PROTECTED COVID-19 INTUBATION

**PREPARE PATIENT**
- While getting ready, apply NRM @15L/min over top surgical mask

**SLOW DOWN**
- SHOULD YOU INTUBATE?
- CODE STATUS? PROGNOSIS?
- Full PPE for all who will/may enter designated room, wear Voceras
- Assign roles: Intubation (2), IV start, Runner, call to PTN/Family
- Review PLAN A, B and C with team
- Equipment packs checked and ready (see page 2)
- Intubation drugs drawn up and labeled (see page 2)

**PREPARE TEAM**
- 1 MD + 1 RN +/- 1 Extra RN in designated room in full PPE (N95 mask, double gloves)
- 2nd MD + 2nd RN on stand-by outside room in full PPE
- Runner/Safety Officer monitors PPE don/doffing
- CALL LAB + XRAY

**AGITATED PATIENT?**
- DELAYED SEQUENCE INTUBATION
  - Ketamine 1mg/Kg (+ 0.5mg/Kg prn)

**POSITION**
- Head & torso elevated, Auditory meatus at sternal notch
- Dentures? IN for preOX, OUT for intubation

**CIRCULATION**
- Judicious use of fluids
- Start pressors early
- Push-Dose Epi and NOREPI drip ready (+/- IO)

**PRE-OXYGENATION**
- Put N/P on, then NIPPV mask attached to Filter
- + CO2 detector (+/- flex mount)
- + BVM @ 15L/min, PEEP 10
- + N/P @ 5L/min
- DO NOT BAG!!!!

**VERBALIZE PLAN A - B - C**

**PLAN A**
- (When ready, turn off N/P)
- Video-Laryngoscope + Bougie

**PLAN B**
- MD preference or skip to Plan C

**PLAN C**
- SGD + call for help
  + - prepare for Surgical Airway

**RE-OXYGENATE with Apneic CPAP, gentle FMV or SGD – if fails, GO SURGICAL!**
- Apneic CPAP = N/P 5L/min + BVM 15L/min + PEEP 10 with Filter + waveform CO2 detector – DO NOT BAG!
- FMV = gentle 2-person Face Mask Ventilation (10 slow breaths, 1 per 6 sec), SGD = Supraglottic Device

**INDUCTION**
- Ketamine 1.5mg/Kg (if hypotensive)
  - OR
  - Propofol 1.5mg/Kg (if hypertensive)

**PARALYSIS**
- Rocuronium 1.5mg/kg
  - Wait long enough!

**INTUBATION**
- Do not ausculate!
- Confirm with ETCO2
- Clamp ETT to connect to ventilator
- Cover face with mask if SGD/Cric

**SURGICAL AIRWAY**
- scalpel ~ finger ~ bougie

1. Make generous VERTICAL cut, as depicted
2. Feel for cricothyroid membrane
3. Make HORIZONTAL cut through the membrane
4. Feel for tracheal lumen, insert Bougie
5. Insert 6-0 cuffed ET tube over Bougie
6. Remove Bougie, inflate cuff, cover face w/ mask
7. Bag to confirm position, secure ET tube

Last updated: March 29, 2020
**Intubation Drug Kit**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Concentration</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketamine</td>
<td>10mg/mL</td>
<td>200mg = 20mL (can be used for DSI as well)</td>
</tr>
<tr>
<td>Propofol</td>
<td>10mg/mL</td>
<td>200mg = 20mL</td>
</tr>
<tr>
<td>Rocuronium</td>
<td>10mg/mL</td>
<td>150mg = 15mL (kept in fridge)</td>
</tr>
<tr>
<td>Push Dose Epi</td>
<td>10 mcg/mL</td>
<td>1mL Cardiac Epi 1:10000 + 9mL NS = 10mL</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>50mcg/mL</td>
<td>200mcg = 4 mL</td>
</tr>
<tr>
<td>Midazolam</td>
<td>5mg/mL</td>
<td>20mg = 4 mL</td>
</tr>
</tbody>
</table>

**Infusions: Pressors & Post-intubation sedation**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Concentration</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norepinephrine</td>
<td>16mcg/mL</td>
<td>Start with 0.1 mcg/kg/min, titrate by 1mcg/min q5min</td>
</tr>
<tr>
<td>Propofol</td>
<td>10mg/mL</td>
<td>20-40 mcg/kg/min</td>
</tr>
<tr>
<td>Ketamine</td>
<td>10mg/mL</td>
<td>1mg/kg/hr</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>50mcg/mL</td>
<td>50mcg/hr</td>
</tr>
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</table>
1. Press and hold “On/Standby” until lights turn on
2. Turn selection dial until “NEW PATIENT” is displayed at the top of the panel
3. Press “Select” to the left of screen; turn dial until “ADULT” is displayed, press “Select” again
4. To silence alarm, press “Silence Reset” (repeat as needed)

INITIAL SETTINGS for LUNG PROTECTIVE VENTILATION

5. Ventilator Mode
   - VOLUME
6. Tidal Volume
   - = PROTECTION
   - 6 mL/Kg (IBW)
7. Inspiratory Time
   - = COMFORT
   - < 0.5 sec
8. Respiratory Rate
   - = VENTILATION
   - 16
9. FiO2/PEEP
   - START 1.0/5, then titrate 0.3/5 - 0.4/5 - 0.4/8 - 0.5/8 - 0.5/10 - 0.6/10 - 0.7/10 - 0.7/12 - 0.7/14 - 0.8/14 - 0.9/16 - 0.9/18 - 1.0/18-24
10. Plateau Pressure
    - Adjust tidal volume by 1 mL/Kg increments to keep plateau pressure < 30

NB: to change a numerical value, press its respective button, turn selection dial, then press the button again

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<table>
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<th><strong>POST-INTUBATION CHECKLIST</strong></th>
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<td><strong>ET Tube depth</strong></td>
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</table>
| **ET cuff pressure** | **INFLATE before bagging, AVOID AIR LEAKS!!**  
Cuff should be easy to squeeze and barely recover |
| **Inline Suction** | Must be connected between ETT and filter |
| **ET disconnecting** | Ensure filter remains on ETT, **clamp tube before disconnecting; be quick about it if patient no longer paralyzed!** |
| **Filter** | Filter should be interposed at all times between ETT and ventilator/BVM, but after the inline suction segment |
| **SGD/CRIC** | **Cover face with surgical mask** if ventilating via SGD or Cricothyrotomy |
| **Elevate head** | Elevate head 30 degrees to reduce aspiration and facilitate ventilation |
| **Restraints** | Consider wrist restraints to prevent unwanted self-extubation |
| **CXR, portable** | To confirm ET tube position (2 - 3cm above carina) and look for complications |
| **ABG** (or VBG, with sat 90-95%) | 30 min. after intubation or any change in ventilator settings |
| **NG or OG Tube** | To decompress stomach, prevent aspiration, ease ventilation |
| **Bronchodilators** | Try not to use them; if must, use MDI Port |
| **Mouth wash** | Chlorhexidine mouthwash decontamination may help reduce risk of aspiration pneumonia |
| **DVT Prevention** | LMWH, Ted Stockings |
| **Ulcer Prevention** | Adjust position q2h, low pressure mattress |
| **Rescue equipment** | BVM + PEEP at bedside, ready for use if ventilator malfunctions; ensure that HME filter remains connected to ETT, and clamp ETT before disconnecting |

| **Ventilator Alarms** | "DOPE" Displacement, Obstruction, Pneumothorax, Equipment failure  
LOW PRESSURE = leak in the system, disconnected  
HIGH PRESSURE = tube kinked/bitten, mucous plug, coughing, tension pneumothorax, ARDS |

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