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Aerosol-Generating Procedure Guidelines

Purpose

An aerosol generating procedure (AGP) is an artificial manipulation of a person's airway that may generate aerosols. In British Columbia, there is a provincial process for including procedures on the accepted list of AGP. For further details, please refer to the AGMP Decision Framework on PICNet.

This document stratifies the risks associated with AGP by both patient category and procedures, and specifies the protective measures required in all cases. It will be used to determine the patient room or bed placement and the personal protective equipment (PPE) required for the AGP.

Note: The term ''patient'' in this document refers to any patient, client or resident receiving care within a health care setting.

Scope

This document is applicable to all Fraser Health areas where AGPs will be performed including: Emergency Department, all Inpatient Units, all Critical Care Units, Outpatient areas, including Ambulatory Day Care and Medical Imaging, as well as Long-Term Care (LTC) communities.

High-Risk AGP

There are many procedures that result in the generation of aerosols. However, only a subset of these procedures has been shown to increase the risk of transmission of microorganisms. The list of AGP classified as high-risk are in Table 1.

Table 1. High-Risk AGP

High-Risk AGP
Autopsy[1]
Bag valve (manual) ventilation
Bronchoscopy and bronchoalveolar lavage (diagnostic and therapeutic[2])
CPAP and BiPAP[3]
CPR (with manual ventilation)
Endotracheal tube intubation and extubation (and related procedures including manual ventilation)
Sputum induction with inhalation of nebulized saline[4]

[1] Use of an elastomeric half-face respirator with combination P100 and formaldehyde cartridges is recommended for Autopsy.
[2] Therapeutic bronchoscopies are recognized as being lower risk than diagnostic, however in order to ensure consistent precautions, all bronchoscopies are classified as high-risk AGP.
[3] In LTC/Hospice/Mental Health and Substance Use (MHSU) in-patients , follow "Low Risk Category" of AGPs for residents on routine practices and no respiratory symptoms. Follow "High Risk Category" during Enhanced monitoring, outbreaks and when residents are on droplet precautions.
[4] To protect staff from patients with undiagnosed tuberculosis (TB), sputum induction procedures should be performed in a negative pressure room or a single occupancy room with the door closed if a negative pressure room is not available.

Low-Risk AGP

Low-risk AGP are those AGP for which there is inconclusive evidence for the transmission of microorganisms. Table 2 provides the list of low-risk AGP.

Table 2. Low-Risk AGP

Low-Risk AGP
Breaking the integrity of the ventilator circuit while in operation (e.g., circuit changes, filter changes in a Heat and Moisture Exchanger, in tracheostomy care)
Open-circuit ventilator with no filter
Non-heated humidified high flow O_2 (yellow or green top nebulizer with attached water bottle, wide bore tubing and aerosol mask or “Star Wars” mask)[1]
Nasopharyngeal aspirates and washes
Nebulized therapies including Methacholine challenge
Cough reflex testing
Mastoidectomy
Tracheotomy
Upper endoscopy
Flexible/fiber optic endoscopic evaluation of voice and swallowing

[1] Low-flow O_2 (1 to 6 L/min on nasal prongs, or up to 15 L/min on a non-rebreather or simple mask) is *not* considered an AGP.

Note: Oral and nasal suctioning procedures are *not* considered AGP.

Patient Category and AGP Requirements

Best practice guidelines recommend the use of negative pressure rooms for AGP. However, it is recognized that there are competing needs for negative pressure and single occupancy rooms, and that they are not always available for all patients who require AGP. Under certain circumstances, AGP will be performed in open bays or in multi-bed rooms (MBR). Table 3 stratifies the risk by patient and procedure, and identifies Infection Prevention and Control (IPC) best practices, and where applicable, alternatives for each category. Consult with IPC if you have questions.

For those patients placed on multiple precautions (e.g., droplet and airborne precautions), the protective measures specified by the higher level of precautions must be followed.

Visitors should be instructed to check with the unit staff before entering the room while an AGP is in progress.

For further guidance on N95 respirator use, refer to the N95 Respirator Clinical Protocol.

Table 3. AGP requirements

Patient category[1]	AGP risk category	Procedure location	Is an open bay acceptable?	PPE required*	Risk mitigation	Precautions signage	Air clearance time required?[2]
Patients with airborne infections (e.g., TB)	High or Low	Negative pressure room	No	N95 respirator or equivalent, gown, gloves, protective eyewear and face shield for a health care provider performing an intubation	N/A	Airborne, AGP	Yes for less than or equal to one (1) hour post patient discharge, *or* Yes for less than or equal to one (1) hour post procedure when the patient is not in the room
Patients with droplet precautions due to confirmed or suspect respiratory illness	High or Low	Preferred: negative pressure room Acceptable: single occupancy room with closed door *or* Acceptable: in a MBR with one or other patients with the same pathogen.	No, **except in life-threatening situations**	N95 respirator or equivalent, gown, gloves, protective eyewear and face shield for a health care provider performing an intubation	Close the curtains around every bed in a MBR or open bay	Droplet, AGP	Yes for less than or equal to one (1) hour post procedure in the single patient room, *or* Yes for less than or equal to one (1) hour post procedure for the bed space in the MBR
Low-risk of respiratory illness (no droplet precautions)	High	Preferred: single occupancy room with closed door *or* Acceptable: in a MBR with other patients in the same patient category	Yes	N95 respirator or equivalent, gown, gloves, protective eyewear	Close the curtains around the bed space in a MBR or an open bay	AGP	Yes for less than or equal to one (1) hour post procedure in the single patient room, *or* Yes for less than or equal to one (1) hour post procedure for the bed space in the MBR or the bed space in the open bay
Low-risk of respiratory illness (no droplet precautions)	Low	LTC, Hospice and MHSU in-patients only: CPAP/BiPAP residents are managed under this category[3] In a MBR with other patients in the same patient category	Yes	Medical mask, protective eyewear	Close the curtains around the bed space in a MBR or an open bay	N/A	No

* For all in the room, bed space in a MBR or open bay

[1] Patient category refers to pathogens with airborne or droplet transmission (e.g., TB, Influenza).

[2] Air clearance time is the time where respiratory protection is required (e.g., N95 respirator or equivalent). This time may be shorter depending on air changes per hour (ACH) in that room or area. Contact your FMO for information on ACH. Refer to Table 4 to determine the length of time room must be vacated to remove at least 99 percent of airborne particles.

[3] In LTC/Hospice/MHSU in-patients, follow “Low Risk Category” of AGPs for residents on routine practices and no respiratory symptoms. Follow “High Risk Category” during Enhanced monitoring, outbreaks and when residents are

on droplet precautions.

Table 4. Air changes per hour (ACH) and time required for airborne-contaminant removal efficiencies of 99 percent[1] in minutes.

Air clearance time (minutes) required for removal	
ACH[2]	**99% efficiency[3]**
2	138
4	69
6	46
8	35
10	28
12	23
15	18
20	14
50	6

[2] Values apply to an empty room with no AGP. Contact your FMO for information on ACH.
[3] Fraser Health has adopted a standard 99 percent efficiency for air clearance time.

Reference:

1. U.S. Department of Health and Human Services Centers for Disease Control and Prevention (CDC) Atlanta, GA. Appendix B.Environmental Infection Control Guidelines i [Internet]. 2003 [updated 2019 July; cited 2024]. Available from: Appendix B. Air | Infection Control | CDC