

Boston Medical Center
Recommendations for Airway Management during the COVID-19 Pandemic
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Purpose

COVID-19 may be asymptomatic and contagious. There is a limited supply of appropriate Personal Protective Equipment dictating that we differentiate between SUSPECTED OR CONFIRMED COVID-19 patients and NON-COVID SUSPECTED patients.

This guideline describes how to manage:

1. The airway of patients admitted to the hospital requiring endotracheal intubation during the COVID-19 pandemic.
2. The airway of non-intubated and intubated Suspected or Confirmed COVID-19 patients requiring an urgent procedure.
3. Patients requiring urgent procedures that have been screened and are determined to be Non-COVID Suspected patients.

Team Members

- Primary Laryngoscopist
- Supporting airway provider
- Respiratory Therapist
- Bedside Nurse

Personal Protective Equipment: Enhanced precautions (contact, airborne, droplet)

- Inner gloves: Disposable medical gloves
- Outer gloves: Disposable medical gloves with extended cuffs or sterile surgical gloves
- Gown: Impermeable with integrated thumb hooks
- N95 or PAPR (Powered Air Purifying Respirator)*
- Hood
- Face shield
- Footwear covers (optional)

*PAPRs are available for health care workers that have not been fit-tested or cannot wear the N95 respirator. To obtain a PAPR, call Transport at 4-5835 and provide the caller's name and location where the PAPR will be delivered.

Follow the Donning and Doffing for Airway Management Guidelines with observer-ensured compliance.

Airway Management Equipment

Use the dedicated COVID-19 Airway Management Kit (adult or pediatric). These COVID-19 Airway Management Kits will be in the Anesthesia Workroom in labeled orange tackle boxes. The COVID GlideScopes must be plugged in when not in use to ensure full battery charge.

Adult Kit contents	Pediatric Kit contents
Outer gloves (#7 and # 8) with extended cuff	Outer gloves (Size 7 and 8) with extended cuff
Gown: Impermeable with thumb hooks	Gown: Impermeable with thumb hooks
N-95 Respirator size regular only	N-95 Respirator sizes small and regular
Hood	Hood
Face shield	Face shield
Footwear covers (optional)	Footwear covers (optional)
1 DIRTY red biohazard plastic bag	1 DIRTY red biohazard plastic bag
1 CLEAN red biohazard plastic bag	1 CLEAN red biohazard plastic bag
GlideScope monitor	GlideScope monitor
Size 3 blade	Size 1 blade
Size 4 blade	Size 2 blade
One re-useable adult stylet	One disposable pediatric stylet
One re-usable adult camera/cable	One re-usable pediatric camera/cable
One HEPA filter	One HEPA filter
Bleach wipes	Bleach wipes

Anesthesia Code Box: DO NOT TAKE CODE BOX INTO PATIENT’S ROOM. Contains medications and backup airway supplies for use as needed.

Emergency Department (ED) physicians will use ED equipment which is kept in the trauma rooms along with “To go” kits/pouches.

Anesthesia Medication Kit: etomidate, propofol, succinylcholine, rocuronium, phenylephrine, ephedrine, and sugammadex.

Suspected or Confirmed COVID-19 Patients – Airway Management

In patients that have developed respiratory failure requiring oxygenation and ventilation support, early tracheal intubation is recommended. Noninvasive positive pressure ventilation (NIPPV) or high flow nasal oxygen (HFNO) is NOT recommended and should be discontinued before attempting intubation to minimize exposure. NIPPV and HFNO both risk aerosolization of upper airway droplets that contain virus.

There are no “STAT” intubations in Suspected or Confirmed COVID-19 patients; donning and doffing PPE and preparing supplies to be brought into the patient’s room takes time. During nights and weekends, the in-house anesthesiologist must consider requesting anesthesia backup personnel (in-house or from the call team) to assist with procedures or other anesthesia-related activities.

All intubations and extubations, to the extent possible, should be performed in a negative pressure room. Intubations should be performed by the most experienced available clinician.

Complete the routine preparation checklist including:

- Suction
- Ventilator setup
- IV access with ability to administer medications easily
- Standard monitors (BP, Oximeter, EKG)
- Draw up medications

The primary team should place ventilator and sedation orders prior to intubation to minimize the risk of bucking, coughing, and agitation after intubation. This lowers the risk of ventilator disconnection and accidental extubation, reducing the chance of aerosol contamination.

Bring only the items you intend to use into the room. All other items should remain outside of the room with the support team.

Example of items to be brought into the room:

- Medications you intend to use, drawn up outside the room with blunt needles attached
- Multiple 10 ml saline flushes with blunt needles attached
- GlideScope with appropriate blade and camera
- GlideScope stylet
- Endotracheal Tube
- 1 Oral Airway
- 1 DIRTY red biohazard bag to place used GlideScope, stylet, and reusable face shield

Items to be left outside the room with the support team:

- Anesthesia Code Box
- COVID airway management tackle box
- Medications you do not intend to use
- 1 CLEAN red biohazard bag into which the DIRTY biohazard bag will be placed

Use awake intubation ONLY when absolutely necessary. NOTE: Atomized local anesthetic will aerosolize the virus. Avoid nebulized medication administration whenever possible.

ED intubations should follow the above steps where pertinent with the following ED specific caveats:

- While expert opinion advises early intubation in critically ill COVID-19 cases, timing and necessity are matters of judgement. The ED should emergently consult pulmonary critical care regarding the need, urgency and timing of intubation and consensus reached. If the intubation is needed in the ED, then anesthesia should be consulted and the ED and anesthesia attending confer regarding the airway management including who will be the “Primary Laryngoscopist” and who the “Supporting Airway Provider”. In most cases, the Primary Laryngoscopist will be the anesthesia provider. In the rare case of a truly emergent intubation precluding the above processes, the most experienced Laryngoscopist immediately available (from ED) will manage the airway with supporting ED airway provider and adhering to PPE.
- ED intubations, should ideally take place in a negative pressure room (A3, B10 or B11). If no negative pressure room is available, then intubate in an available trauma room.
- Pharmacists will hand off medications outside to inside rooms (non-trauma rooms).

Recommended Steps:

Preoxygenate with 100% oxygen at 15 liters/min for 3-5 minutes of tidal breathing via Non-Rebreather Mask or Face mask attached to HEPA filter and AMBU bag (hold mask firmly on face).

Rapid Sequence Induction (RSI) is recommended for securing the airway to mitigate viral spread. Consider using rocuronium (1.2 mg/kg) to ensure paralysis after intubation and allow the ICU team to establish sedation and other care without rushing. Allow adequate time for NMBA onset, and DO NOT attempt to manipulate the airway until certain of neuromuscular block.

Avoid bag mask ventilation. If bag mask ventilation is necessary, consider placing an oral airway and use a two-handed technique to ensure maximum seal. Use low volume and higher frequency ventilation via bag-mask. Place a HEPA filter between the mask and bag.

Using a GlideScope is recommended to maximize first attempt success and allow for increased distance between the laryngoscopist and the patient’s mouth. After GlideScope intubation, consider attaching the endotracheal tube directly to the ventilator circuit and the attached HEPA filter. If you have a clear view of ETT passing through cords, rather than colorimetric CO2 detection, rely on the ventilator’s capnography if available. Do not use the AMBU bag for alveolar recruitment unless necessary. This strategy avoids multiple disconnects. In the Emergency Department, continuous wave capnography is the preferred method to confirm adequate ventilation using colorimetric CO2 detection only as back-up.

All disposable airway equipment should be discarded in a designated container prior to leaving the patient’s room.

Non-disposable equipment including GlideScope monitor, GlideScope camera, stylet, and reusable face shields will be placed in the DIRTY red biohazard bag in the patient's room. Eventually, the DIRTY biohazard red bag will be placed into a CLEAN biohazard bag and brought to the dirty utility room in the OR for disinfection by the Anesthesia Technicians. After initial disinfection, the Anesthesia Technicians will send the GlideScope stylet to CPD for final processing and reassemble to COVID Airway Management Kit with clean supplies.

Remove your PPE by following the Donning and Doffing for Airway Management Guidelines.

Additional Considerations:

In patients that have features suggesting difficult airway, consider having the supporting airway provider fully donned in PPE outside the room for immediate assistance. The supporting airway provider should enter the room if summoned by the primary laryngoscopist. In these cases, early activation of the Emergency Airway Response Team (EART), even before instrumenting the airway, should be considered. Early activation allows time for the surgical staff to arrive and start donning PPE and preparing all the necessary equipment and supplies.

The EART is activated by calling 4-7777 and stating "Surgical Airway Team" in accordance to BMC Policy # 03.39.000 Emergency Airway Response ("Surgical Airway Team). EART activations during the COVID-19 pandemic will follow this policy except in regards to the Emergency Airway Cart. The cart will be brought to the bedside by the Anesthesia Technician and will stay outside the room unless a fiberoptic intubation is needed. The supporting airway providers will pass other necessary equipment into the room to prevent cross-contamination of supplies in the cart.

Limit ventilator disconnects. If you need to disconnect the ventilator for any reason, do so proximal to the HEPA filter.

For procedures in the IPP please refer to: COVID 19 Universal Precautions in the IPP Version 3 4/14/2020 posted on the Hub.

Airway Management of Patients Undergoing Necessary Procedures under Anesthesia

- **Applicable Patients:** Because of the exceptionally high concentration of the COVID-19 virus in the upper aerodigestive tract, airway management poses an **EXTREMELY HIGH RISK** to Anesthesia Staff and other staff present in the room. Therefore appropriate PPE should be utilized by all staff present during intubation and extubation. **ONLY** essential personnel will be permitted in the room during airway management
- **Personal Protective Equipment (PPE):**
 - a. Must be worn by anesthesia staff. If circulating RN or members of the surgical team are required to be present, they must wear PPE as well.
 - b. All of the options below provide EQUIVALENT protection if **DONNED AND DOFFED PROPERLY**.
 - c. There are limited PAPRs so N95 should be worn by staff unless they have not been fit tested, have not passed the fit test, have facial hair, or they have medical contraindications to using an N95
 - d. Description:

- i.** N95 + FULL FACE SHIELD or PAPR
- ii.** Impervious gown
- iii.** Double glove