

Infection Prevention & Control and Occupational Health & Hygiene During Pandemic Influenza

CPIP: Annex F

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Objectives:

- To provide an update on select components of CPIP Annex F, including:
 - Development and revision process
 - Rationale for major changes
 - Role of corporate and individual risk assessment

Annex F Goal:

- Influenza is an acute respiratory infection spread primarily in the community and spreads rapidly once introduced.
- During an influenza pandemic there will be risk of transmission of influenza in all community settings. While HCWs and patients are in the community, they share the same risk as the general population.
- **The goal of Annex F is to minimize the risk to patients, HCWs and others in a health care setting of acquiring influenza while in that setting.**

Process:

- Co-Chairs: Dr. Mary Vearncombe and Dr. George Astrakianakis
- Membership represented three expert groups: Public Health, Infection Prevention and Control and Occupational Health & Hygiene
- Working group guiding principles:
 - Examination of both IP&C and Occupational Health and Hygiene (OH&H) literature and recent systematic literature reviews
 - Consensus was established on terminology early in the process
 - airborne exposure vs airborne transmission
 - physics vs biology

What do you mean it's "airborne"?! Exposure vs Transmission

Airborne exposure:

- Exposure to a particle in a suspension of aerosols in the air capable of being inhaled

Airborne transmission:

- Transmission of microorganisms via inhalation of aerosols in air that results in an infection in a susceptible host

Travel distance of infectious droplets: 1 metre or 2?

- Traditionally accepted spatial separation of 3 feet/1 metre
 - derived from epidemiological observations of spread of meningococcal disease
 - extrapolated to other infections
- Occupational Hygiene literature: droplets travel for up to 2 metres when forcefully expelled by cough or sneeze
 - new spatial separation adopted by CDC, PHAC
 - CDC IC Guideline for Seasonal Influenza in Acute Care, 2007
 - PHAC RP/AP Guideline, under revision

Assumptions regarding transmission of influenza (1)

- The majority of transmission occurs at short range
- Several modes of transmission may contribute simultaneously
- Relative contribution of each mode is uncertain
- Droplets generated by coughing/sneezing potentially lead to generation of infectious aerosol
- Survival of aerosolized virus depends on environmental conditions

Assumptions regarding transmission of influenza (2)

- Individual acquisition of infection depends on the dose, immune response and presence of pathogen-specific receptors
- Influenza spreads primarily in the community and spreads rapidly once introduced
- During a pandemic, there will be risk of transmission in all community settings
 - HCWs and patients share the same risk as the general population when in the community

Risk Assessment

- Risk assessment will be dynamic during the pandemic
 - e.g., pandemic activity in region, severity of illness
 - H1N1 behaving like seasonal influenza, to date

Organizational Risk Assessment

- Organizations are responsible to:
 - determine situations where hazard exists and severity
 - evaluate potential for exposure to hazard and consequences of exposure
 - mitigate the hazard through engineering and administrative controls and provision of adequate, accessible hand hygiene agent and PPE

Point-of-Care Risk Assessment

- HCWs are responsible to:
 - perform a point-of-care risk assessment (for influenza transmission) prior to each patient interaction to determine controls required to prevent exposure of self and other patients
 - understand and follow organizational policies and procedures and use controls appropriate to the interaction and the patient's status

Risk Assessment: HCW Routine Practices

1. Do I need protection because there is a risk of exposure to blood, body fluid, secretions, excretions, mucous membrane, non-intact skin, contaminated equipment/surfaces?
2. Do I need protection because of the patient's symptoms (diagnosed or undiagnosed)?
3. What are the organizational requirements for this patient interaction and/or symptoms, infection?

Point-of-Care Risk Assessment Tool

- Consideration of the physical environment, the organism, the patient status and interaction and the HCW status
- Selection of PPE dependant on the risk assessment
- Table 1: physical setting and level of patient interaction
- Table 2: patient clinical status and source control capability
- Matrix: apply 1 and 2 for level of precautions required
- Table 3: PPE for level of precautions

Table One: Identification of the physical setting and level of patient interaction

<p>No Patient Interaction, Non Clinical</p>	<p>Area with no patient access Examples: Non-clinical setting (medical record department, administrative office, central pharmacy, information technology office, central storage area, mail room, central maintenance areas, business office, etc.).</p>
<p>No Direct Patient Interaction and No Indirect Contact</p>	<p>No face to face interaction with patients and no indirect contact Examples: 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.</p>
<p>Indirect Contact</p>	<p>No direct patient interactions; indirect contact only Contact with patient environment or contaminated inanimate objects Examples: Discharge patient room cleaning, equipment cleaning.</p>
<p>Direct Patient Interaction</p>	<p>Direct, face to face interaction with patient Examples: 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.</p>
<p>Direct Patient Interaction with Potential for Aerosol Generation</p>	<p>Performing and/or assisting with Aerosol Generating Medical Procedures Examples: Open endotracheal suctioning, bronchoscopy, endotracheal intubation, tracheostomy procedures, nebulized therapy, cardio-pulmonary resuscitation.</p>

Table Two: Identification of the patient clinical status and source control capability.

Recovered from Influenza	Patient recovered from influenza
Influenza and Compliant or Weak Cough and Not Compliant	Patient with symptoms of influenza Cough of any intensity and Adherence with respiratory hygiene / cough etiquette Adherence to hand hygiene
	Patient with symptoms of influenza Weak or no cough and Not adherent with respiratory hygiene / cough etiquette Not adherent to hand hygiene
Influenza and Forceful Cough and Not Compliant	Patient with symptoms of influenza Forceful cough and Not adherent with respiratory hygiene / cough etiquette Not adherent to hand hygiene
Influenza and AGMP	Patient with symptoms of influenza And an Aerosol Generation Medical Procedure is being performed

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

Level of Precautions Matrix

Match the Setting and level of patient interaction (table 1) with the patient clinical status and source control capability (table 2) on the following matrix, to determine the level of precautions I – IV (table 3).

	Setting and level of patient interaction				
Patient clinical status and source control capability	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	IV	IV
Influenza and AGMP	I	I	II	IV	IV

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

Table 3: Level of Precautions for Pandemic Influenza

	Hand hygiene	Respiratory hygiene/cough etiquette	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	

- IP&C and OH&H response to pandemic influenza is dependent on an effective IP&C and OH&H program during the inter-pandemic period
- Without the infrastructure of an effective IP&C and OH&H program, effective response to pandemic influenza is not possible