IH0200: Airborne Precautions

EFFECTIVE DATE: September 2006

REVISED DATE: April 2011, January 2015, November 2016, March 2019, February 2020

REVIEWED DATE:

1.0 PURPOSE

Airborne Precautions refer to infection prevention and control interventions **to be used in addition to Routine Practices**. Airborne Precautions are used for diseases that are spread by airborne transmission. Control of airborne transmission is the most difficult, as it requires control of air flow through special ventilation systems and use of respirators.

2.0 DEFINITIONS

Airborne particles include organisms that remain suspended in the air over time and can be dispersed by air currents. These may then inhaled by others who are nearby or who may be some distance away from the source patient, in a different room or ward (depending on air currents) or in the same room that a patient has left, if there have been insufficient air exchanges. Organisms are sometimes contained in droplet nuclei which are small airborne particles, less than 5 microns in size that result from evaporation of large droplets.

Airborne Precautions are used for clients/patients/residents known or suspected of having an illness transmitted by the airborne route and to prevent transmission of airborne particles. Common microorganisms transmitted by the airborne route are Mycobacterium tuberculosis (TB), varicella virus (chickenpox virus) and measles virus.

Conditions/clinical presentations and specific etiologies requiring airborne precautions:

Conditions/clinical presentation	Specific etiologies
Cough, fever, pulmonary infiltrate in person at risk for TB (pleuropulmonary or laryngeal TB) Rash, maculopapular with fever and one of coryza, conjunctivitis or cough * Rash, vesicular with fever	Measles (rubeola) * Monkeypox Tuberculosis (pleuropulmonary or laryngeal) ■ nonpulmonary lesions, during procedures that may aerosolize tuberculi bacilli * Smallpox Varicella zoster virus * ■ varicella (chicken pox) * ■ zoster, disseminated * ■ zoster in immunocompromised patient

***Use Airborne & Contact Precautions**

Aerosol-generating medical procedures (AGMPs) - are medical procedures that can generate aerosols as a result of artificial manipulation of a patient's airway. Examples include intubation, manual ventilation, open endotracheal suctioning, CPR, bronchoscopy, sputum induction, nebulized therapy, surgery, autopsy, and non-invasive positive pressure ventilation (CPAP, BiPAP, Chest Physiotherapy (Cough Assist, Percussion or Vibration)

Airborne Isolation Room – a single patient room that is equipped with a special air handling (negative pressure) and ventilation system.

Anteroom – is considered a clean area and is used to transition people in and out of the airborne isolation room when it is under negative pressure. An anteroom is used as a transitional space between the hallway and the airborne isolation room. This transition area is where the Healthcare Worker (HCW) puts on personal protective equipment (PPE) prior to entering the airborne isolation room. The HCW also will store all clean PPE in this area. See page 11 Anteroom Protocol

Negative Pressure Room – also known as an **Airborne Isolation Room;** a negative pressure room that is a single-occupancy patient-care room used to isolate persons with a suspected or confirmed airborne infectious disease.

N95 Respirators – *A disposable, (Note: most respirators used for health care purposes are disposable filtering face pieces covering mouth, nose and chin) particulate respirator. Airborne particles are captured from the air on the filter media by interception, inertial impaction, diffusion and electrostatic attraction. The filter is certified to capture at least 95% of particles at a diameter of 0.3 microns; the most penetrating particle size*. (Public Health Agency of Canada, 2016, pg. 173)

3.0 GUIDING PRINCIPLES

3.1. Maintain a high degree of suspicion for those patients who present with compatible symptoms of an airborne infection, prompt implementation of airborne precautions and rapid diagnosis.

3.2 **For the purpose of this guideline**, the term **Airborne Isolation Room** will be used to refer to a "negative pressure room". An **Airborne Isolation Room** must have:

- Ventilation creating inward directional airflow from adjacent spaces to the room ('*negative pressure*') that is regularly monitored.
- Direct exhaust of air from the room to the outside of the building or recirculation of air through a HEPA filter before returning to circulation.
- Twelve (12) air changes per hour.
- The door into the room kept closed to maintain negative pressure, even if the patient is not in the room.
- Windows closed at all times; opening the window may cause reversal of air flow, an effect that can vary according to wind direction and indoor/outdoor temperature differentials.

3.3 **A point of care risk assessment** for **every patient interaction** needs to be done to determine additional precautions, room placement and PPE:

- All healthcare providers in high risk areas must be fit tested for an N95 respirator. **Refer to AV 1900 Respiratory Protection Program Policy**
- An N95 respirator must be worn by all HCWs entering the room of a patient with measles regardless of immune status when Airborne Precautions are in place with visible signage

4.0 PROCEDURE

As well as Routine Practice, Airborne Precautions includes the following:

4.1 Source Control

a) A **point of care risk assessment (PCRA)** as per routine practices should be done to determine if airborne precautions are required.

- Note that some diseases/conditions require two precaution categories; airborne and contact. Refer to the Point of Care Risk Assessment Table on the back of precautions signs (pg. 8).
- Patients should be directed to put on a surgical/procedure mask, if tolerated when not in an airborne isolation room.
- Place patients directly into an airborne isolation room with door closed.
- If a facility does not have an airborne isolation room, patient to be placed into a single room; the patient should be instructed to keep the mask on and the door should remain closed. Transfer as soon as possible to a facility with an airborne isolation room.
- **Signage placed at the entrance to patient room**.

b) The following strategies should be applied to reduce the level of aerosol generation when performing **aerosol-generating medical procedures (AGMPs)** for patients with suspected airborne disease.

- AGMPs should be limited to those that are medically necessary.
- The number of personnel in the room should be limited to those required.
- Consider appropriate patient sedation.
- AGMPs should be performed in an airborne isolation room.
- Single rooms (with the door closed and away from high-risk patients), should be used in settings where airborne isolation rooms are unavailable.
- N 95 respirators should be worn by all personnel in the room during the procedure.
- Closed endotracheal suction systems should be used wherever possible.
- In an emergency situation when an airborne isolation room is not available; at a minimum pull the privacy curtains and all personnel to wear N95 respirator. Remove visitors and other patients from the room/area.

Refer to Appendix A - Respiratory Care and Oxygen Therapy Resource

c) Intubated and ventilated patients

- An appropriate bacterial filter should be placed on the “Y” portion of the ventilator circuit to prevent contamination of the ventilator and the ambient air.
- Endotracheal suctioning should be performed using a closed suction system where possible.

4.2 Hand Hygiene

Perform hand hygiene as per hand hygiene guidelines IF0200.

4.3 Patient placement and accommodation:

- Place patient in airborne isolation room
- The airborne isolation room should have a toilet and sink for the patient, and a designated hand washing sink for healthcare workers.
- Monitoring – ensure pressure differentials are correct and indicators/alarms are activated.

4.4 Patient flow/transport

- Communication is essential when a patient goes to another department for testing, to another unit or to other healthcare settings/facilities. This communication must include Emergency Medical Services (EMS) staff and other transport staff.
- Patients should be restricted to their room, unless medically necessary.
- Patients must wear surgical/procedure mask during transport.
- If the patient needs to be transported and **cannot wear a mask**, transport should be planned to limit the exposure of other individuals (e.g. no waiting in the reception areas, transport in empty elevator) and it should be communicated to receiving personnel so that consistent precautions can be maintained. The transport personnel should wear an N95 respirator during transport.
  Refer to AV 1900 Respiratory Protection Program Policy

4.5 Personal Protective Equipment (PPE)

- Healthcare worker to wear appropriately fit-tested N95 respirator upon entering room and when assisting or performing AGMPs.

Appropriate respirator use:

- Hand hygiene should be performed prior to putting on a respirator.
- Respirator should be inspected prior to donning for any abnormalities (tears, rips, punctures)
- A seal check should be performed.
- After exiting Airborne Isolation Room, respirators should be carefully removed by the straps to avoid self- contamination.
- The respirator should be discarded immediately after use, followed by hand hygiene.

Note:

- A respirator should not dangle around the neck when not in use.
- The respirator should be changed if it becomes wet or soiled (from the wearer's breathing or an external splash).

4.6 Management of patient care equipment

- As per routine practices. If contact precautions are also in use, then refer to Contact Precautions Guideline 3.6.

4.7 Cleaning of patient environment

- As per routine practices. If contact precautions are also in use, then refer to Contact Precautions Guideline 3.7.

4.8 Education of patient, family and visitors

- Educate as per Airborne Precautions signage.
- Visitors should be limited.
- Visitors should be counseled about their risk and advised to wear an N95 respirator.

4.9 Duration of precautions

- Airborne precautions should be discontinued after signs and symptoms of the infection have resolved or as per Transmission Tables
  Refer to IH0100 Transmission Tables
- Upon discharge or discontinuation of airborne precautions door must remain closed and negative air flow maintained until all air in the room has been replaced. **Requires 2 hours in a non-negative pressure room and 45 minutes in a negative pressure room.**

4.10 Management of deceased bodies

- Airborne precautions should be used for handling deceased bodies and preparing bodies for autopsy or transfer to mortuary services.
- Airborne precautions should be continued for the handling of a patient with infectious respiratory tuberculosis, measles or varicella until appropriate time has elapsed to remove airborne contaminants in the room. **Requires 2 hours in a non-negative pressure room and 45 minutes in a negative pressure room.**

4.11 Airborne precautions for Residential Care

In addition to routine practices:

- Resident to be placed into a single room; the resident should be instructed to keep a mask on and the door should remain closed. Transfer as soon as possible to a facility with an airborne isolation room.

4.12 Airborne precautions for Clients in a Home Environment

In addition to routine practices:

- The healthcare worker should wear a fit-tested N95 respirator.

5.0 REFERENCES

1) Routine Practices and Additional Precautions In all Healthcare Settings. Provincial Infectious Diseases Advisory Committee (PIDAC), Ontario; November 2012. , http://www.publichealthontario.ca/en/eRepository/RPAP_All_HealthCare_Settings_Eng2012.pdf

2) Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Health Care Settings; Public Health Agency of Canada; 2013 revised 2016, https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/diseases-conditions/routine-practices-precautions-healthcare-associated-infections/routine-practices-precautions-healthcare-associated-infections-2016-FINAL-eng.pdf

3) Routine Practices and Additional Precautions Assessment and Educational Tools. Public Health Agency of Canada; 2013.

4) BCCDC Communicable Disease Control –Management of Measles September 2014. http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Epid/CD%20Manual/Chapter%201%20-%20CDC/MeaslesSeptember2014.pdf

General Donning Instructions for N95 Respirators

The following instructions must be followed **each time** the respirator is worn. Before donning, wash your hands and inspect the respirator to ensure the integrity of the components, including the shell, straps, and metal nose-clip.

1 Cup the nosepiece in your hand with the nosepiece at fingertips, allowing the headbands to hang freely below hands.

2 Position the respirator under your chin. The nosepiece should be over the bridge of your nose.

3 Pull the top strap over your head so it rests high on the back of head.

4 Pull the bottom strap over your head and position it around neck below ears.

5 Using **both** hands, mold the metal nosepiece (if present) to the shape of your nose by pushing inward while moving fingertips down both sides of the nosepiece.

6 **SEAL CHECK**: The respirator seal MUST be checked before each use. To check fit, place both hands over the respirator and exhale. If air leaks around your nose, adjust the nosepieces as described in step 5. If air leaks at respirator edges, adjust the straps back along the sides of your head. Check again.

If you cannot achieve proper fit, DO NOT enter the contaminated area. See your manager.

OHSAH

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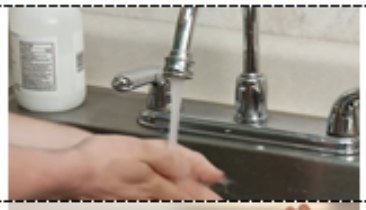
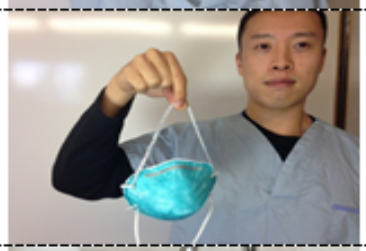
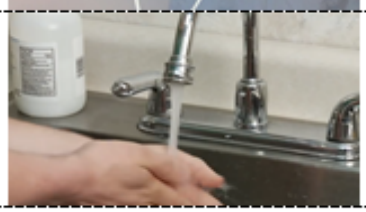
N95 Respirator Doffing Instructions

DOFFING PROCEDURE – STEPS APPLICABLE TO ALL MODELS DISPOSABLE N95 RESPIRATORS

Always remove an N95 respirator by using the straps only. Do not touch the front of the N95 respirator.

	1. Perform hand hygiene
	2. Without touching the front of the respirator, slowly lift the **bottom** strap from around your neck up and over your head while keeping the respirator seated against your face. Let the strap drop and hang in the front of the respirator.
	3. Lift the **top** strap and while maintaining tension move hands forward then slowly release tension and carefully remove the respirator without allowing the outside of the respirator to come in contact with your body.
	4. Discard respirator according to the infection control policy
	5. Perform hand hygiene

Point of Care Risk Assessment is on the backside of each Precautions Sign

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Every person matters

Point of Care Risk Assessment

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A program of the Provincial Health Services Authority

Risk	Protection
• Contact with patient or environment expected	• Hand hygiene
• Splash or spray of blood or body fluids/secretions anticipated	• Mask and eye protection • Put on gown if soiling of clothing is likely
• Contact with mucous membranes • Non-intact skin, blood, body fluids, secretions, excretions or soiled or likely soiled item/surface anticipated	• Perform hand hygiene, then don gloves • Perform hand hygiene after PPE removal and before leaving patient environment

	Contact	Contact Plus	Droplet	Droplet + Contact	Airborne	Airborne+ Contact
Organism-based precautions (examples only; not complete list)	CPO, MRSA, VRE, lice, scabies	*C. difficile*	*N. meningitidis*, mumps, pertussis	Influenza, invasive group A *Streptococcus*	Tuberculosis (TB), measles	Varicella (chickenpox, disseminated herpes zoster)
Syndromic precautions	Draining wound, diarrhea, infestation	Diarrhea and/or vomiting	Stiff neck + fever + headache	Malaise + acute cough + fever, toxic shock	Fever + weight loss + cough + high risk for TB	Disseminated rash + fever
Private room	Preferred. For suspect & confirmed CPO: yes	Preferred	Preferred. If in multi-bed room, draw curtain.	Preferred. If in multi-bed room, draw curtain.	Yes	Yes
Negative pressure room	No	No	No	No	Yes	Yes
Staff PPE	Gown + gloves	Gown + gloves	Procedure mask and eye protection	Procedure mask + eye protection + gown + gloves	N95 respirator	N95 respirator + gown + gloves
Visitor PPE	Gown + gloves if direct care	Gown + gloves	Procedure mask and eye protection	Procedure mask + eye protection (+gown +gloves if direct care)	Offer N95 respirator to visitor	N95 respirator (+gown +gloves if direct care)
Parents of pediatric patients	Clean hands before entering and on leaving room. Do not go into common areas such as patient kitchens, playrooms, school rooms, patient lounges.					
Patient wears a procedure mask during transport	No	No	Yes	Yes	Yes	Yes

JUN.2016 | Adapted from VCH/PHC

Note: in this document the term "patient" is inclusive of patient, resident or client.

Airborne Precautions Sign - Form #807900

Airborne & Contact Precautions Sign - Form #807901

AIRBORNE & CONTACT PRECAUTIONS

Private Room
Negative Pressure

Keep door closed

Families and visitors:

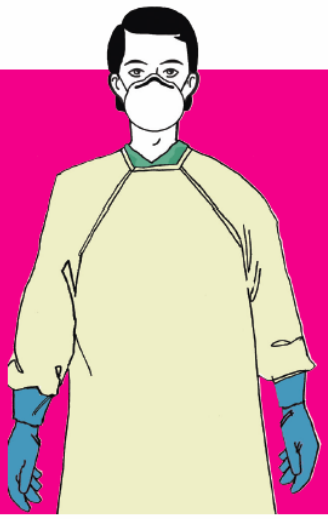
STOP

Please report to staff before entering

Clean hands before entering and when leaving room

Clean hands with
A) Hand foam/gel or **B)** soap and water

Staff:



Required:
- **Point of Care Risk Assessment**
- **Gown and gloves**
- **N95 respirator**

KEEP SIGN POSTED UNTIL ROOM CLEANED
HOUSEKEEPER will remove sign after "Discharge" cleaning

Notify Infection Prevention & Control - Before Discontinuing Airborne Precautions

Interior Health
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A program of the Provincial Health Services Authority

807901 Oct 06-16

Note: in this document the term "patient" is inclusive of patient, resident or client.

Airborne Isolation Room – Anteroom Protocol

EFFECTIVE DATE: February 2011

REVISED DATE: February 2020

1.0 PURPOSE

An anteroom is used as a transitional space between the hallway and the airborne isolation room. This transition area is where the Health Care Worker puts on their PPE prior to entering the airborne isolation room. The HCW also will store all clean PPE in this area.

2.0 DEFINITIONS

Anteroom - anteroom is considered a clean area and is used to transition people in and out of the airborne isolation room when it is under negative pressure.

3.0 GUIDING PRINCIPLES

3.1 During Airborne Precautions.

- The anteroom is to be used for anyone entering or exiting the patient room when the room is used for airborne precautions.
- The laundry hamper shall be situated just inside the patient room when additional precautions are in place.
- The only items that should be stored in this room include:
    - PPE (N95 respirators, procedure masks, gowns, eye protection, gloves).
    - Garbage container.
    - Alcohol based hand rub (ABHR) in a holder.
    - Disinfectant wipes in a holder.
    - Precaution signs.
    - Hand soap in a holder.
    - Paper towels in a holder.
- Posters could include – hand hygiene, donning and doffing, instructions for families.

3.2 No Additional Precautions in use.

- DO NOT USE the room for storage.
- May be used to go in and out of patient room.
- Use for hand hygiene prior to entering and on exit from room.
- May be used to don PPE as necessary for routine practices.

4.0 PROCEDURE

4.1 During Airborne Precautions:

1. Doors to and from the anteroom and the patient room shall remain closed when the room is used for airborne precautions.
2. Perform hand hygiene in the anteroom on entrance and exit from room.
3. Put personal protective equipment (PPE) on before entering the patient room.
4. Remove the N95 respirator in the anteroom after you have closed the door to the patient room and have performed hand hygiene.

For airborne/contact precautions remove the gown and gloves just inside the patient room, and then remove the N95 respirator in the anteroom after you have closed the door to the patient room.