COVID-19 SYSTEM ADULT CRITICAL CARE AND VENTILATORY SUPPORT RECOMMENDATIONS

Pulmonary and Critical Care Workgroup

MultiCare

Objectives

- Develop consistent clinical screening and practices for patients requiring life supportive interventions that reduce the risk of staff exposure to COVID-19.
- Unify all sites of care in a single fashion so that risk can be mitigated on a system level.

MultiCare

General Considerations

- Early identification and categorization of patients admitted with acute respiratory failure is essential. This process should be reviewed daily as clinical and laboratory indicators become available
- If respiratory support is indicated, then planning ahead may avoid the need for rescue interventions (e.g., crash intubations), which have greater potential for infectious transmission due to mishaps during the use of barrier protections.
- In patient with acute respiratory failure with confirmed or highly suspected COVID 19 illness, it may be prudent to proceed to early endotracheal intubation, because non-invasive ventilation (e.g. CPAP or BIPAP) may increase the risk of infectious transmission[5].
- When possible, perform procedures in an airborne infection isolation room rather than in non-negative pressure rooms. An airborne isolation room has a negative-pressure relative to the surrounding area
- If a procedure must be performed emergently, then limit the number of healthcare workers present in and around the procedure room.
- Seek collaboration with local infection control expertise as early as possible.

MultiCare

Definitions

- **High Risk Aerosolizing Procedures** – *Airborne Precautions required*
  - Tracheal intubation and Extubation
  - Bronchoscopy
  - Open Airway Suctioning
- **Intermediate Risk Aerosolizing Procedures** – *Modified droplet precautions required and clinical caution when in use – consider Airborne Precautions when available*
  - High Flow Nasal Oxygen systems
  - Non-invasive positive pressure ventilation systems
  - Hand held nebulizers in spontaneously breathing patients
- **Low risk Aerosolizing Procedures** – *Modified droplet precautions required*
  - Closed circuit mechanical ventilation
  - Vibrating mesh nebulizer for ventilated patients

MultiCare

Reduced Aerosolization Protocol for Respiratory Support and Mechanical Ventilation

- Oxygen Supplementation for Patients in Respiratory Failure
  - Use low flow oxygen systems without humidification
  - Use either O2 (low flow) by nasal cannula at 1-6 lpm
  - Use of non-rebreathing mask running at the minimum flow to completely inflate the reservoir bag. For flows
  - between 12-15 lpm consider using an oxygen blender for increased control of FiO2 (if available)
  - Use of High Flow Nasal Cannula Systems is discouraged. If considered clinically warranted, close clinical and infection control monitoring should take place
  - Use of Non-Invasive Positive Pressure Ventilation (BiPAP, CPAP, APAP) is discouraged. If considered clinically warranted, close clinical and infection control monitoring should take place

MultiCare

Reduced Aerosolization Protocol for Respiratory Support and Mechanical Ventilation (continued)

- Endotracheal Intubation for Patients Requiring Mechanical Ventilation
  - Double gloves will enable one to shed the outer gloves after intubation and minimize subsequent environmental contamination.
  - Designate the most experienced clinical professional available to perform intubation, if possible.
  - Avoid awake fiberoptic intubation unless specifically indicated. Droplets containing viral pathogens may become aerosolized during this procedure. Aerosolization generates smaller liquid particles that may become suspended in air currents, traverse filtration barriers, and inspired.
  - Consider a rapid sequence induction (RSI) in order to avoid manual ventilation of patient's lungs and potential aerosolization. If manual ventilation is required, apply small tidal volumes.
  - After removing protective equipment, avoid touching your hair or face and perform hand hygiene.

MultiCare

Reduced Aerosolization Protocol for Respiratory Support and Mechanical Ventilation (continued)

- Respiratory Care Equipment Requirements:
  - Mechanical Ventilators should have a HEPA filter installed per standard practice.
  - Always use a closed suction system during airway suctioning
  - Cuff pressure should be maintained between 25-30 CWP
  - Intubated or manually bagged patients should have a HEPA rated Medical Exhalation filter inserted at the bag-valve-mask exhalation port.
  - Pressure support ventilation is recommended for implementing spontaneous breathing trial (SBT), avoid using T-piece to do SBT. When tracheotomy patients are weaned from ventilator, HME should be used, avoid using T-piece or tracheostomy mask.
  - After the airway procedure is completed, clean and disinfect high-touch surfaces mechanical ventilator, reusable equipment, including Glydescopes and work area with an EPA-approved hospital disinfectant.
  - For patients who need aerosol therapy, dry powder inhaler metered dose inhaler with spacer is recommended for spontaneous breathing patients; while vibrating mesh nebulizer is recommended for ventilated patients.

MultiCare

Reduced Aerosolization Protocol for Respiratory Support and Mechanical Ventilation (continued)

- Special Considerations:
  - Strong recommendation to avoid bronchoscopies in this patients. If a bronchoscopic procedure is unavoidable then disposable bronchoscopes should be used
  - Code situations will proceed with the preparation of getting into proper PPE before entering the patient's room.
  - If devices such as point-of-care ultrasound are used:
  - A long sheath cover of the ultrasound unit and cable should be used to minimize contamination of the equipment.
  - Non-essential parts of the ultrasound cart may best be covered with drapes to minimize droplet exposure.
- Modifications to these guidelines will require approval through the directors and medical directors of Respiratory and Critical Care

MultiCare

Transporting Patients

- Transport patients only for procedures and studies deemed essential for patient care.
- Consult local infection control expertise prior to transport.
- Intubated patients should have a HEPA rated filter on the expiratory outlet of the bag-valve-mask
- Patients who are not ventilated should wear a surgical mask.
- Health care professionals transporting the patient should not routinely wear gowns and gloves, unless direct contact with the patient or contaminated equipment is anticipated during transport. In this case, one person should wear the appropriate PPE per CDC COVID-19 guidance, and, ideally, be accompanied by an additional member of the transport team who is not wearing a gown and gloves. The person without gloves and gown can interact with the environment. Prior to transport, the PPE clad person should perform hand hygiene and don a fresh gown and gloves to reduce potential contamination of environmental surfaces.

MultiCare

References

- **1.** On February 11, 2020 the World Health Organization announced that “COVID-19” is the official name for the disease associated with the current novel coronavirus outbreak. Co and Vi are derived from “coronavirus,” D stands for disease, and 19 is for 2019, the year the first cases were seen. The pathogen causing the disease is termed “Severe Acute Respiratory Syndrome Coronavirus 2,” abbreviated as SARS-CoV-2.
- **2.** An Airborne Infection Isolation Room (AIIR) has a negative-pressure relative to the surrounding area. A minimum of 6 air changes per hour (12 air changes per hour are recommended for new construction or renovation). Air from these rooms should be exhausted directly to the outside or be filtered through a high-efficiency particulate air (HEPA) filter before recirculation. Room doors should be kept closed except when entering or leaving the room, and entry and exit should be minimized. Facilities should monitor and document the proper negative-pressure function of these rooms. If an AIIR is not available, patients who require hospitalization should be transferred as soon as is feasible to a facility where an AIIR is available.
- **3.** Personal protective equipment (PPE) is specialized clothing (e.g., gowns, gloves) or equipment (e.g., face shields, masks) worn by a health care worker for protection against a hazard. Hazards may include physical, chemical, and biologic hazards; however, the PPE’s specified in these recommendations are designed to protect the wearer from infectious hazards transmitted by direct or indirect contact, droplets, and airborne particles.
- **4.** The Anesthesia Patient Safety Foundation (see link below) states that a PAPR may be warranted for airway procedures on these patients given prior cases of infection transmission of SARS-CoV when N95 masks were used.
- 5. Expert consensus on preventing nosocomial transmission during respiratory care for critically ill patients infected by 2019 novel coronavirus pneumonia Respiratory care committee of Chinese Thoracic Society, Zhonghua Jie He He Hu Xi Za Zhi. 2020.
- 6. World Health Organization. Clinical management of severe acute respiratory infection when novel coronavirus (2019nCoV) infection is suspected. Interim guidance. 28 January 2019

- **Additional Resources**
  - The APSF Perioperative Considerations for the 2019 Novel Coronavirus (COVID-19)
  - The SHEA Novel Coronavirus 2019 Resources.
  - The Centers for Disease Control and Prevention (CDC) “Interim Infection Prevention and Control Recommendations for Patients with Confirmed Coronavirus Disease 2019 (COVID-19) or Persons Under Investigation for COVID-19 in Healthcare Settings.”

MultiCare