COVID-19 Emergency Department Intubation November 18, 2020 1254

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Introduction
Always ensure appropriate use of Personal Protective Equipment Precautions. Plan ahead, as it takes time to apply all the barrier precautions.

Overview
Clothing: Wear gown, gloves (consider double or triple gloving to be able to immediately remove the most highly contaminated pair right after intubation before resuming additional patient care), PAPR/CAPR, or fit-tested N95 respirator + face protector such as a shield and goggles. **A PAPR is preferred for intubation.** Consider the use of additional protection, such as an intubation box or other barrier device if available (e.g. premade durable plastic drape to cover the patient), but only if hooked up to negative pressure. If not using negative pressure it may actually increase exposure to aerosolized particles. Be aware that barriers may increase intubation times, decrease first pass success, increase patient hypoxia times, and damage or tear provider PPE. Weigh risks and benefits
Staffing: Limit the number of healthcare providers to only essential personnel in the room where the patient is to be intubated.
Considerations: Consider using a video laryngoscope.
Plan for rapid sequence induction (RSI): RSI may need to be modified, if patient has very high alveolar-arterial gradient and is unable to tolerate 30 seconds of apnea or has a contraindication to succinylcholine. If manual ventilation is anticipated, small tidal volumes should be applied.
Oxygenation: 5 minutes of preoxygenation with oxygen 100% and RSI to avoid manual ventilation of patient's lungs and potential aerosolization of virus from airways. [35] Click to view additional details on preoxygenation methods.
Check filter: Ensure viral filter placed between facemask and resuscitation bag. After intubation, respiratory will move it to the appropriate position on the respiratory circuit (downstream of the exhaled arm of the ventilator circuit).
Intubate: Intubate and confirm correct position of tracheal tube. Do not perform repeated intubation attempts, if unsuccessful then bridge with an LMA until stabilizing patient and situation enough for another controlled attempt.
Disposal: Treat all highly exposed materials and equipment as hazardous infectious materials. As soon as possible get these items decontaminated or properly discarded to avoid cross contamination. (ex – outer layer of gloves, laryngoscope blades, stylets)

Induction Strategies
The goal of induction for COVID-19 patients is to quickly and completely induce apnea and eliminate the cough reflex to minimize the risk of aerosolization.
Sedation

- **Ketamine is the preferred sedative agent 1mg/kg for intubation. If the patient is not compliant with pre-oxygenation, consider** Delayed Sequence Intubation (DSI)**.**[38]
- Can use etomidate in normal 0.2-0.3mg/kg induction dosing but weigh the risk of adrenal suppression.[40]

- Propofol – 1-1.5mg/kg, other than increased risk in hemodynamic instability, no specific COVID recommendations.[40]

Paralytics

- Use **higher doses** in COVID patients to ensure apnea and blunting of cough reflex (Rocuronium – 1.5 mg/kg, Succinylcholine – 2 mg/kg).
- Give the meds **1 full minute** to work, otherwise you risk increasing aerosolization. This is why a good pre-oxygenation plan is important, since you will ideally be waiting 1 minute with no BVM. [41]

Mechanical Intubation and General Post Intubation Care[60-67]

1. COVID patients seem to have 2 phenotypes, L or H.
2. L Phenotype – Not a classical ARDS patient – Compliant lungs and less abnormal chest imaging
    - Tidal Volume: Start with 8 cc/kg IBW and titrate to achieve a Pplat <30 mmHg. (Driving pressure <15)
    - FiO2: Titrate to achieve SpO2 >90% Start high, 80-100%
    - PEEP: After setting tidal volume and higher FiO2 start Peep at 5 and titrate up to effect.
3. H Phenotype – Treat like classical ARDS – low compliance lungs, very abnormal chest imaging
    - Tidal Volume: 6-8 cc/kg IBW
    - FiO2 and PEEP: Titrate up utilizing ARDS protocol, higher PEEP and lower FiO2

Best Bet: Start at 8 cc/kg IBW; FiO2 100%; RR 16-18; PEEP at 5 and titrate up to affect. Goal SpO2 of 92-95%

Alternate Strategy (consider only under direction & supervision of the intensivist)

Consider airway pressure release ventilation (APRV) as the initial vent mode because it fits well with suspected COVID-19 pathophysiology. This mode helps maintain high mean airway pressures and facilitates secretion clearance. Recommended starting settings: P-High around 25cm, P-Low at zero, T-Low at 0.5 seconds initially, FiO2 100% and titrate down, turn on Automatic Tube Compensation.[43]

References: COVID 19 Literature Bibliography.docx