

## Updated Patient Care Guidance for COVID-19 Patients – April 10<sup>th</sup> 2020

Dear AMC Clinicians,

### Air Methods Guidelines for the Care of Patients with Suspected or Confirmed COVID-19

The objectives for this guideline are to balance optimal care of critically ill patients with suspected or confirmed coronavirus infection with the safety of our crews. This requires an in-depth understanding of the transmission risks with the potential therapeutic benefit of various modalities, which will be explored in further detail below.

#### General considerations

- Appropriate personal protective equipment (PPE) will be donned for any patient with a respiratory or infectious chief complaint. At a minimum, PPE should include a tight-fitting surgical mask and gloves at first encounter with the patient. This should be escalated to full respiratory & droplet precautions [gown, N95 mask, goggles, gloves] with any suspicion of COVID-19 and use of high-risk therapies [nebulizer therapy, CPAP/BiPAP, bag-valve-mask ventilation, placement of an advanced airway].
- The maximum level of PPE used for an individual patient should be maintained until decontamination of the cabin and equipment is performed.
- Flight crews are encouraged to involve on-line medical control prior to transport of a suspected or confirmed COVID-19 patient with ongoing bronchodilator therapy or non-invasive positive-pressure ventilation (NIPPV) or with any concerns about optimal therapy expressed by the sending or receiving facilities or our air medical crews.
- Any potential exposure should be reported to the Area Manager who will notify the Clinical Director.
- High risk exposures with suspected or confirmed COVID-19 patient, would include either: a) absence of at least a surgical mask and gloves, or b) failure to don full respiratory & droplet precautions [gown, N95 mask, goggles, gloves] with implementation of high-risk therapies [nebulizer therapy, CPAP/BiPAP, bag-valve-mask ventilation, placement of an advanced airway].
- For the non-intubated patient with a respiratory illness consider leaving the jump bags outside the patient's exam room while one clinician remains with the bags and the other clinician completes an assessment to determine what items necessary for patient care. After completing an assessment, the clinician in the exam room will communicate with the clinician outside the exam room who will bring only the necessary items to provide patient care (*this process will reduce exposing the jump bags to possible contaminants in the exam room*).
- Place a surgical mask on patient's receiving oxygen by nasal cannula due to a respiratory illness.

- Clinicians are required to contact on-line medical control when encountering any ventilated patient in a prone position to determine how best to proceed. If the patient is transported in a prone position clinicians are required to carefully secure the patient on the transport stretcher in a manner they can closely monitor the endotracheal tube for possible displacement. Clinician must be prepared to immediately manage a displaced endotracheal tube.
- The receiving facility must be notified that the patient has suspected or confirmed COVID-19 and the receiving unit must be prepared to receive the patient.

### Bronchodilator therapy

- The pulmonary syndrome associated with COVID-19 is an inflammatory condition that is unlikely to respond to bronchodilators in the absence of reactive airways disease (asthma, COPD).
- Bronchodilators, such as albuterol, and other nebulized medications increase the efficiency of transmission of coronavirus, which should be considered in the risk-benefit analysis when treating suspected or confirmed COVID-19 patients.
- The use of bronchodilators increases exposure risk and should prompt the use of full droplet precautions, including gowns, N95 masks, and goggles.
- Suspected or confirmed COVID-19 patients with reactive airways disease may require bronchodilators as part of their therapy. It is reasonable to first try alternative routes for beta-agonist administration, such as the use of terbutaline or subcutaneous epinephrine in the absence of cardiovascular risk factors.
- The administration of beta agonists via metered dose inhalers, ideally administered with a spacer/aero chamber, is preferable to the use of nebulizers in these patients. Whenever possible, these should be requested a from the sending facility as an alternative to nebulizers.
  - Albuterol 4-8 puffs every 20 minutes may be administered for bronchospasm.
    - If a spacer/aerochamber is available: Spray 1 puff at a time into the spacer/aerochamber and have the patient take 3-4 slow, deep breaths; repeat for 4-8 total puffs.
    - With no spacer/aerochamber: Have the patient exhale completely, then spray 1 puff at a time simultaneous to the inhale of a maximum tidal volume breath; repeat for 4-8 total puffs.

### Non-Invasive Positive-Pressure Ventilation

- The use of positive-pressure via bag-valve-mask (BVM), high-flow oxygen (HFO2) devices, continuous positive airway pressure (CPAP), bi-level positive airway pressure (BiPAP) ventilation in a suspected or confirmed COVID-19 patient may be reasonable to avoid intubation, particularly with a scarcity of mechanical ventilators, but should be considered high risk. Full

respiratory & droplet precautions [gown, N95 mask, goggles, gloves] should be donned prior to initiating these forms of non-invasive positive pressure ventilation.

- Whenever available, an in-line filter should be placed immediately over the mask, with the end-tidal CO<sub>2</sub> (EtCO<sub>2</sub>) sensor placed above the mask (i.e., further from the patient) when performing BVM ventilation.
- The risk of transmission decreases following intubation. Thus, if progression of disease is anticipated in a suspected or confirmed COVID-19 patient, the potential benefit with regard to decreasing transmission risk of intubation and mechanical ventilation prior to transport should be considered in the risk-benefit analysis.

### Advanced Airways

- Insertion of an advanced airway is considered a high-risk procedure. Full respiratory & droplet precautions [gown, N95 mask, goggles, and gloves] should be donned prior to initiating the procedure. A full-face shield (separate from the mask) with forehead seal should be used if available.
- The use of passive oxygenation may be deferred in a suspected or confirmed COVID-19 patient to avoid facilitating transmission to the advanced airway practitioner. If passive oxygenation is provided by non-rebreather place a full-face shield (separate from the mask) with forehead seal if available on the patient to direct passive airflow in a caudal direction. Leave the full-face shield in place during oral suction procedure. Remove the full-face shield when the patient is fully sedated, chemically paralyzed and the clinician is prepared to initiate an oral intubation.
- Assisted ventilation and non-invasive positive-pressure ventilation using BVM should be performed as needed for preoxygenation in suspected or confirmed COVID-19 patients, who have a high likelihood of hypoxemia. When providing mask seal ventilations use a two-person technique to ensure a tight seal and include an in-line filter immediately above the mask will substantially decrease transmission risk.
- An in-line filter should be placed immediately proximal to the advanced airway, with the EtCO<sub>2</sub> adapter placed proximal to the filter. In addition, side-stream capnography has a filter mechanism within the sampling line, and mainstream capnography has a closed circuit.
- In-line suction systems should be used when available for pulmonary toilet in suspected or confirmed COVID-19 patients with an advanced airway.
- The endotracheal tube should be clamped during transfer from one ventilator to another to minimize transmission risk.

### Resuscitation

- Patients with COVID-19 may have increased sensitivity to crystalloid IV fluid boluses.
- Elevated serum lactic acid is often a result of hypoxia and/or cytokine storm and does NOT require a 30 mL/kg crystalloid IV fluid bolus.
- Vasopressors are used early for MAP < 65 mmHg rather than crystalloid IV fluid resuscitation.

### Cardiac Arrest

- Chest compressions are a high-risk procedure that aerosolizes the virus.
- At no point should the safety of the clinician be compromised during cardiopulmonary resuscitation.
- Secure the airway with tracheal intubation prior to any virus aerosolizing procedure including chest compressions.
- Contact Medical Control early for any COVID-19 patient in cardiac arrest.
- The outcome of COVID-19 patients in cardiac arrest is poor.

Sincerely,

AMC Physician Advisor Board