

Advocate Christ Medical Center: Guide to COVID-19 management in The Medical Intensive Care Unit

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PRESENTING SYMPTOMS:

- Cough
- Upper respiratory
- Anomsia
- 50% Febrile illness
- 5-10% Gastrointestinal

RISK STRATIIFCATION:

- Elderly (Age > 60)
- Heart failure
- Hypertension
- Immunocomprimsed status
- Saturation < 92% on RA
- Diabetes
- HR > 125
- Chronic kidney disease
- Long-term care facility
- RR > 24

CALL ICU 41-8842 FOR CHANGES IN CLINICAL STATUS

INITIAL LABS TO BE SENT:

- CBC
- CMP
- CPK
- Procalcitonin (85% < 0.5)
- COVID-19 PCR
- Troponin
- NT-Pro BNP
- Ferritin
- Influenza A
- D-dimer

RISK STRAIFICATION Q2-3 DAYS

- Ferritin
- D-Dimer
- CRP/ESR
- IL-6

MORE SEVERE DISEASE:

- Troponin Increasing
- D-Dimer > 1,000
- CRP > 10.0
- Abs. Lymphopenia < 0.8

COMMON TRENDS

- Acute kidney injury, late (ATN)
- Mild AST/ALT elevations
- Rapid worsening
- Shock tends to be distributive
- Myocarditis, typically later in onset
- Profound hypoxemia, with good lung compliance, EARLY

RESPIRATORY MANAGMENT IN THE ICU

- Early intubation
- TRIAL of MONITORED high flow (30-40L), can be attempted with a known high failure rate
- Non-invasive ventilation is **not** recommended for management of COVID-19 pneumonia.

MECHANICAL VENTILATION SETTINGS:

- Low Tidal Volume with goal of 6 cc/kg or les
- Driving Pressure (PPI - PEEP) of < 15 ideal
- PEEP levels will be higher than usual in other ICUs (start 10)
- Goal Saturation > 90%
- Intiial mode of ventilation AC/VC

PEEP TITRATION:

- Increase PEEP with checking of driving pressure (PPI - PEEP)
- If driving pressure improves with increasing PEEP, suggests lung recruitment.

PRONE POSITIONING:

- If P/F ratio is < 150, despite optimal medical maneuvers consider EARLY PRONE positioning.

NEUROMUSCULAR BLOKCRERS:

- If the patients is unable to obtain ventilator synchchony despite sedation (RASS -4/-5), consider early trial of neuromuscular blockers.

FLUID STRATEGY:

- Conservative fluid strategy is recommended given patients have high cytokine levels and lung injury may result in extravascular lung water. NO MAINTENANCE FLUIDS

INHALED NITRIC OXIDE:

- 20-40 ppm, RV dysfunction common with medical comorbidites, high PEEP levels, hypercapnea and hypoxia

ECMO:

- Early discussion with Medical Intensivists and Cardiac Surgeons recommended, especially in young patients.

SHOCK:

- Norepinephrine first line vasopressor
- Early bedside echo to evaluate myocardial dysfunction recommended
- If vasodilatory shock is principal cause (bounding pulses, high SVO2, warm extremities), consider vasopressin, +/- stress dose steroids.
- If myocardial dysfunction consider inotrope and consultation with heart failure specialist

ACUTE KIDNEY INJURY:

- Often seen later after intubation
- Combination likely of ATN and poor renal perfusion
- High PEEP strategy can worsen RV performance, and increase renal vein pressures reducing GFR.
- Consider trial of augmented MAP and monitroing of renal function.
- Consider consult with nephrology and early RRT if becoming fluid overloaded as this will impair oxygenation.

ANTI-VIRAL AND ABX MANAGEMENT IN COVID-19

- ICU patients should have consultation wth ID
- Consider hydroxychloroquine and azithromycin in accordance with AAH guidelines
- Remdesivir if avaialble, through compassionate use program may be considered
- Anti-mircobials if suspected bacterial superinfection

IMMUNOMODULATION

TOCILIZUMAB

- Consider Tocilizumab in consultsion with infectious disease
- Resevred use for salvageable patients with cytokine activation syndrome (increasing inflammatory markers, shock, organ-failure).

STEROIDS

- Some data suggest increased viral shedding
- SCCM guidelines reocmmends a short course for early ARDS
- Clinical equipoise exists regarding the routine use of steroids