COVID-19: ICU FOR THE NON-INTENSIVIST

INFECTION CONTROL

- Hand hygiene before and after all patient encounters and when changing PPE
- Use airborne, contact, and droplet precautions for patients with confirmed/suspected COVID-19, including:
  - N95 respirator or PAPR/CAPR
  - Eye protection, preferably a face shield
  - Gloves & gowns
- N95 respirators or PAPRs/CAPRs must be used for all aerosol-generating procedures, including:
  - Endotracheal intubation
  - Deep suctioning
  - Nebulizer treatments
  - Bronchoscopy
  - Noninvasive ventilation
  - Chest compressions
  - Chest physiotherapy

- Patients should be placed in negative-pressure rooms, as able, or in geographic cohorts, if necessary
- Minimize aerosolizing procedures whenever possible

RISK FACTORS FOR SEVERE DISEASE

Demographics

- Age >55
- Male sex
- Obesity
- Racial and ethnic minority groups
- Residents of long-term care facilities

Comorbid conditions

- Chronic lung diseases: COPD, lung cancer, cystic fibrosis, pulmonary fibrosis, moderate to severe asthma
- Heart disease
- Diabetes
- Obesity
- Chronic liver or kidney disease
- Immunocompromised/malignancy

INITIAL LABORATORY WORK-UP

- CBC w/ differential
- BMP, Mg, Phos
- LFTs, troponin & CPK, NT-proBNP
- LDH, CRP, D-dimer, procalcitonin
- PTT/INR, ferritin

COVID-19-SPECIFIC MEDICATIONS

- **Dexamethasone** 6 mg IV/PO q24h for up to 10 d
  - **Mortality benefit** seen in hypoxemic patients, including those on mechanical ventilation
  - Avoid in patients without hypoxemia (room air SpO_2 ≥94%)
- **Remdesivir** 200 mg IV loading dose, then 100 mg IV q24h for 5 d
  - Benefit greatest in patients receiving supplemental O_2 but limited in patients requiring mechanical ventilation
  - Shortens time to recovery but no apparent mortality benefit in most ICU patients
- **Therapies with inconsistent evidence of benefit:**
  - Convalescent plasma
  - Tociluzimab
- **Therapies shown to be ineffective or harmful:**
  - Hydroxychloroquine
  - Monoclonal antibodies (ineffective in hospitalized patients, may have a role in high-risk outpatients)
  - Azithromycin
  - Lopinavir-ritonavir

RESPIRATORY

Start PRONING patient early if PaO_2/FiO_2 <150
Respiratory escalation (Target SpO_2: 92%-96%)

1. Nasal cannula: Up to 6 LPM
2. Venturi mask: 9-12 LPM with FiO_2 30%-60%
3. Trial HHFNC if available: 100% to start at 20-30 L/min, up to 60 L/min flow
4. NIPPV: Trial CPAP or BiPAP with mask & filter EPAP 5 to start, can increase up to 15-20
5. *If mental status deteriorates, hypercarbia or acidosis develops, cardiac instability ensues, or patient has persistent profound hypoxia, tracheal intubation is likely next step*

Utilize lung-protective/ARDSnet recommendations

- Tidal volume: 4-6 mL/kg predicted body weight
- Choose RR (15-20 breaths/min), titrated to blood pH (not pCO_2 allowing for permissive hypercapnea)
- Goals: Titrate PEEP/FiO_2 to target PaO_2 >55 mm Hg or SaO_2 88%-95%
- Goals: pH 7.25-7.35, plateau pressure ≤30 cm H_20

CARDIAC

- Shock common—consider etiology
  - Cardiogenic vs septic vs vasodilatory
  - Empiric antibiotics within first hour
- Consider conservative fluid management strategy (withholding fluid bolus or giving smaller 250 – 500 mL boluses)
- Start norepinephrine as first agent
  - Titrate every 3-5 min
  - 2-20 mcg/min (max 100 mcg/min)
- Next-line agents vasopressin or epinephrine
  - Epi 1-10 mcg/min
  - Vaso 0.01-0.04 units/min
- If not already receiving glucocorticoids, start hydrocortisone 50 mg IV q6h if inadequate response to second vasopressor
- Dobutamine may be considered if cardiac dysfunction playing a large role

HEMATOLOGIC

High incidence of thromboemboli and hypercoagulability

- Suggested prophylaxis of all patients if no contraindications
  - If CrCl >30: Enoxaparin 40 mg SC daily
  - If CrCl <30 or AKI: Heparin 5000 units SC TID
  - Hold if platelets <30,000 or bleeding; start TEDs and SCDs
  - If the patient is on direct oral anticoagulants or warfarin, switch to full dose anticoagulation with enoxaparin or heparin

NEURO/SEDATION

High incidence of neurologic manifestations

- Stroke can occur
- Combination of analgesia and sedation should be employed
- Daily sedation holidays if able/safe
- Sedation should be targeted to facilitate improved oxygenation/ventilation
- Scoring systems such as the RASS should be employed

For greater detail, review the NIH treatment guidelines at https://www.covid19treatmentguidelines.nih.gov