

1.0 INTRODUCTION

Alberta Employment and Immigration (E&I) has been working with the healthcare industry and Alberta Health and Wellness to develop strategies and best practices to reduce workplace injuries and illness in the healthcare sector. The Healthcare Compliance Strategy was initiated to help Alberta healthcare industry's work sites meet the minimum standards set out in the Occupational Health and Safety (OHS) legislation.

This document outlines a focused inspection protocol directed at ensuring that healthcare workers with the highest potential exposure to the 2009 H1N1 virus are adequately protected at the work site.

2.0 RATIONALE FOR INSPECTION PROGRAM

Information suggests that healthcare workers are at a higher risk for exposure to the H1N1 virus while at the work site:

- Following an outbreak of H1N1 in an acute care facility in Calgary, evidence indicated that healthcare workers may not have been appropriately protected from workplace exposure to H1N1.
- Review of current international literature indicates that healthcare workers are experiencing H1N1 exposure in the workplace and becoming ill as a result.

These reports generated concerns regarding the protection of healthcare workers from H1N1 exposure, as well as compliance with Alberta OHS legislation. In response, focused inspections will be conducted. Sites chosen will be emergency departments and intensive care units in acute care facilities across the province. Additional sites may be inspected in future phases of this program.

The evidence points to a need for inspections to evaluate:

- Compliance with hazard assessment and control requirements in the OHS legislation (Since there is no current data to confirm the route of transmission, it must be assumed that the H1N1 virus can be transmitted by all routes. Accordingly, controls need to be in place to protect workers from all routes of transmission.)
- Extent to which employers and workers meet the requirements for personal protective equipment, particularly respiratory protective equipment

3.0 IDENTIFICATION OF HEALTHCARE WORK SITES TO BE INSPECTED

The targeted inspection initiative developed for the Healthcare Compliance Strategy addressed four key hazard areas. The emerging issue of H1N1 has instigated the need for

this additional focused inspection protocol. Inspections will concentrate on H1N1 hazard assessment and control. The focus will be on work sites where workers have a high risk of exposure to H1N1 based on the hazard assessment. Healthcare and related support services in hospital emergency rooms and intensive care units (ICUs) will be specifically targeted.

4.0 INSPECTION STRATEGY AND PROCEDURES

4.1 Purpose of Inspection

The purpose of the inspections is to assess compliance relative to OHS requirements in healthcare settings with potentially high worker exposure to the 2009 H1N1 virus to ensure that workers who may be exposed are adequately protected. The objective is to work collaboratively to ensure adequate hazard assessment is completed, appropriate controls exist and that workers are both aware of and use the controls that are in place.

4.2 Inspection Procedures

A list of employers will be developed and contact information for each employer will be obtained from Alberta Health Services. This listing of healthcare facilities will be sent to the North and South Region compliance managers responsible for monitoring the Healthcare Inspection Program. Where possible, the compliance program managers will assign these work sites to the Officers who are currently assigned to the healthcare program. Additional Officer resources, if required, will be drawn from the general pool of existing Officers. The compliance program manager will also, ensure that each worksite inspection assignment is entered into the H1N1 Inspection Project in WITs. This project will be set up by the South Region WITs administrator by July 31.

In addition to standard experience and knowledge of the OHS Operational Procedures, Officers who are assigned to this project need to have attended the recent pandemic planning sessions, be fit tested and knowledgeable in how to select and use the appropriate respiratory protective equipment and participate in the project specific orientation.

Officers should pre-arrange a date for their inspections with the work site contact that will provide them with the best opportunity to evaluate compliance with Alberta OHS legislation. The contact name and information for each facility to be inspected will be included with the assignment list. If the Officer is unsure of best method of scheduling, they should work with their compliance program manager. If, after the inspection, the Officer has concerns about continued compliance they may follow up with the employer or conduct an unannounced inspection at a later date.

Initial inspections should begin by August 17, with 2 to 4 inspections completed by August 31 provincially. Inspections for this phase of the program should be completed by October 31, 2009.

During inspections, Officers will follow their operational procedures and OHS compliance policy as they would normally do. Conducting observations or talking with workers may, however, need to be done differently than with other inspections. Officers need to remain at least 2 metres away from any patient treatment for their own protection, to prevent interference in any patient treatment and to ensure patient and family privacy. Officers will need to consider the activity level at the worksite before talking with staff about compliance issues. It is important to not hinder workers that are conducting activities that are directly related to patient care.

After each inspection, the appropriate party responsible for the work area will be provided with a report documenting the results of the Officer's observations. The Client Contact Report will outline whether compliance issues were identified, and if so, itemize the deficiencies. Compliance orders written to the party responsible will appear on the Client Contact Report. Hazards identified that are attributed to other employers at the work site will be reflected in a separate Client Contact Report.

Imminent danger may be identified if the officer observes a worker(s) conducting a duty or task that could expose them to H1N1 where the worker has not been appropriately trained or supervised. Example: Electrician repairing equipment in an area where she/he could be exposed to H1N1. This could be applicable to administrative staff, delivery workers or any other untrained workers in the area.

If the OHS Officer identifies an imminent danger, the Officer will issue a stop work order or stop use order to the employer representative responsible for the process or condition. When evaluating whether a stop work order is required, the OHS Officer will consider the protection of all persons present, workers as well as patients, clients and residents. If the employer is willing and able to remedy the imminent danger immediately, the stop work or stop use order may be averted.

For non-imminent danger concerns, the Officer will engage the employer in the compliance process and determine a reasonably achievable compliance date by the employer or other party involved. Depending on the circumstances, the healthcare facility may not be the employer (e.g. support personnel such as cleaning staff).

4.3 Applicable OHS Legislation

There are several key areas of the OHS Code that related specifically to the focus of these inspections and will need to be evaluated during the site visits. Officers will address additional hazards observed during the inspections, as appropriate.

OHS Regulation, Section 8, Critical Documents Available

Where an employer is required to develop procedures or put procedures in place, these procedures must be in writing and available to workers at the work site. The following documents should be in writing and available at the work site:

- Hazard assessment addressing worker exposure to H1N1 (OHS Code, Section 7)
- Specific work site procedures related to addressing protection of workers from exposure to H1N1 (OHS Regulation, Section 15, OHS Code Section 21)
- Code of practice for respiratory protective equipment (OHS Code, Section 245)
- Fit test records for respirator users (OHS Code, Section 250)
- Post-exposure management policies and procedures (OHS Code, Section 530)

OHS Regulation, Section 13, General Protection of Workers

If work may be done that could endanger a worker, the employer must ensure that:

- The work is done by a “competent” worker or by a worker under the direct supervision of a “competent” worker (“competent” is defined as adequately qualified, suitably trained and with sufficient experience to safely perform work without supervision or with only a minimal degree of supervision)
- All workers affected by procedures respecting work at the work site are familiar with it before work starts
- Workers who are required to use safety equipment or protective equipment are competent in the application, care, use, maintenance and limitations of that equipment
- Workers perform their duties that are required by the OHS legislation

Questions to ask the employer include:

- For work where workers may be exposed to H1N1 virus, how do you ensure that workers are “competent” with respect to procedures they must follow and equipment they must use?
- How do you ensure that workers:
 - follow the procedures you have developed,
 - properly use, wear and inspect their personal protective equipment,
 - properly use the respiratory protective equipment provided.

Questions to ask workers include:

- What are the procedures at your work site for protecting you from H1N1?
- Has instruction been provided to you about your health and safety and the procedures you are required to follow?
- Have you received instruction about the proper use of equipment, particularly personal protective equipment such as respirators?
- How do you use, maintain and inspect personal protective equipment?
- What are the limitations of the personal protective equipment you use?

OHS Code Section 7, Part 2, Hazard Assessment

The employer must complete a written hazard assessment that evaluates the potential for worker exposure to H1N1 virus. Of particular interest will be workers who:

- May be at higher risk of exposure from working within 2 metres of patients with symptoms of influenza-like illness/H1N1 virus. That is:
 - respiratory illness with or without fever, sore-throat and body aches,
 - when the patient is coughing/sneezing forcefully and
 - is unable or unwilling to comply with respiratory hygiene.
- Perform job tasks in the same room while aerosol-generating medical procedures are performed on patients with symptoms of H1N1 virus
- Are in vulnerable groups at risk due to underlying medical conditions such as pregnancy, asthma, diabetes and morbid obesity

Questions that the employer should be able to answer include:

- Has a hazard assessment been completed?
- What happens when the hazard level posed by a patient or work activity changes?

Officers should refer to the document *Best Practice Guideline for Workplace Health and Safety During Pandemic Influenza* for guidance on hazard assessment and high exposure work tasks.

OHS Code Section 8, Part 2, Worker Participation in Hazard Assessment

Workers must be included in the hazard assessment process and be provided with instruction on the hazards present in the workplace. Workers should be asked about their involvement in the hazard assessment process.

OHS Code Section 9, Part 2, Hazard Elimination and Control

Once the employer has completed the hazard assessment, they have an obligation to control worker exposure to the identified hazards. The employer should be able to identify the specific controls that are in place to prevent exposure to H1N1 virus. For example:

Engineering controls: ventilation, physical barriers

Administrative controls: safe work procedures, training and supervision enforcing hand washing and proper hygiene procedures, respiratory protective equipment program, ensure that workers who are ill stay home, job reassignment

Personal protective equipment: gloves, gowns, eye protection, respirators, as appropriate to the exposure circumstances

During the site visit, the following should be identified/confirmed:

- What controls have been identified to protect workers from exposure H1N1?
- Have the identified controls been implemented?
- Have workers received training on the controls that are in place and their proper use?
- How does the employer ensure that controls are used and used properly?
- Were affected workers involved in the identification/implementation of controls?
- Is there evidence that point of care assessments are done when evaluating patients?

- What happens should a control fail (for example, personal protective equipment becomes damaged, a ventilation system fails)?
- Is there a process to evaluate the adequacy and effectiveness of controls on an ongoing basis?
- Do workers come to work sick? If so, are they sent home?

If possible, the Officer should observe the workers to evaluate how these controls are used at the work site. However, in doing so, consideration must be given to protecting patient privacy, ensuring that the inspection process is not obtrusive and does not interfere with patient privacy or treatment (see Section 4.2).

OHS Regulation, Section 15(3), 15(4), 15(5) Safety Training
OHS Code, Section 21, Part 4 Potential Worker Exposure

The OHS legislation requires an employer to identify the health hazards associated with exposure and assess worker exposure when a worker may be exposed to a harmful substance at the work site. A “harmful substance” is defined as “a substance that because of its properties, application or presence, creates or could create a danger, including a chemical or biological hazard, to the health and safety of a worker exposed to it.” Workers who are exposed must be informed of the health hazards associated with exposure, receive training on procedures developed by the employer to minimize exposure and understand the procedures in place. Workers are required to use the procedures appropriately and apply the training.

Questions to ask the employer:

- Have procedures been developed to minimize worker exposure to H1N1 (for example, donning and doffing of personal protective equipment, protocols for cleaning work areas)?
- Have workers received training on the procedures developed by the employer? Are there training records?
- Have workers received information on the health hazards associated with exposure to the H1N1 virus, including circumstances that may increase their risk?
- How does the employer ensure that workers apply the training to the work they do?
- Do workers know of the consequences should they not apply the training expectations or follow the procedures?

Questions to ask the worker:

- What procedures are in place for preventing exposure to the H1N1 virus? Have you received training on these procedures?
- Have you received information on the health hazards from exposure to the H1N1 virus?
- Are you aware of the risk factors that may make you more vulnerable to complications from the virus?
- How do you apply the training you received in the work you do?

Section 23, Part 4 Worker Decontamination

If a worker may be contaminated by a harmful substance at the work site, the employer must have facilities and procedures in place to ensure that the worker can properly decontaminate before they leave the work area. This is to ensure that workers do not inadvertently spread the virus into other areas of the work site (such as lunch rooms or office areas) or bring contamination home with them.

During the site visit look for/ask about the following:

- What are the specific procedures for donning and doffing protective equipment?
- Have workers received training on the decontamination procedures?
- Do workers have a clean area where they can store personal effects and clothing and don their protective equipment?
- What happens to used PPE and other potentially contaminated equipment?
- Do workers have readily accessible areas where they can wash their hands and face or shower after removing PPE?
- What are the cleaning procedures in areas with high potential for H1N1 exposure?
- How does the employer ensure that proper decontamination procedures are followed?

Section 228, Part 18, Duty to Use Personal Protective Equipment (PPE)

If the hazard assessment identifies the need for PPE, the employer must ensure that workers wear PPE that is appropriate to the hazards, workers use the PPE properly and workers are trained in the use, care, limitations and assigned maintenance of the PPE. Attention should be given to the compatibility of the equipment used if several types must be used at once (e.g. the use of protective eyewear and respirators). The potential for the protective equipment itself to present a hazard to workers (e.g. is the worker medically able to wear the specified respirator, heat stress issues, etc.) must be evaluated.

Officers should refer to the document *Best Practice Guideline for Workplace Health and Safety During Pandemic Influenza* for guidance on the types of PPE that workers should use for control of exposure to H1N1 in high exposure work tasks.

Section 244, Part 18, Respiratory Dangers

Where a worker may be exposed to an airborne hazard at a work site, the employer must evaluate the need for respiratory protective equipment and provide the equipment as required. For the H1N1 virus, it should be assumed that the workers may be exposed to the virus from all routes of exposure. So, for workers who have been identified by the hazard assessment with a potential for high risk of exposure, properly fitted respirators will be required. Workers should be able to identify when (i.e. for what specific tasks and situations) they are required to wear a respirator. The employer must enforce the use of respirators for workers that are identified by the hazard assessment in potentially high risk exposure situations.

Section 245, Part 18, Code of Practice

If respiratory protective equipment is used at the work site, the employer must prepare a code of practice governing the selection, maintenance and use of the equipment.

Healthcare workers who may be exposed to airborne biohazardous material must receive annual training on the code of practice. During the site visit, the Officer should ensure that the code of practice has been done. The employer must also be able to identify

- How respirators are selected?
- What their procedures are related to the use of respirators?
- Whether workers are aware of their code of practice?

OHS Code Section 248, Part 18, Storage and Use of Respiratory Protective Equipment

Respiratory protective equipment that is kept ready to protect workers must be stored in a readily accessible location, stored so that it does not become contaminated, maintained in a clean and sanitary manner, inspected before and after each use to ensure that it is in satisfactory working condition and serviced and used in accordance with the manufacturer specifications. If the equipment is not routinely used (kept for emergency use), it must be inspected at least once each month by a competent worker to ensure that it is in satisfactory working condition. The employer should be able to identify how they ensure that respirators are properly maintained, cleaned and stored.

Section 250, Part 18 Effective Facial Seal

The employer must ensure that respiratory protective equipment that depends on an effective facial seal for its safe use is correctly fit tested in accordance with the CSA Standard Z94.4-02 *Selection, Use and Care of Respirators* or a method approved by a Director of Occupational Hygiene. In addition, workers must be clean shaven where the face piece of the respirator seals to the skin of the face.

The CSA Standard requires the following elements to be present in the fit testing program:

1. The fit tester must be competent to do the fit testing This means that:
 - They must have suitable training and practical experience (they should be able to demonstrate how to properly don and doff a respirator, conduct fit checks and conduct the fit test)
 - They must, themselves, be able to wear a respirator
 - They must maintain fit test records
2. Frequency of fit testing: It must be done
 - Prior to use and after completing the health surveillance evaluation
 - At least every 2 years
 - When there is a change in the respirator
 - When there is a change to the wearer that could affect fit

3. Facial hair: The wearer must be clean shaven where the respirator seals to the skin of the face. Fit testing may not be done if this condition is not met.
4. The wearer must be provided with a variety of sizes and models to ensure satisfactory fit.
5. Other required PPE must be worn during the fit testing to ensure compatibility
6. The respirator must meet the fit factor criteria specified in the CSA Standard for a satisfactory fit to be confirmed
7. Fit test records must be kept and must include at least the following information:
 - Name of person tested
 - Date of tests
 - Specific make, model and size of respirator
 - Type of fit test and test agent used
 - Pass/fail criteria and results of fit test
 - List of additional PPE worn during the test
 - Comments related to unusual facial features, corrective eyewear or fitting difficulties
 - Name of the person conducting the fit test

The employer should be able to identify and have documentation for the following:

- Who is responsible for fit testing workers?
- What is the process for ensuring that workers are medically able to wear a respirator?
- What is the procedure for conducting fit testing?
- Where are records for fit testing kept and who maintains them?
- Are provisions in place to accommodate workers with facial hair or those who cannot wear a tight-fitting respirator?

Workers should be able to answer the following questions:

- When were you fit tested for a respirator?
- What is the type (make and model) of respirator that you use? When do you use it?
- How do you ensure that you have donned a respirator properly? (Conducting fit checks—if possible the Officer should observe a worker donning a respirator to see if they can do this properly.)
- How do you remove (doff) a respirator?

Section 530, Part 35 Post Exposure Management

If workers may be exposed to a biohazardous material, the employer must have policies and procedures in place for post-exposure management. The Officer needs to check if these policies and procedures have been developed, are in place and are followed.

Questions to ask include:

- Do workers report potential exposures?
- What is the plan in place to identify workers who have become ill?
- What is the procedure for post-exposure management?

Workers should be able to answer:

- What do you do if you think that you may have been exposed to H1N1 at the work site?
- What do you do if you think you have become ill as a result of a workplace exposure to H1N1?
- What do you do if you think you may be ill with a respiratory illness, regardless of where you got it?

4.4 Data Management

The findings of the inspections will be shared with the employer (Alberta Health Services) head office. This will consist of copies of the inspection reports as well as a summary of the inspection findings. The North and South regional offices will provide this information to OHS head office to the Project Manager for the Healthcare Initiative where the summary will be prepared and distributed.

5.0 PROTECTION OF PERSONNEL

The site inspections must be conducted with consideration for the health and safety of E&I personnel. For Officers conducting these site visits, the following requirements will apply:

- Officers must be aware of the potential hazards of exposure to the H1N1 virus. Officers who are pregnant or have risk factors, such as asthma or other respiratory diseases, should not conduct the site visits.
- In addition to standard experience and knowledge of the OHS Operational Procedures, Officers that are assigned to this project need to have attended the recent pandemic planning sessions and participate in the project specific orientation.
- Officers must have received fit testing for respiratory protective equipment and be able to wear the equipment for which they have received fit testing. Officers must bring their respirator with them when conducting the site visits. Officers will use the guidelines set out in the *Best Practice Guideline for Workplace Health and Safety During Pandemic Influenza* for hazard assessment and determination of appropriate controls for their own protection during site inspections.

- Officers are not to be in areas of the work site where they are within 2 metres of a possibly infected patient or in a room while aerosol generating medical procedures are performed.
- Officers must be provided with hand sanitizer, which must be used prior to entering the work site, during the site inspection, as indicated, and after the completion of the site inspection before leaving the work site. Officers may also use the hand sanitizer available at the facilities visited.
- If officers become aware that they have experienced a potential exposure to H1N1 virus (closer than 2 metres, longer than 5 minutes or a respirator breach) they should report the contact to their regional compliance manager within 24 hours.

6.0 RESOURCES

Respiratory Protective Equipment: An Employer's Guide

http://employment.alberta.ca/documents/WHS/WHS-PUB_ppe001.pdf

Guideline for the Development of a Code of Practice for Respiratory Protective Equipment

http://employment.alberta.ca/documents/WHS/WHS-PUB_ppe004.pdf

Best Practice Guideline for Workplace Health and Safety During Pandemic Influenza

http://www.employment.alberta.ca/documents/WHS/WHS-PUB_bp002.pdf

CSA Standard Z94.4-02 Selection, Use and Care of Respirators (available from CCOHS website Canadian enviroOSH Legislation plus Standards database)

A Physician's Guide to Occupational Health and Safety Responsibilities

http://employment.alberta.ca/documents/WHS/WHS-PUB_physicians_guide.pdf

Interpretation of Respiratory Protective Equipment Requirements in Occupational Health and Safety Law for Pandemic Influenza (Western Canadian Provinces Interpretation Document)--appended

Respiratory Protective Equipment: An Employer's Guide

http://employment.alberta.ca/documents/WHS/WHS-PUB_ppe001.pdf

Guideline for the Development of a Code of Practice for Respiratory Protective Equipment

http://employment.alberta.ca/documents/WHS/WHS-PUB_ppe004.pdf

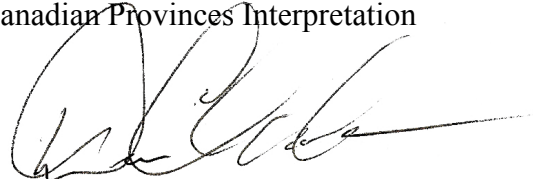
Best Practice Guideline for Workplace Health and Safety During Pandemic Influenza

http://www.employment.alberta.ca/documents/WHS/WHS-PUB_bp002.pdf

CSA Standard Z94.4-02 Selection, Use and Care of Respirators (available from CCOHS website Canadian enviroOSH Legislation plus Standards database)

A Physician's Guide to Occupational Health and Safety Responsibilities
http://employment.alberta.ca/documents/WHS/WHS-PUB_physicians_guide.pdf

Interpretation of Respiratory Protective Equipment Requirements in Occupational Health and Safety Law for Pandemic Influenza (Western Canadian Provinces Interpretation Document)—appended



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Date: August 13, 2009

Appendix 1

Interpretation of Respiratory Protective Equipment Requirements in Occupational Health and Safety Law for Pandemic Influenza

Introduction

In Canada, governments, industry, and individuals are developing plans to prepare for a predicted pandemic influenza. Inconsistency in approach and recommendations regarding respiratory protective equipment (RPE) is noted in various plans. To ensure a consistent interpretation for Western Canadian jurisdictions regarding the requirements for RPE in the workplace during pandemic influenza, Occupational Health and Safety (OHS) experts and regulators from the Western Canadian provinces – British Columbia, Alberta, Saskatchewan, Manitoba – met to review the current technical information available to provide an interpretation of RPE requirements for pandemic influenza. This document presents the OHS interpretation to address the appropriate protection of exposed workers during pandemic influenza.

This interpretation identifies RPE requirements for workers at risk of exposure in the workplace during pandemic influenza from their job tasks; generally this will be exposed health care workers.

Joint Recommendation

To meet requirements of OHS legislation in the four Western Canadian provinces, employers who have workers at risk of exposure to the pandemic influenza virus must have an exposure management plan in place which incorporates:

1. a hazard/risk assessment to identify workers at risk of exposure to pandemic influenza and the work tasks that put them at risk and,
2. measures to effectively prevent or control the exposure.

In the exposure management plan, all potential routes of exposure - direct contact, indirect contact and airborne - are considered probable and consequential. Therefore, the control measures must consider all routes of exposure to pandemic influenza.

Where engineering and administrative controls, such as social distancing, are not sufficient to control exposure to pandemic influenza, personal protective equipment (PPE) including RPE must be used as appropriate, based on the hazard/risk assessment. For workers with a high risk of exposure to airborne respirable pandemic influenza virus, a properly fitted, NIOSH approved, N95 respirator without an exhalation valve is required at minimum. High risk exposures would include workers:

- ⌚ performing aerosol-generating procedures on pandemic influenza patient(s);
- ⌚ providing direct care of confirmed or suspected pandemic influenza patients (e.g. healthcare, first aid, emergency response); or
- ⌚ in other circumstances, based on the risk assessment.

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Background/Issues Summary - N95 and Pandemic Influenza

Infection control and public health representatives have raised issue regarding OHS regulatory interpretations. The following table represents the major issues or objections that have been raised and the response of the OHS agencies from Western Canadian provinces that are providing the above interpretation. The responses below are largely based on the findings of the recent Council of Canadian Academies report.

Objections	OHS Response
<p>OHS law should not apply during pandemic influenza- in an emergency it is acceptable to take extra risks.</p>	<ul style="list-style-type: none"> ⌚ OHS laws do apply during emergencies. From a societal point of view, these laws are of increased importance in healthcare during a pandemic influenza as the surge healthcare capacity cannot be met if healthcare workers (HCW) are absent due to illness or concerns about a lack of personal protective equipment (PPE). ⌚ During pandemic influenza, HCW are in higher exposure risk situations due to the nature of their profession at a time when their workplace presence, health and skills are of increased to importance to individuals and the community. ⌚ OHS legislation highlights the workers right to know about workplace hazards. This includes a right to know about evidence that pandemic influenza infection is possible after inhalation of alveolar-sized particles. ⌚ Withholding RPE hazard information could result in the loss of confidence in decision-makers.

Evidence is lacking that coughing and sneezing produces airborne particles that are a significant route of infection.

⌚ The Council of Canadian Academies *Influenza Transmission and the Role of Personal Protective Respiratory Equipment: An Assessment of the Evidence – 2007* (CCA Report) recognizes that the pandemic influenza could be transmitted by alveolar-sized particles over short distances.

⌚ CCA Report: “*There is evidence that influenza can be transmitted via inhalation of tracheobronchial and alveolar-sized particles at short range.*” (p. 11) “*Previous reviews and reports have focused discussion of short-range transmission on the concept of droplet transmission. This, however, does not take into account the full range of particle sizes that are expelled from a potentially infectious individual. All particles of inhalable size, whether nasopharyngeal, tracheobronchial or alveolar, can contribute to short-range transmission of influenza*” (p. 10)*.

⌚ Particles generated by coughing and sneezing vary widely in size and number and include a significant proportion with diameters in the alveolar-size range, especially considering the rapid size reduction that occurs due to evaporation.

⌚ Influenza transmission studies in animals and humans support transmission via alveolar-sized particles that can travel longer