

Infection Control Guidelines for Health Care and Community Settings

Introduction and Overview of the Guidelines

This document is considered to be a working draft of infection control guidelines that are to be activated in Interior Health during an influenza pandemic. These recommended practices are meant to assist health care workers, practitioners, and the general public in understanding the measures necessary and equipment/supplies required to limit the spread of the pandemic influenza virus once it is in circulation in the community. In addition, the practices outlined in this document pertain to both traditional health care facilities and other environments where pandemic influenza patients will likely be assessed, treated, and/or observed.

Similar to other sections in the IH PIPP, these guidelines will be updated if epidemiologic and virologic information on the eventual pandemic influenza virus strain indicates that adjustments in approach to infection control are necessary. Users are strongly urged to refer to the most up-to-date version of this document (likely to be available from web-based access – <http://www.interiorhealth.ca>).

Glossary of Terms and Acronyms

Airborne transmission	Refers to the dissemination of either airborne droplet nuclei (small particle residue <5µm in size of evaporated droplets) or dust particles containing the infectious agent. Such microorganisms remain suspended in the air for long periods of time and are widely dispersed by air currents. The microorganisms are inhaled by susceptible hosts, who may be some distance away for the source patient, depending on environmental factors.
Antisepsis	The prevention of infection by topical application of bacteriostatic agents to tissues.
Antiseptic hand rub	A waterless, alcohol-based product that is applied to all surfaces of the hands to reduce the numbers of micro-organisms present.
Avian influenza	An infectious disease of birds caused by type A strains of the influenza virus. The disease occurs worldwide. While all birds are thought to be susceptible to infection with avian influenza viruses, many wild bird species carry these viruses with no apparent signs of harm. Some avian influenza viruses can also infect and cause illness in humans (e.g., H5N1).
BCCDC	British Columbia Centre for Disease Control
Biohazardous	Refers to human tissue, cells, body fluids, or culture materials that may contain infectious or other hazardous materials
Clinical waste	Potentially infectious waste that is generated by human or animal health care facilities, health care teaching establishments, laboratories, pharmaceutical or similar settings.
Cleaning	The physical removal of foreign material (e.g., dust, soil, organics material such as blood, secretions, excretions and micro-organisms). Cleaning physically removes rather than kills micro-organisms. It is accomplished with water, detergents, and mechanical action, and must precede disinfection and sterilization.
Cohort	Two or more patients exposed to, or infected with, the same organism who are separated physically (e.g., in a separate room or ward) from other patients who have not been exposed to, or infected with, that organism.
Cohort staffing	The practice of assigning specific personnel to care only for patients/residents known to be exposed to, or infected with, the same organism. Such personnel would not participate in the care of patients/residents who have not been exposed to, or infected with, that organism.
Contact transmission	Transmission of an infectious agent by person-to-person contact (direct) or via contaminated objects (indirect).
Decontamination	The removal of micro-organisms and/or foreign matter from contaminated materials or living tissue.
Disinfection	The inactivation of non-sporing micro-organisms using either thermal or chemical means.
Droplet transmission	Transmission of infectious agents in droplets from respiratory secretion.
Hand antisepsis	A process for the removal or reduction of resident and transient micro-organisms. This term refers to the use of either antiseptic hand wash or antiseptic hand rub.

Hand hygiene	A general term that applies either to hand washing, or use of an antiseptic hand wash, an antiseptic hand rub, or a surgical handscrub.
Hand washing	Washing hands with plain (i.e., non-antimicrobial) soap and water. A process for the removal of soil and transient micro organisms.
Health care worker (HCW)	Refers to all health care professionals, including students and trainees, and employees of health care establishments, who have contact with patients, or with blood or body substances from patients.
IH	Interior Health Authority
Immunocompromised patient	Person whose immune system is not functioning normally because of an immune deficiency disorder or other disease, or as the result of the administration of immunosuppressive drugs or radiation.
Influenza-like illness (ILI)	Acute onset of respiratory illness with fever and cough, and one or more of the following: sore throat, arthralgia, myalgia, or prostration, which could be due to influenza.
Pandemic influenza	Strain of a novel influenza A virus that: <ul style="list-style-type: none"> • Emerges and for which the population has little or no immunity; • Can spread efficiently from human-to-human; and, • Causes serious illness and death.
Pandemic precautions	Use of PPE when in close contact with pandemic influenza patients (e.g., N95 respirator, surgical mask, gloves, gown, goggles [as necessary]).
Personal Protective Equipment (PPE)	Gloves, gowns, aprons, eyewear, caps and respirators, worn to protect the operator from infectious hazards.
Respirator (e.g., N95)	A high efficiency filter disposable respirator with the capacity to filter up to 95% of airborne particles with an aerodynamic diameter of ≥ 0.3 micron.
Routine practices	Infection control precautions in health care settings that are designed to prevent, or at least minimize, the transmission of infection from both recognized and unrecognized sources of infection. Healthcare workers must exercise caution and wear personal protective equipment whenever there is contact with: <ul style="list-style-type: none"> • blood, • all body fluids, secretions and excretions (except sweat), and • non-intact skin and mucous membranes.
Surgical (procedural) mask	A barrier covering the nose and mouth used in this context to protect the mucous membranes of the wearer from accidental splashes or sprays of respiratory secretions, or other body fluids. Surgical masks may also be used to contain large droplet particles generated by coughing or sneezing persons.
Suspected case	A person who meets the case definition in use at the time prior to confirmation of the diagnosis using laboratory tests.

Background of Influenza Transmission and Recent Research

Potential Routes of Transmission for Influenza in Humans

When influenza viruses pass from human-to-human, as is the case with the normal human seasonal influenza, they are transmitted by contact with virus-containing respiratory secretions.

The three potential modes of the spread of the virus are:

- **Droplet:** Droplet transmission occurs when large (greater than or equal to five micrometer diameter) droplets are generated, propelled a distance of up to one metre and deposited on the mucous membranes or conjunctivae (mouth or nose [possibly eyes]) of another person. Transmission via large droplets requires close contact as the droplets do not remain suspended in the air and generally only travel short distances (usually a metre or less).
- **Contact:** Direct contact transmission occurs when skin-to-skin contact results in the physical transfer of micro-organisms. Direct contact transmission can also occur when a virus contaminates a person's hand and then that person touches his or her mouth or nose (or possibly the eyes). Indirect contact transmission occurs when the virus is transferred to a person's mouth or nose (or possibly eyes) after coming into contact with a contaminated object or surface.
- **Airborne:** When smaller (less than five micrometres diameter) droplets or dust particles containing the infectious agent are produced (e.g., from the evaporation of water from larger droplets) which remain suspended in the air, are dispersed by air currents, and may be inhaled by a person who is some distance from the source patient.

The relative contribution and clinical importance of the different modes of influenza transmission are currently unknown. However, in February 2007, the Public Health Agency of Canada (PHAC) asked the Council of Canadian Academies, a not-for-profit organization whose primary mission is to provide independent, expert assessments of science that is relevant to matters of significant public interest, the following questions:

- Based on existing reviews (or, where needed, original literature generated from seasonal influenza outbreaks and from previous pandemics) how and where are seasonal influenza and pandemic influenza transmitted?
- Based on the conclusions of this review, what is your assessment of the contribution that N95 respirators or surgical masks will make to the prevention of transmission of seasonal and pandemic influenza?

In its report submitted to the PHAC in December 2007, the Council came to the following conclusions:

- The panel asserted that a major route of influenza transmission is through the expulsion of infected particles into the air by an infected person.

- Particles expelled are categorized as ballistic (i.e., follow a ballistic trajectory) or inhalable.
- Inhalable particles are further categorized as nasopharyngeal, tracheobronchial, and alveolar-sized particles depending on where in the human respiratory tract the particles may reach.
- The panel concluded that the relative contribution of the different modes of transmission to the spread of influenza is unclear; however, there is evidence that influenza is transmitted primarily at short-range (less than two metres).
- Short-range influenza transmission may occur by inhalation of tracheobronchial and alveolar-sized particles at short-range or by deposition of nasopharyngeal particles in the upper-respiratory tract, which then cause infection.
- The panel defined a second mode of transmission, contact transmission, as the transfer of virus from an infected individual to a potential host either by direct, physical contact or by indirect contact by touching contaminated surfaces; they determined that despite lacking evidence, contact transmission can occur but is less probable than transmission by inhalation.
- The panel was inconclusive as to whether or not long-range transmission of influenza (transmission over distances greater than 2 metres) actually occurs.

Following from this analysis of the first question, the Council addressed the use of PPE in limiting the transmission of the influenza virus. It came to a number of conclusions:

- The panel concluded that N95 respirators can theoretically protect against the inhalation of nasopharyngeal, tracheobronchial, and alveolar-sized particles.
- Furthermore, N95s offer a physical barrier to contact with contaminated hands, ballistic particles, and some inhalation particles. Fit testing and fit checking combined, with an educational program, will increase the effectiveness of respirators and the rate of adherence to protocols requiring the donning of respirators.
- Surgical masks worn by an infected person may play a role in the prevention of influenza transmission by reducing the amount of infectious material that is expelled into the environment.
- Surgical masks may, like respirators, offer a physical barrier to contact with contaminated hands and ballistic trajectory particles.
- However, the efficiency of the filters of surgical masks to block penetration of alveolar and tracheobronchial-sized particles is highly variable. When combined with the inability to ensure a sealed fit, these factors suggest that surgical masks offer no significant protection against the inhalation of alveolar and tracheobronchial-sized particles.
- The efficiency of the filters of surgical masks to block penetration of nasopharyngeal-sized particles is unknown. The lack of a sealed fit on a surgical mask will allow for the inhalation of an unknown quantity of nasopharyngeal-sized particles and since inhalation

is thought to be the primary route for transmission, surgical masks will most likely be of little use during an influenza pandemic.

- Regardless of the PPE selected, the theoretical ability of a properly selected respirator to protect the wearer from inhalation of infectious material does not always equate with its “real world” effectiveness. Various factors can diminish PPE’s role within the overall hierarchy of controls. They need to be taken into consideration when evaluating the incremental contribution of respirators to preventing influenza transmission.

An additional element to be considered when selecting PPE standards for health care workers in Interior Health during an influenza pandemic is the overall labour and psycho-social issues which may arise. Following from the perceived failures and the lack of protection afforded to health care workers during the SARS outbreaks in Vancouver and Toronto in 2003, workplace safety considerations must also be factored into the PPE to be provided during an influenza pandemic.

While there is a need for ongoing and additional research regarding the transmission of influenza and the best methods of limiting its spread, current best practice standards for PPE protection of infectious hazards may be required from the outset of the pandemic to promote a safe working environment for staff and thus encourage HCWs returning to work during the emergency. It may also be easier to “ramp down” the precautions once the epidemiology of the pandemic virus has been researched versus attempting to “ramp up” precautions should initial measures not be suitable for an extremely virulent strain.

Regulatory Guidelines for Pandemic Influenza Exposure Control in the Workplace

WorkSafe BC 2007 Exposure Control Pandemic Guidelines

In response to the growing concern regarding pandemic influenza, WorkSafe BC drafted guidelines in early 2007 to inform employers of the need to implement procedures to control the spread of viruses. The guidelines require employers to develop and implement an Exposure Control Plan, which includes a number of components meant to protect employees from potential exposures to an influenza virus. While these guidelines are generic for all occupational environments, they also outline various degrees of risk associated with specific employment sectors, and argue that health care settings will require stringent infection control and PPE protocols to mitigate employee exposure in a high risk environment.

What is “Occupational Exposure” to Pandemic Influenza?

The WorkSafe BC guidelines define “occupational exposure” as, “... reasonably anticipated, harmful contact with blood or other potentially biohazardous material that may result from the performance of a worker’s duties.” Exposures which occur in the home, at social functions, or in any other non-work setting do not constitute “occupational exposure.”

The probability of contact being harmful is entirely dependent on the infectious agent and the means by which it is transmitted. In the case of pandemic influenza, “harmful contact” could occur in workplaces including, but not limited to, ambulances, hospitals, long-term care facilities, and group or private homes. “Harmful contact” resulting from the performance of work-related duties could take place, for example, while caring for a patient infected with pandemic influenza or while cleaning a facility where an outbreak had occurred.

Exposure Control Plan (ECP)

An ECP is a plan for avoiding harmful workplace exposure to biohazard agents, and in the case of these WorkSafe BC guidelines, pandemic influenza.

According to the guidelines, if it is reasonable to assume that employees will be exposed to the pandemic influenza virus in a workplace setting while performing their duties, the employer must implement an ECP. WorkSafe BC anticipates that the majority of workplaces will require an ECP.

For many workplaces, the risk of exposure to pandemic influenza will be considered low and accordingly, their ECP will involve relatively few precautions. However, where the risk of “harmful contact” is greater, as is the case with health care workers providing direct patient care, the ECP must be much more thorough in order to enable the workplace to provide sufficient employee protection.

According to the guidelines set forth by WorkSafe BC, an ECP must include the following components:

- A statement of purpose and responsibilities;
- Risk identification, assessment, and control;
- Education and training;
- Written work procedures, when required;

- Hygiene facilities and decontamination procedures, when required;
- Health monitoring, when required; and,
- Documentation, when required.

The following guidelines on infection control practice in health care settings in Interior Health address some of the preceding requirements. Most other sections of the Interior Health PIPP address the other elements of the regulation's standards.

Core Principles of Containment and Infection Control during an Influenza Pandemic

- Adherence to consistent infection control precautions to limit nosocomial transmission.
- Education materials for staff, patients, and visitors about the transmission and prevention of influenza, which are easy-to-understand and applicable.
- Appropriate use of personal protective equipment (PPE).
- Effective practice of routine infection control such as aseptic technique, handling of sharps, reprocessing of instruments, and appropriate use of antiseptics and disinfectants.
- Administrative controls, such as the segregation or cohorting of patients with pandemic influenza from those who have other medical conditions.
- Use of auxiliary measures such as restricting ill workers and visitors from the facility, and posting of pertinent signage.

Infection Control Practices in Interior Health during an Influenza Pandemic

One of the most important mitigation strategies to manage the spread of pandemic influenza will be the infection control practiced during this public health emergency. Interior Health will face pressure to deal with large numbers of patients with pandemic influenza, in addition to “routine” medical emergencies and (where capacity exists) the continuation of non-emergency care.

Hand Hygiene and Cough Etiquette

Hand hygiene is the single most important practice to reduce the transmission of infectious agents in health care settings. During outbreaks of pandemic influenza, strict adherence to current hand hygiene protocols ought to be enforced.

Infection control practices should also include respiratory (“cough”) etiquette, which involves:

- Covering one’s nose and mouth with a disposable, single-use tissue when coughing or sneezing, or coughing/sneezing into the upper sleeve;
- Appropriate disposal of tissues directly after use; and,
- Hand hygiene after coughing/sneezing, and after handling used tissues.

Management of the Coughing and Sneezing Patient, HCW, or Visitor

Patients, in addition to staff and visitors, should be encouraged to minimize potential influenza transmission through the following good hygiene measures:

- Cover your nose and mouth with disposable single-use tissues when sneezing, coughing, wiping, and blowing noses.
- Cough/sneeze into the upper sleeve.
- Cough/sneeze away from other people (if possible).
- Dispose of used tissues in the nearest waste bin directly after use.
- Perform hand hygiene after coughing, sneezing, using tissues, or having had contact with respiratory secretions and/or contaminated objects.
- Keep hands away from the mucous membranes of the eyes, nose, and mouth.
- Certain patients (e.g., the elderly, children) may need assistance with the containment of respiratory secretions; those who are immobile will need a supply of tissues and a receptacle (e.g., a plastic bag) readily at hand for immediate disposal of tissues.
- Where possible, in common waiting areas or during transport (e.g., from the community to an acute care facility, or from one area of the hospital to another), coughing/sneezing patients should wear surgical masks to assist in the containment of respiratory secretions and to reduce environmental contamination.

Use of Personal Protective Equipment (PPE)

PPE is used to protect the wearer from contact with the pandemic influenza virus. During the early phases of a pandemic when the transmission characteristics of the newly emergent virus are not fully understood, immunity to the virus is absent and a vaccine is not available, adherence to appropriate PPE is recommended for all contacts with pandemic influenza patients. In the later phases, recommendations will be updated in light of increasing knowledge about the virus, availability of PPE and availability of antivirals and vaccines.

Appropriate PPE should be worn by:

- All people who provide direct patient care (e.g., doctors, nurses, radiographers, physiotherapists).
- All supporting staff, including medical aides and cleaning staff when working in a room when a pandemic influenza patient is being cared for.
- All sterilizing service workers handling equipment that requires decontamination and had come from a patient with pandemic influenza.
- Admitting staff.
- Family members or other visitors.

N95 Respirators:

- N95 respirators provide a facial fit to the wearer that ensures inhaled and exhaled air travels through the filter medium. If a good facial seal cannot be achieved (e.g., the intended wearer has a beard or long moustache), an alternative respirator such as a powered air-purifying respirator (PAPR) could be used, provided the wearer is trained in its use, and PAPRs are available.
- If a PAPR is unavailable, the HCW should consider the removal of their facial hair.
- Respirators, including N95s, should be used within the context of a respiratory protection program that includes fit-testing, fit-checking, and training. A fit check should be carried out each time a respirator is worn.
- N95 respirators are essential when aerosol generating procedures are being performed (e.g., intubation, suctioning, chest physiotherapy, bronchoscopy or nebulization). They may provide an increased level of safety in other close contact situations. Therefore:
 - It is recommended that all health care workers who have to be in close (within one metre) contact of a pandemic influenza patient, for example, when undertaking procedures relating to examination or treatment of the patient, should wear an N95 respirator, or other appropriate high filtration device.
 - If an N95 respirator is not available a surgical mask should be worn.
 - If N95 respirators are in short supply at any stage of a pandemic, they should be prioritized for use by health care workers undertaking aerosol generating procedures.
 - The respirator should be applied before entering the patient's room. If pandemic influenza patients are cohorted in a common area or in several rooms on a nursing unit, and multiple patients must be visited over a short time, it may be practical to wear one respirator for the duration of the activity. (Ongoing discussions with subject-matter experts across IH are required to address the concept of prolonged use of N95 respirators during periods of a pandemic where supplies are limited. Moreover, such extreme practices as the "re-use" of respirators, if "decontamination" practices are followed, may also have to be addressed during extreme shortages of such supplies.)
- Do not leave a respirator dangling around the neck.
- Upon touching or discarding a used respirator, perform hand hygiene.

Surgical Masks:

- Surgical masks do not protect the wearer from pathogens that are transmitted via the airborne route, but are used to protect the wearer from contact or droplet contamination of the nasal or oral mucosa

Gloves:

- Gloves should never replace the need for hand hygiene.
- Gloves should be worn in accordance with routine precautions (i.e., when contact with respiratory secretions or other body fluids is anticipated (e.g. during provision of oral care, handling soiled tissues). They are not necessary when performing other tasks such as changing bed linen unless the linen is visibly soiled, provided hand hygiene is performed afterwards.
- Gloves should always be replaced between different patient contacts.
- Always perform hand hygiene after glove removal.

Gowns:

- Gowns should be worn when attending to pandemic influenza patients. A disposable gown made of synthetic fibre or a washable cloth gown may be used. The gown should cover the wearer's clothing.
- Gowns are essential when soiling of clothes is anticipated (e.g., during invasive procedures or suctioning, nebulization, bronchoscopy, chest physiotherapy or intubation). In such circumstances, a long-sleeved, cuffed, and fluid repellent gown is recommended.
- If gowns are in short supply, consideration should be given to establishing priorities for their use. For example, if soiling of clothes with a patient's blood or body fluids is anticipated such as during intubation or when holding a patient close to the body (e.g., paediatric patient).
- Gowns should be worn only once and then placed in waste or laundry receptacle, as appropriate and hand hygiene performed.

Protective eyewear (goggles/visor/shield):

- In general, wearing goggles or a face shield for routine contact with patients with pandemic influenza is not necessary, unless sprays or splatter of infectious material is likely especially if the patient is not wearing a surgical mask at the time.
- Protective eyewear should be worn during aerosol generating procedures (see below).
- These items should be removed and decontaminated between patient uses, according to manufacturer's instructions.

PPE for Aerosol-Generating Procedures:

Please note that such procedures ought to be done in a negative pressure room. During procedures that may generate aerosols, the use of full PPE is essential, such as:

- A properly fitted N95 respirator.

- A disposable fluid-repellent, long-sleeved gown (wear a plastic apron if splashing of blood, body fluids, excretions or secretions is anticipated and a fluid repellent gown is not available).
- Gloves.
- Protective eyewear.
- Disposable theatre-type cap.

Table 1: Personal Protective Equipment during an Influenza Pandemic

	Entering patient room, but no close patient contact	Close patient contact (<1 metre)	Aerosol generating procedure being performed
N95 respirator	No	Yes	Yes, or PAPR
Surgical mask	Yes	Only if N95 unavailable	N/A
Gown	No	Yes	Yes
Gloves	No	Yes	Yes
Eyewear	No	Yes, if body fluid exposure anticipated	Yes
Cap	No	No	Yes
Apron	No	Yes, if splashing possible and impermeable gown not available	Yes, if impermeable gown not available

Donning and Doffing Personal Protective Equipment (PPE)

Donning order of PPE should as follows (when all are used):

- Hand hygiene
- N95 respirator
- Eye protection
- Gown
- Cap
- Gloves

Dooffing order of PPE should be as follows (when all are used, and preferably in the designated anteroom, if available):

- Gloves
- Cap
- Gown
- Hand hygiene
- Eye protection
- N95 respirator (remove straps and pull N95 directly away from face after leaving the room)
- Hand hygiene

Environmental Infection Control

Clinical and Non-Clinical Waste

No special handling procedures beyond those for Routine Infection Control Principles are recommended for clinical and non-clinical waste that may be contaminated with influenza virus. Waste generated within the clinical setting should be managed safely and effectively, with attention paid to the disposal of items that have been contaminated with secretions/sputum (e.g., paper tissues), in addition to other routine and domestic waste management. Refer to the local waste policy as needed.

Liquid waste such as urine and feces can be safely disposed of into the sewage system. All waste collection bags should be tied and sealed before removal from the patient area. Gloves should be worn when handling ALL waste and hand hygiene performed after removal of gloves.

Linen and Dishes

- Routine precautions should be applied when handling dishes, linen, and waste.
- Disposable dishes are not required. Some areas may wish to use these for operational reasons.
- Dishes should be returned directly to the meal tray cart.
- Linen should be transported from the patient's room in closed laundry bags. Wet items should be contained in a plastic bag lined inside a laundry bag.
- Gloves and aprons should be worn for handling all contaminated linen.
- Hand hygiene should be performed after removing gloves.

Environmental Cleaning and Disinfection

- Pandemic Treatment areas should be cleaned daily at a minimum and after patient discharge. Cleaning schedules (may vary by setting).
- Use detergent and hot water for cleaning and disinfection.
- Damp, rather than dry dusting, should be performed to avoid generating dust particles.
- No re-dipping of clothes.
- Dedicated or single-use/disposable equipment should be used.

Patient Care Equipment

- Soiled patient care equipment should be handled in a manner that prevents exposure of skin and mucous membranes, and contamination of clothing and the environment.
- Equipment that is visibly soiled should be cleaned promptly with hospital approved cleaner or wipe.
- Disposable equipment should be used as much as possible (e.g., thermometer).
- Reusable equipment (e.g., stethoscopes) must be scrupulously decontaminated between each patient.
- Empty bed pans and urinals by carefully pouring contents into toilet. Avoid aerosol generation and do not clean using hoses or hoppers. Ideally the staff should use a closed system such as a washer disinfectant to dispose of body fluids.

- All patient care equipment must be cleaned following the Health Canada recommendations published in Infection Control Guidelines Hand Washing, Cleaning, Disinfection and Sterilization in Health Care (1999).
- Whenever possible, non-critical patient equipment should be dedicated for use by pandemic influenza patients only.
- Use of equipment that re-circulates air (e.g., fans) should be avoided.

Table 2: Recommended Disinfectants for Pandemic Influenza Virus

Disinfectants	Recommended use	Precautions
Accelerated hydrogen peroxide or Quat Disinfectant Cleaners	Disinfection of material potentially contaminated with blood and body fluids	<ul style="list-style-type: none"> ▪ Follow manufacturer's instructions; wear appropriate PPE
Alcohol (when disinfectants above are not available and when surface is clean):	Smooth metal surfaces, tabletops, and other surfaces on which bleach cannot be used (and when already clean)	<ul style="list-style-type: none"> ▪ Flammable, toxic, to be used in well-ventilated area, avoid inhalation ▪ Keep away from heat sources, electrical equipment, flames, hot surfaces ▪ Allow it to dry completely, particularly when using diathermy as this can cause diathermy burns ▪ Follow manufacturer's instructions

Setting-Specific Guidelines

Ambulatory Settings (General Practices, Hospital Emergency Rooms, Community Health/Alternative Care Centres)

During a pandemic, people with suspected or confirmed pandemic influenza may telephone or present to community health care settings (e.g., GPs' offices, hospital emergency rooms, alternative care sites). In this situation, the objective is to prevent transmission to attending health care staff and patients.

i. General principles

Post visual alerts (in appropriate languages) at the entrance to the facility instructing persons with respiratory symptoms to:

- Inform reception and other health care personnel when they first register for care.
- Practice respiratory hygiene/cough etiquette.
- Request and wear a surgical mask.

Triage patients calling for medical appointments for influenza symptoms:

- Discourage unnecessary visits to medical facilities.
- Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

ii. Information and education measures

Post signs that promote cough etiquette in common areas (e.g., waiting areas and toilets) where they can serve as reminders to all persons in the health care facility. Signs should instruct persons to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions.
- Wear a surgical mask if they have respiratory symptoms.

Facilitate adherence to respiratory hygiene/cough etiquette. Ensure the availability of materials in waiting areas for patients and visitors:

- Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand wash product.
- Provide soap and disposable towels for hand washing where sinks are available.
- Provide surgical masks for use by those with respiratory symptoms.
- Promote the use of surgical masks and spatial separation for persons with symptoms of influenza.
- Offer and encourage the use of surgical masks by symptomatic persons to limit the dispersal of respiratory droplets.

- Encourage coughing persons to sit at least a metre from other persons in common waiting areas.
- Consider arranging a specified time for the assessment of patients with suspected pandemic influenza.

iii. Patient placement

- Where possible, designate separate waiting areas or rooms for patients with symptoms of pandemic influenza. Place signs indicating the separate waiting areas.
- If this is not feasible, a waiting area should be set up to enable patients with respiratory symptoms to sit as far away as possible (at least one metre) from other patients.
- Place symptomatic patients in an evaluation room as soon as possible to limit their time in common waiting areas.

iv. Other measures

Prior to clinical assessment:

- During a pandemic, any patient who telephones or presents for an appointment should immediately be questioned to determine if he or she could be an infectious case.
- The suspected case should be provided with a surgical mask upon entering the facility and separated from other patients and staff, prior to assessment by a doctor or nurse.

During clinical assessment of an infectious case:

- The attending doctor should wear appropriate PPE consisting of gown, gloves, eye protection (if body fluid exposure is anticipated) and properly fitted N95 respirator when examining the patient or taking clinical samples.
- Use disposable items for examination where possible.
- If seen by a GP who considers that the patient needs immediate hospitalization, the GP should telephone the ambulance service (or other available transportation service in use during a pandemic) and advise the ambulance officer that the patient is a potentially infectious case.
- The attending ambulance officer should wear the recommended PPE and inform the receiving hospital Emergency Department or clinic prior to the patient's arrival.

Following clinical assessment of a suspected case:

- Attending HCWs should avoid touching their own eyes, nose and mouth until they have removed themselves from the vicinity of the case, disposed of their gloves, eyewear (if used), respirators and gowns, and washed their hands.
- Used respirators, gown, and gloves should be disposed of in general waste and reusable PPE (i.e., goggles/visor/shield) should be cleaned and disinfected as per the manufacturer's instructions.
- If the patient is discharged home, then the patient should be advised to avoid contact with other persons until the infectious period has passed, and should be provided with written information advising the patient what infection control precautions to take and what actions to take if the symptoms worsen.
- Non disposable equipment used on the patient should be cleaned and disinfected according to manufacturer's instructions.

Hospitalization Settings

i. Patient placement and care

- Limit admission of influenza patients to those who cannot be cared for in the home.
- As is feasible, a treatment area should be designated with a single point of entry/exit. Any additional entrances should be rendered useable for emergency use only during a pandemic.
- The “pandemic patient treatment area” will be clearly outlined using visible signage. An improvised physical barrier (e.g., yellow tape, room divider, polyethylene drapes, etc.) should be used where necessary, and a person reminding patients, staff, and visitors of the need for PPE/sanitation/hygiene should be employed where necessary.
- All staff and visitors entering the pandemic treatment area shall don the appropriate PPE.
- As is feasible, each pandemic treatment area shall have a designated anteroom set up for the purposes of donning and doffing pandemic precautions PPE. All persons entering/exiting the treatment area shall enter/exit through the anteroom.
- The admitted patient should immediately be isolated in a single room (negative pressure, if available), and should wear a surgical mask until he or she is advised to remove it by attending staff. If the patient is a child, this may not always be possible. Any caregiver remaining with the child should be given a surgical mask to wear while in the room.
- The door to the patient’s room should remain closed (if applicable) and attending staff and the patient should be informed of this requirement, including appropriate signage.
- The patient’s movement should be restricted. If the patient must leave his or her room, then he or she should only do so while wearing a surgical mask.
- If oxygen is required, nasal oxygen prongs should be used and covered with a surgical mask. If high-flow oxygen is required, a non-rebreather oxygen mask should be used
- Nebulizers should not be used in any patient suspected to have pandemic influenza because of the infection control hazards associated with their use, and the increasing body of evidence that spacers are just as effective in delivering the medication. Other high risk activities that disrupt the airway such as suction and intubation need to be performed with caution and will require the use of N95 respirators by all HCWs involved
- Disposable equipment should be used wherever possible during the treatment and care of pandemic influenza patients and should be disposed of appropriately. If equipment is to be re-used, it should be cleaned and disinfected in accordance with the manufacturer’s instructions.

ii. Cohorting

- Designated units or areas of a facility should be used for cohorting patients with pandemic influenza. During a pandemic, other respiratory viruses (e.g., non pandemic influenza, respiratory syncytial virus, parainfluenza virus) may be circulating concurrently in the community. Therefore, to prevent cross-transmission of respiratory viruses, whenever possible assign only patients with confirmed pandemic influenza to the same room. At the height of a pandemic, laboratory testing to confirm pandemic influenza is likely to be limited, in which case cohorting should be based on having symptoms consistent with pandemic influenza
- Personnel (clinical and non-clinical) assigned to cohorted patient care units for pandemic influenza should not “float” or otherwise be assigned to other patient care areas. The

iv. Visitors

- Screen visitors for signs and symptoms of influenza before entry into the facility and exclude persons who are symptomatic.
- Family members who accompany patients to the hospital are assumed to have been exposed to influenza and should take measures such as careful attention to hand and respiratory hygiene and keeping a distance of one metre from other people in the hospital. Keep the numbers of family members accompanying the patient to a minimum.
- Limit visitors to persons who are necessary for the patient's emotional well being and care.
- Visitors should be educated about influenza transmission and infection control principles and practices.
- When entering the patient's room, visitors should wear a surgical mask, be instructed to maintain a distance of at least a metre from the patient and to perform hand hygiene upon leaving.

v. Control of nosocomial pandemic influenza transmission

- Once patients with pandemic influenza are admitted to the hospital, nosocomial surveillance should be heightened for evidence of transmission to other patients and health-care personnel.
- Appropriate control measures should also be implemented. These may include:
 - Cohorting of patients and staff on affected units
 - Restriction of new admissions (except for other pandemic influenza patients) to the unit(s) with the pandemic influenza patient
 - If nosocomial transmission is detected in the hospital, consider only allowing admissions to the hospital of pandemic influenza patients
 - Restriction of visitors to the affected unit(s) to those who are essential for patient care and support (if nosocomial transmission detected, consider these restrictions hospital wide).

Transport Settings (e.g., ambulances)

Patients with severe pandemic influenza or disease complications are likely to require emergency transport to hospital. The following information is designed to protect ambulance personnel (or other types of personnel should alternative methods of transport be required).

- i. Screening of patients
 - Screen patients requiring ambulance transport for symptoms of influenza.
- ii. Source control
 - All suspected or confirmed pandemic influenza patients should wear a surgical mask during transport. If this is not possible due to the clinical condition of the patient use the most practical alternative to contain respiratory secretions.
 - Consider routine use of surgical masks for all patient transport when pandemic influenza is in the community.
- iii. Staffing and PPE
 - Follow routine contact, droplet and where possible, pandemic precautions when transporting suspected or confirmed pandemic influenza patients.
 - The number of staff caring for the patient should be minimized. If the patient is to be transferred then the original crew should be utilized if possible.
 - All attendants who are in close (within one metre) contact with the patient or involved in any aerosol generating procedure should wear appropriate PPE for the duration of the trip consisting of gown, gloves, eyewear (if body fluid exposure is anticipated) and an N95 respirator.
 - Consideration could be given to having dedicated influenza teams for patient transport.
- iv. Communications and record keeping
 - The hospital, the ambulance will attend should be notified.
 - Ambulance services should keep accurate records of any attendances and/or transports of suspected pandemic influenza cases. This information should include the officers who cared for the patient and any potential breaches in infection control.
- v. Patient equipment
 - Disposable equipment is preferred in the treatment and care of patients with suspected pandemic influenza and, this should be disposed of appropriately. If equipment is to be reused, it should be reprocessed in accordance with the manufacturer's instructions:
 - If oxygen is required, nasal prongs should be used and covered with a surgical mask. If high-flow oxygen is required, a non-rebreather oxygen mask should be used. If needed, positive pressure ventilation should be performed using a resuscitation bag-valve mask.

- If aerosol generating procedures need to be performed to support life whilst in transport, these high risk procedures should be performed with caution and full PPE including an N95 respirator is required for all HCWs involved.
- If the patient requires treatment with a nebulized medication, consideration should be given to using a spacer instead.

vi. Cleaning and disinfection

- After transport the ambulance should be left for a period of 10 minutes to allow droplets to fully settle on surfaces, with the windows and doors left open.
- Surfaces should then be cleaned as outlined above (Environmental Infection Control).
- Cleaning personnel should wear gloves, gown, eye protection (if body fluid exposure is anticipated) and a surgical mask.
- All reusable equipment should be processed in accordance with manufacturer's instructions.

Residential Care Settings

Residents of nursing homes and other residential care facilities will be at particular risk of pandemic influenza and disease complications. Pandemic influenza can be introduced through facility personnel and visitors and once a pandemic influenza virus enters such facilities, controlling its spread is problematic. Therefore, as soon as pandemic influenza has been detected in the region, nursing homes and other residential care facilities should implement aggressive measures to prevent introduction of the virus.

The basic infection control principles and practices such as hand and respiratory hygiene, spatial separation of patients, and environmental cleaning and disinfection should be adhered to.

i. Prevention or delay of pandemic influenza virus entry into the facility

Control of visitors:

- From the very early phases people with suspected pandemic influenza and their contacts will be advised to stay at home and should therefore not be visiting residential care facilities.
- Once the virus is easily transmissible between humans, consider reinforcing the control of visitors by posting visual alerts at the entrance to the facility restricting entry by persons who have been exposed to or have symptoms of pandemic influenza.
- As necessary, enforce visitor restrictions by assigning personnel to verbally and visually screen visitors for respiratory symptoms at points of entry to the facility.

Control of staff:

- Once the virus is easily transmissible between humans, consider implementing a system to screen all personnel for influenza-like symptoms before they commence work each day.

ii. Monitoring patients for pandemic influenza

Despite aggressive efforts to prevent the introduction of pandemic influenza virus, persons with asymptomatic or pre-symptomatic disease could introduce it to the facility. Early detection of the presence of pandemic influenza in a facility is critical for ensuring timely implementation of control measures. As soon as there has been effective human-to-human transmission of the virus, increased surveillance for influenza-like symptoms ought to be activated.

iii. Control measures

Once a case of suspected or confirmed pandemic influenza is detected in a residential care facility, the following control measures should be implemented:

- Public health units will give guidance for determining when these measures can be ceased.
- Wherever possible, residents should not leave the facility during the period that the measures are in place.

- Residents should only be transferred to a hospital for acute medical conditions that cannot be managed in the residential care facility.
- iv. PPE for staff
- If symptoms of pandemic influenza are apparent, implement droplet and contact precautions for the resident and roommates, pending confirmation of pandemic influenza virus infection.
 - Any staff member undertaking examination or treatment procedures that require close (within one metre) contact or any aerosol generating procedure with an infectious patient should use a properly fitted N95 respirator.
 - If N95 respirators are in short supply, staff should wear a surgical mask when in close contact with symptomatic residents.
- v. Movement restrictions for index case and contacts
- Once a resident has been diagnosed with pandemic influenza, roommates should be regarded as exposed contacts. Patients and roommates should not be separated or moved out of their rooms unless medically indicated.
 - Restrict the ill resident and roommates to their room for at least seven days, or until asymptomatic.
 - The ill resident should wear a surgical mask to restrict droplet spread when others are in the same room.
 - The resident should not be transferred to hospital unless their condition cannot be managed in the facility.
 - If the outbreak is confined to one unit, all residents and staff from that unit should avoid contact with residents in the other units of the facility.
- vi. Movement restrictions for entire facility
- Limit movement within the facility (i.e., temporarily close the dining room and serve meals on nursing units, cancel social and recreational activities).
 - Admission of new residents during the outbreak is not recommended.
 - The return from hospital of residents who left the facility during the outbreak is permitted (because they are likely to already have been exposed) provided appropriate care can be provided.
 - The return from hospital of patients who left the facility before the outbreak commenced is generally not recommended unless there is adequate staff and the patient can be provided with antiviral prophylaxis from the facility.
 - Reschedule non-urgent medical appointments during the outbreak.
 - If a resident is transferred to hospital during the pandemic, details of the influenza status (i.e., whether any residents are infected with pandemic influenza) of residents in the facility must be provided to the hospital and those transferring the patient.
 - Any transfer to hospital of a resident within the facility during the course of the outbreak should be avoided if possible. Transfer to hospital for elective procedures is not recommended.
 - Resident transfers from anywhere in the facility to another facility is not recommended during the outbreak.

vii. Recommendations for staff

- Ideally, all staff (including volunteers) who are working in the facility at the time a case is detected should not work in other settings until the outbreak has ceased.
- Staff should report any illness to the designated team leader (e.g., manager, OH&S lead).
- In general, symptomatic staff should be sent home until they are no longer infectious.
- Cohorting of staff should be considered (i.e., staff working on an affected unit should not work on other units).

viii. Visitors

- During the outbreak, signage should be used to notify visitors that an outbreak is occurring and there is a potential risk of infection.
- Next of kin/guardian of ill residents should be notified.
- Visitors should be screened for respiratory illness and not permitted to enter the facility if unwell.
- Visitors who choose to visit during the outbreak should be advised to only visit the resident they have come to see.
- Visitation by groups should not be permitted.
- Signage should be placed on the door of the ill residents' rooms. It should advise visitors to check with the nursing station before entering the room. Visitors should be advised to:
 - Wash hands on arrival and just before leaving the room
 - Wear a surgical mask and maintain a distance of greater than one metre from the symptomatic resident
 - Visit ill residents in their rooms only.

Home Health

Home health care includes nursing, allied health and rehabilitative services performed in the home. The scope of services ranges from assistance with activities of daily living to wound care, occupational therapy, and chronic ambulatory peritoneal dialysis.

Communication between home health care providers and patients or their family members is essential for ensuring that these personnel are appropriately protected.

When pandemic influenza is circulating in the community, home health agencies should consider contacting patients before the home visit to determine whether persons in the household have an influenza-like illness. If patients with pandemic influenza are in the home, consider:

- Postponing non-essential services.
- Assigning providers who are not at increased risk of complications of pandemic influenza to care for these patients.
- Consideration should be given to using a minimum number of staff to care for pandemic influenza patients.

Home health care providers who enter homes where there is a person with suspected or confirmed pandemic influenza should follow the same infection control principles and practices that are recommended for other health care providers. Communication with the household ahead of the visit will be important to ensure the patient is wearing a surgical mask and to assist the provider in deciding when to apply PPE. In case suitable hand washing facilities are not available, the provider should bring alcohol based hand hygiene products along with PPE.

Schools, Childcare, and Workplaces

In these settings, infection control for pandemic influenza should focus on:

- Keeping people who meet the suspected or confirmed case definition for pandemic influenza and who are potentially infectious away from the facility.
- Keeping contacts of the above away from the facility.
- Promoting respiratory and hand hygiene.
- Isolating from others (by at least one metre) any person with respiratory symptoms, ensuring that person wears a mask and arranging for a medical assessment.
- When the pandemic is circulating in the community this may be extended to keeping a distance of over one metre between all people regardless of symptom status.
- School administrators and employers should ensure that materials needed for hand and respiratory hygiene are available (i.e., tissues and receptacles for their disposal and hand washing products).
- If schools or childcare centres are to be closed, administrators and employers will be advised by their state or territory government.