

Oxygenation and Ventilation of COVID-19 Patients

Module 2: Airway Management

In collaboration with



American Society of
Anesthesiologists

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The American Heart Association does not endorse or recommend any specific manufacturer or product.

To show skills clearly, the healthcare providers shown do not always use recommended personal protective equipment (such as gloves, masks, face shields).

Objectives

- To review criteria of when to intubate
- To review an inventory of items needed to successfully perform an intubation of those with or suspected of having COVID-19
- To discuss risk mitigation techniques specific to COVID-19 used to protect healthcare providers
- To review manual ventilation devices and filter placement

Escalation to invasive ventilation

- There are several reasons to consider intubation in COVID-19 patients
- If using HFNC of 40 or greater, use the ROX Index to determine when to intubate
 - ROX Index = $(\text{SpO}_2/\text{FIO}_2) / \text{respiratory rate}$
- If using NIV and an $\text{FIO}_2 > 0.6$ cannot maintain a $\text{SpO}_2 > 90\%$
- General on any noninvasive modality
 - Septic shock
 - Worsening oxygenation $\text{PaO}_2/\text{FIO}_2$ or $\text{SpO}_2/\text{FiO}_2 < 150$
 - Hypercapnia/acidosis with a $\text{pH} < 7.3$
 - High work of breathing
 - Altered mental status attributed to respiratory failure

2 Hours	6 Hours	12 Hours
<2.85	<3.47	<3.85

Sample supply list

*These supplies should be taken in **addition to**, not **instead of**, the arrest bag to all intubations/arrests of patients under investigation (PUI)/confirmed COVID-19 cases*

- High-efficiency particulate air (HEPA) filter
 - N95 masks × 4 (2 small, 2 regular)
 - Full face shield (welder mask) × 2 preferred (surgical face shields × 2 if no welder mask available)
 - McGrath, 3 blade × 2, 4 blade × 2 (if not in the standard arrest bag)
 - Isolation gown × 2 (yellow, not waterproof)
 - Waterproof (blue) gown × 2
 - Sterile gown × 1 if available
 - Bouffant hat × 2
 - Long “beard” hat × 1
- (Note: Beards will interfere with the effectiveness of the N95!)**
- Sterile gloves: 6.0, 6.5, 7.0, 7.5
 - Bag for McGrath Handle/battery post-intubation



Sample supply list (cont.)

- Do not need to be taken to non-COVID-19 intubations/arrests
- Do not take the COVID/arrest bag into the room with PUI/confirmed COVID-19 patient
- Take only the things that you need with you into the room
- Prepare medications and intubation equipment outside of the patient's room
- Have a dedicated provider outside the room to hand any necessary additional equipment/medications to avoid contaminating the bag
- If the bag is contaminated, discard all disposable items; clean nondisposable items with wipes (follow manufacturer's directions)
- Do not forget to restock at the end

Things that may be different

- N95 mask/personal protective equipment (PPE) + eye protection
 - Beards or not being fit tested for N95 masks decrease effectiveness
- Rapid sequence intubation with video laryngoscope performed by the most experienced provider
- Heat moisture exchange/filter
 - Prolonged mask ventilation and following intubation
- HEPA filter on manual ventilation devices and ventilators
- Roll of tape/mask holder per patient
- Other items to reduce aerosol generation
 - After intubation, use in-line suction catheters
 - Disconnect the endotracheal tube (ETT) as few times as possible



CPR in COVID-19

- Ensure hand hygiene and PPE for resuscitation team before entering the room
- **Goal is early intubation**
- Minimize bag-mask ventilation; if necessary
 - 2-hand masking to ensure a tight seal by the most experienced provider, with second provider assist with bag ventilation
 - HEPA filter between mask and bag
- If unable to intubate via trachea, consider placing laryngeal mask airway (LMA) for ventilation
- **Hold chest compressions while intubating** to minimize aerosolization of the virus and infectious risk to resuscitation team
 - Clearly alert code leader and team members providing chest compressions

Continued risk mitigation: Cleaning

- Disposable devices should be discarded within the room and processed by housekeeping according to procedure
- Items that are reusable should be processed according to policy
 - This usually requires at minimum a 2-step process of cleaning and then disinfection; disinfection usually requires a 2- to 5-minute dry time
- If supplies of HEPA filters is a concern, typically a single HEPA filter can be used for 2 purposes