

Appendix B
Critical Care/Intubation Pearls

Criteria for strong consideration of mechanical ventilation:

Severe pneumonia defined by any of the following:

- 1) Radiographic infiltrates by imaging (CXR or CT scan on admission) or rapidly progression of infiltrates OR
- 2) Failure to oxygenate despite appropriate supportive care OR
- 3) Evidence of Hypoxemia requiring supplemental oxygen (PaO₂/FiO₂ ratio <150) OR
- 4) RR > 30 min and/or evidence of respiratory distress OR
- 5) pH < 7.3 with or without hypercapnia (PaCO₂ > 45 mmHg) OR
- 6) Hemodynamic instability manifested by: hypotension (BP < 90/60, MAP < 65 mmHg unresponsive to fluid bolus administration (30cc/kg) or need to initiate vasopressors

Management recommendations:

1. Compliance with strict PPE requirement to include use of PPE “coach” or “buddy”

- N95 mask, consider PAPR if indicated
- Face shield/Goggles--(glasses are not the equivalent of goggles or shield)
- Gloves
- Gown (**waterproof gowns recommended for those performing the procedure, if available**)

2. Avoid Aerosol generating therapies

- We WILL NOT use CPAP/BIPAP OR other forms of non-invasive ventilation OR High Flow Nasal Cannula or other high flow delivery devices (venture, face, oxi, misty ox masks, respectively) in order to limit infection to other patients or healthcare workers
- Nebulizer treatments have to be avoided. Convert to MDI if bronchodilator treatment required
- Do not use EZPAP or IPV

3. Oxygen therapy

- Titrate Nasal Cannula up to **6 L/min** to maintain SpO₂>92%
- If evidence of RR>30, SpO₂<92% OR altered mental status OR abdominal paradox OR use of accessory muscles -> proceed with endotracheal intubation.
- Do not delay intubation (disease progresses rapidly)

4. Intubation procedure

- Attempt intubation in an airborne infection isolation room (AIIR)—if not possible to perform in AIIR contact the PCC immediately
- Caregivers performing and/or assisting with intubation will use appropriate PPE as outlined
- Intubation to be performed by provider with most experience
- Intubation team: Physician, RT and ED RN
- If possible, have **a provider stationed outside the room** to 1.) pass additional supplies to intubating team 2.) monitor for breaches of PPE
- Perform rapid sequence intubation (RSI)
- Avoid awake fiberoptic intubation, unless specifically indicated. Atomized local anesthetic can aerosolize the virus.

- Preparation for intubation (10 minutes before intubation) with assessment of difficult airway and removal of dentures or piercings
 - Position the patient for intubation
 - Preoxygenation using passive FiO₂ with an oxymask at 15 L/min (5 minutes before intubation) with concomitant nasal cannula O₂ (at 10 L/min) for apneic oxygenation
 - Avoid manual ventilation
 - Confirm vascular access
 - Prepare equipment: oxygen sources x 2, suction working and under the pillow, MAC and/or MILLER blade in appropriate size with back up size, endotracheal tube x 2 sizes with stylet, NPA/OPA, ETCO₂ detector, and lubrication in room, video assisted laryngoscopy available and difficult airway supplies outside of the room ready for usage: LMA, Bougie, Disposable bronchoscope.
 - Intravascular access x 2 (consider central venous access)
 - Prepare medications: Induction agents: Etomidate 0.3 mg/kg IV [70kg = 20 mg], or Ketamine 1-2 mg/kg if shock or SBP<100mmHg, Fentanyl 25 mcg IV (over 30-60 seconds administration), Midazolam 0.1 – 0.15 mg/kg IV (if not using RSI)
 - AVOID Propofol
 - Use neuromuscular blockade to limit the risk of peri-procedure cough, gag, emesis, etc. with Rocuronium 1-1.2 mg/kg IV or Succinylcholine 1.5 mg/kg
 - Make available reversal agent for paralytic available if needed: Sugammadex 16 mg/kg IV
 - Medications should be drawn up and prepared outside room
 - Initiation mechanical ventilation after inflation of the endotracheal tube with a balloon cuff pressure > 20 cmH₂O and confirmation ETT placement (use 2 methods: color capnography, visualization of condensation inside ETT during video laryngoscopy, auscultation)
 - Initiate light continuous sedation and analgesia following RASS score to establish ventilatory synchrony
- *If CPR is in progress, goal is immediate intubation. Hold chest compressions while intubating** to increase first-pass success and reduce exposure of HCWs to body fluids

5. Connect to the ventilator

- Initiate AC mode, TV= begin with 8 ml/kg and adjust down to 6 ml/kg IBW, begin with PEEP 5 and adjust for oxygenation, FiO₂ 1.0, begin RR 20 bpm or to match as closely as possible and able, the patients' resp rate before intubation
- Monitor Pplat <30 cmH₂O
- Compliance with ARDS protocol [Low tidal volume strategy and PEEP / FiO₂ titration]
- AVOID: aerosol therapies
- Use dual limb heated wire circuits (change only when needed).
- HEPA (vent filter) in line with the ETT will be placed
- HEPA when using Ambu bag

6. Post-intubation

- Place all non-disposable airway equipment in biohazard bag. If video Laryngoscope used immediately wipe down with approved wipes.
- Remove PPE in anteroom. If no anteroom is available, remove PPE *except for N95* in patient room.
- Wash hands or use appropriate alcohol based hand sanitizer immediately after removing PPE



Reference: UNIVERSITY HEALTH SYSTEM COVID-19 UNIT – VENTILATORY
RECOMMENDATIONS, PROTOCOL Ver 3.0 (3/18/20)