Aerosol-Generating Procedures (AGPs) & PPE

Aerosols generated by medical procedures are a potential route for the transmission of the COVID-19 virus. Categories of risk are based on procedures that have been shown to consistently produce aerosols with evidence of transmission of COVID-19 in the absence of appropriate personal protective equipment (PPE). This guideline is for confirmed COVID-19 patients, and PUIs (patients under investigation) only. All others use standard practice. This guidance may change as further evidence becomes available.

GUIDING PRINCIPLES
- Limit high risk AGPs as much as possible and, if occurring, bundle care to conserve PPE use.
- High risk AGPs should occur in all rooms. The space in which the procedure is performed could be contaminated with viral particles until the appropriate air exchanges have occurred (15 min for all room with N95 + eye protection/PAPR). Facilities must check all rooms at regular intervals to ensure air exchange requirements are met. Patients with Medium risk or low risk procedures can remain in non-AIi room.
  - **Note**: If no AIi room available, high risk AGPs are not recommended
- If the PUI undergoes COVID-19 testing and the test is negative, follow standard practice. N95 or PAPRs will not be necessary.

HIGH RISK PROCEDURES
Recommend N95 or PAPR (if not sterile OR environment) + eye protection + gown + gloves.
- Intubation, extubation, and related airway procedures. See unit specific information regarding the process for intubation
- Tracheotomy/tracheostomy procedures, including open suctioning and trach changes
- High risk airway sinus operative procedures
- Manual ventilation; use in-line filter between mask and bag
- Open airway suctioning in intubated patients which could generate strong cough (due to tracheal stimulation)
- Bronchoscopy
- Non-invasive ventilation (NIV) e.g. BiPAP, CPAP
  - **Exceptions**: Bubble CPAP; NIV moves to LOW RISK when the mask interface has a sufficient seal and adaptations are made to the circuit: viral/bacterial filter placed on the expiratory port, or transition to a closed ventilator circuit, e.g. Servo
  - **Note**: Continue the HIGH RISK process if/when the patient’s mask is removed or a sufficient seal cannot be maintained.
- Post-mortem (autopsy)
- High-frequency oscillating ventilation (HFOV)
- Procedures with goal of induction of sputum
  - Includes Cough Assist (In-Exsufflator), IPV, MetaNeb (unless in line with the ventilator), Aerobika, Acapella, PEP, etc.
- Some dental procedures (e.g. high-speed drilling)
- Cardiopulmonary resuscitation unless invasively ventilated and connected to a ventilator
- Colonoscopies
- Air contrast enema

MEDIUM RISK PROCEDURES
Recommend full face shield (also serves as eye protection) + face mask + gown + gloves. If patient has **highly** suspected (PUI) or confirmed COVID-19, and procedure cannot be delayed, utilize N95 respirator or PAPR in place of full face shield and face mask.
- Exercise lab testing
- Esophageal procedures (e.g. upper endoscopy, transesophageal echocardiogram, impedance probe placement)
- ENT outpatient procedures (e.g. foreign body removal, NP scope, nasal cautery, frenulectomy)
- Rectal manometry
- Upper GI, diagnostic enemas and other routine fluoroscopic procedures, video fluoroscopic swallow study, NG, NJ tube placement
- Pulmonary Function Tests
- Feeding therapies
LOW RISK PROCEDURES
N95/PAPR is not recommended. Follow precautions as per standard practice. If COVID-19 suspected (PUI) or confirmed, wear face mask + eye protection + gown + gloves. A face shield is recommended in situations where the patient is coughing excessively and is unable to cover.

- Patient care in close proximity (e.g. eye exam, ultrasound, etc.)
- Nasal and oral suctioning
- NP and OP specimen collection
- Physiologic (no goal of sputum induction) coughing and crying
- Incentive spirometry
- High-flow Nasal Cannula (HFNC); place surgical mask on patient to mitigate droplet dispersal from coughing.

If a patient is unable to tolerate a surgical mask i.e <2, neurological impairment, provider is recommended to don a face shield when providing care in close proximity to the patient.

- Bubble CPAP
- Closed in-line tracheal suctioning
- Paracentesis
- Thoracentesis with or without pleural catheter placement
- Wound care
- Basic dental examinations and fluoride administration
- Medication administration via nebulization (included continuous nebulization), transition to MDI when feasible
  - **Note:** During nebulization, the aerosol derives from a non-patient source (the fluid in the nebulizer chamber) and does not carry patient-derived viral particles. If a particle in the aerosol coalesces with a contaminated mucous membrane, it will cease to be airborne and therefore will not be part of an aerosol.
- Airway Clearance (if open suctioning with trach move to high risk)
  - Chest physiotherapy (CPT)
  - Vest Therapy

REFERENCES
5. [https://journals.lww.com/ccmjournal/Abstract/OnlineFirst/Surviving_Sepsis_Campaign_Guidelines_on_the.95707.aspx](https://journals.lww.com/ccmjournal/Abstract/OnlineFirst/Surviving_Sepsis_Campaign_Guidelines_on_the.95707.aspx)