

Interim Guidance: Infection prevention and control measures for Health Care Workers in Acute Care Facilities

Human Cases of Pandemic (H1N1) 2009 Flu Virus

This fact sheet has been developed to provide interim guidance to health care workers (HCWs) in the infection prevention and control management of suspected or confirmed cases with Pandemic (H1N1) 2009 Flu Virus (H1N1 2009).

This Interim Guidance is designed to help slow (mitigate) the transmission of this virus; **it is expected that the infection prevention and control recommendations (particularly recommendations related to respiratory protection) may change as further information about the epidemiology (e.g., mode of transmission) and clinical course (e.g., mild or severe disease) of this virus is available and the outbreak evolves.** In this document, a point of care risk assessment approach is used to guide decisions regarding the type of droplet precautions/respiratory protection to apply ([LINK to Appendix A](#)).

Source control, achieved through administrative and engineering measures, is the most effective way to prevent the transmission of infectious agents, including H1N1 2009, in all health care settings.

This guidance document is being provided by the Public Health Agency of Canada in response to the Pandemic (H1N1) 2009 Flu Virus outbreak. Please note that this document replaces previous guidance with respect to *Interim Guidance: Infection prevention and control measures for Health Care Workers in Acute Care Facilities* of May 11, 2009. This guidance is based on current, available scientific evidence about this emerging disease, and is subject to review and change as new information becomes available. The following guidance should be read in conjunction with relevant provincial and territorial guidance documents. The Public Health Agency of Canada will be posting regular updates and related documents at www.phac-aspc.gc.ca. The content of this document has been informed by discussion with and technical advice provided by the Infection Control Expert Advisory Group to PHAC.

At this time the evidence suggests that the incubation period for H1N1 2009 is up to 7 days and individuals may remain infectious for up to 7 days. These timelines are similar to prior experience with human swine influenza viruses. Spread of H1N1 2009 has been almost exclusively in the community setting to this point, and this is where most exposures for the general public and health care workers alike will occur. The clinical picture to date of human illness from H1N1 2009 for most individuals is one of mild disease however, some will experience severe disease. H1N1 2009 is susceptible to the antiviral agents, oseltamivir and zanamivir, which represent therapeutic options for individuals in whom treatment is indicated. This information on morbidity and mortality and treatment options has been taken into account when updating this guidance. As noted above, as this virus spreads throughout the world, the clinical and epidemiological picture may change, requiring further modifications to this guidance. **One goal of this revised guidance is, using a risk assessment approach, to support use of personal protective equipment most appropriate to the risk associated with the care to be provided, thereby protecting limited resources for those situations where protection is most needed.** [Link to epi summary](#)

The following criteria for influenza-like illness (ILI) can be used to determine the need for applying the infection prevention and control measures found in this guidance:

- Acute onset of respiratory illness with cough, with or without fever (in children under 5 years of age and adults 65 years of age and older fever may not be present with infection; additionally, fever has not been a consistent symptom with H1N1 2009; in children under 5 years of age GI symptoms may also be present)
- And one or more of: sore throat, arthralgia, myalgia, or prostration that could be due to influenza. [Link to ILI screening criteria](#)

It should be noted that the ILI screening criteria above will also capture individuals who meet the criteria for severe respiratory illness (SRI). Individuals with SRI have chest radiograph findings of pulmonary infiltrates in addition to the screening criteria noted below. It should also be noted that these screening criteria above will be updated as the epidemiological situation evolves.

Until the etiology is known, **in addition to Routine Practices**, infection prevention and control measures in health care facilities for **all ILI cases suspected or confirmed to be due to H1N1 2009** should include:

1. Source Controls
2. Respiratory Hygiene (also known as Respiratory Cough Etiquette)
3. Hand Hygiene
4. Accommodation
5. Contact Precautions

¹Surgical or high-quality procedure mask.

6. Droplet precautions/Respiratory protection (Mask¹/N95 Respirator; and eye or face protection)
7. Reporting

Routine Practices and Additional Precautions as outlined below are to be practiced with symptom(s) onset and until symptoms have resolved.

1. **Source Controls** (engineering [e.g. glass/acrylic glass partitions in triage areas] or administrative [e.g. patient flow])

The importance of applying administrative and engineering controls as the first strategy in protecting the HCW from exposure to infectious agents in the health care setting cannot be overemphasized. Health care organizations should complete assessments of each area of all of their acute care facilities including physical settings (e.g. single rooms, use of partitions, ability to establish 2 metre distance between ILI cases and others), the types of patients seen, and the types of patient care activities undertaken. Based on these assessments, organizations need to determine what administrative and engineering controls are needed. **This is especially important for patient care areas/settings where patients appear for initial assessment/investigation before a diagnosis of H1N1 2009 has been made.**

In Emergency Departments (ED) and other acute assessment clinics (i.e. where patients present for assessment of new symptoms/illness) the following strategies are suggested:

- Post signs prior to entering the ED/acute assessment clinic to direct patients who have come with respiratory symptoms to the designated triage area. Signage should be language-specific and reading level appropriate.
- Provide masks¹ to all patients self directing to the triage area designated for patients with respiratory symptoms. Provide instructions on the proper use and disposal of masks¹ and on how to perform hand hygiene.
- For patients who are unable to wear a mask¹, provide tissues for use (i.e., when coughing, sneezing, or controlling nasal secretions) and instructions on how and where to dispose of them, and the importance of hand hygiene after handling this material.
- If a designated triage area is not available, designate an area in waiting rooms where patients with respiratory symptoms can be segregated (ideally by 2 metres) from patients, visitors, and staff who do not have respiratory symptoms.
- Provide dispensers of alcohol based hand rubs at points of care and at entrances to and exits from ED/acute assessment clinics.
- Provide hands-free garbage and laundry receptacles.
- Remove magazines and toys from the waiting rooms to reduce potential contact exposure.

Where there is a physical barrier:

If performing triage from an enclosed area and conducting the initial interview from behind a physical barrier (e.g., glass/acrylic glass partition), the HCW will not require any droplet precautions/respiratory protection.

Where there is no physical barrier:

If performing triage from an open area, where there is not a physical barrier, see #6 (Droplet Precautions/Respiratory Protection) to guide decisions regarding whether to use a mask¹ or N95 respirator.

It should be noted that source control and practicing respiratory hygiene is often not feasible in paediatric patients.

In elective ambulatory care clinics (e.g. physiotherapy clinics, Well Baby and Well Woman clinics, outpatient follow-up clinics), where patients present for appointments:

- It is suggested that clinic visits for patients who are ill with ILI symptoms be deferred until they are well.
- This may be facilitated by reminder calls to patients to reschedule their appointments if they have ILI, and by signage at the entrance to the clinic reminding patients to not attend clinic and to reschedule for when their symptoms have resolved.

¹Surgical or high-quality procedure mask.

2. **Respiratory Hygiene (Respiratory Cough Etiquette):**

Suspect ILI cases should be taught to perform hand hygiene (See #3 below).

Suspect ILI cases should also be taught how to perform respiratory hygiene practices (coughing into sleeve, using tissues, wearing a mask¹).

Suspect ILI cases should wear a mask¹ (if tolerated) when HCWs, or other staff or visitors are present.

3. **Hand Hygiene**

HCWs should perform hand hygiene frequently (as per the healthcare organization's policies) using either alcohol based hand rubs (60-90%) or soap and water.

4. **Accommodation:**

Suspect ILI cases should be cared for in single rooms. If a single room is not available, patients with infection due to the same microorganism may be cohorted.

Place infection control signage on the room door indicating the precautions required.

Suspect ILI cases should only leave their rooms for medically necessary procedures; whenever a case leaves the room he/she should wear a mask¹ if tolerated and be instructed on how to perform respiratory hygiene.

5. **Contact Precautions:**

HCWs should wear gloves when entering the room of a suspect ILI case.

Gloves should be removed just before leaving the room and disposed of in a hands-free waste receptacle.

Gowns should be worn as per Routine Practices. When worn, gowns should be removed just before leaving the room and disposed of in a hands-free receptacle.

HCWs should use alcohol based hand rubs or soap and water after removing gown and gloves and after leaving the room.

6. **Droplet Precautions/Respiratory Protection** (Mask¹/N95 Respirator; and eye or face protection)

HCWs should use droplet precautions/respiratory protection when within 2 metres of a suspect ILI case. The choice between droplet precautions (a mask¹) and respiratory protection (N95 respirator) should be based on the following:

A mask¹ should be worn:

- If within 2 metres of a suspect ILI case.

An N95 respirator should be worn:

- If conducting an aerosol-generating medical procedure (AGMP²) on a suspect ILI case, all individuals in the room should wear an N95 respirator. The number of individuals in the room should be limited to only those necessary. A negative pressure (airborne infection isolation) room is preferred for non-urgent aerosol generating medical procedures (AGMP²). If an airborne infection isolation room is unavailable a single room should be used. When suctioning of intubated cases is required, closed suctioning should be used when possible.

Whenever a mask¹ or N95 respirator is required, the HCW should also wear eye or face protection. Eye or face protection should be removed after leaving the case's room and disposed of in either a hands-free waste receptacle (if disposable) or in a separate receptacle to go for reprocessing (if reusable).

The mask¹ or N95 respirator should be removed by the straps, being careful not to touch the mask or respirator itself, after leaving the case's room and disposed of in a hands-free waste receptacle.

HCWs should perform hand hygiene before and after removing the respiratory protection and after leaving the case's room.

There is no indication for use of powered air-purifying respirators (PAPRs) in the care of a suspect ILI case.

7. **Reporting**

HCWs should notify Infection Prevention and Control personnel in the acute care facility that a case with symptoms of ILI is being assessed. Infection Control personnel in the facility should notify Public Health of suspected or confirmed cases of H1N1 2009.

¹Surgical or high-quality procedure mask

² Aerosol-generating Medical Procedures (AGMPs): any procedure carried out on a patient that can induce the production of aerosols of various sizes, including droplet nuclei. Examples include: non-invasive positive pressure ventilation (BIPAP, CPAP); endotracheal intubation; respiratory/airway suctioning; high-frequency oscillatory ventilation; tracheostomy care; chest physiotherapy; aerosolized or nebulized medication administration; diagnostic sputum induction; bronchoscopy procedure; autopsy of lung tissue.

References and Additional Information:

- 1) Public Health Agency of Canada website, posted May 27, 2009 at:
<http://www.phac-aspc.gc.ca/alert-alerte/swine-porcine/surveillance-eng.php>
 - 2) Centers for Disease Control and Prevention, posted May 29, 2009 at:
<http://www.cdc.gov/h1n1flu/update.htm>
- ILI protocols and case-investigation form available at the following websites:
http://www.phac-aspc.gc.ca/eri-ire/pdf/02-ILI-Surveillance-Protocol_e.pdf
http://www.phac-aspc.gc.ca/eri-ire/pdf/03-ILI-Report-Form_e.pdf
 - Nosocomial and Occupational Infections Section, Centre for Communicable Diseases and Infection Control, PHAC <http://www.phac-aspc.gc.ca/nois-sinp/index-eng.php>

Appendix A

Point of Care Risk Assessment Tool for H1N1 2009

Prior to any patient interaction, all health care workers (HCWs) have a responsibility to always assess the infectious risk posed to themselves and to other patients, visitors, and HCWs. This risk assessment is based on professional judgement about the clinical situation and up-to-date information on how the specific healthcare organization has designed and implemented engineering and administrative controls, along with the availability and use of Personal Protective Equipment (PPE).

Point of Care Risk Assessment (PCRA) is an activity performed by the HCW before every patient interaction, to:

1. Evaluate the likelihood of exposure to H1N1 2009
 - from a specific interaction (e.g., performing/ assisting with aerosol-generating medical procedures, other clinical procedures/ interaction, non-clinical interaction (i.e., admitting, teaching patient/ family), transporting patients, direct face-to-face interaction with patients, etc.),
 - with a specific patient (e.g., infants/ young children, patients not capable of self care/ hand hygiene, have poor-compliance with respiratory hygiene, copious respiratory secretions, frequent cough/ sneeze, early stage of influenza illness, etc.),
 - in a specific environment (e.g., single rooms, shared rooms/ washrooms, hallway, influenza assessment areas, emergency departments, public areas, therapeutic departments, diagnostic imaging departments, housekeeping, etc.),
 - under available conditions (e.g., air exchanges in a large waiting area or in an airborne infection isolation room, patient waiting areas);

AND

2. Choose the appropriate actions/ PPE needed to minimize the risk of patient, HCW/ other staff, visitor, contractor, etc. exposure to Human H1N1 2009 /suspect ILI case

PCRA is not a new concept, but one that is already performed regularly by professional HCWs many times a day for their safety and the safety of patients and others in the healthcare environment. For example, when a HCW evaluates a patient and situation to determine the possibility of blood or body fluid exposure or chooses appropriate PPE to care for a patient with an infectious disease, these actions are both activities of a PCRA.

References

1. Health Canada, December 17, 2003. Infection Control Precautions for Respiratory Infections Transmitted by Large Droplet and Contact: Infection Control Guidance if there is a SARS Outbreak Anywhere in the World, When an Individual Presents to a Health Care Institution With a Respiratory Infection (Draft)
2. New York State Nursing Association (NYSNA), Nursing Practice Alert. Emergency Department Overcrowding/Preparedness. Website accessed May 2, 2009.
http://www.nysna.org/practice/alerts/alert_1104.htm

The PCRA tool consists of tables 1 to 4. A step-by-step description on how to use them follows:

Step 1: In Table 1, choose one of the physical setting and level of patient interaction options (in the highlighted column) using the description and example columns in the table.

Step 2: In Table 2, choose one of the patient clinical status and source control capability options (in the highlighted column) using the description and patient presentation column in the table.

Step 3: Using the matrix on Table 3, match the physical setting and level of patient interaction option from Table 1 (Step 1) with the patient clinical status and source control capability option identified from Table 2 (Step 2), to determine the appropriate level of precautions.

Step 4: From Table 4, determine what specific measures and personal protective equipment are indicated for the level of precautions identified in Table 3 (Step 3).

Table 1: Identification of the Physical Setting and Level of Patient Interaction

Physical Setting and Level of Patient Interaction	Description	Example
No Patient Interaction, Non-Clinical	Area with no patient access (restricted areas)	Non-clinical setting (medical record department, administrative office, central pharmacy, information technology office, central storage area, mail room, central maintenance areas, business office, etc.).
No Direct Patient Interaction and No Indirect Contact	No face-to-face interaction and no indirect contact with patients.	Hallways, cafeteria, public areas, clinical areas with no patient access (charting room, office, storage room, staff lounge, medication room, etc.), totally enclosed reception/triage areas with physical barrier between HCW and patient.
Indirect Contact	No direct patient interactions; Indirect contact only with patient environment or contaminated inanimate objects	Discharge patient room cleaning, equipment cleaning.
Direct Patient Interaction	Direct, face-to-face interaction with patient (within 2m of the patient)	Providing patient care, home care visit, assisting with Activity of Daily Living (ADL), diagnostic imaging, phlebotomy services, physiotherapy, occupational therapy, recreational therapy, intra-hospital transport/portering, non-enclosed triage/registration area, cleaning patient bedspace while occupied, routine ambulance or inter-facility transport.
Direct Patient Interaction with Potential for Aerosol Generation	Performing and/or assisting with Aerosol Generating Medical Procedures (AGMP)	Open endotracheal suctioning, bronchoscopy, endotracheal intubation, tracheostomy procedures, nebulized therapy, cardiopulmonary resuscitation.

Table 2: Identification of the Patient Clinical Status and Source Control Capability

Patient Clinical Status and Source Control Capability	Description	Patient Presentation
Recovered from Influenza	Patient recovered from influenza	Influenza-infected patient, beyond the known period of communicability
Influenza and Compliant or Weak Cough and Not Compliant	1) Patient with symptoms compatible with influenza with cough	Cough of any intensity and Adherence with respiratory hygiene Adherence to hand hygiene
	2) Patient with symptoms compatible with influenza with weak or no cough	Weak or no cough and Not adherent with respiratory hygiene Not adherent to hand hygiene
Influenza and Forceful Cough and Not Compliant	Patient with symptoms compatible with influenza	Forceful cough and Not adherent with respiratory hygiene Not adherent to hand hygiene
Influenza and AGMP	Patient with symptoms compatible with influenza	And an Aerosol Generation Medical Procedure (AGMP) is being performed

Note: If more than one risk level identified (e.g., multiple concurrent patient interactions), select the higher risk level.

Table 3: Level of Precautions Matrix

Patient Clinical Status and Source Control Capability	Physical Setting and Level of Patient Interaction				
	No Patient Interaction Non clinical	No Direct or Indirect Patient Interaction	Indirect Contact	Direct Patient Interaction	Direct Patient Interaction with AGMP
Recovered from Influenza	I	I	II	II	II
Influenza and Compliant or Weak Cough and Not Compliant	I	I	II	III	IV
Influenza and Forceful Cough and Not Compliant	I	I	II	III	IV
Influenza and AGMP	I	I	II	IV	IV

Note: It is anticipated that the majority of patients with H1N1 2009 will be cared for using level II and III and a minority would be cared for using level IV precautions.

Table 4 Personal Protective Equipment Suggested for the Level of Precautions for Human Cases of H1N1 2009

	Hand hygiene	Respiratory hygiene	N95 Respirator	Mask*	Eye Protection	Gown	Gloves
Level I	Yes	Yes	No Patient Contact – Not Required				
Level II	Yes	Yes	No, Except as per Additional Precautions*	As Per Routine Practices			
Level III	Yes	Yes	No, Except as per Additional Precautions*	Yes	Yes	As Per Routine Practices	
Level IV	Yes	Yes	Yes	No	Yes	As Per Routine Practices	

*Additional Precautions recommend an N95 respirator for known or suspected active tuberculosis or measles