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

Welcome back. This is Central Line. And I'm Dr. Adam Striker, your host and editor. Today's topic is non-operating room anesthesia, or as is commonly known, N.O.R.A. or NORA. We know that hospitals face great burdens on perioperative resources, and one way they are responding to them is by shifting some surgical and procedural needs outside of the operating room. NORA Cases are increasingly accounting for a larger percentage of anesthetics administered in the United States. And to help us think through how this is and how it should be working, I'm joined by Dr. Basem Abdelmalak, professor of anesthesiology at Cleveland Clinic. Dr. Abdelmalak, thank you for joining us.

DR. BASEM ABDELMALAK:

Hi, Adam. Great to be with you. And thank you for having me.

DR. STRIKER:

And just for our listeners, this episode is sponsored by GE Healthcare. Although neither myself nor Dr. Abdelmalak have been compensated for this discussion and this discussion has been independently developed.

Let's start, as we often do with a get to know you. Question Dr. Abdelmalak, why don't you tell our listeners a little bit about yourself and your experience with Nora?

DR. ABDELMALAK:

Absolutely. I practice at the Cleveland Clinic in Cleveland, Ohio. I also served as the president for the Society for Ambulatory Anesthesia, SAMBA, in 2019, 2020 during the
COVID pandemic. I do a lot of writing and publication speaking on this topic that's near and dear to my heart. My involvement with NORA started with my involvement with establishing the state of the art bronchoscopy suite outside of the operating room, hence the name NORA, where we provide a whole host of advanced diagnostic bronchoscopy as well as therapeutic bronchoscopy. This has been functioning since, I would say, 2010. It's been about 13 years or so, about three operating rooms that are fully equipped as bronchoscopy suite in a hybrid operating room model with a recovery room space attached to it to provide pre and post procedural services. And I also provide anesthesia services and all other NORA locations around the hospital. As you know, SAMBA is involved in and focused on all ambulatory anesthesiology services with all sorts of shapes, including but not limited to outpatient anesthesia, whether it's done in the hospital or the freestanding ASC and non-operating room anesthesia, as well as office based anesthesia. So with that, I'm happy to answer some of the questions that you might have.

DR. STRIKER:

Well, one of the biggest questions that we're going to tackle is how is it to administer anesthesia outside of the operating room in that it oftentimes involves doing more with less. But before we get to that, I think it might be helpful to sort of lay out what we're talking about. I think many of our listeners are probably familiar with NORA, but in case there are those out there that aren't, let's talk about what settings we're talking about and why anesthetic care has evolved into those settings outside the operating room.

DR. ABDELMALAK:

Great questions. Um, NORA refers to providing anesthesia outside the main operating room, but within a given hospital. And that includes many areas like gastroenterology, interventional radiology, bronchoscopy suite, cardiac cath lab, EP, lab, MRI, nuclear medicine, PACU, you name it. And the list is growing by the month as also now providing anesthesia services for procedures in ICUs, pain management, procedure rooms and such. So these are all the locations where we provide anesthesia outside of the operating room. The old term, if you remember, used to be called remote anesthesia. Remote kind of carries some negative feelings attached to it. So hence the name NORA kind of caught on and people started using that term now to describe all services provide operating room.

So there are some folks who like to consider any other service outside the main pavilion operating room, like freestanding ASCs or or office based anesthesia are part of the Nora services. However, I believe that that would give this service to all these different services. It's better to focus on one item at a time and try to describe the characteristics
and concerns and issues and how we can do better in those locations. For example, the
the standards and the way we provide services in office-based anesthesia are much
different than the ambulatory surgery center, where the standards are different, the
anesthesia machine is different, the facilities are different, the personnel are different
and so forth. Even patient selection, the one you accept provide service for an office-
based anesthesia is not the same as when you provide service for at ASC or non
operating room anesthesia, which is a Nora location within a hospital. And as you know,
the freestanding is an outpatient office-based anesthesia services are totally 100%
outpatient. However, if you look at Nora, it's mostly outpatient, about 70%. But we
provide a good number of cases, about 30% or so for inpatients who are higher acuity,
are very sick, and we still provide great care for them in those areas. So issues are
different and concerns are different and should be addressed separately.

DR. STRIKER:

I'm sure there's multiple factors involved in the shift out of the operating room over the
years for anesthesiologists. Just briefly, do you mind telling our listeners a little bit about
those factors? What has happened over the last number of years to account for the
shift? Whether it's economics, logistics, differences in catering to different patient
populations or other physicians' needs. Let's just touch on that briefly just to to lay some
groundwork.

DR. ABDELMALAK:

Sure. You're absolutely correct. It's multifactorial. There has been new advances in the
procedures, so many of them now not requiring the full capabilities of the operating
room. And some of them require complex and immobile technology that are fixed into
those NORA locations. Also, higher risk patients as the population ages and who are
not considered candidates for surgeries in the past now have an option, now have a
minimally invasive procedure that can be done safely in NORA. And as you alluded to,
economic trends that push for more outpatient versus inpatient services. So all that has
led to the movement towards NORA relocation. Also, we cannot deny that if an area
focuses on certain line of service or certain procedures and they do it day in and day out
all the time, that there is some value into that, where it would improve outcomes and
help with efficiency as well. So it's a multifactorial etiology for for moving to. Nora.

DR. STRIKER:

Okay. Well, a few minutes ago we did mention that operating in a NORA environment
oftentimes is doing more with less as far as the anesthesiologist is concerned. So let's
dive into that a little bit. And let's start with talking about patient safety. Do you mind
outlining what are some key points or aspects of performing anesthesia in the NORA environment that you feel anesthesiologists need to know as it pertains to performing an anesthetic safely?

DR. ABDELMALAK:

Absolutely. You touched on a very important point, which hot topic, that many of the anesthesiology team members do not consider NORA as a desired assignment. Unfortunately, they consider it as an undesirable. The reason is that their concern for patient safety, because many of us feel like we do not have what we need or what it takes to provide the safest possible care there due to the many facts, like, for example, if you retrofit anesthesia service in an area that's originally designed for procedural sedation or procedure under local anesthesia, they are not equipped or not. They were not planning on having a seizure service there. Now you are trying to retrofit anesthesia machine and some anesthesia supplies and medications and equipment and so forth in there. And you may miss one or you miss two. You don't have a way to communicate with your colleagues and such. So it's it becomes an issue. And we don't feel that we have what it takes to provide service. But that can be easily overcome by proper planning.

So as you retrofit an area, make sure you have a list and we have the the current ASA statement on NORA that give us a list of what kind of equipment that we need to have in there. And also, if you hear of plan of building or establishing a new location, we got to be involved at beginning of the blueprint stage where we can decide on the space and the size of the area, how much we're going to use for our equipment and supplies and machines and and electric outlets and lighting and so forth. So we need to have what we need to be able to provide that kind of service. Also minor thing, even like electrical outlets or adequate lighting or ability to access the patients. All these are safety features and most importantly, our monitors. The same level of monitoring, the same standards that we use, the same ASA standard monitors should be also used in non-operating room anesthesia.

And as we plan to provide services there, we should pay attention to a lot of other details like patient selection, Who should we serve there and how can we provide that service safely? Other side items like do we have access to difficult airway management equipment? So we should have that available looking at what kind of policies in this area that they are utilizing and and can we move this tender up to what we have in operating room? Code response. Should we arrange for a case of situation? We have codes. Do we have a two-way communication to call for help or tech support? Or can we call for the rapid response team within a hospital? So there are many issues that we
can address that would help us feel more comfortable and also provide the means and what it takes to provide safe care in those locations.

DR. STRIKER:

Well, as is always the case with the demands on anesthesiologists, we're asked to do things in more and more efficient manners, and none of us wants to compromise safety. And as it pertains to NORA, how do we navigate all the items you mentioned, along with the demands for increased efficiencies where we don't want to compromise safety in any way? I don't think anybody wants us to. But as experts in patient safety and the hyper acute delivery of medicine, we know that those realities exist. Talk a little bit about what are things we can do to maybe navigate those roadblocks.

DR. ABDELMALAK:

Oh, absolutely. Start from the beginning, from start. If we're building a new area, we should try to build it as close to the operating room as possible, if not within the operating room pavilion. That would eliminate a lot of issues that we're talking about in terms of efficiencies and such and also safety as available additional personnel that can help in case of emergencies that would be there. If that's not feasible, and we're building multiple suites, it's better to have them all located in one area, one big floor, for example, or one big building. So this way we have very close proximity to each other where we can have a better ability to provide and staff those areas with personnel and having available additional hands to help in emergencies as well. Also consider opportunities for system-based triage, what kind of patients we need to get there. So as when you when you put on a patient who is requiring a whole lot of work to get a case started moving that would decrease efficiencies in that area. The scheduling is a huge piece of that. I mean, using block time was thought to be very, very helpful, but it is recommended to to use a whole day block time versus partial day block time. That has been shown to help. We try to minimize the under over utilization of the block time that has a lot of economic disadvantages attached to all that. Also it would be helpful to incorporate NORA scheduling within the same scheduling frame that we use in the main hospital operating room. This way the anesthesiologist in charge will be able to see what's happening in all locations at the same time, be able to assign proper personnel to different areas as you see as the day goes. And we need to work with our colleagues in those areas. We need to understand how we function, our schedule, our personnel and what you probably see that in your hospital, Adam, that the the schedule sedation cases or local anesthesia cases in between anesthesia cases, that's not appropriate and that would be detrimental to efficiencies and providing services in those areas as well. And what kind of case, what kind of patient scheduled and the more complex patient probably should be done early in the day versus late in the day and so forth, to
have the adequate personnel and opportunities to take care of those cases versus one a day. So there are many ways and many opportunities that we can do to improve the scheduling. The main thing, and I cannot stress that enough, is the geographic footprint of these locations in the hospital. The closer we get them all together in one area or closer to the main operating room, the better it is for efficiency and scheduling and so forth. And that should help us be able to provide the service efficiently and also economically.

But we have to realize that oftentimes with the best effort, sometimes providing safe care and safe staffing of those areas, we may end up having that professional fees for service may not be adequate to cover the costs of providing safe care. In those situations, we have added that to the revised language and the documents that are being considered right now to replace the NORA statement is to consider having the institutional financial support for those kinds of services. As you know, institutions get additional revenues from facility fees and technical fees and such, and they should consider contributing to the cost of providing safe anesthesiology care in this area.

DR. STRIKER:

Well, I do want to talk about that statement, but before we get to that, you had mentioned earlier that oftentimes, NORA assignments are not perceived to be good or plum assignments. And the reason for that is because of safety issues. Is there data to show that these environments are indeed less safe, or is that really just a perception, not reality?

DR. ABDELMALAK:

No, there are many outcomes data out there. I mean, for example, data from 12 million patients in the NACOR database, which is a national anesthesia clinical outcome registry within the Anesthesia Quality Institute at the ASA, looked at those patients and they found that, as we all know, that NORA patients are older and we use anesthesia more commonly than other modes or other forms of anesthesia in those areas. One of the main findings in that study that showed that while the overall mortality in NORA is less than the operating room, 0.2% versus 0.4%. But if you parcel out a cardiology and interventional radiology areas, those two areas had higher mortality than the main operating room, which may reflect the acuity or the high-risk patients being taken care of in those areas or maybe the more invasive procedures that are being done there. But more importantly, we also identified that the wrong patient or site procedures were higher in NORA than in the main operating room. And if you look at the closed claims trials, it showed us some very interesting data there. They found that respiratory events were higher in NORA than in the main operating room, and about 50% or so of
them are preventable by better monitoring. And that data actually did not improve in the most recent closed claim trials. One thing they identified is that the mortality claims or the claims and the non-operating room anesthesia had higher death and also had higher pay out as well. So these are real concerns. I mean, overall, the numbers are fortunately low, but as you know, one is way too many when it comes to complications like that. And the fact that many of these events are preventable with better monitoring, it tells me that there’s a lot more work to be done and we can do better.

DR. STRIKER:

Certainly interesting and concerning numbers, It seems that that would be an effective tool for heads of anesthesiology groups or organizations to go to the administrators and hospitals and say, hey, these are the facts and we need some support in making these environments a little safer, a little more efficient, a little more accessible. Things like that. But that that does seem like that would be one one strong route to pursue.

DR. ABDELMALAK:

You’re absolutely correct. I could not agree more. We have the data and we know what’s going on there. And that’s why I stressed earlier that we need to be sitting at the table as we discuss different areas as the remodel, as the build, as the retrofit, as we start new service, we need to be there at the beginning to say, well, this is what it takes to provide safe anesthesia care. These are kind of matters we need. These are kind of equipment we need, and this is how we can provide safe service, how we can help you to provide the safe care that you would like to provide with the highest level of safety that we can provide. We are leaders in patient safety. We’re known to be so for decades. And and we have been leading many, many safety initiatives in our own hospitals around the country and in medicine in general. And this is part of this one area where we can actually show evidence that we can do that.

DR. STRIKER:

Well, have some more questions for you, including circling back to the updated statement on Nora. So please stay with me through a short break. We'll be right back.

(SOUNDBITE OF MUSIC)

DR. ALEX ARRIAGA:
Hi, this is Dr. Alex Arriaga with the ASA Patient Safety editorial board. Perioperative critical event debriefings are important for patient safety and the provider experience. Yet research suggests only a fraction of perioperative critical events are followed by any form of debriefing. The time shortly after a critical event presents a valuable opportunity to reflect, provide feedback, identify systems gaps, and look out for each other's well-being. At a local policy level, there are crisis checklists, emergency manuals, and other tools that can be a starting point to discuss events where debriefing may be most supported. Medical simulation may be a way to generate rare events and facilitate debriefing training in a safe space. Leadership support for a critical event debriefing can improve buy-in. Efforts to improve critical event debriefing can benefit the individual team and overall health system.

VOICE OVER:

For more information on patient safety, visit ASA Fccps.org. Slash patient safety two to.

DR. STRIKER:

Welcome back. Dr. Abdelmalak, you've been involved in updating the ASA statement on NORA. And you mentioned it earlier. Do you mind telling our listeners a little bit about that and the best practices at proposes?

DR. ABDELMALAK:

Sure. I had the privilege of leading a group of national experts, including many ASA leaders and officers, to revise the ASA statement on NORA. The statement that we currently have has been around for many years and has helped us tremendously in establishing our NORA location. But with the new advances and expansions that NORA locations now account for about close to 50% of all what we do in anesthesiology services and all the new procedures and new locations and expansions, the group felt that it is time to revise that statement and to match the current needs. So the one-page document is now into four page document, covers many items, and is now being considered with the Committee on Procedural and Surgical Anesthesia. Hopefully will be finalized and our readers will be able to read the full document when it gets posted on the ASA website very soon.

Now we divided up the recommendations into many items including facilities, design and equipment, environment of care, staffing and schedule optimizations, quality and safety, regulatory issues, supporting technology and IT systems, finance and budget, as well as materials management and sterile processing. It's worth looking at when the document comes out. It will really help us as a starting point. It's not, it doesn't tell the
whole story. Each one of us should adjust the items mentioned there and the recommendations to match their local needs and their community and their hospital and their health system. There are many ways of doing things. But this kind of gives us a framework to think about what's necessary, what's needed to provide the highest level of care, the safest level of care, if you will, to our patient in those areas.

DR. STRIKER:

Well, let's talk a little bit about new trends in NORA that you think our listeners should be aware of. Do you mind telling our listeners a little bit about what insights you have on newer trends regarding this area?

DR. ABDELMALAK:

Absolutely. First of all, it's expanding. If you look at the data, the latest data that was published from data from 2014 was published in 2017 showing that NORA, it's close to 40% of what we do. If that trend continued as it was till now, I expect it to be around 50% of what we do. And also that trends are showing that it's higher patient is increased as the years go by, and also increased comorbidities as judged by their status. And more and more of them are becoming outpatient procedures, about 70% or so. So there's increasing volume there, increasing patient comorbidities, increasing in age, and also increasing invasiveness. I mean, there are more and more procedures being added to NORA Location and NORA services. I can just give you one example. Many IR departments around the country, they started to now provide pulmonary thrombectomy for patients who admitted to our ICUs with PEs in the department. That's a NORA service being done there. There are many new procedures as well being added to bronchoscopy. For example, now there's a robotic bronchoscopy being added. And there are many other new advances in navigational bronchoscopy and diagnosing lung cancer. And there's even a new technology coming on to not just diagnose lung cancer, but treat lung cancer by ablation therapy and such and other techniques. So there are new technologies and new procedures being added, and we need to stay abreast of what's happening in those locations, what kind of services we provide there.

DR. STRIKER:

Well, let's talk a little bit about that. Anesthesiologists involved in areas where proceduralists want to introduce a new procedure, whether it's something that hasn't been done before, whether it's increased acuity. What should the anesthesiologist do? What resources are there? What should be done beforehand?

DR. ABDELMALAK:
That is a great question. First, we need to understand more about the procedure. Let's have a conversation with the proceduralist who wants to add that procedure. Let's learn a little bit more about it. How is it going to be done? What kind of equipment needed for that procedure? What kind of patient population will need or require this kind of procedure to see how we can optimize them and get them better? We can provide patient selection criteria or pre-op evaluation and such. For that we can do a literature search was in anesthesia literature as well as the procedure specific literature to learn more about the procedures, see if any other colleagues are doing it around the country. And there are many resources. If we, for example, those coming to the ASA annual meeting, I had the privilege of leading the ambulatory track for the last three years, and I know there are this year we're having a lot of NORA focused presentations and talks and such and also Society for Ambulatory Anesthesia annual meeting is, has many sessions focused on. Nora A lot of resources available there for the website asahq.org, samba website, samba.org and also many publication from our colleagues. And we have published some showing how to address a new procedures.

One of, one items I would encourage folks to do is to do a dry run before they start any new procedure. Meaning like have a mannequin in a room or something like that and talk about how this procedure is going to go, anticipate complications and see how the team is going to respond to it. Assign roles. When something like that may happen, then you know who's going to respond to what? Who's going to call for help? Who's going to grab which equipment, who's going to grab which intervention? And then also make sure that you have the equipment and the resources needed to address this potential complications from that procedure as well. We have done that successfully when we introduced a new procedure, for example, robotic bronchoscopy, providing the robot with a mannequin and we looked at how the robot gets attached to the airway, the endotracheal tube, and if complications happen, how are we going to gain access to the airway one more time? Who's going to be disconnecting the machine from the airway and who's going to be moving the equipment out of the way for the anesthesiologists and pulmonologists to gain access and intervene to help with whatever potential complications like pneumothorax or bleeding and such in the airway that we can help with. So these are some strategies that people can use to help start when you introduce a new procedure in an area in a safe manner. And sure enough, once we did that dry run and got everybody assigned to roles and we made sure that we have the equipment we need to address potential complications, we have been able to provide the service safely for a long time now.
Well, before I let you go, let's talk a little bit about the role of anesthesiologists. As we've talked, you've certainly laid out a great case for why it is important that anesthesiologists play a key role in developing and driving future policy measures surrounding NORA practice. Talk to our listeners a little bit about what kinds of policies they should expect to be involved in, they should maybe look to be involved in, and maybe what are some pitfalls that we should be aware of when engaging in that development?

DR. ABDELMALAK:

Oh, absolutely. I mean, we should look at NORA as if it's an operating room. I mean, we if you provide service there, it's prudent to follow the same safety practices that we follow in operating room. Starting from simple things like patient identification and site identification. As I mentioned earlier, wrong site surgery has been found to be higher in NORA than an operating room, and we have gained great skills and insights on how to prevent that in operating room. We can help our colleagues in those areas to prevent that as well. Patients coming for anesthesia should have also the same standards we have an operating room, for example. We need to write and be responsible for some policies in those areas like NPO guidelines and also recovery criteria they have. When are we going to discharge this patient? How are they going to recover them in those areas and training the area nurses of how to recover those patients, how to manage AICDs and pacemakers in that area. And more importantly, patient selection and pre-op evaluation. When and where is going to be done? Is it needed or not? And what kind of items we need to focus on, what specifics for that area, for that patient population being served or that procedure being done in that area? We have been, again, safety leaders around the country and we need and around the hospitals and we need to continue with our leadership role in those areas.

While writing policies is not one of the most desired activities for anesthesiologists, but it is very important. Because these are the ones that we're going to end up having to follow. And who would be better to write policies related to anesthesiology practice than the the anesthesiologist in charge of that area and encourage folks to have leadership assignments in that area from anesthesiology for from the procedural side, from nursing side. So those leaders can communicate regularly and frequently to address any issues that may arise. This way we have a point of contact to reach out to when issues arise and resolve it quickly, and that would result in better satisfaction of the teams and better safe care for our patients.

DR. STRIKER:

Well, Dr. Abdelmalak, really enjoyed the conversation today. Thank you for providing such a nice overview on really what is such a key component for almost every
anesthesiologist, no matter what area you might be practicing in, the idea of practicing a non-operating room anesthesia. So thank you for joining us today.

DR. ABDELMALAK:

Thank you for having me. I enjoyed it as well.

DR. STRIKER:

And to our listeners, thank you very much for tuning in again to this episode of Central Line. Please tune in again next time, take care.

(SOUNDBITE OF MUSIC)

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