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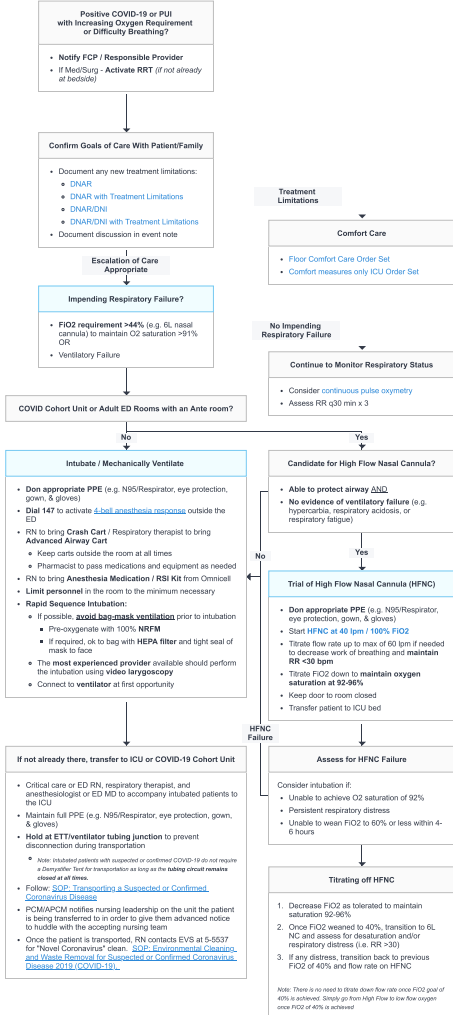
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- ### For Cardiac Arrest
- Determine code status
 - Ethical considerations (see [Recommendations regarding CPR in patients with COVID-19](#) for additional detail)
 - CPR should be performed for unexpected cardiac arrests in COVID-19 infected individuals if consistent with patient preferences/code status
 - CPR should NOT be performed for expected cardiac arrest due to progressive clinical deterioration from COVID-19 refractory to maximal intensive care
 - Cardiac arrest secondary to COVID-19 infection is not an indication for Extracorporeal Cardiopulmonary Resuscitation
 - For CHCA patients who arrive with ongoing CPR by EMS, a max of 3 attempts of CPR is recommended unless a family member/supervisor is reachable, in which case, continue until the patient is declared dead.
 - Don appropriate PPE (e.g. N95/Respirator, eye protection, gown, & gloves)
 - Limit personnel in the room to only those essential
 - Avoid Bag-Mask Ventilation if at all possible
 - Provide compression-only CPR prior to intubation
 - Administer oxygen via non-rebreather face mask
 - If required, an experienced provider can perform BVM with filter, provided a tight seal can be maintained (consider a second provider to hold the mask in place)
 - When airway established, connect to mechanical ventilator rather than bag
 - Following advanced airway establishment, if bag ventilation required, must use filter
 - Keep the crash cart outside the room
 - Defibrillate as needed
 - Pause compressions to intubate
 - Don **airway** considerations

- ### Resources & Updates
- UCM Coronavirus (COVID-19) Resource Center
- [Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 \(COVID-19\)](#)
- [American Heart Association CPR & Emergency Cardiovascular Care: Interim Guidelines for Healthcare Providers during COVID-19 Outbreak](#)
- [Basics of Mechanical Ventilation](#)
- [Contemporary Ventilator Management for ARDS](#)
- [ARDS management outside the ventilator](#)
- For clinical questions regarding the care of COVID-19 or COVID patients, [visit the COVID Resource Team](#) (930028).
- Recent Updates:**
- 4/16/2020
 - Added sign to be posted on patients door prior to AGP
 - 4/13/2020
 - Expanded HFNC to Adult ED rooms with air rooms
 - 4/12/2020
 - Made revisions to Initial Analgesia and Sedation Settings
 - Added order links for goals of care/treatment limitation options
 - Added links for instructional videos for ventilation guidance
 - Updated goals of care and treatment limitation settings
 - Increased threshold for hypoxemia to FIO2 requirement >44% or 6LNC from 40%SL
 - Added Trial of HFNC details and order into workflow
 - Replaced less relevant Aerosol Generating Procedures information with links to the UCM Aerosol Generating Procedures Guidelines
 - Added links to SCCM/Surviving Sepsis and ANA/ECC recommendations
 - Removed outdated COVID Cohort Unit phone numbers
 - 3/26/2020
 - Allowed for HFNC, BiPAP/CPAP in COVID Cohort Units
 - Added link to palliative care order set
 - 3/24/20
 - Grammar/style updates
 - Added link to Recommendations Regarding CPR in Patients with COVID-19 document
 - Added ED/CHCA considerations including termination of resuscitation recommendation for CHCA without ROSC in the field and post arrest recommendations
- [archived updates](#)



- ### Initial Ventilator Management
- Set tidal volume to 6cc/kg of ideal body weight (IBW)
 - Calculate IBW using height and sex ([calculator](#))
 - Team FIO2 down from 100% to 60% to achieve saturation 90-95%
 - If unable to wean to 60%, increase PEEP in increments of 2 and check plateau pressure
 - For every increase in PEEP there should be a change in plateau by the same amount or less
 - Increase PEEP until FIO2 can be brought down to 60% or less, plateau pressure >30, or plateau pressure increases more than PEEP change
 - If P/F ratio <10 after initial PEEP titration, consider Prone
 - Inform bedside critical care nurse of intent to prone patient
 - Call SSouth Charge RN for proning help (x8-8500), if needed
 - If not in shock, start diuresis

- ### Initial Analgesia and Sedation Settings
- Use the sedation order set
 - Start with analgesic
 - Fentanyl IV pushes and/or gtt titrated to score of 4 on Non-Verbal Pain Scale (NVPS)
 - Add sedation as necessary
 - Diazepam/lorazepam or Propofol
 - Titrate sedative to Richmond Agitation Sedation Scale (RASS) of 0 to 2
 - If significant ventilator dysynchrony persists despite PEEP titration and adequate sedation
 - Consider neuromuscular blockade (NMB) with Cisatracurium only if patient is deeply sedated (RASS = -4 or -5)
 - Do not titrate analgesic or sedative until NMB is discontinued

- ### Continued Ventilator Management and Weaning
- Liberation from Mechanical Ventilation: Educational video**
 - For prone patients, attempt supination daily and can remain supine if P/F ratio >150 after supination
 - Call SSouth Charge RN for assistance with supination (x8-8500)
 - Continue diuresis as tolerated
 - Wean FIO2 as tolerated
 - Wean PEEP as tolerated to maintain adequate saturation on room air FIO2 80% or less
 - If PEEP decreased to 6cm H2O or less may consider spontaneous breathing trial (SBT)
 - Pair spontaneous breathing trial with weaning from sedation
 - If passes SBT, evaluate for HFNC if FIO2 is >40% or PEEP requirement was >5cm H2O
 - Discuss possible evolution to helmet NIV especially for patients on PEEP or f-10cmH2O
 - [Helmet Ventilation Education Video](#)
 - Helmet Ventilation resource: call 6-1888 for Lead RT support

- ### Treatment Limitations
- Comfort Care
- Floor Comfort Care Order Set
 - Comfort measures only ICU Order Set

- ### No Impending Respiratory Failure
- Continue to Monitor Respiratory Status
- Consider continuous pulse oxymetry
 - Assess RR q30 min x 3

- ### Candidate for High Flow Nasal Cannula?
- able to protect airway Δ ND
 - No evidence of ventilatory failure (e.g. hypercarbia, respiratory acidosis, or respiratory fatigue)
- If Yes: Trial of High Flow Nasal Cannula (HFNC)
- Don appropriate PPE (e.g. N95/Respirator, eye protection, gown, & gloves)
 - Start HFNC at 40 lpm / 100% FIO2
 - Titrate flow rate up to max of 60 lpm if needed to decrease work of breathing and maintain RR <30 bpm
 - Titrate FIO2 down to maintain oxygen saturation at 92-96%
 - Keep door to room closed
 - Transfer patient to ICU bed

- ### Assess for HFNC Failure
- Consider intubation if:
- Unable to achieve O2 saturation of 92%
 - Persistent respiratory distress
 - Unable to wean FIO2 to 60% or less within 4-6 hours

- ### Titrating off HFNC
- Decrease FIO2 as tolerated to maintain saturation 92-96%
 - Once FIO2 weaned to 40%, transition to 6L NC and assess for desaturation and/or respiratory distress (i.e. RR >30)
 - If any distress, transition back to previous FIO2 of 40% and flow rate on HFNC
- Note: There is no need to titrate down flow rate once FIO2 goal of 40% is achieved. Simply stop high flow flow to low flow oxygen once FIO2 of 40% is achieved

- ### Aerosol Generating Procedures
- CPR, intubation, BiPAP/CPAP and HFNC are aerosol generating procedures
 - Don appropriate PPE (e.g. N95/Respirator, eye protection, gown, & gloves)
 - Maintain for 45 minutes post intubation/aerosol generating procedure
 - After 45 min, surgical mask is appropriate in the absence of additional aerosol generating procedure
 - The following is contraindicated and should be avoided except with the express permission of Dr. Kreis or Dr. O'Connor:
 - Any use of BiPAP/CPAP in suspected or confirmed COVID patients
 - Use of HFNC in suspected or confirmed COVID patients located outside a COVID Cohort Unit
 - Helmet ventilation may be considered at the direction of the MICU service
 - See [UCM General Guidelines for Aerosol Generating Procedures for Adult COVID-19 and COVID Positive Patients](#) for additional recommendations
 - [Post sign](#) on patients door prior to all aerosol generating procedures