

3.24.2020 ASPR 12 pm call notes

COVID-19 CLINICAL ROUNDS

Lifesaving Treatment and Clinical Operations: Critical Care

A Peer to Peer Virtual Community of Practice

Richard Hunt, HHS/ASPR

- Peer to peer real time share of challenges and successes in treating COVID-19 critically ill patients
- Extraordinary efforts in this national emergency

Bruce Struminger, MD

- Over 1000 people signed in
- Session being recorded
- CME credits will be available through the University of New Mexico

1st Presenter – Mark Caridi-Scheible

- Emory University Hospital
- 14 bed relatively new COVID-19 unit
- Need to deliver great critical care with high level of attention to detail and accountability
- No luxury of time, get them better FAST
- Leaders, attendings, managers: you need to step up, anticipate long hours
- Call in every friend and favor
- Daily huddles with entire unit are critical
- Document algorithms and protocols, it saves time later
- Be thorough with transition
- Disease Course:
 - Slow smoldering with silent hypoxia in phase 2
 - Require between 2-10L O2
 - Objectively can be tachypneic but otherwise comfortable
 - Can last for days before progressing
 - Phase 3 can come on rapidly; o2 requirements start to get into 10-15L, coughing requires increased effort; need to move to Covid ICU
 - Phase 4 is respiratory collapse that can come on quickly and typical intubation time has been 4-5 days; HFNC and NIPPV seem to delay time to intubation
 - Multi-organ failure and death Phase 5 – fulminant viral myocarditis with malignant arrhythmias has been reported – OR resolution over several days to base line
 - Decision Point and Action: 15L NC or requiring NRB or >10L with respiratory distress
 - Both: mask progression or pulmonary damage by making the PaO2 look better
 - Both: allow secretions to accumulate
 - HFNC: allows continued de-recruitment
 - NIPPV: likely actively harmful by newer Italian reports
 - Controlled intubation; central line; surveillance labs (daily ABG, CBC with diff, CMP, CRP, D-dimer, LDH, PT); Strict I&Os WITH foley
 - Neuro
 - Marked encephalopathy with agitation and high sedation requirements has been uniformly observed;

- Pulmonary recovery has preceded neurological recovery, waking them up to tolerate SBP is rate limiting step
- Minimize sedation as much as possible, goal RASS-1 if pulmonary status tolerates
- Start physical therapy as soon as patient participatory, even if still intubated.
- Phase 4 management – sedation cost of over-sedation is prolonged vent time and delirium; Pulmonary – nothing magical, lung protective ventilation, wean actively and diligently, pulmonary edema must be dried out; maximize perfusion, MAP>75
- Pulmonary and renal congestion will slowly recover
- **Antivirals:** Remdesevir (only available now through trial) we highly advocate enrolling; hydroxychloroquine – unclear efficacy; Kaletra – reasonable data that is not effective
- **Anti-inflammatories:** NSAIDs are probably safe in our opinion, but controversial; APAP cannot be used on Remdesevir trial; Steroids are probably harmful, but may be necessary in particular settings (COPD, transplant, etc)
- COVID+ does not preclude other infections: Leukocytosis atypical to COVID, suggests other infection; new pressors suggest sepsis or developing cardiomyopathy
- Not helpful to be experimental! It's unethical no matter how well-meaning, advise from those without direct experience is not helpful.
- Patients and statistics slide:
- Optimally, rapidly and pro-actively provided good critical care across the board regardless of the time of day, intervened early in phases, focus on lung and renal protection
- Final thoughts: Prepare early, it will be hard, there is hope and it is worth the effort.

Airway management differ for COVID 19 patients?

- Not specifically, took more precautions, a lot of argument for early intubation, a lot was common sense, but early intervention is the key

Threshold for airway management?

- Heightened alert when it got to 10L, standard humidified tubing at 15L for a few days – intubation proceeded.

What criteria for COVID patients for ICU, what if number of critically in exceeds current capabilities?

- Already triaged them to a cohorted floor; still CHF or asthma; had to have a good story... triage – frail with shortness of breath.
- Plans in the works for increasing capacity; taking over other units, preidentified those units already; identified significant capacity in non-traditional spaces

For your unit, what have you observed has been the main failure of PPE challenges?

- Difficult to answer, good team of dedicated PPE trainers, by an large have not had a difficult time with this. Having an organized code plan is very important.

2nd Presenter - Melissa E. Brunsvold, MD Health system medical director of university of Minnesota

- Cases of contraction at national conferences and not through providing medical care
- **ECMO and COVID** – ECMO outside of CPB is an off-label use of technology and this is a team sport!
- 38 year old male marathon runner, no smoking or vaping – 5 days of cough, chest x rays good, COVID testing not available, was discharged home, did travel a lot so he self-quarantined, but presented again later to UMMC with worsening dyspnea, dehydration, malaise, fever – he received single doses of azithromycin and ceftriaxone as empiric therapy for CAP – suspected

non-viral pneumonia – rapid spiral followed over the next 12 hours he became more hypoxic. Intubated, proned, paralyzed, inhaled epoprostenol, oxygen saturations low 60-70% despite maximum ventilator settings.

- Younger male – decision for ECMO – drains blood out of the venous system, runs by membrane, oxygenates it and goes back into the venous system and heart and lungs. Around that time tested positive for COVID-19
- Negative air-flow room
- Hydroxychloroquine, azithromycin, remdesivir, No ARB, tocilizumab (got this and this was helpful) – we are in trials
- Decannulated from ECMO after 12 day run
- Still on mechanical ventilation but recovering well
- Need for ECMO is uncertain – no good model for this; in H1N1 2.6 million cases of use; MERS 5.8 per 100 cases used ECMO
- Only 12 cases of ECMO in Italy; in US only 33 patients – doesn't seem highly used
- Patients respond to conventional methods – don't typically need mechanical circulatory support which is good since there is a shortage
- Disaster planning in Minnesota – Car with 5 children and mom went into water – 5 kids needed ECMO for near-drowning – overwhelmed that hospital – after that planning was put in place on how to plan for disasters.
- When 2 sites are full call near site if no room triggers a call to RCHC; text out to all, then rotating call 5 medical directors; all competing hospitals agreed that medical directors will decide based on rotation between 5 medical directors
- Share Data on Vents and ECMO – very collaborative effort

1. Discussion on cardiac manifestation – can you share your experience?
 - Have not seen at our institution; literature d-dimers elevated; micro-thrombosis perhaps
- 7 hospital health system – plan to shut one down and make it a COVID hospital – PUI cohorted to investigation floors in other hospitals but if test positive will be moved to that one hospital.
2. What labs are you using to inform your treatment plans?
 - d-dimers, infectious diseases, national trials, daily CRP/LD/D-dimer panels
3. Most important question we can answer?
 - Late cardiovascular collapse – if we can solve this problem it would be very helpful.
 - Predicting when appropriate time to put on ventilator.