

Protocol Name	ICU Care for Patients with Suspected or Proven COVID-19
Division/Unit:	All Critical Care Units
Effective Date:	3/11/2020
Revision Date(s):	3/18/2020

## PROTOCOL STATEMENT:

This protocol details specific considerations in the event a patient with suspected or proven COVID-19 (the disease caused by severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2] infection) is evaluated for admission to the medical intensive care unit (ICU). Indications for ICU admission, choice of hospital and ICU room, the potential role of cohorting, specific critical care procedures and the unique responsibilities and precautions for various providers caring for patients with suspected or proven COVID-19 are described. Unless otherwise specified patients with suspected or proven COVID-19 should receive standard critical care treatment.

## PROTOCOL DETAILS:

### Indication for ICU admission:

- *Reason for modification:* The threshold for admitting a patient with suspected or proven COVID-19 should be lower than for other patients being considered for ICU level of care. These patients can be more easily managed in the ICU and there are distinct advantages to early intubation (avoidance of emergent procedures, limiting of aerosolized virus).
- In addition to the usual indications for ICU admission, Patients with suspected or proven COVID-19 who have early signs of clinical deterioration, increasing oxygen requirement, or O2 requirements of  $\geq 6$ L nasal cannula.

### Choice of hospital: Hillcrest or Jacobs Medical Center

- *Patients in the emergency room:* In the event a patient with suspected or proven COVID-19 presents to the emergency department the patient should be admitted to the same hospital campus.
- *Patients admitted to either Hillcrest or Jacobs and subsequently deemed a patient under investigation (PUI):* should remain in the same hospital campus if they are clinically unstable. Patients who are clinically stable can be considered for transfer to another hospital in an effort to cohort patients with COVID-19.
- *Patients referred from outside the UCSD System:* Patients are currently being admitted to Hillcrest Hospital.
- Of note hospital choice should take into consideration the need for extracorporeal membrane oxygenation (ECMO). In early report of 138 patients hospitalized for COVID-19, 2.9% required ECMO[1]. All COVID patients being transferred from outside the UCSD system who have a high likelihood of needing ECMO should be admitted to Jacobs Medical Center if possible

**Room choice for patients with suspected or proven ICU admission and role of patient cohorting**

- Consideration should be given for admitting a COVID patient to an airborne infection isolation room (AIIR).
- In cases of an emergent intubation or other aerosol generating procedure, providers can proceed to perform these lifesaving functions in a standard isolation room
- Ideally AIIR rooms will have an adjacent anteroom with sufficient space to put on and remove personal protective equipment (PPE).
- In the event an AIIR is not available, the patient should be placed in a single room with closed doors.
- Cohorting of multiple patients with proven COVID-19 is recommended.
- A decision to move a patient from a negative-pressure to a neutral-pressure room will be made by the Critical Care Attending and will be based on clinical features and surge needs.
- This is acceptable under Cal OSHA aerosol transmissible disease standards.

**All providers administering care must adhere to standard, contact, droplet and airborne precautions for COVID patients admitted to the ICU**

*Rationale for modification:* The CDC webpage states that “facemasks are an acceptable alternative when the supply chain of respirators cannot meet the demand;” however, N95 respirators should be used during all aerosol-generating procedures [2].

-At this time in the ICU, PPE for COVID patients will consist of airborne (N95 or PAPR), droplet (preferably face shield with mask) and contact (gown and gloves) isolation. Because of the frequent unexpected aerosol generating procedures in the ICUs, routine N-95 use is our best way to stay in compliance with CDC standard guidance on aerosol generating procedure.

**Donning of PPE:** Before entering the patient’s room, PPE donning should be performed (preferably in an anteroom) and based on current CDC recommendations[3]. PPE for COVID-19 patient care includes donning the following items in the following order:

1. Gown
2. N95 Respirator
3. Eye protection - face shield or goggles
4. Gloves

**Doffing of PPE:**

- *Rationale for emphasis on doffing technique:* all protective equipment be done slowly and carefully to avoid inadvertent contamination of yourself or others
- Anyone who is unwell, has had equipment failure, or likely self-contaminated should be first to doff and exit the patient room
- Inside the room doffing steps in order:
  1. Remove the gloves using the glove-to-glove/skin-to-skin technique and discard in waste container
  2. Perform Hand hygiene

3. Remove face shield or goggles touching only the straps or the ear pieces and discard in waste container
  4. Perform Hand hygiene
  5. Unfasten gown ties and turn gown inside out while removing and discard in waste container
  6. Perform Hand hygiene
- If an anteroom is present otherwise to be performed outside the patient's room:
    1. Remove N95 respirator using straps only
    2. Perform hand hygiene

### **Specific critical care procedures**

#### **Endotracheal Intubation**

- *Rationale for modification:* It is especially important to minimize aerosolization of virus optimize intubation success on first attempt, and limit the number of clinicians and staff at risk of exposure to COVID-19.
- Intubation will be performed by an anesthesia attending or other advanced trainee/airway trained physician such as anesthesia critical care fellow. The presence of a second anesthesiologist may be required for administration of intubation drugs, hemodynamic management or airway assistance.
- Videolaryngoscopy as first intubation technique should be strongly considered as this technique generally does not require the operator to place their own face close to the patient's face.
- PPE donning must be performed before entering the room as described above. Of note, intubating physicians should use either an N95 respirator mask and a full face shield or a powered air purifying respirator (PAPR).
- Pre-oxygenation. It is advantageous to intubate as soon as possible. Apneic oxygenation with nasal prongs may be considered or else pre-oxygenation should be performed using nonrebreather mask. In the event that these techniques are not adequate then other methods of pre-oxygenation should be employed such as BiPAP.
- If manual bag-mask ventilation is performed, ensure a filter (as per usual care) is used between the mask and bag, use small tidal volumes and use a 2-person technique (to achieve tight mask seal).
- The use high-flow nasal cannula—a potentially aerosol-generating procedures—should be the last tier option for preoxygenating a patient with COVID-19.
- Avoid the patient coughing or becoming agitated during intubation to protect staff. In most situations a rapid sequence intubation will achieve this goal
- PPE including an N-95 respirator should be worn during the procedure and for one hour after in non-negative-pressure rooms, 30 minutes after in negative-pressure rooms if staying in the room.

#### **Bronchoscopy**

*Rationale for modification:* It is especially important to minimize aerosolization of virus.

- Ideally, only intubated patients will be considered for bronchoscopy. Bronchoscopy will be performed in the patient's AIIR room.

- Bronchoscopy will be performed by a pulmonary critical care attending or most senior fellow.
- PPE donning and doffing must be performed as described above. Of note, physicians should use either an N95 respirator mask and a full-face shield or a PAPR.
- PPE including an N-95 respirator should be worn during the procedure and for one hour after in non-negative-pressure rooms, 30 minutes after in negative-pressure rooms if staying in the room.

### **Central line or arterial line placement**

*Rationale for modification:* Every effort should be made to minimize proceduralist time spent in close proximity to the patient.

- All vascular access procedures (excluding ECMO) will be performed by a critical care attending or fellow.
- PPE donning and doffing must be performed as described above. Of note, physicians should use either an N95 respirator mask and a full face shield or a PAPR.

### **ECMO**

*Rationale for modification:* The objective is to be prepared in the event that a COVID-19 patient may require ECMO and to both minimize cannulation procedure time and limit the number of clinicians and staff at risk of exposure to COVID-19.

- The ECMO team should be notified of all COVID-19 patients admitted to the medical ICUs at Jacobs or Hillcrest
- Patients being referred to UCSDH from outside hospitals for consideration of ECMO support must follow the process laid out in the “ECMO Transfer Guidelines” (D4515, attached to HCSDHP375.0). This process will ensure that the ECMO team is notified and can assess for resource availability.
- ECMO support can be started at either hospital location, once initiated, the patient will be transferred to and cared for in the cardiovascular ICU in LaJolla in accordance with UCSDHP 375.0. The UCSDH preferred transfer companies will perform patient transfer and have been prepared in COVID patient management.
- All ECMO cannulations will be performed by a CT surgery attending or fellow or interventional cardiology attending or fellow
- PPE donning and doffing must be performed as described above. Of note, physicians should use either an N95 respirator mask and a full face shield or a PAPR.

### **Post procedure modifications**

#### **Handling of equipment and cleaning of room:**

- All non-disposable equipment (e.g. videolaryngoscope) must be wiped with a hospital approved disinfectant wipe.
- Disposable equipment must be discarded.

#### **Doffing:**

- *Rationale for emphasis on doffing technique:* all protective equipment be done slowly and carefully to avoid inadvertent contamination of yourself or others.
- Anyone who is unwell, has had equipment failure, or likely self-contaminated should be first to doff and exit the patient room.

- Inside the room doffing steps in order:
  7. Remove the gloves using the glove-to-glove/skin-to-skin technique and discard in waste container.
  8. Perform Hand hygiene
  9. Remove face shield or goggles touching only the straps or the ear pieces and discard in waste container.
  10. Perform Hand hygiene
  11. Unfasten gown ties and turn gown inside out while removing and discard in waste container.
  12. Perform Hand hygiene
- If an anteroom is present otherwise to be performed outside the patient's room:
  1. Remove N95 respirator using straps only
  2. Perform hand hygiene

**Critical care team will serve as the primary caregivers**

- All orders will be written by the ICU team.
- The patient will be examined daily by the attending or the fellow. Excluding medical emergencies occurring in the absence of an attending, house staff should not examine the patient.

**Infectious disease consultation**

Infectious disease will consult on all patients in the ICU and will examine the patient as needed.

**All other consultation services**

Need for examination will be determined on a case-by-case basis.

**Nursing**

- Nursing/patient ratio in the ICU should be based on clinical need as per standard of care
- Standard of care should be maintained with the notable emphasis on strict adherence to PPE while in the patient's room.
- Handling and transport of lab specimens as per standard procedure. All specimens should be placed in a biohazard bag for transport. Deliver all specimens by hand to the lab. DO NOT use pneumatic-tube systems to transport specimens[4].

**Respiratory Care:**

Standard of care (including the administration of nebulized therapies as prescribed) should be maintained with the notable emphasis on strict adherence to PPE while in the patient's room.

**Patient visitors and family:**

No visitors are allowed in the patient's room.

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## REFERENCES:

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3. Prevention CfDca. Interim U.S. Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with 2019 Novel Coronavirus (2019-nCoV). Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html>.
4. WHO. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. **2020**.