



American Society of
Anesthesiologists™

Central Line
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(SOUNDBITE OF MUSIC)

VOICE OVER:

Welcome to ASA's Central Line, the official podcast series of the American Society of Anesthesiologists edited by Dr. Adam Striker.

INTRO:

Hi. I'm Adam Striker, editor of Central Line. COVID-19 is having a tremendous impact on our specialty and on the country. At my hospital, we are fortunately not seeing the level of patients that others around the country are because we're a pediatric institution and we're in the middle of the country but that doesn't diminish our concern in any way. I'm following along very closely all of my colleagues who are having to deal with this right now in the epicenters in the United States and around the world. My concern, like everybody else's around the world is having enough healthcare resources to take care of everyone that needs it. At the pediatric institution we're trying to conserve as many resources, as much personnel, minimize exposure as much as possible so that we have the ability to take care of not only the kids but any adults around the community that may need our help depending on what happens in the next several weeks. We're trying to figure out ways to match our staffing to what's needed. We, along with many others around the country have stopped doing elective cases. We're doing only what's absolutely necessary.

We're also dealing with PPE issues just like everyone else is around the country and we're trying to conserve those as much as possible. And we're preparing for potentially a surge of patients and we're trying to make sure we have the right PPE's at the right time and this creates issues in, in planning. How much do you use, when, when you engage that level of protection? When the supplies run out how do you manage it? I'm seeing people all over the country having to make due with what they have and as heartening as it is to see people use their ingenuity and their skills to come up with novel solutions it's sad and it's disheartening to see all my colleagues around the country have to cope with that. We should all have the appropriate Personal Protective Equipment that we need to appropriately take care of these patients and be there for them throughout this pandemic.

There are a number of challenges that we're all tackling and I feel for all my colleagues around the country and the world who are having to deal with this right now in numbers that are really, really worrisome but I know they're going to do a great job. I know all of my anesthesiology colleagues are going to step up and utilize their skills whenever and wherever they're needed and to help all of our colleagues in healthcare take care of whoever is sick and in need of medical attention. I have no doubt that we will do the same thing here if and when called upon. With that, hopefully this doesn't last too much longer and hopefully we minimize the amount of, the amount of people that need healthcare with all the methods that are being undertaken throughout the country to try to minimize exposure for everyone.

And while the epidemic is affecting everyone in the field of healthcare, anesthesiologists are facing specific questions and challenges. That's why the ASA brought together a panel of thought leaders to field questions and share their expertise. The ASA's first COVID 19 Town Hall webinar was recorded on March 19, 2020. It was hosted in conjunction with the Anesthesia Patient Safety Foundation and moderated by ASA president Mary Dale Peterson. You can find video of the original Town Hall at asahq.org/COVID19info along with additional COVID-19 resources.

For this episode of Central Line, we've chosen to share key questions and responses on the topics of critical care, medication, emergency preparedness and more. Let's listen in as Dr. Joe Szokol, ASA's Chief Health Policy Officer, chooses from over 1,000 submitted questions, starting with the topic of equipment management...

DR. JOSEPH SZOKOL:

What type of personal, uh, protective equipment should anesthesiologists use for patients suspected of COVID-19?

DR. BRETT AARON:

Joe, Brett Aaron. Uh, the recommendation right now is that there's community spread and every patient is at risk for having, uh, COVID-19, especially since we're not doing elective surgery. Wearing an N95 mask with a mask in front of it is fine protection, having a covering garment either the jacket or the gown - we are, we're currently using jackets because our gowns are in short supply. The CDC has some very good logical set of recommendations that is, as N95 mask, uh, supplies decrease, you may need to use it multiple times, ideally you would only use it once for an intubation or anything close to the airway. But as you're walking around checking on rooms or other patients, uh, if you're not doing an airway procedure, uh, you can keep the same mask on, especially if you're, they're in short supply. Look at full barrier precautions, uh, for all patients.

DR. JOSEPH SZOKOL:

Now, now, the, another question - how do you protect the anesthesia machine from a patient who you suspect or may have COVID-19 infection? What special precautions can you take?

DR. JEFF FELDMAN:

Hi, this is, uh, Jeff Feldman. I can, I can take that, that one. Um, so the filter mechanisms that we have in place, uh, are pretty effective and we did, uh, just post some updated guidelines on the APSF website just a couple of hours ago, um, with the best information we could find. The, uh, the guidelines talk about the viral filtration efficiency that you want to have and in a nutshell, um, mechanical pleated filters are better than electrostatic filters placing a high-quality mechanical filter at the end of the excretory limb will provide, um, probably most of, if not all of the protection that you need for the machine. We are also recommending that you place a filter at the airway, um, and that will facilitate sample gas that you can use for gas analysis and will filter that sampled gas, um, which as you know is then returned sometimes into the anesthesia machine, sometimes to the scavenging system, sometimes to the environment, depending on your, your situation and we're trying to get a little bit better recommendations for that gas sampling device. So, the bottom line is filters, um, at the airway and, um, and those describe the viral filtration efficiency and those numbers were picked for two reasons - one is because we believe that they'll be effective, although we don't have any real data to know what happens when a virus goes into the machine and, and how what's completely protective, but these are, are good standards. Um, it's 1 in 10,000 particles that gets through. When you combine that with 2 filters, it's multiplied, so two filters at 99.99% will admit one in 10 to the 8th particles. Um, one thing I want to emphasize is you don't want to get the machine contaminated. The guidance that we're getting from the anesthesia machine manufacturers, you can find through the APSF website. But, um, if Draeger for sure is not guaranteeing that you can clean the machine completely if it does become contaminated, they're recommending a 3 to 4 week quarantine actually, uh, before you can use it again, so uh, using the filters on an infected patient are very important.

DR. JOSEPH SZOKOL:

So lots of questions on N95 masks. How long can you use them? How do you clean them? Can you use UV light to actually disinfect them?

DR. ALBERT VERON:

Uh, so there has been, there's no set standard on how to clean a mask because they're not made to do that, but obviously, uh, during this times, everybody, there's a lot of creativity and we have heard from our colleagues in Wuhan what they have, what they have done, and uh, none of this is evidence-based, but when you're desperate and you don't have mask some people have achieved that. Uh, in a teleconference that, uh, with that people from Wuhan Hospital I heard that, uh the people when they were running out of N95 masks, and they were reusing it, they were basically using a hairdryer thinking that the heat, may uh, take care of uh, getting rid of the bacteria as one option. Uh and there is actually about, about four reports on the use of UV light. Uh, UV light, it seems to be effective. But it can degrade the mask over time depending you know on you know the number of times you run through it. Uh, but apparently that this at least in vitro seems to uh, uh, work in that sense, but again, it's the number of cycles that you run through it.

DR. JOSEPH SZOKOL:

And, and how do you save the mask? Is another question for... (sic)

DR. ALBERT VERON:

Well, apparently the best myth that is, you don't want it to collect humidity. So the best way to save it is to put it actually in a paper bag or rather a zip lock bag and that's the recommendation.

DR. MARC STEURER:

Another component, when you're trying to reuse mask is to use a surgical mask over the N95 to prevent soiling to keep it as clean as possible.

DR. ALBERT VERON:

Correct.

DR. MARY DALE PETERSON:

Is that, is that better than a face shield?

DR. MARC STEURER:

Well, um, I would guess that anything that physically, mechanically covers the N95, whatever gets the trick done, you still want to get your eyes protected. So you might as well get a, a face mask with a face shield on it, and kind of kill two birds with one stone.

DR. JOSEPH SZOKOL:

Thank you. Next question – should, should we treat all patients as COVID-positive?

DR. GRANT LYNDE:

So, ah, this is Grant Lynde, I'll answer that. I think that the, the challenge that we have is certain organizations like the ANA have come out and they said, uh, that you should wear an N95 for all patients, but the reality is, with, uh, our supplies dwindling in a lot of locations, if you treat every single patient and wear an N95 on, for that case, you may not have an N95 when you have a known COVID-positive patient, in a matter of days to weeks, depending on where you're at. Uh, many of us working in places where supplies are constrained are wearing our normal, um, surgical mask and normal gloves that you'd wear for a case, and just ensuring good hand hygiene and making sure we're not cross-contaminating the anesthesia machines by touching it and, uh, being careful not to touch, you know, a lot of stuff because you know as we all know, um, it's not uncommon to have virus or, or other colds, uh, that you touch other stuff in the OR and contaminate it.

DR. ALBERT VERON:

Um, I want to second that. Um, I work in a level 1 trauma center in Florida. We have to look at the community spread, we have not started yet, we are getting there. Uh, but I think it's essential that you look at the community uh, spread. Working at level 1 trauma center, the trauma patients, they continue to come. If I start using N95 on every trauma patient I intubate on a daily basis, then we're going to be running out of masks. So we, uh, we actually use universal precautions, we use face-shield masks, full gown, but we do not use an N95 for those cases. Uh, we are trying to reserve for the patients that, uh, uh, that are at risk or the patients that are suspicious or the patients that are proven to have uh, COVID-19.

DR. ROBERT LOEB:

This is Rich Loeb from the committee on Equipment & Facilities, and I, I would point out that, the uh, guidelines that uh, we've worked on for protecting the anesthesia machines are that you use the same, uh, filter system for every patient and I, I think we should recognize, in other words, that you need to protect the anesthesia machine and have, at a minimum, one filter in the breathing circuit between the patient and the expiratory limb, of, um, um the expiratory port of the breathing system because once that machine gets in, infected, it will potentially continue to infect all subsequent patients over a period of time. One thing to add about the use of filters is patients who, uh, have active lung disease, and are producing a lot of, uh, uh sputum, are going to tend to soil the filters,

uh, more quickly and uh, need, then need to be replaced and it makes sense in that situation, uh, especially, uh, to have sort of double protection of the anesthesia machine.

DR. MARY DALE PETERSON:

I would just like to say that I do think that, you know, reusing, um, the N95's is, is also a potential solution to conserve, and I've seen a lot of questions in the chat box where we can get more, certainly we can use the industrial supplies, and I would encourage people to go to the industries if you have any in your region, and, and ask for donations, um, from those industries or purchases. You know we have Keywood industries, and they just sent us 500. So there are other places that I think we can try to secure some N95's while we are waiting on 3M to ramp up their productions.

DR. ROBERT LOEB:

But, the CDC does have their extensive uh, documentation about how to use N95 for extended use and for reuse, uh, and the types of situations so that they're certainly information on the CDC website and, uh, I did see uh, something from 3M that they too are considering what are alternatives to N95. So I think it is reasonable and, and hopefully this will be one of the things we will work on in my committee, is if there are ways to, um, get either home built solutions or commercial solutions of, uh, respiratory protective gear for uh, our people. One person did submit to our committee that, uh, they have a home-built solution, uh, and they tested it by doing the standard saccharin test with that device and it passed. So I would recommend it before adopting a solution, uh, that you at least do that very minimal amount of testing to make sure that it works as well as an N95 for those droplets.

DR. BRETT AARON:

Joe, if I could add, this is Brett Aaron. The governor of Ohio was on, on one of the talk shows this afternoon, and said in a week to ten days their trajectory in Ohio will put them at the same place Italy is, so I think you, you have to look at what your community spread is. Uh, if you look at the CDC documents, they recommend using an N95 mask for all intubations or very close to the airway. I think there's no perfect answer. I think you have to know what's going on in your community and try to know who your patient is, um, but you, you really do have to conserve the N95's as, as best you can. When you try to reprocess them, you have to be very careful that you don't make them ineffective.

DR. JOSEPH SZOKOL:

A question – How long after a COVID case do you wait to reusing the OR?

DR. BRETT AARON:

Brett Aaron. There's uh, it depends on what the exchange rate in the room is and, uh, the size of the room. There's a chart on the CDC website that tells you how long you would have to wait when you plug in those numbers before you bring in an, another patient.

DR. MARY DALE PETERSON:

I might add that the, the recommendations are to try to avoid procedures in the operating room because of the positive pressure ventilation but try to do as many as possible at the bedside.

DR. JOSEPH SZOKOL:

How do you convert the operating rooms to ICU care and how, how good are anesthesia ventilators at taking care of patients who need ventilation?

DR. GEORGE WILLIAMS:

When it comes to converting operating rooms to ICU's, the fundamental things that we're looking for are the ability to actually have gas supplies, which is something that all the operating rooms that are going to be applicable would immediately have available and then, um, ease accessibility in terms of a, a layout that you can easily walk from one room to the other, and so from that perspective, operating rooms are ideal for that. Now clearly, using operating rooms for ICU's, capacity will certainly limit the, or cause substantial issues when it comes to sterility later for conversion back to operating room use, usage. There's some discussion about taking anesthesia ventilators, or anesthesia machines and removing them from the operating room, for example, and putting them in the PACU or putting them on another floor of the hospital that will be made available because there's not enough ventilators in general. But, of course, that means that there has to be enough um, floor space to actually accommodate that, um, to make that possible. In either case the anesthesia care team, you know, that, will have to make sure that they are available to manage these sorts of, uh, patients and these sorts of ventilators.

The second part of the question depends on whether or not the anesthesia ventilators that we have, the machines that we have, can function as ICU ventilators. And I will say in general, yes, they can. Um, we did attempt to produce a, a video for this but ignored to share in the webinar, wasn't really functional for that, to that end. But, I want

everyone to think about the key things that it comes to when it comes to ventilators – PEEP, which all of our anesthesia ventilators are capable of generating. Most of the Draeger units that are, that are manufactured are able to generate up to 27 minutes of water pressure PEEP. They all, any, any Fabius or later ventilator also has a pressure volume ... that we are able to utilize, which we, we've all seen before and can re-familiarized ourselves with. And furthermore, um, FI2 component in terms of what they the oxygen concentration is clearly manipulatable.

We do have some patients that require some other modes of ventilation. For example, let's say, the critical care team that's working with you ask for something such as APRV, or bi-level, which is a relatively newer mode of ventilation. I want you to imagine this, the inverse ratio of ventilation. You have your inspiratory phase, which is very long and your expiratory phase is very short. If you can make your I to E ratio, for example 4.5, 4.6 to 1, that's essentially mimicking what any critical care team would ask for in terms of APRV or bi-level of ventilation and we knew that the PEEP was set to 3 and we were really able to simulate that. We're working on making, um, a short video that can show everyone how to do this if APRV is needed. But if you're doing ACSIMB with high PEEP, all, all those can absolutely be done on the anesthesia machine and it's very plausible.

DR. ALBERT VERON:

I, I went after that for the listeners every day. Every single day we take patients who are in the ICU that go into the operating room and we can provide ventilation. So yes, there would maybe selective cases our machine, you know, that an ICU ventilator would, would be better, but in, for the majority of cases, the anesthesia machine ventilators could take care of it. But one thing that came up in our discussion is, it is believed that they work differently and they will have to be, uh, uh, managed by anesthesia personnel uh, uh, because the way we do normally this at the bedside. It's not like an alarmed ICU that you can leave the patient on a ventilator, so it will require restructuring and this will, this will have to be supervised by anesthesia personnel.

DR. MARY DALE PETERSON:

I'd like to add that, that people need to be very careful when they use the anesthesia machines to make sure you've got the filters in place, that you don't contaminate the machine. The other, I think getting the anesthesia machines into the ICU's would be the first choice. Second choice would be using our operating rooms, but there have some concerns brought up that um, you know, not all of our operating rooms may necessarily have slave monitors into a central monitoring station and those types of things. Um, its certainly things that we can work on and obviously, if you're out of ICU beds, that would be another choice if needed.

DR. JEFF FELDMAN:

One other comment, um, this does reflect an off-label use of the anesthesia machine and I agree with the, the comments that were made previously. Both Draeger and GE in the last 24 hours have released guidance on this off-label use, which is a big, um, change in the way a manufacturer would do things so that they are trying to support us very well. Um, those guidance documents, I haven't quite finished going through, but they're pretty detailed. And so, we're hoping to be able to translate some of that information out to people to make it a little bit easier. Hopefully, we have a couple of days before we get to this point so that we can work through the details cuz it's not true to feel, to, to repurpose the machines this way.

DR. MARY DALE PETERSON:

And, and I wanna take this moment to thank Jeff and all the hard work he's been doing and really working with a contact with the FDA to really, I mean have you ever heard of the FDA, um, you know, working with the anesthesia machines, and, and you know, professionals to change guidance this quickly, and so, um, we're working with the administration on this to try to figure out how we repurpose our anesthesia machines. I know that people have brought up as well, um, using, um even the anesthesia machines or ventilators that are in veterinary practices. I know, my niece is a veterinarian and they use very similar machines as what we would use, so, um, we are trying to figure out how we can increase the supply of ventilators that I know the federal government is very concerned that we may not have enough.

DR. JEFF FELDMAN:

Um, just along those lines, I just want to recognize Dr. Alexis Carmer who's an anesthesiologist who works at the FDA who is really been pushing this initiative and recognizing the contribution we can make anesthesiologists. Um, so I think she's, she gets a lot of credit for getting this started and pushing it, um, at the federal government.

DR. MARY DALE PETERSON:

Well, then I, I'm going to put a shout out to Jerome Adams, our Surgeon General, because, as we started coming up with this, these ideas, he fed that to the White House task force as well and allowed me, then to have a discussion with that task force so I think this is on a fast track.

DR:

Uh, I will point out though. So, there are a lot of considerations that we're still, uh, dealing with, um, the Draeger machines, uh, actually conserve, uh, compressed gases, uh, and, but apparently in some countries, uh, oxygen, compressed oxygen is in low supply uh, and one of the, uh, things that, that most anesthesia machines do is they use compressed oxygen to drive the ventilator in addition to the patient gases, and so they actually consume a lot of oxygen. Um, GE has already started to, uh, think about and offer up ways that the anesthesia machines can be converted to use uh, compressed air instead.

BRETT AARON:

We spoke, this is Brett Aaron, we spoke with the, one of my colleagues actually called the OG and spoke with the tech reps and asked for some update on what the important differences were with, uh, using our machines in an ICU setting. They said if you're gonna use them in a, in a PACU or, uh, outside the OR, make absolutely certain that you that the scavenging gas line is hooked up. Otherwise, you may get up to 10 centimeters of PEEP may not show up on the uh, uh, monitors. Uh, the other big difference is the usual ventilators have an articulating arm that keeps the tubing up and out of, of the way of the side rails. We've gotta, uh, one incidence a few years ago where somehow a nurse put up the side rail and compressed the, uh, uh, ventilation tubing, of course the alarms went off and it took us a few seconds to figure it out, but uh, this may be a good place for our staff and nurse anesthetists and residents to watch over the ventilators because when the ICU nurses are not familiar with the ventilators then that's a real recipe for disaster.

DR. GEORGE WILLIAMS:

I want to make sure we also recognize that we had talked about ICU nurses it's very foreseeable that our PACU nurses who are ICU trained would be engaged to actually provide this particular care given the scope of the potential problem that we're looking at.

DR. JOSEPH SZOKOL:

So a follow-up question is, um, I, I'm in a COVID-19 community spread area, and my facility still doing non-urgent procedures. What can I do to influence the decisions within my own hospital?

DR:

Uh, in short, we're facing a, a mass casualty situation from medical disease and when you follow the American College of Surgeons guidelines, they basically are providing

this triage because the idea of elective is not a granular enough in order to identify those patients who need surgery in a more timely basis vs. not, so for example, cancer surgery. My recommendation for working with your services in the hospital is to utilize their own guidelines, their own society guidelines, and uh, talk with them about that and work closely with them to, uh really guide that conversation in terms of what your facility's present resources are, as well as what the specific patient's needs are.

DR. MARY DALE PETERSON:

Joe, if I might add, I think many states now have put out emergency orders and have also, you know, really worked with the hospital associations in really trying to cut back on, uh, non-essential procedures. So that might be another avenue that people could take, is to go to your, either your Department of Health or your Governor's office to ask for that type of help as well.

DR. JOSEPH SZOKOL:

Question I think is for Dr. Williams from the Committee on Critical Care and what guidance can you give to anesthesiologists assisting in intensives rolls when the ICU patients senses overloads critical care departments?

DR. GEORGE WILLIAMS:

Well, thank you very much for that question, Joe, there's clearly the expected possibility in multiple institutions around the country that anesthesiology teams will be expected to provide um, a support role or leadership role in the critical-care management of patients with COVID-19. This will primarily be expected to focus on respiratory support and management and this is something that would need to be worked out on a local basis. But here, the, the essential high points of what's going to be important for that - the first thing will be that anesthesiologists are the one group of people in the hospital that know how to operate our anesthesia ventilators, and in the event that we have to provide ventilation with our equipment, we need to be ready as anesthesiologists to provide 24/7 in-house support for that. The fact that we may be, um, either for our sites that we support, the PACU, the OR, or even floors that we are asked to consult on as ICU services where anesthesia care team members are there, available to see to those issues.

But in addition to that, um, there, because critical care spans so many systems, beyond just the respiratory system itself, anesthesiologists may be asked to take a broader role in terms of care for the critically ill patient including but not limited to procedures at the bedside, centralized arterial lines, um, ordering of antibiotics fluids and making sure that there is appropriate organ function. So there are some materials that the ASA is working

to make available for anesthesiologists to the address that particular need, essentially if you will, a, a crash course for anesthesiologists that, um, can be used to provide nuts and bolts information for those of us who may be a little bit farther away from our critical care rotations during residency so that we can actually provide that pretty good critical care support. The thing that's important for all the groups that have the capability of having intensivists in their departments to allow that that, that intensivist to be able to take some leadership there to provide that guidance to the rest of the department. And, all of this really could and should be done in collaboration with the existing critical care infrastructure of the various hospitals that we serve.

DR. JOSEPH SZOKOL:

There's a question on pediatrics – in essence, the, the young pediatric population are often times are asymptomatic when shedding the virus. Do you treat them as all COVID, uh, patients, or what, what do you answer that? Maybe I'll direct this to Dr. Peterson.

DR. MARY DALE PETERSON:

Um, Joe, thank you for that. And that is a concern that I think pediatric anesthesiologists have. Um, this is, a, a weird thing about this virus. The data we have from China as well as the other countries are that infants and young children, um, really below nineteen in the MM, MMRW report that came out today I believe, showed that of all the hospitalizations in the US so far, um there have been no ICU admissions in anybody under the age of nineteen. But we do know, and we know this, um, from a lot of the testing that's been done that even infants can be sharing, shedding virus without ever having any symptoms. And so I think I know, I have been following the chat box here and there are, the, um, there are a lot of questions because we are in a really tough spot right now because I think with the community spread and, and having asymptomatic people, children included especially, that are shedding virus, um, you know we, we don't know who is actually COVID-19 positive and so I think that's why the guidance is leaning towards, um, trying to use more full protection for aerosolizing procedures. Now, we, we believe COVID-19 is actually droplet and not transmitted like measles. However, we also know and that in intubations and other types of procedures, there can be sort of these aerosolization of, of the droplets for a period of time and that's why, you know, a lot of us feel that anesthesiologists, or anybody performing intubations needs to have that extra protection at least during those procedures. So, some hospitals are really trying to provide, you know, that level of protection for their patients. I know in Europe where they've had awful shortages of N95 masks. They're, you know, going with other kinds of techniques where you, where you shroud the patient, um, and try to limit the closeness that you are with the patient, etc, with video laryngoscopes, but I think that's the current guidance that we have, Joe.

DR. JOSEPH SZOKOL:

OK, thank you very much.

DR. JEFF FELDMAN:

Um, I could, I do practice in shop in Philadelphia and, and I could add some more details about the Pediatric population. We developed our guidance over the last few days and we started intending to treat every patient as if they were, uh, potentially going to transmit the disease to the health care worker and in a long conversation with our epidemiologist, we have decided to tier our patients, so patients without obvious risk factors, and we have a rubric for who those are, um, we treat with barrier precautions, um, our usual way face, face shields things like that, and that's based on local epidemiologic advice. Um, our epidemiologist said that could change if our population changes, but we felt comfortable not using all of our big resources right now for patients who we couldn't view as at-risk. The other strength we have is that the hospital can provide 24-hour turnaround on testing, uh, patients. So we have a policy for any patient that gets scheduled for a procedure in the hospital that has, follows any of the risk factors, they get tested and delayed if it all possible. So we have their test results.

DR. JOSEPH SZOKOL:

Thank you. Another question, uh deals with VV or VA ECMO. What are indications, if ever, and do you employ ECMO in, in these patients who are, uh, sick with COVID-19 on a ventilator. Maybe Dr. Williams will answer that question?

DR. GEORGE WILLIAMS:

Yes, I'd be happy to. Thank you very much Dr. Szokol. Um, VV and VA ECMO are therapies that have been increasingly asked when we're talking about COVID-19. We do surmise are there is a substantial amount of, of mortality that comes resulting from the of degree respiratory failure, ARDS and hypoxemia. There are really mixed experiences right now across the world in terms of what, whether, what the role of ECMO actually should be. The general consensus is that, uh, once a patient, just given the limited resources, once a patient's got to the point where VV ECMO or VA ECMO would be considered, that likely VV ECMO or VA ECMO should not be offered. And that's multi-factorial. The first reason is that, um, we also see when we have severe illness with, uh, COVID-19 that there are others sorts of issues that come up – coagulopathy, acute myocarditis and we, so from some of the experiences have been shared around the world so far, these are some things that lead to the patient's demise and ECMO takes a substantial amount of resources. So in a normal ICU sort of setting, where we have a nurse taking care of two patients, with an ECMO patient, you

essentially put that nurse one-to-one, which means you're choosing not to treat other patients. So in a setting of having a therapy that may be temporarily affected, but not effective for the entire course the disease or have to go back and forth onto ECMO, in addition to that, um, tying up those resources so that you're cutting by half the number of patients that nurse is able to support, has led to substantial amount of ethical disagreement as to the role of ECMO in this particular setting. That being said, um, for institutions that are choosing to use ECMO there are, there have been some applications of that, once again, ECMO, there's only a certain number of ECMO devices and technicians and or nurses that are available in so many hospitals are limited to single, possibly double-digits in terms of the amount of ECMO they can support. In a surge of COVID-19 patients, that would not be a viable option to maximize treatment. So in some ways it's a complicated way of saying that VV ECMO, uh, which is just lung replacement and VA ECMO, which is both lung and circulatory support, do not have a definitive role in COVID-19, and right now we can't recommend for their use.

DR. JOSEPH SZOKOL:

Do we only intubate patients in negative pressure rooms? The operating room is a positive-pressure environment. Do we only intubate them in negative pressure rooms?

DR. JEFF FELDMAN:

This is Jeff Feldman, I'll, I can take that one. So at my hospital, we have decided to intubate all at-risk patients if possible in the ICU. If not, um, we have a designated operating room that we've converted to a negative pressure room and we're specifically using that particular OR for any patients. Fortunately, we haven't had any yet, um, and hopefully it stays that way. But, uh, we're going to approach it in that fashion where they get intubated in, either in the ICU or a negative pressure room in the operating room.

DR. GEORGE WILLIAMS:

If I could tag onto that a little bit, um, the negative pressure room utilization is certainly something that is a great interest for obvious reasons, but, there is not a consistent availability of negative pressure rooms in general. Usually a small fraction of rooms in a hospital – ie 5% - actually have negative pressure capability and the normal sort of either positive pressure or negative pressure room functionality means that you have at least twelve air exchanges, um, being a positive or negative, uh, two Pascals in order to facilitate that particular sort of air exchange. Negative pressure being the negative and positive pressure being positive. Most new construction now has been frowning on the utilization or construction of negative pressure rooms because the thought is, you have a patient that's ill and you, if you have a negative pressure room you're drawing all the

content from the exterior portion the room into the room in order to protect everyone outside the room but you're exposing the patient, effectively to more. So this is questionable and that's why many OR's don't have negative pressure functionality more. So the perspective that to, to avoid intubating less in a negative pressure room doesn't become viable in this situation where there's a surge of COVID patients, and preparation should be made to be able to intubate patients with full PPE when necessary as a positive COVID patient in order to allow those intubations to take place.

DR. JOSEPH SZOKOL:

Thank you. Uh, now, another question. So, so the patient who who has respirator stress, can you use CPAP or BiPAP, or do you just go to immediately intubating the patient with known COVID-19?

DR. GEORGE WILLIAMS:

I'd be happy to take, uh, this one. Because the, the concern is that transmission of COVID-19 is currently expected to be, be a droplet, when we apply positive-pressure via BiPAP mask, or CPAP mask or via high-flow nasal cannula, the concern is that we're actually helping form droplets, help clean distribute COVID further, and therefore increasing likelihood that healthcare workers, physicians, nurses, etc, being infected with COVID. Therefore, the approach that we are strongly recommending in general is that once a COVID patient exhibits respiratory distress, we're, we're seriously thinking about intubation. Don't use the temporizing modalities as described, go in and intubate as soon as possible. Furthermore, there is some discussion in the critical-care world, and it's not firmed up in the literature yet, but there's some discussion in the critical-care world that COVID patients can have very quick respiratory deterioration, so once intubation is being considered or positive pressure support is be considered, there may much, not be much time left in the first place. And so we want to avoid those modalities and intubate as soon as possible.

DR. JOSEPH SZOKOL:

Thank you. So another question. I am pregnant and concerned about my exposure to COVID-19. What precautions should I take to ensure that I don't get sick?

DR. BRETT AARON:

So, there's a very small series out of ... Italy. Uh, nine women in their last trimester who all del-, all had COVID-19 and all delivered normal babies, uh and had normal labors. A very small series, but it's of some comfort. We don't know about the effects of COVID-19 earlier in pregnancy. Uh, there's no evidence that we can bring to bear to suggest

what will happen with the uh, pregnancies. But, there's no reason to believe that it would be like Zika. If you're working to take the routine precautions, minimize the number of people at the head of the bed, wear N95 masks, wear a mask over that mask to prevent, um, larger particles of mucus or saliva from getting out of the N95 mask. Wear face shields, take the usual precautions, use double gloves, try not to contaminate the, uh, workspace with what we call bioburden. I think most people will eventually be exposed to disease at some point in time. We're trying to flatten the curve. I think in the 1918, uh, pandemic, uh world-wide there's only about 45% of the people world-wide actually got the disease, so I think that if people follow the instructions, shelter in place, try to, uh, avoid hospitals if you don't have to work here, I think that should, uh help protect everyone.

DR. JOSEPH SZOKOL:

And, and, Brett – and do you think those, those, uh that recommendation would be the same for caregivers, maybe immunocompromised, on steroids, or elderly? Or, would that be any different?

DR. BRETT AARON:

I think the elderly are at particular risk. We are using telemedicine to stay in contact with our elderly and trying to keep them away from the hospitals. I think one of the biggest arguments against elective surgery is you don't want to bring healthy people around a lot of people who may be shedding virus that's airborne and, uh, creating a bigger problem. I'm not sure what you, uh, I'm not sure we have enough information to the extent that immunocompromised people are more susceptible or have worse outcomes at this point in time. Uh, certainly, age is a factor, uh, in the Chinese population. Uh, there's a difference between men and women. The men had a much higher rate of smoking, that would appear to be a risk factor compared to the women over there.

DR. JOSEPH SZOKOL:

Thank you. The next question - Should we avoid supraglottic airways for the time being? I was told today that in China, they decided a closed system with a tracheal tube was best to avoid air, aerosolization.

DR. ALBERT VERON:

Um, this is Albert Veron. What I hear, uh actually, is that they recommend that in case you have a failure of intubation, not as a primary method, but, uh, since you have very restrictive options when you are intubating these patients, you may only have an assistant, uh, and you may not be able to do a surgical airway, that that would be the

plan B, is to insert that LMA, if it's a difficult intubation, that you're unable to secure their airway. But I have not heard that to be as a primary airway and as a first choice.

DR. MARC STEURER:

I have something to add. The other place where the LMA is, is very useful, is if you need to ventilate the patient without putting the tracheal tube in place. Instead of mask ventilating the patient, it is better to put in an LMA but, yes, it is not a replacement for a tube.

DR. JOSEPH SZOKOL:

Thank you, another question deals with upper EGD's are considered a high-risk case. Should all non-emergency cases be deferred? And if you end up doing the case, should AGDs then be done as a gen line stat with an endotracheal tube?

DR. BRETT AARON:

We have a level 1 Trauma Center. We have a city where drinking is considered an art form, down in New Orleans and, uh, we have a number of patients who come in who have, uh, upper-GI bleedings and they need a, uh, diagnostic and possibly a therapeutic procedure. We're treating them as, uh, with an endotracheal tube and think they should be treated like everybody else, uh, who is getting an endotracheal tube with a very high, very high community spread, so we are intubating everyone and everyone's wearing an N95 mask and uh, they're using them on more than one patient. Everyone's wearing a second mask over the N95 to help to preserve its function.

DR. JOSEPH SZOKOL:

Question on ECT's – should we be doing ECT's and if we do that, we do that all with endotracheal tubes?

DR. BRETT AARON:

This is Brett Aaron. Our governor has issued a mandatory order saying that if a procedure can be done in 30 days, it should be put off for 30 days. ECTs are not an emergency procedure. They are important, but I think we have to, we have to really look at the risk-benefit net. I am not sure that the benefit is there compared to the risk to our employees. I will welcome comments from others.

DR. ROBERT LOEB:

I was talking to one of our, uh, psychologists, I was actually doing ECT's, and uh, uh, he pointed out also that usually you need at least three of them, uh, sequentially, to have any, any benefit, um, so that has to be brought to bear. One of the risk factors, though, is people who are either acutely suicidal or catatonic, maybe in a situation where it really is a life-saving procedure and so is it's like all discussions, uh, it, it's does need to be determined on somewhat on a case-by-case basis.

DR. JOSEPH SZOKOL:

Another question. Is there thought to having an innovating team on Q3 or Q4 to limit hold ... the exposure to potential COVID patients?

DR. ALBERT VERON:

Um, we are actually doing that at our institution. We are putting a, a team together for intubations, and the thinking behind it, was basically that if you look at the process for downing and doffing, it's, it's really not that easy, and it takes a lot of practice and then if you have a team that is doing it continuously they will be in better shape and less chance for mistakes. Actually in the Wuhan epidemic, there is some video there on YouTube, uh nicely shows that there was basically a team set specifically for intubations. I, I was surprised that now and in our department actually a lot of people volunteer to be part of that team. And yes, they will be on for 24 hours, and then off for 48 hours and that will be the only, their only function. The only concern, the only downside is that if we start increasing the number of patients that may not be possible. That's really gonna depend on the number of patients that are coming to your hospital. But that's certainly an opportunity, and I, that will also, uh, resolve the issue that if a, an anesthesiologist is concerned about pregnancy, uh, they could choose to be not a part of the, not part of the team. Uh, but not all practices have enough anesthesiologists to do something like this, but if you are able to do that, but I think that, that that would be a, a good approach.

DR. JOSEPH SZOKOL:

The next question is once a healthcare provider is placed on self-quarantine after having, uh, revealed positive for COVID-19, when can she to go back to work?

DR. MARY DALE PETERSON:

There is CDC guidance on this. I would recommend that people read it. You know, I think it's when they're symptom-free and they've had two negative tests 24 hours apart, is my understanding, and it's variable how long it takes for people to be at, in that condition, but I, I would check the CDC website. It's pretty specific.

DR. JOSEPH SZOKOL:

Thank you. The next question is can the ASA comment on the support of our trainees and their roles during this pandemic? Our institution has transitioned to all out of or intubations being performed by an attending physician to create a best first attempt to secure the airway. Residents have commented on concerns regarding contributing to duplication, PPU's and potential exposure. So does anyone comment on the resident training, uh, during this crisis?

DR. MARY DALE PETERSON:

Our recommendations are that the most experience persons in the hospital be the ones, uh, doing the intubations. That doesn't mean that were going to replace all the critical care-medicine or ER doctors, but that we'll supplement them and obviously be called for difficult intubations. I think a lot of institutions, are not, and we don't recommend this as a training exercise. I think it's up to each institution to consider but I know a lot are not having residents on those teams.

DR. GEORGE WILLIAMS:

Hi. I would also comment. Um, the ACGME has recently issued some guidance indicating the committee's understanding that residents' level of case volumes and their exposure to certain kinds of patients would be limited during this particular event. So the ACGME understands about, about the concerns of what Dr. Peterson just mentioned and so we can implement these changes without affecting a resident's ability to practice or their ability to meet their intubation or case requirements for graduation.

DR. JEFF FELDMAN:

I would argue also that this is an unprecedented learning opportunity for our residents aside from the technical skills that they have to master to become anesthesiologists.

DR. MARY DALE PETERSON:

That would be each institution that needs to make that decision and then maybe at what level the residents are at, um, to come up with a solution.

DR. ALBERT VERON:

Dr. Peterson, uh, I want to say, uh, that I our CA-3's are three months from graduation and they probably in the last six months have done many more intubations than some of our faculty, uh, so I believe that a senior-level resident or a fellow, uh, may be in at one

point equal to, uh, an attending at this point. And I also believe it is a good opportunity. We also have to recognize the some of the circumstances; it's not going to be one anesthesia person going in there. Or there, or the only, the thing is, you need someone to help you and if there's not an ICU nurse or a respiratory therapist, or somebody else, you may have to have a senior resident with you to do so. So, I agree that most of this intubation, should, should probably be done by attendings, but uh in, in depending on the institution, I think senior level residents or fellows can also do that.

DR. MARY DALE PETERSON:

And we don't distinguish in our guidance, uh, between attendings and residents. What we say is experienced, and so to your point, you know, many senior residents have gotten a lot of intubation experience.

DR. JOSEPH SZOKOL:

Thank you Dr. Peterson. So the FSCM has released an on-line course for non-ICU trained physicians who will have to care for critically ill patients. Does the ASA APSF endorse this curriculum, or are there additional alternate recommendations?

DR. GEORGE WILLIAMS:

So, I, I'll take this one. Um, I can definitely speak to the content and having actually looked over the content that the SCCM that Critical Care Medicine is providing. It's a very good practical overview that shows a lot of fundamental uh, concepts and displays those in an effective fashion this is basically a series of webinars and checklists, but they're they're very very helpful and full disclosure, I am also a member of the Society of Critical Care Medicine. Um, and so, the Society has worked to make, make those materials available without requiring membership to anyone else, um, at, at this time. In terms of a comprehensive sort of source for information, that's the best that we really can offer, en masse, right now. We are working to make some more succinct materials available, including but not limited to specific guides that have been for resident rotations in the ICU which are smooth reads and readily available, um, and also in association with other, other critical care organizations including but not limited to the American College of Chest Physicians and, um, other subspecialty critical care societies. So that being said I, am not, and I'll have to leave it to, uh, our President and CEO to determine whether the ASA has officially endorsed it. Our committee is discussing these materials and we have shared that recently with each other to determine whether or not we should recommend that endorsement but in general they are available. I have used them, to look at them to see if they're suitable and they are for the general anesthesiologist.

DR. JOSEPH SZOKOL:

We have some medication questions. I don't know if anyone can answer this, but, um, some type of questions about prophylactic Plaquenil? Is there any use to taking that, when you start taking care of patients that you suspect may have COVID-19?

DR. GEORGE WILLIAMS:

All right. So, I, I'll take this one. Um, the program of Plaquenil or the concept of using a are having a treatment in place, Plaquenil I is an anti-viral that's been around for some time. Um, you know hydroxychloroquine, um, that sort of drug has been and is currently being studied for efficacy. You might have heard it mentioned recently in the President's press conference about um, whether or not that's something that could be useful, um, to uh, treat these patients, but right now there's not an FDA indication for that purpose. We don't have perspective data to recommend as utilization. Of course if someone's doing very poorly, um, then that is something that many positions are considering using. In addition to, in addition to the prophylactic part if we have a patient who we are suspecting of COVID and starting Plaquenil, um, or any other drug that is not something we can recommend based on the literature at the time. We simply don't have enough prospective studies. However, of course, any member can online and find a lot of random sources and case reports of various applications of drugs. We do not have a basis to recommend prophylactic Plaquenil at this time.

DR. JOSEPH SZOKOL:

Thank you, and another medication question. Is it true that NSAID, ACE inhibitors, ibuprofen and other medications may exacerbate COVID-19 patient symptoms?

DR. GEORGE WILLIAMS:

If it's ok I will take this one as well. Um, the NSAID question is certainly very potent. There was an article written in the Lancet on which, ba- it wasn't even an article, it was a letter to the editor, which discussed various experiences with COVID-19 patients. We do not have any basis to, in, to suggest that ibuprofen or any other NSAIDs is unsafe to administer to COVID-19 patients. So there's no mechanism to explain that that's actually viable and there's no prospective study to actually indicate that. The WHO also has removed any suggestion that we should not using NSAIDs in these patients.

Acetaminophen is currently available and it's a reasonable choice if there's any sort of lingering concern about acute renal injury or pre acute renal insufficiency in these patients. They may be critically ill and that may make someone hesitate to administer

NSAIDs in the first place, but there's not a basis, just on the basis, on the fact that someone may have COVID-19 to not administer ibuprofen, in the literature at this time.

DR. ALBERT VERON:

This is Albert Veron and I want to make a point that the Health Ministry in, in France recommended not to take Ibuprofen, but I agree. There's no place that says not to take it. This was just a theoretical, uh, paper in, in Lancet.

DR. JOSEPH SZOKOL:

Uh so, question. Where can I find treatment options for my critically ill patient who has COVID-19?

DR. GEORGE WILLIAMS:

Well in terms of - I am happy to take that one - in terms of treatment options, treatment options are really not well established at this point. We don't have definitive, um, known treatment therapies. The actual treatment that we endorse at this time is supportive care. The things that we know that work, for example proning patient with, with ARDS has been demonstrated in prospective randomized control trials to actually reduce mortality by approximately 30%. We should be doing that. Uh, we should make sure that we are maintaining early ... directed therapy. These are the classic things that we know work and are a part of, uh, what an anesthesiologist's training is. In terms of a specific drug or a specific, um, "magic bullet", there really isn't one. Uh, we've already talked about the Plaquenil or hydroxy, hydroxychloroquine question. There is also a, a new trial that's being done with **Remdesivir**, um, which is being conducted at the University of Nebraska Medical Center, which is, uh, intended to be a prospective trial that lasts potentially several years, so to test that for potential treatment of COVID-19, as well as many other sorts of therapies. So, none of those have actually been shown to work in the literature. None of these have been, have undergone the rigor that all the other therapies have, have undergone. So right now we have to stick to the basics, stick to what works, preventing ventilator ... lung injury, and making sure we have early laryngeal directed therapy, excellent supportive care, and attentive medicine.

DR. ALBERT VERON:

Uh, the American Society of Anesthesiologists published yesterday a special issue which is available on-line that basically reviews all the aspects of the perioperative care of patients with COVID-19, and I encourage you to review it.

DR. JOSEPH SZOKOL:

Thank you. Dr. Veron. The next question is, um, I'm concerned my practice its financial well-being. How do I pay CRNA's when facilities are closed or operating at less than normal capacity? Is the ASA advocating for us?

DR:

Uh, absolutely. The ASA is working to secure, uh, support for anesthesiologists and their practices. There are some provisions right now, that are, uh, under consideration to provide financial support to small businesses. I think it's a possibility that some anesthesiology practices would qualify for some of those benefits, but also, we joined shoulder to shoulder with other medical specialty organizations, uh, asking congress to do more. We are very aware of the implications for practices, especially with the elective surgeries being canceled, the financial implications, too, for anesthesiologists and their practices. So we do expect a couple more rounds of relief, uh, legislation to go through congress in addition to administrative activities, regulatory activities, and one of our priorities from day one has been to work uh, to provide economic support for anesthesiologists' practices. So it's an ongoing effort and we'll continue to do it until we're satisfied.

DR. BRETT AARON:

Joe, if I could add, our nurse anesthetists are, uh, being kept on salary by the hospital and medical centers. They are planned to be used as ICU nurses, uh, to fill in, uh, as if we had a surge. I would suggest people negotiate with their hospitals if they employ their own CRNA's, that the hospitals either find a way to employ them as their own employees get sick, or rent them out to the hospital and have the hospital cover their salaries while they're providing care. Uh, we have an incredibly creative group of anesthesiologists around the country and one size doesn't fit all, but I think there's a lot of opportunities to help take care of patients at our hospitals.

OUTRO:

This is Adam Striker, and we hope this episode has given you some information that will be useful as we face the challenges of Covid-19 together. Things are changing quickly, and we'll continue to keep you informed here on Central Line, so join us again soon.

VOICE OVER:

Visit asahq.org/covid19info for all the up to the minute resources from ASA

(SOUNDBITE OF MUSIC)

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