

CRITICAL CARE CONSIDERATIONS:

A. SUSPECTED COVID-19:

1. Place patient in isolation and negative pressure room.
2. Room will be labelled with sign on door that says “AIRBORNE” precautions.
3. For patient of concern and has not yet been tested (See algorithm for details): Send a biofire to the lab and notify the lab. If biofire is negative for another pathogen and you remain concerned for COVID 19, then notify:
 - a. Infection Prevention via tiger text role. IP will discuss with DOH about the need to test for COVID and guide the testing/sampling. Turnaround time with DOH testing is now 24 hours.
 - b. Notify HOS or Nursing director for appropriate triaging.
 - c. If DOH says NO to testing and the attending MD is still suspicious, you can order the COVID-19 test through CERNER/ labcorp. Make sure the nurse has collected a **separate redtop nasopharyngeal swab for specimen collection**. This swab must be separate from the nasal swab performed for biofire testing. The order is in CERNER. Our lab will then send it to labcorp.

B. GENERAL ICU:

1. NO visitors in the rooms.
2. Staff log- All staff must log in and out of the patient’s room (will be located at the door)
3. Minimize the number of personnel in a COVID-19 patient room. For now, residents ARE permitted to care for these patients, but keep the numbers to a minimum.
4. Personal Protective Equipment (PPE): When entering a patient's room who is suspected or confirmed to have COVID-19, the following PPE **MUST** be worn:
 - i. N-95 mask or PAPR to cover beard. Fit testing is required. **ICU Masks and PAPRs will be available at the admin assistant on each ICU floor. There will be extra masks in the ICU 4 clinical supervisor’s office. N95 masks are one time only. PAPRs may be used by the same provider for 12 hours. PAPRs are in limited supply.
 - ii. Goggles or face shield
 - iii. Gown
 - iv. Double glove
 - v. Hair cover/Bouffant
 - vi. Hand washing pre and post. Soap and water is best, but alcohol has been endorsed as effective
 - vii. Proper donning and doffing technique with an **observer** to ensure compliance
 - viii. Remove all PPE in room prior to exit except the N95 mask. All waste must be placed in a biohazard bag
 - ix. Change to new gown and gloves when transporting patient to new location.
5. Equipment (ie. ultrasound, video laryngoscope, etc):

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- i. Drape nonessential parts equipment to minimize exposure.
 - ii. All equipment brought into the patient's room must remain there and will be unusable until appropriately disinfected.
 - iii. ECMO- Will be considered on a patient-to-patient basis on ICU 5.
 6. Respiratory considerations:
 - i. Venturi masks, CPAP and BIPAP are not advised as they may disseminate droplet spread more readily. They will be double filtered when used. Proceed with early intubation if signs that respiratory distress is progressing.
 - ii. Use disposable stethoscopes.
 7. Capacity: ICU 5 will be the designated floor for cohorting these patients. ICU 4 will open as a full ICU to accommodate other ICU patients.
 8. Management: For now, the care is all supportive in nature. Inhaled flolan, proning, vent mgmt....etc. Steroids do NOT seem to work. We will enroll patients in trials as they come/IRB approval.
- C. INTUBATIONS:
 1. Early tracheal intubation is preferred with goal of avoiding emergent intubations.
 2. Venturi masks, CPAP and BIPAP are not advised as they may disseminate droplet spread more readily. Proceed with intubation if early signs of respiratory failure.
 3. Staffing:
 - i. ICU faculty will be contacted to intubate - attending physician or fellow on duty with most experience. (No resident)
 - ii. If the patient is deemed a risk for difficult intubation, an anesthesiology faculty will be contacted to intubate. (No resident)
 - iii. Limit clinicians in room for intubation: MD performing intubation, RN, and RT
 4. Intubation and extubation should be performed in a **negative pressure room**.
 5. Wear **enhanced droplet personal protective equipment (PPE)**
 - i. N95 or PAPR (certification required within two years)
 - ii. Eye wear
 - iii. Full face shield or goggles
 - iv. Hair cover/bouffant
 - v. Surgical gown
 - vi. Boot coverings
 - vii. Double glove
 - viii. Use an observer and checklist (if available) when donning PPE.
 6. Equipment/Supplies:
 - i. Use dedicated COVID Video Laryngoscope (anesthesia tech stock room) with bougie and two blades – *in progress*
 - ii. Use the dedicated COVID Code Bag (anesthesia tech stock room) for airway supplies, but **LEAVE BAG OUTSIDE OF PATIENT ROOM**. – *in progress*
 - iii. Medication kit available in COVID Code Bag, but *preferred* to use medications from ICU.

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- iv. Use disposable equipment whenever possible and wipe down all other equipment with disinfectant.
- v. Drape non-essential parts of carts (ie. ultrasound, video laryngoscopes) when in room.

7. Procedure:

- i. Leave personal belongings outside, including: jewelry, personal bags, pens, phone ID, stethoscope
- ii. Do not double cover with an AOD phone.
- iii. A second donned provider should be outside the patient room in anticipated difficulty with securing the airway or need for complex airway maneuver.
- iv. Full pre-brief/turnover should take place in clean environment
- v. Preparation:
 - 1. suction, ventilator, PIV, meds, post-intubation sedation/vasopressors, monitors, biohazard bag for disposal, and patient positioning
 - 2. Equipment at bedside: COVID video laryngoscope, styletted ETT (8.0 or larger), bougie, AirQ.
 - 3. Awake fiberoptic intubation is strongly discouraged.
 - 4. Drugs available: induction, paralytics, pressors, with or without antiemetics, narcotics and reversal
 - 5. Pull supplies on top of cart for easy access (e.g. eye tape, bite block, oral airway, temp probe, bair hugger, extra IV fluid bags, IV and art line and central line supplies)
 - 6. Alcohol-based hand sanitizer and sani wipes for cleaning in OR
 - 7. Avoid atomized local anesthetic and nebulized medication administration.
- vi. RSI is recommended. Avoid manual ventilation, if the patient can tolerate it, due to risk of aerosolization.
- vii. Minimize suctioning or other airway manipulation.
- viii. Preoxygenate with 100% oxygen for 5 minutes of tidal breathing with ambu bag and mask at 15 L/min flow with upright position. Use **HEPA filter** (available in ICU) between ambu and mask.
- ix. Avoid bag-mask ventilation: if absolutely necessary, use oral airway and two handed technique to maintain seal. Use low volume/high frequency.
- x. Allow adequate time for NMBD onset of paralysis prior to attempting intubation.
- xi. Use video laryngoscope
- xii. If you have a clear view of ETT passing through vocal cords, and the ventilator is set up with ETCO₂ monitoring, consider connecting directly to ventilator (to minimize disconnects). Listen to breath sounds and confirm CO₂ with the ventilator.

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- xiii. Vent settings: Pressure Control Ventilation with V_T 4-6 mL/kg and Plateau Pressures < 30 cm H₂O. Permissive hypercapnia (pH > 7.2). Use paralysis as needed.
 - xiv. Cover laryngoscope blade with outer glove immediately after confirming placement of ETT.
 - xv. Use a HEPA filter between ETT and Y-piece or expiratory limb of ventilator circuit. Make sure sampling line is post-filter.
8. Post-Procedure
- i. All disposable airway equipment should be gently placed in a biohazard bag and sealed after intubation and outer glove of hand that touches ETT should be discarded as well.
 - ii. Adhere to doffing procedures with an observer, including hand washing. Follow steps according to this video: <https://www.youtube.com/watch?v=OF6dMhRvD8M>
 - iii. All equipment brought into the patient's room must remain there and will be unusable until appropriately disinfected.
- D. Extubation
- 1. Wear personal protective equipment in the same manner for extubation.
 - 2. Place low flow nasal cannula oxygen pre-extubation.
 - 3. Consider using a clear plastic drape for equipment and over the mask during emergence, as noted in the demo video: <https://www.youtube.com/watch?v=OF6dMhRvD8M>
 - 4. Dispose of ETT gently in biohazard bag and seal.

CODES/CPR:

- A. Will be evaluated on an individual basis with Hospital Ethics Committee. General risks and benefits to be considered.
- B. ICU attending to intubate; anesthesiology attending to remain outside room and only called in, if needed – intubation strategy, as above
- C. Do not enter room without PPE.
- D. Minimize personnel.
- E. Isolation Carts will be available at CODES, in ICU and in ED
- F. Even in emergent situations, personnel are **NOT** permitted to shortcut PPE requirements.
- G. In the event of a death from COVID-19, an intensivist must do the following:
 - 1. Call medical examiner's office to report death
 - 2. Call the GW Hospital Command Center at 202-715-4242. The Command Center will call the DC Dept. of Health.

OR CONSIDERATIONS:

- A. No surgery of patients with suspected/confirmed cases of COVID-19 are to be considered in the OR at this time.
- B. Consideration for urgent/emergent cases in the OR will only be undertaken after careful consideration to mitigate risks (ie. attempt to perform in ICU, if possible)

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- C. IF decision made to operate on COVID-19 suspected or confirmed patient:
 - a. Minimize health care workers or patients in OR suite for COVID-19 patient surgery
 - b. If OR utilized for COVID-19 patient surgery, first choice OR should be OR 11. Donning and doffing personal protective equipment should occur in anteroom between OR and hallway.
 - c. If surgery without GA, keep mask on patient.
 - d. If surgery with GA, induce anesthesia and intubate in ICU negative pressure room (or whatever negative pressure room of origin, such as ED) prior to transfer to OR. Patient not to be taken to Preoperative Holding or PACU.
 - e. Change gloves after contamination and before reaching into cart, changing ventilator settings, charting on EMR, or touching other equipment.
 - f. Hand hygiene with every glove change
 - g. Transfer intubated back to negative pressure room in ICU for emergence and extubation. Consideration for intubation/extubation in the OR should only be afforded to patients with potential difficult airway.
 - h. Maximize down time for OR post-procedure to dissipate any potential aerosolized virus - 99.9% air turnover based on OR air exchanged per hour calculation for GW)
 - i. Do not remove any equipment until completion of terminal cleaning of OR
 - j. Clean personal items that you took into OR with you (e.g. phone)
- D. Transfer
 - a. Use PPE for transport
 - b. Prepare: Make a transport bundle consisting of PPE, ICU ventilator with HEPA filter, transport monitor, O₂, resuscitation meds, and any other needed equipment.
 - c. A RN should accompany the patient along with a RT.
 - d. Another care team member designated to touch the environment (buttons etc) and not the patient.
 - e. Full report should be given in a clean environment prior to transport.
 - f. Consider paralysis with propofol infusion for transport
 - g. Halls should be clear, elevators should be held. Elevator will have to be cleaned after use. Avoid contact with the environment.
 - h. Once in OR, OR team attaches monitors. Members of transport team who are no longer needed, should doff PPE as per protocol

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RESOURCES

ASA & APSF:

<https://www.asahq.org/about-asa/governance-and-committees/asa-committees/committee-on-occupational-health/coronavirus>

<https://www.apsf.org/news-updates/perioperative-considerations-for-the-2019-novel-coronavirus-covid-19/>

CDC:

<https://www.youtube.com/watch?v=bG6zISnenPg>