



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

### Human Cases of H1N1 Flu Virus (Human Swine Flu)

This fact sheet has been developed to provide interim guidance to health care workers (HCWs) in the infection prevention and control management of suspect cases with H1N1 Flu Virus (Human Swine Flu). This infection prevention and control guidance is for HCWs caring for patients with **Influenza-like Illness (ILI)** suspected to be due to the novel H1N1 Flu Virus (Human Swine Flu). This Interim Guidance has a goal of slowing (mitigating) 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 novel virus is available and the outbreak evolves. In this document we use a point of care risk assessment approach to guide decisions regarding the type of respiratory protection to apply (Appendix A).

This guideline is being provided by the Public Health Agency of Canada in response to the ongoing outbreak of H1N1 Flu Virus (Human Swine Flu). This guideline is based on current available scientific evidence about this emerging disease, and is subject to review and change as new information becomes available. The content of this document is largely based on the general recommendations included in the Public Health Measures Annex of the Canadian Pandemic Influenza Plan for the Health Care Sector.

Below are enhanced screening criteria to determine the need for reporting and for applying the infection prevention and control measures outlined below.

The infection prevention and control guidance provided in this document is for cases fitting the ILI enhanced screening criteria in the box below. It should be noted that this definition 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.

#### **Influenza Like Illness (ILI) Screening Criteria**

- Acute onset of respiratory illness with fever\* and cough

\*Note: in children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

#### **AND one or more of the following:**

sore throat, arthralgia, myalgia, or prostration which could be due to influenza virus.

#### **AND one or more of the following:**

#### **Travel/contact exposure:**

- Traveller returned from or resident of currently affected area<sup>1</sup> including Mexico and other affected areas, within 7 days of onset of symptoms

- Contact with a traveller/person with ILI from a currently affected area<sup>1</sup> within 7 days of onset of symptoms

#### **Laboratory/Health care setting exposure:**

- Laboratory worker who works directly with influenza or other respiratory viruses

- Health care workers exposed to patients linked to a community or health care facility outbreak

<sup>1</sup>list of currently affected areas on World Health Organization website: [www.who.int/csr/disease/swineflu/en/index.html](http://www.who.int/csr/disease/swineflu/en/index.html)

Until the etiology is known, **in addition to Routine Practices**, infection prevention and control measures in health care facilities for **all suspected cases of H1N1 Flu Virus (Human Swine Flu): ILI cases** meeting the definition above should include:

1. Contact Precautions
2. Respiratory Hygiene (also known as Respiratory Cough Etiquette)
3. Hand Hygiene
4. Accommodation
5. Respiratory protection (Surgical mask or N95 Respirator; and eye or face protection; see #5 below)
6. Additional Source Controls (Engineering [e.g. plexiglass barrier in triage areas] or Administrative [e.g. patient flow])
7. Reporting

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

**1. Contact Precautions:**

Wear gloves when entering the room of a suspect ILI case.

Remove gloves just before leaving the room and dispose of in a hands-free waste receptacle.

Gowns are required as per Routine Practices. When worn, remove the gown just before leaving the room and dispose of in a hands-free waste receptacle.

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

**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 surgical mask).

Suspect ILI cases should wear a surgical mask (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 or cohorted with cases with same exposure history.

Place infection control signage on the room door indicating the precautions required. A negative pressure (airborne) isolation room is preferred for non-urgent aerosol generating medical procedures (AGMP<sup>1</sup>): If an airborne isolation room is unavailable use a single room. When suctioning of intubated cases is required, use closed suctioning when possible. Suspect ILI cases should only leave their rooms for medically necessary procedures; whenever a case leaves the room he/she must wear a surgical mask if tolerated and be instructed on how to perform respiratory hygiene.

**5. Respiratory Protection** (Surgical mask and eye or face protection; or N95 Respirator and eye or face protection)

HCWs should wear respiratory protection when within 2 meters of a suspect ILI case. The choice between a surgical mask and N95 respirator should be based on the following:

Wear a surgical mask:

- If the patient is compliant (willing and able) with respiratory hygiene practices
- or
- If the patient has a weak or no cough. Individuals who may have a weak cough are the frail elderly and paediatric patients.

Wear an N95 respirator:

- If conducting an aerosol-generating medical procedure (AGMP<sup>1</sup>) on a suspect ILI case all individuals in the room should wear an N95 respirator.
- When the patient is coughing forcefully *and* the patient is unable or unwilling to comply with respiratory hygiene (e.g., coughing patient who is unable or unwilling to wear a surgical mask);

Whenever a surgical mask or 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 surgical mask 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 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.

**6. Additional Source Controls** (Engineering [e.g. plexiglass barrier in triage area] or Administrative [e.g. patient flow])

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<sup>1</sup> 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; nasopharyngeal aspiration/swab; tracheostomy care; chest physiotherapy; aerosolized or nebulized medication administration; diagnostic sputum induction; bronchoscopy procedure; autopsy of lung tissue.

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. In conjunction with the above measures, health care organizations should complete assessments of each area of all their acute care facilities regarding their physical settings (e.g. single rooms, use of plexiglass or other 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 this assessment, the organization needs to determine what administrative and engineering controls are needed in addition to the measures described above. **This is especially important for patient care areas/settings where patients appear for initial assessment/investigation before a diagnosis of H1N1 Flu Virus (Human Swine Flu) 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 surgical masks to all patients self directing to the triage area designated for patients with respiratory symptoms. Provide instructions on the proper use and disposal of masks and on how to perform hand hygiene.
- For patients who are unable to wear a surgical mask, 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 at least 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 clinic
- 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., Plexiglas™ partition), the HCW will not require any respiratory protection.

Where there is no physical barrier:

If performing triage from an open area, where there is not physical barrier, see #5 (Respiratory Protection) to guide decisions regarding the type of respiratory protection to apply.

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.

## 7. Reporting

Notify Infection Prevention and Control personnel in your acute care facility that a case with symptoms compatible with influenza who has traveled (or been in contact with someone who has traveled) to an area of concern is being assessed. Infection Control personnel in your facility will notify Public Health of suspected cases of H1N1 Flu Virus (Human Swine Flu).

### Resources and Additional Information:

- 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/02-ILI-Surveillance-Protocol_e.pdf)  
[http://www.phac-aspc.gc.ca/eri-ire/pdf/03-ILI-Report-Form\\_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 Flu Virus (Human Swine Flu)

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 the H1N1 Flu Virus (Human Swine Flu),
  - 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 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 the Human H1N1 Flu Virus (Human Swine Flu)/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.

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
<b>No Patient Interaction, Non-Clinical</b>	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.).
<b>No Direct Patient Interaction and No Indirect Contact</b>	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.
<b>Indirect Contact</b>	No direct patient interactions; Indirect contact only with patient environment or contaminated inanimate objects	Discharge patient room cleaning, equipment cleaning.
<b>Direct Patient Interaction</b>	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.
<b>Direct Patient Interaction with Potential for Aerosol Generation</b>	Performing and/or assisting with Aerosol Generating Medical Procedures (AGMP)	Open endotracheal suctioning, bronchoscopy, endotracheal intubation, tracheostomy procedures, nebulized therapy, cardiopulmonary resuscitation, nasopharyngeal aspirate/swab.



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

Patient Clinical Status and Source Control Capability	Description	Patient Presentation
<b>Recovered from Influenza</b>	Patient recovered from influenza	Influenza infected patient, beyond the known period of communicability
<b>Influenza and Compliant or Weak Cough and Not Compliant</b>	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
<b>Influenza and Forceful Cough and Not Compliant</b>	Patient with symptoms compatible with influenza	Forceful cough and Not adherent with respiratory hygiene Not adherent to hand hygiene
<b>Influenza and AGMP</b>	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
<b>Recovered from Influenza</b>	I	I	II	II	II
<b>Influenza and Compliant or Weak Cough and Not Compliant</b>	I	I	II	III	IV
<b>Influenza and Forceful Cough and Not Compliant</b>	I	I	II	IV	IV
<b>Influenza and AGMP</b>	I	I	II	IV	IV

**Note:** It is anticipated that the majority of patients with Human Swine Flu A virus 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 Required for the Level of Precautions for Human Cases of Swine Influenza A (H1N1)**

	Hand hygiene	Respiratory hygiene	N95 Respirator	Surgical 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 recommends an N95 respirator for known or suspected active tuberculosis or measles



## 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](http://www.nysna.org/practice/alerts/alert_1104.htm)