Community Developed Resource

ICU Guide for Airway Management in COVID-19 Patients

This guide provides a detailed approach to endotracheal (ET) intubation of COVID-19 patients in the ICU while ensuring the safety of healthcare workers involved. The airway manager can deviate from the protocol if needed to accomplish the task.

Intubation Team

Inside the room (Performing the Intubation)

- Airway manager (Intensivist during duty hours and on-call OORAM provider during off duty hours)
- ICU Nurse
- Respiratory Therapist

Outside the room (Bringing additional Supplies, Medications, and Equipment if needed)

- ICU Nurse

Personal Protective Equipment (PPE)

- Inner gloves (disposable medical gloves)
- Outer gloves (disposable medical gloves with extended cuffs or sterile surgical gloves)
- Yellow (impermeable) gown with integrated thumb hooks
- Fit-tested N95 respirator*
- Hat
- Face shield
- Footwear covers (optional)

Preparation Checklist (Outside the Room)

- If at possible perform the intubation in an airborne infection isolation room (AIIR)
- Availability in the ICU of potentially needed medications (e.g., neuromuscular blocking agents, sedatives, vasoactive drugs)
- Availability in the ICU of potentially needed airways adjuncts:
    - Oral airway
    - Bougie
    - Direct laryngoscope
    - King airway
    - GlideScope BFlex
    - Cricothyrotomy kit

Preparation Checklist (Inside the Room)

- Ventilation bag-valve-mask (BVM) connected to the O_2 supply and HEPA filter between the bag-valve and the mask (Figure 1)
- Ventilator ready with a preset controlled ventilation mode
- Reliable IV access (minimum two 20-gauge peripheral IV access)
- Suction available and operational
- Monitoring equipment to include blood pressure, pulse oximetry, ECG, and capnography

[1]Consider PAPR (Powered Air Purifying Respirator) if available for providers not fit-tested or who cannot wear an N95 respirator.

COVID-19 Intubation Kit (To be Taken into the Room)

- Primary IV tubing (1)
- Saline flushes (10)
- HEPA filter (1)
- T-adaptor for capnography (1)
- Capnography water trap and connector (1 each)
- GlideScope stylet (1)
- Surgilube for ET tube (2)
- 10 ml syringe to inflate cuff (1)
- AnchorFast tube holder (1)
- Suction setup (1), to include:
    - Canister
    - Tubing
    - Lid
    - Solidifier
- ET inline suction kit size 54 cm (1)
- Oral cleansing & suctioning system with Yankauer (Sage) (n=1)
- Feeding tube with Kangaroo “Y” connector (1)
- Red biohazard bag (1)
- Saline pink vials (1)
- AMT bridle (1)
- Sterile irrigation tray with 60 ml piston syringe (1)
- Soft restraints set (1)

Patient/Airway Manager-Specific Items (To be Taken into the Room)

- First-line medications
- GlideScope blade (select size)
- Endotracheal Tube (select size)
- PEEP valve

Endotracheal Intubation

- Preoxygenate with 100% oxygen, which can be delivered through HFNC (if patient is already receiving HFNC; e.g., AIRVO2), simple face mask, or a non-rebreather mask.
- Avoid BVM if possible. If BVM is needed, consider placing an oral airway and/or perform a jaw-thrust maneuver while using a two-handed technique to hold the mask firmly to the face and ensure maximum seal. Verify the HEPA filter is placed between the bag-valve and the mask (Figure 1) and deliver low volume at high frequency ensuring no leak through the mask-face interface.
- Rapid Sequence Intubation (RSI) is recommended to mitigate viral spread.
    - Options for sedation:
        - Propofol 1.0 to 2.0 mg/kg IV reducing the dose to 50% or more in hemodynamically unstable and elderly patient.
        - Ketamine 2.0 to 2.5 mg/kg IV reducing the dose to 50% or more in hemodynamically unstable and elderly patient (preferred option for hemodynamically unstable patient while avoiding in hypertensive/tachycardic patients).

        - Midazolam 0.05 to 0.15 mg/kg IV using lower dose range in hemodynamically unstable and elderly patient.
        - Etomidate 0.2 to 0.4 mg/kg IV (less desirable given the risk of adrenal gland suppression).
    - Options for neuromuscular blockade
        - Rocuronium 0.5 to 1.2 mg/kg IV, with the higher dose acting in 60 to 90 seconds (prolonged duration of action in renal and liver disease). If reversal is needed when not able to intubate and ventilate administer sugammadex 16 mg/kg IV.
        - Succinylcholine 0.5 to 1.5 mg/kg, with the higher dose acting in 30 to 60 seconds (avoid in hyperkalemia, expected to increase serum potassium by 0.5 to 1.0 mEq/l).
- Once the patient is sedated and paralyzed, proceed with ET intubation.
- Use GlideScope to maximize first attempt success visualizing the passage of the ET tube through the vocal cords.
- For failed initial attempt, consider BVM ventilation (as described above) to secure oxygenation while preparing for the subsequent attempt, e.g.:
    - Bougie-guide intubation
    - Direct laryngoscopy
    - King airway placement
    - GlideScope BFlex-guided intubation
    - Emergent cricothyrotomy
    - Call for help from experienced airway manager
- Advance the ET tube for the expected distance into the trachea and inflate the cuff to prevent air leak around the ET tube.
- Connect a HEPA filter pre-assembled with a T-adaptor for capnography to the ET tube (i.e., sequence ET tube – HEPA filter – T-adaptor, Figure 2).
- Deliver a breath or two with the ventilation bag to confirm proper ET tube location based on capnography.
- Place a tube holder and secure the ET tube at the proper distance from the teeth or gumline.
- Connect the ventilator circuit to the ET tube and start ventilation using a controlled mode until respiratory muscle function is restored (Figure 3 and Figure 4).
- Consider immediate use of high PEEP (10 to 12 cmH_2O) or recruitment maneuver.
- Remove the HEPA filter only if the ventilator circuit already has a HEPA filter.
- Place a feeding tube.
- Request a chest-x-ray and adjust the ET and feed tubes if necessary.

Prepared with guidance from professional organizations and input by pertinent FHCC services, led by:

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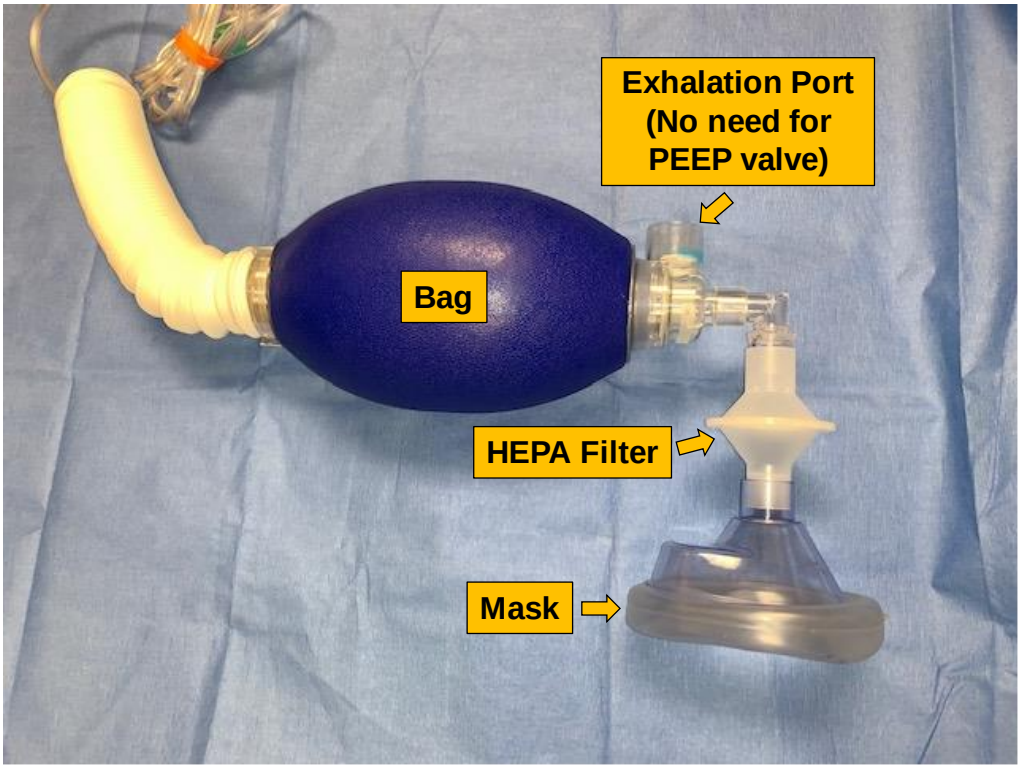


Figure 1: Assembly Bag-Valve-Mask ventilation with a HEPA filter placed between the Mask and the Valve.

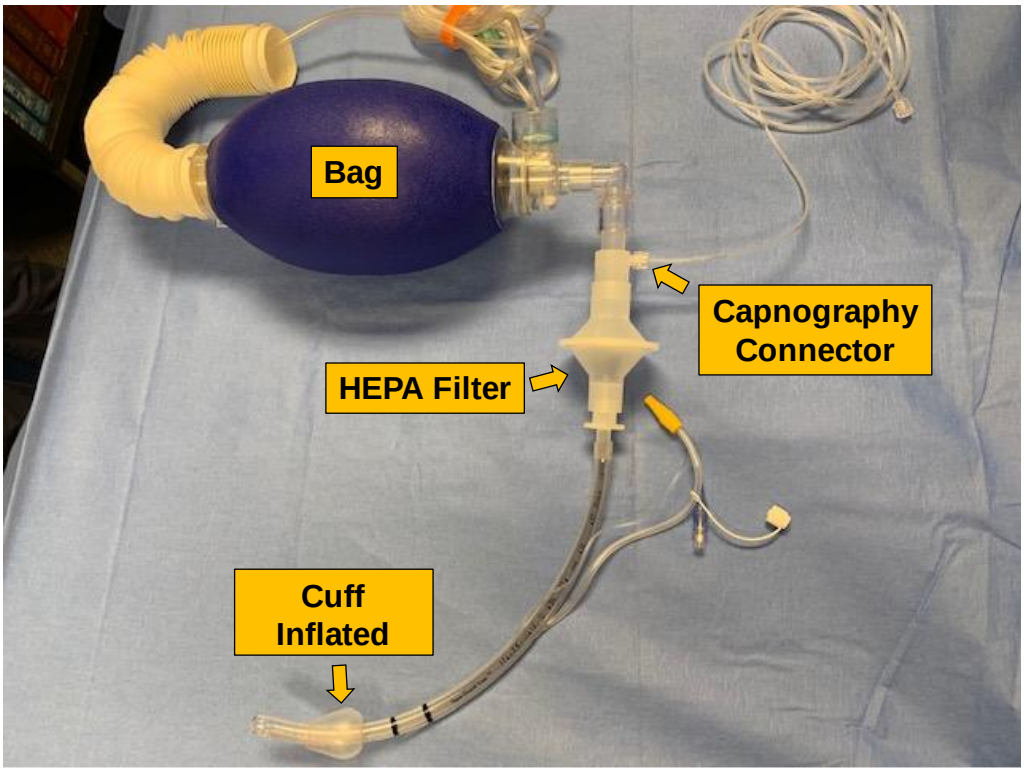


Figure 2: Assembly to verify proper ET tube placement having the ET tube cuff inflated and the HEPA filter between the ET tube and the T-adaptor for the capnography connector.

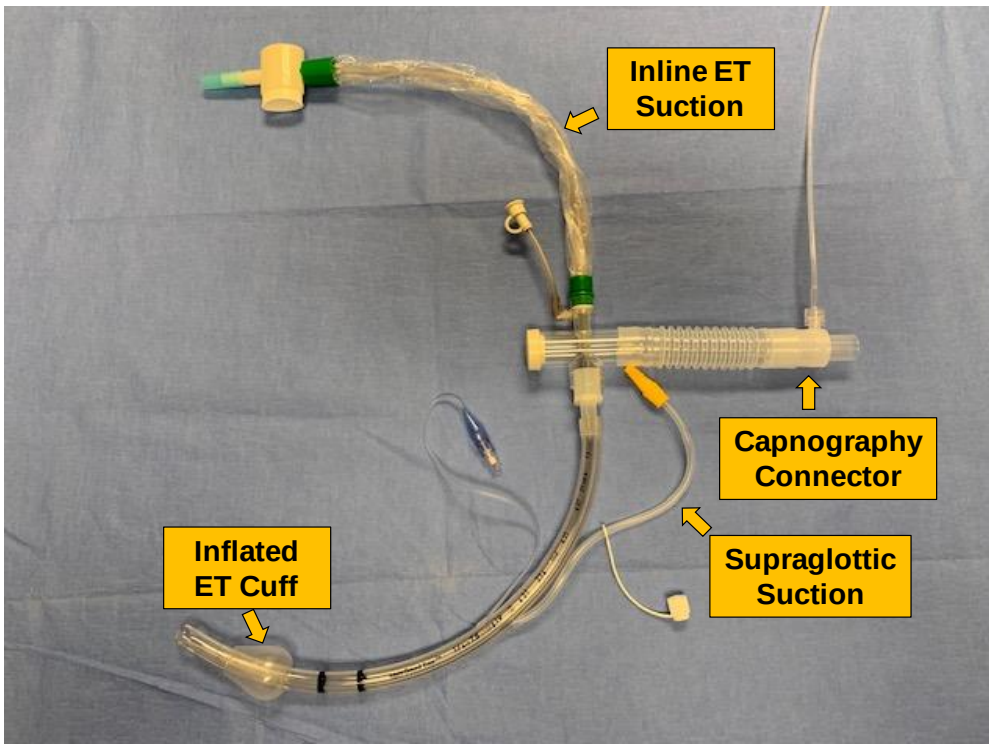


Figure 3: Assembly for connection to a ventilator with humidifier and HEPA filter. Sidestream capnography detector connected to water trap with bacterial and viral filter (not shown).

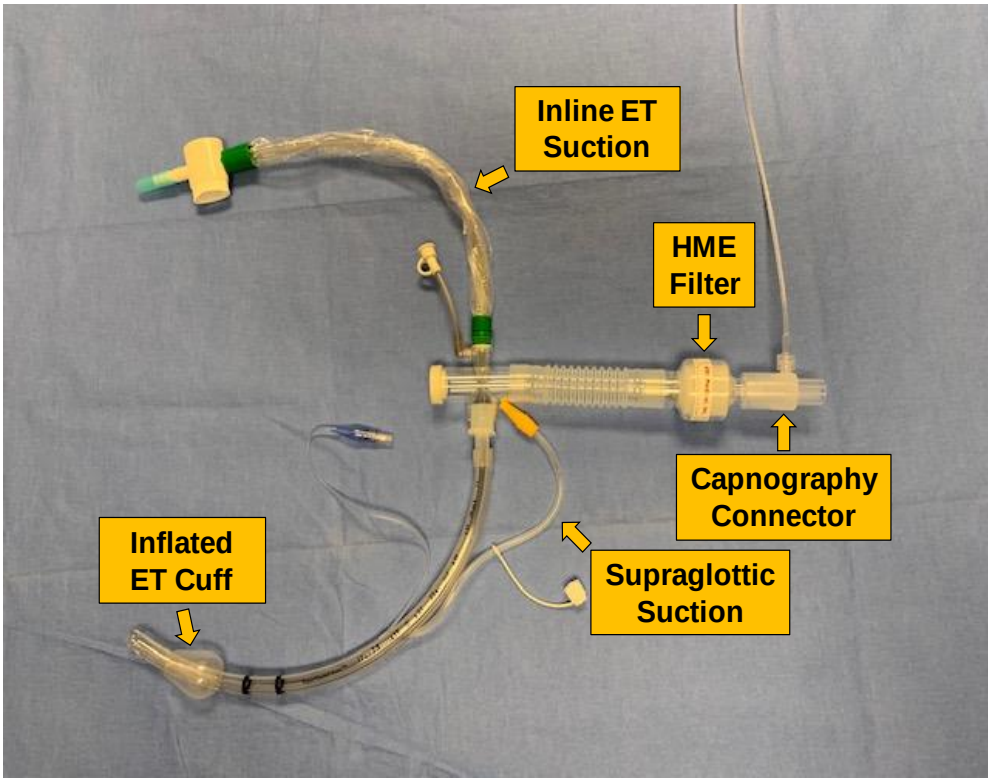
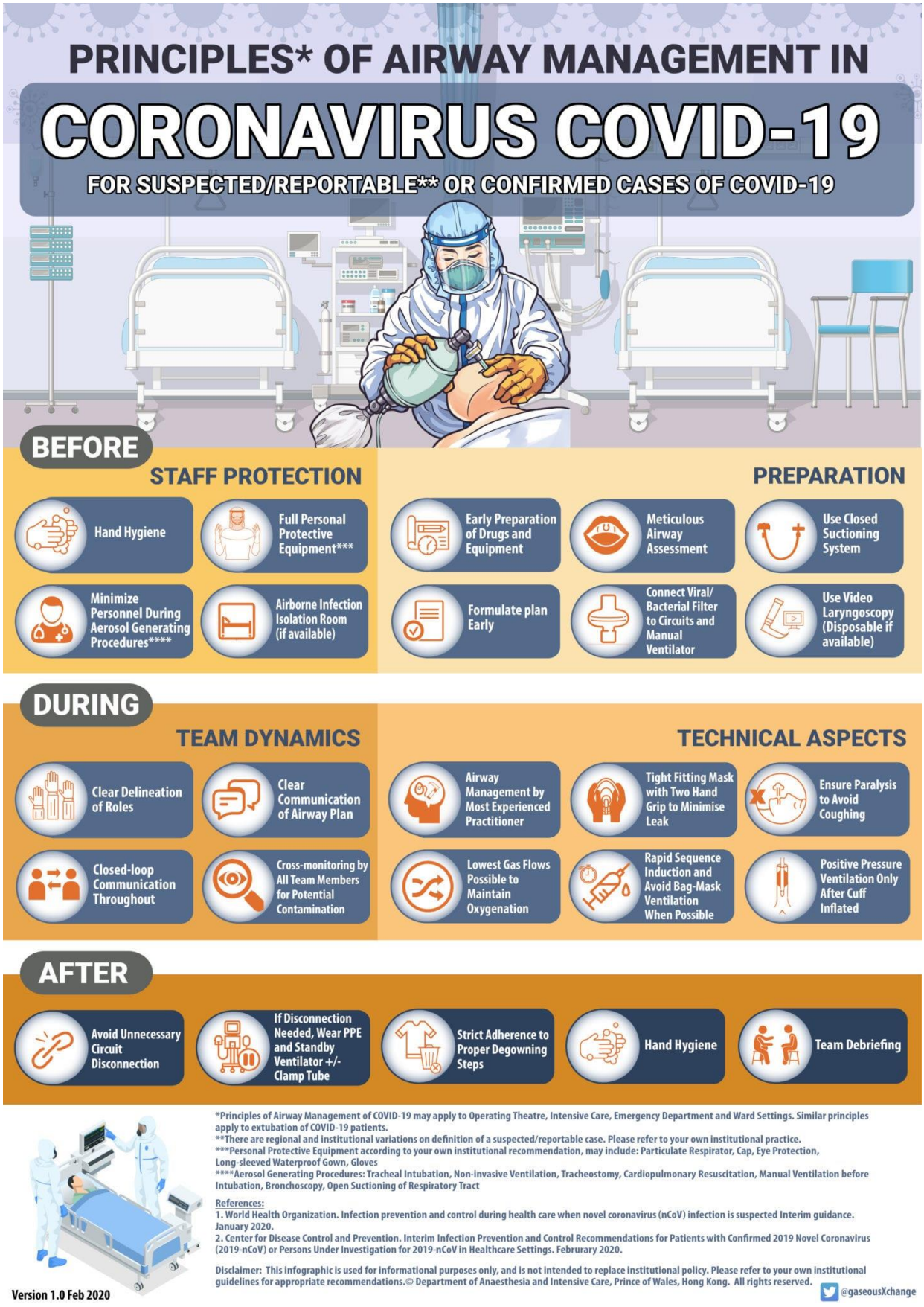


Figure 4: Assembly for connection to a ventilator without humidifier but with HEPA filter. Sidestream capnography detector connected to water trap with bacterial and viral filter (not shown).



Additional Information

https://www.oakesacademy.com/public/Coronavirus-Clinical-Collaboration.cfm
https://www.wfsahq.org/resources/coronavirus