Clinical Alignment Summary: COVID-19 Critical Care

The purpose of this summary is to display how clinical guidance from different organizations is aligned in this topic area.

LABS and IMAGING

Upon admission: CBC with diff, LDH, CRP, CK (1,2,3,5)
- Also CMP, Mg, Phos, PT, BNP, D-dimer. Key labs daily (1,2,3)
- Additional admission labs: ferritin, IL-6 level, troponin, BNP, DIC panel, minimize/batch labs thereafter to minimize HCW risk (5)
  - Q12hr: Troponin, ABG and VBG (1,2)
  - Recommend against routine CXR (1,2,3)
  - Consider POCUS to monitor cardiac dysfunction (1,3,5)

PRONE POSITIONING

All protocols (1,2,3,5,7,8) recommend prone positioning of ARDS patients
- Recommend against using awake prone positioning as a rescue therapy for refractory hypoxemia to avoid intubation and mechanical ventilation in patients who otherwise require it (7)
- Consider trial of awake prone positioning in patients with persistent hypoxemia despite increasing supplemental oxygen requirements in whom intubation is not otherwise indicated (7)
- Consider staff exposure risk/benefit ratio of prone positioning (5)
- Consider placing dialysis bags on chest for patients who cannot be proned (1)
- Detailed prone positioning instructions in document (4)

TREATMENTS

- Dexamethasone recommended for patients (6mg/day for 10 days) who are mechanically ventilated and those on supplemental O2 (1,2,5,7). See specific treatment recommendations by disease severity (NIH COVID-19 Treatment Guidelines: Therapeutic Management of Patients with COVID-19, Updated 10/9/20)
- Recommend norepinephrine as first-choice vasopressor (7,8)

ANTICOAGULATION STRATEGIES

- All COVID patients should receive standard prophylactic anticoagulation with LMWH (1,3,5,6) or heparin (1,5,6)
- All patients should have daily DIC panel and twice weekly hypercoagulability panel (1)
- Risk Stratified Treatment: Emory Healthcare VTE and Prophylaxis Guidelines for COVID-19 in ICU—Summary (6)

CPR

- Encourage early discussions with family about DNRs (1,2,5)
- See Serious Illness Communication/Conversation Guidance
- In case of code, staff donning PPE should be prioritized (1,2,5)
- Call Anesthesia for Intubation (1)
- No more than 6 people should be in room during code (1,2)

PULMONARY

Avoid emergent intubation (1,2,3,5)
Early intubation recommended (1,2,3,5)

HFNC & NIPPV:
- Extreme caution should be used in patients already on high amounts of O2 or with increased work of breathing as they will likely benefit from early intubation, rather than HFNC (1)
- May use HFNC if in appropriate isolation (5)
- Close monitoring for worsening of respiratory status; consider early intubation with worsening (8) or if consistent with goals of care (5)
- Recommend use of HFNC over NIPPV for acute hypoxemic respiratory failure despite conventional oxygen therapy (7)

Mechanical ventilation:
- Preferred means of respiratory support for COVID-19 patients with respiratory failure (1,3,5)

PRE-INTUBATION

Goals for ARDS patients: (1,2,3,7,8)
- Low tidal volume (6 mL/kg IBW)
- SpO2 > 92% (2), SaO2 90-96% (3)
- pH > 7.25, plateau pressure <30 cm H2O
- Then assess for extubation

For patients who are difficult to oxygenate, consider:
- High PEEP ladder or alternative ventilator modes (1,2,3,5,8)
- Paralysis/sedation for ventilator dyssynchrony (1,2,3,5,8)
- Initiate trial of inhaled pulmonary vasodilator (1,2,3,7,8)
- ECMO (1,2,3)

Prone ventilation recommended if PaO2/FlO2 ratio <150 (1,2,3,5)

INTUBATION

- Only extubate when reasonably confident that patient has peaked in terms of illness (1)
- Extubate to face mask, followed by titration down to nasal canula (1,2)
- Encourage aggressive pulmonary toilet (1,2)
- Do not use NIPPV with COVID-19 patients because of concerns of aerosolization (1,2)

EXTUBATION

INFECTIOUS DISEASE

- Require ID consult for COVID-19 patients (1,2) based on resource availability (5)
- Recommend consult when using investigational treatment (antivirals) (3,5)
- See Clinical Alignment Summary: COVID-19 Infectious Disease Treatment
### RENAL
- Conservative fluid management (1,2,3,5,7,8)
- Recommend robust electrolyte repletion (K>4.5, Mg >2.5, PO4 > 2.5) (1)
- Place Foley for strict I/O’s (1,2)
- Recommend Continuous Renal Replacement Therapy (CRRT) when available (7)

### NEUROLOGICAL
**Sedatives:** use opioids as primary sedative agents (1,2)
- Avoid benzodiazepines, due to hepatic and renal side effects, unless patient is difficult to sedate (1,2)

**Neuromuscular Blockade Agents (N MBA)**
- Recommend intermittent boluses in COVID-19 patients with moderate to severe ARDS to facilitate ventilation and prone positioning (3,7,8)
- Routine NMBA is not indicated in patients with ARDS (3,5)
- NMBA s may be used in patients with dyssynchrony (3,5,8) (5 specifies non-depolarizing NMBA s)

**Sedation/N MBA**
- First line regimen: hydromorphone, propofol, cisatracurium (3)
- Wean to minimum goal RASS 0 to -1 or, if dyssynchronous, RASS -1 to -2(1,2,5)
- Recommend wrist restraints (1,2)
- Consider neurological consultation (1,2)

### GASTROINTESTINAL
- Early initiation of enteral feeds (1,2)

### CARDIAC
- Recommend baseline EKG for all patients upon admission (1,2,5)
- Consider troponin and TTE/POCUS (1,5)

### PALLIATIVE CARE
- Consult the palliative care service upon admission to ICU (1)
- Consider video visitation for families (5)
- See Serious Illness Communication/Conversation Guidance

### SOURCE DOCUMENTS
1. Emory Healthcare Guidelines for the Care of Critically Ill Patients with COVID-19, Updated 6/30/20
2. Emory Healthcare Overview of the Management of Patients with COVID-19 for Non-Critical Care Providers, Updated 6/30/20
3. Massachusetts General Hospital Treatment Guidance for Critically Ill Patients with COVID-19, Updated 4/05/2020
5. University of Washington Medicine Critical Care Management of COVID-19, Updated 9/14/20
7. NIH COVID-19 Treatment Guidelines: Care of Critically Ill Patients with COVI D-19, Updated 10/9/20

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