

Resources from Nebraska Medical

<https://www.nebraskamed.com/sites/default/files/documents/covid-19/covid-iv-push-med-review.pdf>

COVID-19 Therapy blog link

<https://www.visanteinc.com/covid-medication-information-and-guidance-resources/>

ASHP COVID therapy link

<https://www.ashp.org/COVID-19>

Visante WebEx FAQ's: COVID-19 and The Business of Pharmacy

Automated Dispensing Cabinets

Question	Did you have to add new ADCs? How fast?
Answer	Only to the field hospitals, we relocated lower use units and worked with our vendor.
Question	Did you change the access to your ADC's such as change override status for select medications?
Answer	No. Not at all. Only change was expediting the travel RN processing for access to ADC
Question	How are you handling anesthesia carts and meds for emergent surgeries?
Answer	Refer to the Visante blog for handling of medications
Question	Visante, can you please provide the Omnicell contact info for their offer after the webinar?
Answer	Two references for ADCs for COVID-19: Omnicell https://www.omnicell.com/news-and-events/blog ; BD Pyxis https://www.bd.com/en-us/support/mms-covid-19-customer-updates
Question	Have you limited traffic in and out of COVID units? For instance, does the Pyxis delivery drop at the door and someone (pharmacy staff) within that unit deliver to the specific ADC?
Answer	This is the goal, but the sheer quantity of meds used by COVID patients is quite high and often requires multiple restocks a day by pharmacy. Additionally, nursing is very busy so not a good time to add to their workload
Leadership	
Question	Have you received any information from the DEA to increase CDS inventory production?

Answer	The DEA has issued two waivers in practice with regards to an increase in production of key controlled substances and with regards to allowing delivery to alternative sites from the primary registrant's address. Please refer to the DEA's website for the most current waivers to the Controlled Substances Act for COVID-19: https://www.dea.gov/press-releases/2020/03/20/deas-response-covid-19
Question	How has the cooperation between hospital systems been established or have them been to help with the drug shortage?
Answer	NYC has daily pharmacy director calls and the collaboration has been good.
Question	How are you tracking your pharmacy COVID expenses so they can be reimbursed from Federal programs?
Answer	Our entire system is electronic (drugs, payroll etc.) Not sure if there will be any help from state or Feds but tracking direct expenses would not be difficult
Question	One more time-- we have removed support for all verification and clinical consults to support all of hospitals. Also moved IV production for all but CS to my 503A.
Answer	This is good information to share with the pharmacy group as each site will vary on intensity and volume of patients. Pharmacy models will have to change to meet the most immediate needs of the patients and healthcare providers at the front line. Do not expect what one site does will emulate every other site.
Question	What was a mistake you made or something you did in the beginning that looking back you would now do differently? Ex inventory, staffing, etc.
Answer	I should have asked for help from office based pharmacy staff earlier
Question	What if anything are you doing to prepare now for decommissioning surge-specific processes, equipment, routines?
Answer	We are not there yet to provide guidance.
Question	Have you had to co-hort family members including pediatrics on the same units?
Answer	Not sure
Question	Are there any new processes that you have started that you will plan to continue once this is resolved?
Answer	1- More scrutiny on refill requests 2- Dosing/volume/concentration standardization
Question	FYI Each state has different requirements on labels for outpatient dispensing (albuterol inhalers). Refer to state board requirements as some states have relaxed policies during such times.
Answer	This is a good piece of advice for all pharmacy locations; although we are in an alternative mode of healthcare, safety and legal adherence must prevail for medications. Continually monitor state board of pharmacy actions for guidance. If Federal agencies such as FDA, DEA, CMS ,etc. issue new waivers or guidance confer with your state board of pharmacy to ensure they approve of the guidance waivers.

Question	What are the recommendations for healthcare workers who work at health systems, when going home to minimize any potential contamination? Self-quarantine until the pandemic is over?
Answer	I hear that workers change clothes at work- clean clothes to and from work, scrubs placed in washable bag and washed immediately at home, work shoes stay at work or in garage. If scrubs are worn home, regularly clean steering wheel. See graphic tab.
Medication Handling	
Question	He mentioned "return to stock." What about decontamination of medications exposed to COVID-19 patients? How are they handling this issue?
Answer	If we know for certain that the medication was contaminated, we will discard
Question	What was your code cart process? can you describe that in more detail?
Answer	Please refer to the Visante blog for handling medications. These processes will differ based on your specific cart process.
Question	Concerning Returns (RTS), what is your process for cleaning the returned goods and keeping staff safe, before redisposed?
Answer	Please refer to the Visante blog for handling medications.
Question	How did you deliver meds to areas where the entire nursing unit was turned negative?
Answer	Using the pneumatic tube system where possible
Question	For medications returned to pharmacy, did you have a process to wipe them down before resending to the floor? Can you describe your quarantine process, did it include a wipe down of all medications?
Answer	Working on this policy; Refer to the Visante blog for handling of medications for guidance.
Question	What process have you adopted for code carts? We have had instances where nursing has brought the entire code tray into a PUI/Positive pt room. They then try and return the trays directly to Pharmacy. How have you handled challenges around this?
Answer	Medications should be in a plastic bag prior to being sent into room. Bag can be prepared or done at time of event. Premade bags that are sealed, can be wiped down and re-used. Pharmacist and cart remain outside room. If a tray has entered a contaminated room, clean it thoroughly and follow protocol for returned meds that are in original packaging (wipe down/ isolate).
Question	Questions for the end: what strategies have you implemented to preserve your current inventory such as fentanyl, midazolam, and ketamine?
Answer	See COVID therapy blog for alternatives. Need to determine best balance between mixing larger bags to reduce room entry/PPE use while potentially increasing waste vs. smaller bags.
Question	How are you handling albuterol MDI outpatient dispensing? At discharge and for ED RX?

Answer	Refer to your state board of pharmacy regulations for the proper guidance for how to label and dispense MDIs and other medications during this event. Many states have addressed this specific topic.
Question	If medications go into COVID+ patient rooms do you bring them out, clean them, and reuse?
Answer	See COVID blog for examples posted on how to handle these medications
Question	As the patient volumes start to ramp up in other areas (and hopefully get better in current area), has there been communication on sharing excess supplies and medications to new areas in need?
Answer	No but this would be great if coordinated by the government or pharmacy societies.
Question	What was the concentration ketamine you were using?
Answer	500mg/250mL at Langone NY. However, 4mg/ml is most commonly reported, but some sites suggest 10mg/ml. See therapy blog.
Question	Regarding medications in crash carts - do you have a procedure for "cleaning" meds from crash carts that may have been in a COVID patient room?
Answer	Please refer to the Visante blog for handling medications. These processes will differ based on your specific cart process.
Question	What is process for cleaning Anesthesia stations located in OR's?
Answer	Please refer to the Visante blog for handling medications. These processes will differ based on your specific cart process.
Question	Do you use disinfectant cleaners to wipe down all the medications before returning to stock?
Answer	Yes. Nothing specific. Whichever disinfectant wipes are available at the time; please work with your infection control team to assist you.
PPE/Cleaning	
Question	How are you handling PPE conservation with sterile product preparation?
Answer	Please refer to the USP and FDA guidance PPE/garb shortage and strategies for sterile compounding. Links are provided in the blog.
Question	Can you address the fume guns?
Answer	This is a great question. If you watch the news coverage from other countries, you see people in HazMat suits spraying down streets and surfaces in public. The US has not implemented this strategy. Most of the countries are using ionized hydrogen peroxide which shows to be effective against COVID-19.
Question	Do you used products like Oxivir to sanitize returning medications?
Answer	Please work with your Infection control team to assist you with the appropriate product to use for this process.
Question	Are you reprocessing used Masks/Gowns/ etc..?

Answer	The University of Nebraska has done the bulk of research on this process. Please refer to the NETEC website for guidance: https://repository.netecweb.org/exhibits/show/ppe-cons/ppe-cons
Staffing	
Question	Based on consistent workloads throughout the day and night- did you change staffing?
Answer	For Langone NY: We shifted staffing quite a bit. For instance, lots of help from areas with lower volume such as OR and pediatrics to help compound IV's and other operational help; For IU Health had almost 24-hour bedside CC/ED specialists already, but adjusted schedule to have a CC specialist in house in the evening, in addition to the pharmacy resident. One starts at 6 am and one at 2-10 pm, CC/ED floater is 9 pm-7am, others maintain usual day shift schedule. A CC/ED Specialist is now in-house every weekend.
Question	Can the speaker at some point share what their census has been, how big is the hospital and what the surge has looked like for them in terms of numbers? Trying to understand how comparable they are to our facility. Thanks. Also, how many pharmacists have they had to bring in extra if any?
Answer	I don't have the daily Census for March and April, but I will say that we did not bring in new pharmacists. Deploying office based pharmacy staff was adequate. We also had at least 2 pharmacists come back from retirement to help
Question	Did you rotate staff out?
Answer	We are still working through this process. Yes, you have to have a process in place to keep your staff resilient. Continually check on your staff as you ramp up. Please refer to the ASHP COVID-19 community for ideas for staffing.
Question	You mentioned several times the workload volume is now 24/7. How have you adjusted your evening / night shift staff to accommodate?
Answer	We've re-allocated 2-3 evening and night pharmacists to compound drips. Also, we have 2 working managers on site in the evenings and at night
Question	How did you determine the criteria for all offs? And where are those staffing resources coming from?
Answer	Mostly from pharmacy administrative positions
Question	We have several pharmacy staff who do not want to come to work because they are concerned about getting infected and/or bringing it home. Many pharmacists are asking to work from home. How did you address this?
Answer	This is not easy due to HIPAA etc. We did not have any staff work from home. I recommend asking your hospital HR and compliance for help and recommendations. Bedside staff are most effective when present and able to assist and anticipate problems, it was not successful keeping them in a more remote location.

Question	What are you doing with decentral clinical staff that are not practicing in their usual areas?
Answer	A couple came to central pharmacy to help but all others were in dire need for clinical interventions for COVID patients due to the high census. SCCM has training for non-critical care personnel on website, also see therapy blog for additional suggestions.
Question	Do you still have Pharmacists and Technicians having direct patient care: example attending codes, performing face to face med rec, etc. If so, is it all patients or just non-COVID patients?
Answer	Most sites have pulled these techs back away from direct care, i.e. med histories; to preserve PPE. Depending upon your PPE program and need keep them deployed.
Question	What was your previous Pharmacist to Patient ratio and how has that changed to now?
Answer	No change
Question	Have you had to make any adjustments if some of your staff test positive for COVID-19?
Answer	Yes, you have to have a plan in place because either they will be positive or a family member they will need to care for.
Question	How did you handle the labor-intensive duties that the study drugs required?
Answer	Part of the process that is the new normal. You must use your skill sets and your IDS skill sets to make this a quick and safe process.
Question	You mentioned the flow and workload is similar for days, nights, and weekends. What cadence or cycle have you found is most tolerable for staff? 7 on/7 off or shorter cycles? 12 hours shifts?
Answer	unable to change shifts due to multiple reasons (payroll, several staff complains, etc..)
Question	Did you have massive call-ins? How did you staff-up to deal with that or prepare for that?
Answer	Yes. We used OT and managers.
Question	Were there any adjustments to the clinical staffs' duty hours?
Answer	Yes, for everyone's hours where needed. The clinical staff are integral to good communication between the front line and the central pharmacy.
Question	Do you use volunteers, pharmacists?
Answer	Yes but no pharmacists. The hospital established a pool of volunteers and we use 4 of them
Question	We're currently not hiring replacement positions, but worried about surge & needing these positions- do you have any recommendations?
Answer	I personally make a strong argument for replacing front line and operational staff and also personally do not put forward any non-critical replacement positions
Question	Given the intensity of clinical pharmacist work, did you make changes in their scheduling- to provide more coverage off hours and did their way of practicing change?
Answer	See line above.

Treatment	
Question	we are using alternative therapies to manage ventilated patients to reduce drip requirements. Using fentanyl patch to reduce fentanyl drip requirements. Seroquel and phenobarbital to aide sedation. Are you using any other medications in your vented patients?
Answer	Please refer to the Visante treatment blog.
Question	Did you provide prophylaxis doses of HDQ for employees? if they were exposed? or?
Answer	No.
Question	Do you agree with the news surrounding Kaiser Permanente's withholding of hydroxychloroquine prescriptions (for SLE, RA, etc) to stave off the foreseeable shortage? Is there something you would have done differently?
Answer	There has never been valid support for hydroxychloroquine use, and very little current data in favor of its use. Protocols should be revised to remove that option. See therapy blog.
Question	Can you supplement mechanical vented patients with oral BDZ such as diazepam (long-acting with active metabolites) to place a limit IV sedative?
Answer	Yes, see Visante therapy blog.
Question	Have you started to use oral opiates or benzo's via tubes to supplement IV sedation?
Answer	Yes, see Visante therapy blog.
Question	Any information you can share related to conservation of NMBA's as that is a current pain point for us currently.
Answer	Yes, see Visante therapy blog.
Question	Have you seen increase use of prolonged nimbox or other NMBA drips in COVID vent patients?
Answer	Literature for ARDS provides little support for routine use. Duration should be as short as possible- reassess continued need every 12 hours. See blog.
Question	How are you handling fentanyl shortage?
Answer	Yes, see Visante therapy blog.
Question	The hydroxychloroquine is it used in combo with azithromycin and zinc? or just hydroxychloroquine?
Answer	A variety of combinations have been attempted. Zinc/HCQ combo theoretically increased cellular penetration- no data available. Azithromycin may be a beneficial anti-inflammatory agent (theory only), but increases risk of QTc prolongation, so consider risk vs. benefit. No data to support azithromycin use. See blog.
Question	Are you using the common canister approach for albuterol MDI's?
Answer	No, please refer the information from ISMP guidance and your state board of pharmacy regulations for this process.

Question	What's the HCQ prophylaxis dose being tested? Is everyone getting a baseline ECG with repeat testing?
Answer	There are many different regimens used/reported, but no data on prevention. See ASHP COVID information https://www.ashp.org/COVID-19
Question	Gabapentin and Tylenol ATC. Also, ketamine drip is an option for intubated patients
Answer	Agree, see blog. However, gabapentin has shown some minor benefit for peri-operative patients, but do not expect significant impact on reducing opioid requirements for sedation.
Question	Did you utilize Remdesivir? Tocilizumab?
Answer	Remdesivir data as of 4/21 includes a compelling monkey study, and leaked information from a clinical trial in Chicago- very suspect and completely inappropriate. Must await actual results to now with any certainty, but anecdotally seems to have some benefit in symptom reduction. Tocilizumab data is small case series, no way to know if useful at this point. Would use HScore elevation before considering it. See blog.
Question	How are MDIs and nebulized meds managed; ICU vs NON-ICU vs ED patients being released?
Answer	Minimization of nebulized therapies. Please refer to your board of pharmacy regulations and waivers for guidance.
Question	Were you able to work with the regulatory boards to allow the hospital pharmacies to dispense the patient's used albuterol inhaler home with them since the inhalers are not available from the community pharmacies?
Answer	You can, please refer to your board of pharmacy regulations and waivers for guidance.
Question	did you have to resort to different drugs for drips that you don't have on standard due to shortages? did you have to accommodate making new drip sizes if you started putting pumps outside the rooms?
Answer	Many are using ketamine infusion where they had not previously. It is not on the ASHP Standardize4Safety concentration list. If you make a larger bag, use your standard concentration and label so that the bedside providers have clear understanding of which pump concentration to use.
Question	What is your opinion on the role of thrombolytics in COVID-19 patients?
Answer	A clinical trial is starting from Beth Israel. See blog.
Question	What resources are available to help nurses who are having to mix their own vasoactive infusions?
Answer	Obviously, this should be for emergency use only with limited duration of use and replaced with a pharmacy compounded solution, properly labeled ASAP. Keep a reminder of the appropriate standard concentration with the drug.

Question	Would you recommend targeting higher Mg and K levels for patients on hydroxychloroquine +/- azithromycin?
Answer	Monitor QTc prior and during therapy. Use bedside monitor for continuous QT display, if available. Keep K > 4 and Mag > 2 as suggested by Am Coll Card. See blog
Question	Are there any other issues with long tubing other than tube flushing, clotting?
Answer	Must be compatible medications if using the same primary line (amiodarone must be with dextrose). Measure your extension tubing to know volume precisely for appropriate flush methods. Keep infusion rate > 5 ml/hr. Central line only. See blog.
Question	We have a prosol shortage as well as a clinimix shortage. Any thoughts on parenteral nutrition?
Answer	SCCM and ASPEN guidelines suggest enteral nutrition. See blog.
Question	What about hanging critical drips for longer than 24 hours? where is good documentation and resources for this in regard to stability and sterility issues?
Answer	Should ensure safe therapy and follow established BUD.
Question	What scale do you use to assess sedation for patients on NMBA?
Answer	Clinical assessment scales cannot be used with continuous paralysis. Should stop NMBA every 12 hours (or at least daily) to assess analgesia, sedation, and continued need for NMBA. If intermittent NMBA, should assess when muscle activity has returned-prior to redose of NMBA. Then can use your usual scale for sedation. See blog.
Question	Our intensivists concerned with micro thromboembolism in the lung and began to use therapeutic dose of heparin (i.e. heparin drip) for elevated D dimer, and monitor fibrinogen
Answer	Like other viruses this is often a hypercoagulable state and VTE prophylaxis should be used for all patients who are not bleeding or severely thrombocytopenic (<25,000). Use VTE prophylaxis regimens appropriate for risk severity (use a scoring system). ASH and ISTH have provided guidance- generally not starting therapeutic anticoagulation without documentation of clot (not started just for elevated D-dimer) See blog
Question	Can you comment on flolan nebulization for those already prone but still with worsening oxygenation?

Answer	Prostaglandin nebs(Flolan, Veletri) can improve oxygenation in ARDS for some patients. If no benefit (< 20% increase pO ₂), do not continue it. Protocols usually start with a standard dose and then taper doses as the patient improves. Would use on mechanically ventilated patients only. A delivery device such as Aerogen with pump to control drug delivery rate is needed. If RRT do not routinely use continuous aerosols, would not suggest starting this new process now. See blog. IU Health starts 160 mcg/hr (>80kg) or 80 mcg/kg (<80kg) and halves the doses progressively for weaning. On-line protocol (not an endorsement) https://www.utmb.edu/policies_and_procedures/Non-IHOP/Respiratory/Respiratory_Care_Services/07.03.60%20Inhaled%20Epoprostenol.pdf
Question	What is your view for the timing of drugs such as tocilizumab? Prior to intubation, post intubation. Also for tocilizumab do you consider re-dosing and under what circumstances?
Answer	Clearly not beneficial if the patient is extremely ill, but nothing to guide initiation. Would look for elevated Hscore, but there is no data for/against this therapy. See blog.
Question	What is the role if zinc and the clinical efficacy of hydroxychloroquine?
Answer	Theoretical role in increased cell penetration, but no data at all. Is a low risk intervention. See blog.
Question	How do we balance the two schools of thought of increasing sedative/analgesia drip bag sizes to minimize entrance into the patient's room, with preventing wasting medications in these patients likely to require extended infusions of limited stock medications?
Answer	This is an on-going question as we see sporadic drug shortages (drugs and concentrations) and shortages of tubing sets. Preserve your medications, preserve your PPE and preserve your IV lines it is a daily balance.
Question	Is anyone using inhaled alteplase? I've seen that it's being used somewhere, but no dose documented
Answer	See above and blog.
Question	Has any physician asked about the use of Vit C iv, Vit D, Zinc or Methylene Blue IV?
Answer	See prior answers about HCQ and Zn. No High dose ascorbic acid is talked about but no data. It will alter accuracy of many glucose meters. Have not found any data on methylene blue, other than a mention that patients receiving photodynamic therapy for cancer, who had received it had apparently not contracted SARS-CoV. See blog
Other	
Question	Field hospitals - are you managing any of these?
Answer	Please refer to the ASHP guidance on setting up a field hospital.
Question	Are there any specific precautions you've communicated to OR staff around pyxis anesthesia station use for COVID+ patients to limit contamination? Particularly around controlled substances.

Answer	Please refer to medication handling blog.
Question	How is the pharmacy experience described at NYU Langone similar or different from other HHS pharmacies in the NYC area? Lots of press, particularly about PPE availability / use that would seem very different from what was described on webinar.
Answer	Quite honestly, I haven't had time to learn about other hospitals' issues and challenges, but I think we are all experiencing similar issues
Question	Just fyi - I've seen business place the 3' wide fold up plastic tables in front of their counters to create the 6' barrier
Answer	Thanks for sharing the idea for the group to consider.
Question	Is the barrier just around the cash register?
Answer	In the pictured slide, yes. However, there has been much discussed about ensuring that all staff and customer points are protected; noting that administering vaccines is direct patient contact and staff should don appropriate PPE.
Question	Do you have any contacts related to pharmacy services at the Jarvis center? We are in the process of setting up an alternative care facility.
Answer	No
Question	Did you make changes to PPE worn in IV room in order to conserve PPE?
Answer	Limiting staff into areas is key. Any shortage of garb/PPE requires sites to review the USP and FDA guidance documents. Either way, sites would benefit to establishing SOPs with varying examples of where specific PPE components are shorted and what the alternative processes would be. Keep in mind the limitation of BUDs per USP, FDA and your state boards of pharmacy.
Question	Have you seen BCG vaccine used to promote the immune system?
Answer	The proposal to explore BCG vaccine is being proposed based on the low incident of COVID-19 in India in the older population which had received the BCG vaccine in the past. In addition to BCG, Oral Polio Vaccine is being explored as an option based on early case studies of patients receiving OPV with a lower incidence of measles.