“COVID-19 Critical Care and Pulmonary Management Updates from the Frontlines”
April 13th Zoom Presentation: Q&A

Presenter: Bill Vandivier, MD; Pulmonary & Critical Care Medicine; Director, COPD Program University of Colorado Anschutz Medical Campus

Facilitator: Allen Greiner, MD; Professor and Vice Chair of the Department of Family Medicine, University of Kansas Medical Center; Medical Director of KPPEPR

Guest: Lewis Satterwhite, MD; Associate Professor, Pulmonary and Critical Care Medicine, University of Kansas Medical Center

The full recording of the presentation can be found here [https://www.youtube.com/watch?v=new0AG_bQAs](https://www.youtube.com/watch?v=new0AG_bQAs).

**ZOOM Q&A**

The questions below were submitted by participants via the chat feature during the presentation. Due to the amount of information covered, all questions could not be addressed during the call. In an effort to respond to all questions, Dr. Greiner, Dr. Vandivier, and Dr. Satterwhite have reviewed and commented on each of the questions mentioned.

1. I see some of the small rural facilities will probably be transferring these to larger facilities but then will be working with these facilities later on to receive those patients back - any recommendations on that or is that what you would expect to see?

   **A. AG:** We expect to see this as well. These patients should be isolated and full PPE should be used by staff transporting these patients as well as any healthcare staff who will provide care for them. There is some controversy on how long they should be isolated. CDC has guidance for 7 days past the initial symptom or 72 hours past when their last symptom resolves, whichever is longest. In Wyandotte County, we are ordering these cases to stay in isolation for 10 days past the resolution of their last significant symptom (fever, cough, shortness of breath, sore throat, headache, loss of taste or smell, fatigue, body aches or diarrhea) based on studies showing prolonged viral shed.

2. Can you discuss antibody testing? It’s efficacy, accuracy? Are healthcare workers being prioritized for these tests, and the impact on workforce planning?

   **A. AG:** Current antibody testing is not FDA approved and these tests have not been well validated. Some studies have found that 60% of these tests provide false positive results because they detect antibodies to garden variety coronaviruses.
3. What is your take on the treatment of ventilators early not helping? It’s the effect of the virus on the hemoglobin oxygen carrying ability that needs to be targeted?

A. **BV:** Most patients who require ventilator support have a prolonged course that can last several weeks. It’s too early as to whether their mortality will be higher than ARDS from other causes. These patients may also have a “honeymoon” phase where they initially do well and then worsen. This likely is caused by the cytokine storm or hyper-inflammatory syndrome that is being targeted by drugs that target IL-6 and IL-1. We may just need to support these patients longer and use more rescue modalities like prone ventilation or extracorporeal membrane oxygenation (ECMO).

B. **LS:** There is a lot of discussion nationally on list serves, blogs, etc regarding AVOIDING intubation in recent days/weeks. Presumably, the concern is that even with careful ventilator management, this viral pneumonia is acting in a unique way where ventilator induced lung injury is more prevalent and that the ventilator itself is doing harm beyond what the virus is doing. Early on, centers were advising (without data) that we should intubate early (at 6L NC need) because patients “crash” quickly. Now, some of those same centers and some new ones are suggesting that we NOT intubate even for patients with severe respiratory failure. People are advocating allowing patients to be hypoxic and purporting a “bland hypoxemia” where patients have very low saturations without other organ distress. Trials of HHFNC (some centers call this ComfortFlow and some call it VapoTherm – regardless, this is O2 via a special nasal cannula that can deliver O2 at up to 100% at liter flows of 40-80L/min) and/or BiPAP has been suggested. I would assert that these claims are also without data. That leaves us (with lots of things in COVID) to rely on our clinical judgment and experience.

My recommendation: neither of these approaches has hard science behind them. The truth is also likely to lie somewhere in the middle. I don’t think you have to intubate ALL patients that get to a 6L O2 requirement if they are looking good otherwise. I also would not WITHHOLD intubation for someone that is rapidly deteriorating because X / Y / Z therapy has not been trialed yet.

Until we have more evidence, there will be some patients that we need to intubate early because of risks and clinical trajectory. Other patients may deserve trials of heated high flow NC. I, personally, have not used BiPAP (but I cannot definitively say that is “wrong”)

If a patient is on a ventilator, we need to do our best to not cause ventilator-induced lung injury. Be particularly careful of “setting” safe parameters (low tidal volume or driving pressures) but seeing a patient “pull” higher volumes in volume or pressure targeted modes where patient effort influences what is actually delivered. Some of these patients need more sedation to reduce respiratory drive and actually achieve low tidal volume ventilation.

4. How do you clean your half-face respirator between patients? Who is using the half-face respirator?

A. **AG:** These can be cleaned with a diluted bleach solution spray or in a UV light machine. First responders are wearing these as are providers and staff involved in aerosolizing procedures (bronchoscopies, intubations, etc.).

B. **BV:** You can also use CaviWipes™ disinfectant wipes.
5. **How much early proning are you doing even if not intubated? Do you see benefit from pre-intubation proning? Early proning?**

   A. **BV:** “Awake proning” is being used increasingly in Denver and Kansas City. It may be very helpful to stabilize patients who become unstable on the floor so that transfer to the ICU can happen more safely. Once people are in the ICU, awake proning is being used much more carefully, because it could help patients but could also make eventual intubation a more risky procedure.

   B. **LS:** Agreed wholeheartedly. Awake proning is an area of interest and it may be helpful. Like in many things in COVID, the possible benefits need to be weighed against the risks. We are attempting to study this in a controlled fashion to answer this question. In the meantime, we can not give straight answers. I would consider it as a bridge to get to a higher level of care/monitoring (with the realization that if intubation is needed that may be “farther down” the road of deterioration. Another interesting use might be in patients that would want fairly aggressive therapy but have DNAR / DNI orders.

6. **Do you have a recommendation for shoe covers?**

   A. **AG:** No specific brand recommendations but the virus has been detected on shoes so caution is crucial when donning and doffing shoe covers

7. **So vapotherm is not an option? Even if we keep the L/M 40 or less?**

   A. **BV:** High flow oxygen systems like Vapotherm are not routinely being because of the theoretical possibility of producing more aerosols and increasing the risk of infection by healthcare workers. Likewise, we are avoiding the use of noninvasive ventilation. This could change as we learn more about the risks these systems pose for healthcare workers. We are typically intubating patients on a case-by-case basis as their oxygen needs exceed 10L.

   B. **LS:** See above. We just don’t know yet. People have very strong feelings about this. We “allow” heated high flow nasal cannula. Any time we use more than 15L / min – we treat the patient/room as if we are doing an aerosolizing procedure. We -right this minute – have 3 patients in our ICU on 60L / min. Most are intubated.

8. **What is the rate of success if coding COVID pts? Similar to usual?**

   A. **AG:** I don’t believe data are available. Anecdotally, it seems likely that codes would be less successful

9. **So if we don’t have an ICU we should transfer out STAT if 4 L/M?**

   A. **BV:** Yes. If you don’t have an ICU and cannot use mechanical ventilation, then it might be more prudent to transfer out at lower oxygen flows. The key is that these patients can progress extremely quickly, sometimes over 30 minutes.

   B. **LS:** Agreed.
10. I was wondering your thoughts about the use of antihistamines upon the suspicion of cytokine storm & perhaps giving a patient an "antihistamine cocktail" to try to dampen the effect. For example, initiating Benadryl + Cimetidine (has some data on IL6 inhibition and cytokine/chemokine modulation...perhaps using Famotidine vs Ranitidine instead, as Cimetidine has so many adverse effects). Additionally, Montelukast has some low IL-6 inhibition and macrophage modulation (could potentially add it to the antihistamine regimen). Melatonin has also been shown to have some IL-6 inhibition. These just all seem to be readily available and relatively cheap therapies.

   A. AG: Interesting suggestions. These would be potentially worth testing should other therapies fail in placebo controlled studies.

11. For the receiving facilities, would we need to have a confirmed positive case prior to you accepting them when they are on 4L, or would a presumed positive case be accepted?

   A. AG: A presumed positive or “probable case” would be accepted.

12. Does anyone wear shoe covers?

   A. AG: Yes

13. If you have to intubate, do you put a filter between ET and bag or on the exhalation valve of the bag?

   A. BV: Place the viral filter between the bag valve mask stem and the mask.

   B. LS: We are, when possible, not even using a BVM. If used, we will place a viral filter. However, we have found (if the patient can be pre-oxygenated), you can do RSI and intubate and place directly on the vent (with a filter) and not use a BVM prior to inserting the laryngoscope or after ET tube placement.

14. Long-term care facilities are at so high risk. Anything special for these organizations?

   A. AG: Yes, the KU Center on Aging is developing guidelines that will be disseminated soon.

15. It would be great to address more EMS issues as well. What kind of staffing is needed for these transfers? Will flight services be transferring patients? Are there resources available to come out and pick up patients from frontier and rural hospitals? Thanks so much!

   A. AG: Additional staffing is likely needed for transferring COVID-19 patients. Plans for additional personnel, additional PPE and rapid implementation of intubation protocols are all needed. Flight services will be involved. The University of Kansas Health System does not have its own transfer services but partners with regional private transport agencies.

*Many requests were also made to receive the proning protocols mentioned. These will be distributed to attendees as well.

If you are interested in learning more about KPPEPR, visit our website at [http://www.masoniccanceralliance.org/mca-affiliated-organizations/kppepr.html](http://www.masoniccanceralliance.org/mca-affiliated-organizations/kppepr.html). For additional questions or comments, please contact KPPEPR at kppepr@kumc.edu.