans recommend that people who are ill with influenza-like illness who must leave their home to receive medical attention should wear a mask. The plans do not recommend masks as a community-based disease control strategy. However the federal plan states that members of the public may wish to purchase and use masks for individual protection.

The World Health Organization does not have a formal position on the use of masks but will likely be recommending evaluation of the effectiveness of mask use (and respiratory etiquette) with respect to prevention of cases, costs and alleviation of public concern. Although masks may provide some reassurance to people, the effectiveness of this measure in preventing infection in the general community is unknown. If masks are used, they should only be used once and must be changed if wet (because they become ineffective when wet). As well, people who use masks should be trained on how to use them properly to avoid contaminating themselves when removing the mask. In addition, there may be issues of access to masks due to cost or supply shortages and other feasibility concerns.

Further consideration should be given to the wearing of masks in community situations where potential exposure to infectious individuals is likely and unavoidable e.g. care of an ill family member, large public gatherings. Additional research needs to be done on this on an urgent basis.

3.6 Get Vaccinated

The best way to protect your self from seasonal influenza is to get vaccinated every fall. The influenza vaccine (flu shot) is made from particles of killed flu viruses. It contains three different types of influenza viruses (two types of influenza A and one type of influenza B). Doctors and scientists around the world determine the strains of influenza virus that are circulating, and the vaccine is then prepared to protect against the types that are most likely to occur each year. A person who receives the flu shot develops immunity for the types of influenza in the vaccine. The body needs about two weeks to build up protection to the virus, and this protection may last for about four to six months. The influenza virus changes each year, so a different vaccine has to be used each year.

It is important to get vaccinated for seasonal influenza. Although the pandemic strain will be a new strain of influenza, getting vaccinated protects individuals against seasonal strains. Seasonal immunization may also reduce the chances of genetic re-assortment of a new influenza virus.

The influenza vaccine is available free of charge to everyone who lives, works or attends school in the province of Ontario through physicians, workplaces and public health units.

In the event of a pandemic strain of influenza, it is estimated that it will take approximately four to six months to produce a suitable vaccine. During the early stages of a pandemic, vaccine will be in short supply. In this situation, the province will follow the national recommendations for priority groups for influenza immunization, adapting them as required to meet provincial needs and in accordance with the

ethical framework for decision making. Renfrew County & District Health Unit (RCDHU) will work with hospitals and other organizations to ensure that vaccine reaches target groups. When enough vaccine becomes available, RCDHU will organize mass vaccination clinics in order to vaccinate the general public. RCDHU will make public announcements about the time and location of these clinics.

3.7 Environmental Cleaning When Caring for a Person with Known or Suspected Influenza at Home

People sick with influenza may contaminate their surroundings with respiratory secretions from their mouth and nose. As mentioned earlier in this chapter, the influenza virus can live for up to 5 minutes on hands, 8 to 12 hours on soft surfaces, and up to 2 days on hard surfaces. Therefore, some additional cleaning measures should be taken if there is someone in your household with suspected or confirmed influenza. **Remember that frequent and careful hand washing/sanitizing is the single most important method to prevent the spread of pandemic influenza before a vaccine becomes available.**

Housekeeping

- Environmental surfaces (e.g. bathroom counters) and objects (e.g. door knobs) that have been touched by a person with known or suspected influenza should be cleaned every day with your regular household cleaning agent.

Laundry

- Special handling of clothes and linens used by a person with known or suspected influenza is not needed.
- If an item is heavily soiled it should be rolled or folded to contain the heaviest soil in the centre of the bundle. Large amounts of solid soil, which may include feces or blood clots, should be removed from the item with a gloved hand and toilet tissue, and then placed in a bed pan or toilet for flushing. In order to prevent splashing, solid soil should not be removed by spraying with water.
- Use of commercial laundry detergent with household bleach (according to product instructions and where suitable for fabrics) and a normal machine wash are enough to clean soiled clothing and linens in the home.
- After machine washing, machine drying or hanging clothing and linens on a clothes line at home are suitable methods for drying.

Garbage

- Garbage created by a person with known or suspect influenza does not need any special handling and may be placed with your regular household waste for disposal.

4.0 Infection Control Practices for Community Settings

Community settings (e.g. emergency response organizations, child care settings, mortuaries, schools and student residences, and workplaces) must develop infection control and occupational health plans for managing pandemic influenza. See Annex F: Infection Control and Occupational Health Guidelines during Pandemic Influenza in Traditional and Non-Traditional Health Care Settings, Part B of the Canadian Pandemic Influenza Plan (2006) for specific guidelines by each setting. This document can be accessed online at

<http://www.phac-aspc.gc.ca/cpip-pclcpi/>

5.0 Infection Control Practices for Health Care Settings

Health care settings (e.g., acute care, long-term care, ambulatory care, and home care) must develop infection control and occupational health plans for managing pandemic influenza. See Annex F: Infection Control and Occupational Health Guidelines during Pandemic Influenza in Traditional and Non-Traditional Health Care Settings, Part B of the Canadian Pandemic Influenza Plan (2006) for specific guidelines by each setting. This document can be accessed online at <http://www.phac-aspc.gc.ca/cpip-pclcpi/>

1. All Ontario Health Care Settings should refer to:

- The Provincial Infectious Disease Advisory Committee's (PIDAC) document "Preventing Febrile Respiratory Illness" (2005) available online at:

http://www.health.gov.on.ca/english/providers/program/infectious/diseases/ic_fri.html

This document reflects the best expert opinion on the prevention and control of droplet spread febrile respiratory illness. Components of these best practices include: influenza immunization, case finding and surveillance, preventive practice, reporting, and evaluation.

2. The Provincial Infectious Disease Advisory Committee's (PIDAC) document "Best Practices for Cleaning, Disinfection & Sterilization" (April 30, 2006) available online at:

http://www.health.gov.on.ca/english/providers/program/infectious/diseases/ic_cds.html

All health care settings need to routinely screen for febrile respiratory illness (FRI) according to the PIDAC guidelines. See following chart for FRI screening procedure.

Febrile Respiratory Illness Screening and Reporting

1. **At initial contact, each patient should be asked two questions:**
 - Do you have a new or worse cough or shortness of breath?
 - Are you feeling feverish?
2. **If the answer is yes to both questions the patient should be:**
 - Offered alcohol-based hand sanitizer.
 - Provided with a surgical mask to wear.
 - Asked to remain in a separate waiting area or keep at least one metre away from other people.
3. **Health care providers who assess the patient should:**
 - Take droplet/contact precautions (hand hygiene, mask, eye protection).**At initial contact, health care providers should ask the patient:**
 - Have you traveled in the last 14 days? Where?
 - Have you had contact with a sick person who has traveled in the last 14 days?
 - Where did that person travel?

For a current list of countries with health alerts, see
<http://www.phac-aspc.gc.ca/tmp-pmv/index.html>

4. Report immediately to Renfrew County & District Health Unit by phone at 613-732-3629 when there is:

- A positive travel history in a case or contact of a case.
- A possible FRI cluster (group of 4 or more persons with FRI).

In addition, a number of specific documents have been prepared for health care professionals and facilities regarding routine infection control practices:

Physicians in office practice should refer to:

3. "Infection Control in the Physicians Office" (2004) guidelines from the College of Physicians and Surgeons of Ontario. This document is available online at <http://www.cpso.on.ca/> (under "Publications").

Health care facilities should refer to the Public Health Agency of Canada's:

4. "Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care" (1999) available online at <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/99vol25/25s4/index.html>;
5. "Hand Washing, Cleaning, Disinfection and Sterilization in Health Care" (1998) available online at <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/98vol24/index.html> scroll down to the heading "Advisory Committee Statements and Supplements to the CDDR"; and "Prevention and Control of Occupational Health Infections in Health Care" (2002) available online at <http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/02vol28/index.html> scroll down to the heading "Advisory Committee Statements and Supplements to the CDDR".

Long-term care homes should refer to:

6. "A Guide to the Control of Respiratory Outbreaks in Long-Term Care Homes" (2004) from the Ministry of Health and Long-Term Care available online at:
http://www.health.gov.on.ca/english/providers/pub/pubhealth/ltc_respoutbreak/ltc_respoutbreak.html.