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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.

DR. ADAM STRIKER:

Welcome to Central Line.

DR. ADAM STRIKER:

Welcome back. This is Central Line, and I'm your editor and host, Doctor Adam Striker. Today, we're welcoming Dr. Sara Robertson to the show. Dr. Robertson is a pediatric anesthesiologist and a member of the ACE editorial board. She contributed an item on the topic of pediatric pain scales to the 19B issue. And pediatric pain scales is the topic of today's show. Dr. Robertson, welcome to the show.

DR. SARA ROBERTSON:

Thank you so much for having me.

DR. STRIKER:

Let's start having you. Tell us a little bit about your background and your role with ACE.

DR. ROBERTSON:

Sure. So I am an associate professor of anesthesiology at University of Mississippi Medical Center. I'm a pediatric anesthesiologist and just do peds. So 100% pediatric practice. I actually grew up in Jackson, Mississippi. I did my medical school training also here at the university and then went to the University of Arkansas for Medical Sciences for my residency and Arkansas Children's Hospital for my Pedes Anesthesia Fellowship. We then went to Cleveland, Ohio for one year. For my husband, we actually couples matched in anesthesia and then he did a fellowship in Cleveland. I was at Rainbow

Babies, part of Case Western for one year, which was an excellent experience and then decided to come back home in 2016. And we had both been staff at the university since then. We have a lovely daughter, two-year-old daughter named Lucy, who's the light of our lives, and we love her so much. I serve as the assistant program director for the Pediatric Anesthesia Fellowship, the Clinical Competency Committee chair for the residency. And then also I'm the editor of our departmental newsletter, The Pulse, which I truly enjoy. I love my job. I love training our trainees and being able to experience anesthesia through their eyes and to teach them lots of lots of good tricks and tips for anesthesia. I've always loved ACE. I have read every single issue that has come out and I really jumped at the chance to join the editorial board and currently in my second year of doing that.

DR. STRIKER:

Fantastic. ACE is a great program. I know a lot of a lot of anesthesiologists that not only really enjoy it but rely on it actually for a lot of the CME.

DR. ROBERTSON:

Yeah, 30 hours of CME per booklet comes out twice a year, so that is a pretty significant amount.

DR. STRIKER:

Well, tell us a little bit about your involvement with pediatric pain. Is this something that you just have taken a liking to? Is this something that you've made part a focus of your career?

DR. ROBERTSON:

So we we currently have 12 pediatric anesthesiologists, and there are several of us that are on the pediatric pain team. I'm actually not one of them, but we do all of us participate in regional and neuraxial blocks in the operating room. And then we have a team that takes care of the acute pain service and the chronic pain service as well. So one of the parts of my practice that I really do enjoy is making sure that the children are safe and comfortable.

DR. STRIKER:

Before we get into some of the specifics of acute pain management or chronic pain management in children, why don't we start off the discussion by telling our listeners

why we should be concerned here? What are the long term adverse consequences of not treating pain in pediatric patients?

DR. ROBERTSON:

So kind of like a little bit of a background. For a long time, we really have not known much about pain and pain perception in their very small patients. Only in the last couple of decades have we really shown that most of the neural pathways that conduct no deception from the periphery through the central nervous system are present and actually functional at 24 weeks gestational age, which is kind of amazing. Although those central connections, particularly the ones in the thalamic cortical pathways, are involved in the integration and perception of conscious pain. Those are not well developed. So basically the inhibitory descending pathways are immature in those little, little children.

Some of the things that I came across while I was reading shown hospitalized infants born between 25 and 42 weeks gestation, actually experienced on average about 14 painful procedures a day during the first two weeks of life. So that can range from an IV stick to heel stick to putting a blood pressure cuff on stuff that we don't really think of as painful could potentially be painful for these little people. So lots of long term adverse consequences that also include some harmful neuroendocrine responses. So about 26 weeks they will respond to tissue injury or inflammation with withdrawal reflexes, autonomic arousal and also hormonal and metabolic stress responses. They can have disrupted eating, sleeping cycles. And then also another thing that that has been discovered in the very recent time period is that they have an increased pain perception. So almost like a hyperalgesia or allergenic response to repeated noxious stimuli may actually result in a heightened sensitivity to that nociceptive input and that would have adverse consequences for them, including central sensitization, almost kind of like a rewiring of their central nervous system, which is quite frightening. You know, and you think about it about back back in the day, you know, 20, 30 years ago, they used to just do surgery on little neonates and not give them anything or may give him paralytic and not give him any pain medicine. It's just just hurts your heart.

DR. STRIKER:

No, that's what we were told the same thing when we were trainees on the for pediatrics that that was a fairly new development was the idea of treating pain in younger patients. Why do you just out of curiosity, why do you think that was the case? Why was there such a resistance to treating pain medicine? Or maybe why was there not a lot of emphasis on it?

DR. ROBERTSON:

So the response is that we see in term neonates, so facial grimacing and withdrawal and the physiologic changes, so increase in heart rate, increase in blood pressure, they happen in preterm children, but it's to a smaller degree of magnitude as the gestational age decreases. So people may not have realized that these neonates were actually in quite a bit of pain just based on their vital signs or the way they were acting towards the noxious stimuli. So I think a large part of it has to do with just the fact that we didn't know, we didn't know that they were in pain or we were afraid to give them too much, and then they stopped breathing or we would have difficulty intubating that kind of thing. So I think the best interests were at heart, but we just didn't know, I suppose.

DR. STRIKER:

Yeah. I was going to ask about how much you feel like the apnea aspect of everything played into it, which was always a focus in pediatric anesthesia with the idea of having, at least in the infants, having them breathe after anesthesia.

DR. ROBERTSON:

Right. Well, too I mean, think about pulse ox has only been around what, since like the late eighties. Yeah. And so pediatric anesthesia wasn't really a thing. And a lot of these children were not surviving to, you know, to a certain point. So I think a lot of it had to do with just we just really didn't know what we didn't know.

DR. STRIKER:

And it's fair to say now, though, not only are we cognizant of it, not only are we, as a specialty more aggressive at treating it, but it's evolved quite a bit. Techniques, modalities, everything. Right.

DR. ROBERTSON:

I think I think the neonatal cases are some of the most fun, especially for the trainees, too, because they realize when you go in, especially if you're doing a bedside case, we will give a massive amount of fentanyl. It's so cardiac stable, it's almost like a fentanyl rock europium anesthetic. And they do. They do fantastic. I mean, their blood pressure is just most of the time rock solid as long as you keep them hydrated and the blood appropriately given.

DR. STRIKER:

Well, let's talk a little bit about how we navigate the challenges of understanding pain in infants and interpreting it. Let's talk a little bit about the differences between small children, infants as opposed to adults.

DR. ROBERTSON:

Okay. So it's kind of hard, it appears difficult to distinguish consequences of pain per se from the consequences of like other factors like prematurity, critical illness, deprivation of tactile and social contact, and then also nutritional deprivation, because a lot of these kids, you know, if they have neck or something similar, they'll be on TPN and lipids and they won't be actually able to consume breastmilk or formula. So, you know, we really want to err on the, I guess, the side of caution and give the pain medicine. Don't withhold analgesia, I guess, from the little bitty babies. So with older children who also have other comorbidities, it's really hard sometimes to distinguish pain from hunger, pain from wanting their caregiver. So a lot of the times I'll ask the parents before surgery, especially if the child does have delays or other comorbidities, that will make it very difficult for me to tell if they're in pain, how their child responds to pain normally awake. And that gives me a good idea, especially in the recovery room after surgery on how to best treat their pain is how they respond to what the caregiver tells me is what they normally how they normally respond to.

DR. STRIKER:

Great suggestion and a great segue into talking about some specifics. What are things that are commonly seen as indicators of pain in the younger population?

DR. ROBERTSON:

Right. So the older population, the facial grimacing this, my number one. So I'm going to go to the bedside and do a quick physical exam. But facial expression for me is the number one. There are lots of children who cannot verbalize, who cannot say, I'm in pain or tell me where the pain is coming from. But a cry, like crying in general, again, it's hard to distinguish that from possibly being hungry, especially if they've been NPO all day. Also body posture. So legs to the chest, motor restlessness, moving around like not being able to keep still because of discomfort are the main things that I look at and are pretty reliable indicator of smaller children being in pain.

DR. STRIKER:

Let's say your community anesthesiologist, you take care of all sorts of age groups of patients and you may not be taking care of the smallest ones all the time.

DR. ROBERTSON:

Right.

DR. STRIKER:

What would you recommend to those anesthesiologists when it comes to treating pain, let's say after an anesthetic in an infant. Let's say they're awake, you're not sure, you don't want to give too much. Is it better to maybe err on the cautious side and give a little more than you might otherwise give? Or is it better to withhold it and not take the side effects of giving the medication? I know it's a it's a tough it is. It's a tough question. It's very general.

DR. ROBERTSON:

It is a tough question. And obviously, it has to be taken case by case. But if you're going to the bedside and evaluating the patient, I usually from my PACU orders will write, and unless there's a contraindication for morphine, I find it's long acting. It will especially the patient's going to be outpatient and going home. They tend to do really, really well for longer time period as far as pain control goes with that. I practice obviously in an academic center. We happen to be the only children's hospital in the whole state. So some of these patients can be traveling two, 3 hours home. And so you want to make sure that they don't get halfway home and are like just dying of pain. So morphine is my go to I usually do 0.05 milligrams per kilogram to 0.1. And it really honestly just depends on the child. Also, everybody says multimodal pain control. Fantastic. So we use I.V. Tylenol. Unfortunately, in our institution, we're actually only allowed to use that for tonsils or adenoids. We occasionally slip it in otherwise. But Toradol is actually also one of our go to medications. Of course, the GFR does not reach adult levels till about two years of age. So I always teach our residents, you know, we try not to give it in a kid less than two. And I actually max out at about 15 milligrams per kilogram there. I think there was a recent paper, I think in the last five years or so that basically said there's really no difference between giving 15 milligrams and 30 milligrams, even though the dose is 0.5 milligrams per kilogram. And I've really found that to be true. But we utilize Toradol very heavily in the pediatric population, just kind of depending on the surgery itself and the surgeon preference too. Sometimes the surgeons don't want us to use it because of blood loss, but those are our go to meds for for the post-operative pain control for for kids. And that's it.

DR. STRIKER:

You mean 15 milligrams total, not 50?

DR. ROBERTSON:

Yeah, 15 milligrams total.

DR. STRIKER:

Yeah, right. I'd seen that too. We had historically used up to 30.

DR. ROBERTSON:

Right.

DR. STRIKER:

And then recently that's, that's shifted.

DR. ROBERTSON:

When of course they package it in 60. Right. Always gets me, I'm like, oh, I can only use a fourth of the bottle. But anyway.

DR. STRIKER:

Well let's talk about some pain scales. There's a lot of them. This is obviously a valuable tool for for children because they may lack the cognitive skills to quantify their pain. Let's go through some of them and what the advantages or disadvantages are.

DR. ROBERTSON:

Sure. So self-report metrics are those that the patient is asked to quantify the severity of the pain. So zero being no pain, ten being maximum pain. The child has to have cognitive skills like have the concept of magnitude and order to do this. So those those scales are not typically used until about seven years of age, but can be used down to about three years of age.

So the most common and the one the question, the ACE question, focuses on is the long baker faces scale. It's from 0 to 10 and it has a cartoon cartoon faces of basically

zero being the least amount of pain and ten being the maximum amount. And they're crying, crying, crying at the ten. There's also another faces scale called the outer face, a scale. And it actually comes in multiple different ethnic offerings. So there's an African American one, there's an Asian child, and then also a Caucasian child as well. So the patient can feel seen when telling the nurse or the physician at the bedside, what is their pain?

There's also numeric pain scale. So you can have the numerical self-report, the horizontal visual analog scale, and there's also a vertical visual analog scale. Those are the reporting scales.

But there's also kind of going into the other other types of scales. Going on to the next question is the observational and behavioral pain scale. So actually five behaviors have been shown to be more reliable and specific and sensitive, which are facial expression, vocalization, cry, leg posture and motor restlessness. And we can kind of go into a couple of those. There's like probably 20 to 25 of these that are used. But the most common are the FLACC pain scale and then also the cries pain scale. Both of those are used for post-operative pain assessment.

DR. STRIKER:

What do you think would be the most valuable for most of our listeners if they had if there were a couple to choose?

DR. ROBERTSON:

Yes. So the most I think the most commonly used is the FLACC score. So that stands for face, legs, activity, cry and console ability. Each category is scaled 0 to 2 with a total score of ten. So zero would be like relaxed and comfortable. 1 to 3 would be mild discomfort, 4 to 6 moderate and 7 to 10 severe. So at about the four scale, you're thinking about possibly giving some medicine for the patient's pain. This this is an awesome scale because it can be used from about two months of age all the way up to about seven years of age. So it's multi use, wide range of ages as well. In contrast, the Wong Baker Faces scale can be used, like I said, about three years of age, but that one can be used all the way up to about 18 years of age.

The CRIES neonatal pain scale that's used for the neonates. So from about 32 weeks to 56 weeks, it stands for crying, requires oxygen and increased vital signs, expression and sleeplessness and 0 to 2 each category. Total score of ten. Exactly like the FLACC. I really do like the FLACC. In addition, not only because it's multi use and can be used for a wide age range, but it also they also have a modified FLACC scale for the

cognitively impaired. So you can use it for pretty much anybody that you come across in the pediatric PACU. I also want to mention the CHEOPS, the Children's Hospital of Eastern Ontario pain scale. It can be used for children 1 to 7 and a score greater than six indicates pain. And then the comfort scale is actually used in the ICU setting. It has an insane amount of categories up to ten, and then the eight is the lowest score you can get, which is deep sedation, and then 40 is alert and agitated. So alert and awake, patient can be even intubated on a ventilator. You can get a pain score from that.

DR. STRIKER:

I want to talk about one pain scale we haven't touched on yet. Before we get to that, let's go ahead and take a short patient safety break. Please stay with us.

(SOUNDBITE OF MUSIC):

DR. ALEX ARRIAGA:

Hi, this is Dr. Alex Arriaga with the ASA Patient Safety Editorial Board. Medication errors are not uncommon in health care systems. In the field of anesthesiology, medications are often prescribed, prepared, administered, and recorded by a single individual, all while working in a complex and dynamic environment. Pediatric anesthesia has additional intricacies surrounding weight-based dosing, physiology and pharmacodynamics.

There are several measures to reduce the risk of medication errors in pediatric anesthesiology. Ensure accurate patient weight prior to procedures. Label all syringes and use standardized color coded labels when possible. When administering medications, particularly very small volumes, ensure the IV line is flushed and that the medication does not stay in line. Provide a well-lit workspace and standardized organization of medication jars by promoting medication safety within individual systems as well as nationally and internationally. Providers can work towards providing even safer anesthetic care to the pediatric population.

VO:

For more information on patient safety visit asahq.org/patientsafety22

DR. STRIKER:

Well Dr. Robertson, there's one final score that I did want to touch on, and that's the parent's post-operative pain. Measure the PPP. Go ahead. And if you don't mind explaining to our listeners what this is and how it's used.

DR. ROBERTSON:

Sure. So this is for parents. Their patients are having outpatient procedures. So it's a 15 item Yes/No questionnaire. It can be completed by a parent or a caregiver and is designed specifically for use at home without the involvement of a health care professional. So a score of six or greater correlates with clinically significant pain. And kind of tips the parent off to say hey yeah this my kid's in pain I probably should go ahead and give that pain medicine now. It's actually been validated for children 2 to 12 years of age and it's mainly used for research and quality improvement projects, but it's basically for outpatient basis and in a large majority of our cases are outpatient.

DR. STRIKER:

If our listeners want to go research this for themselves, figure out what they might like best to utilize, or just learn about these a little more in depth. Where would you suggest they get this information?

DR. ROBERTSON:

A large majority of the information I gathered from textbooks, so from Doctor Cote's textbook Cotes and Smith or obviously the two major textbooks, both of them have all the pain scales actually listed in their entirety and then give a description about each, each of them. So a good resource as well as PubMed. It's fantastic. You just type in pediatric pain scales and you have numerous, numerous articles about how to choose which one to use.

DR. STRIKER:

Great. Well, let's talk about the importance of rating pain as a tool. It's been around for a little while, but historically that was not the case. So what considerations should we keep in mind as we use that tool for any of our patients?

DR. ROBERTSON:

So several age is the biggest one, obviously. So if you have a kid that's less than three, they're more than likely they're not going to be able to adequately verbalize where where it hurts. Right. So this is where I think the pain scales really come into use is in

those situations. And then also you have to remember a lot of, especially in the academic setting, a lot of our patients are cognitively impaired. The developmental level is not what it could be because of comorbidities. So or prematurity, both both children and adults who are cognitively impaired receive or receive less pain medicine. It's been proven than the cognitively normal patient in a similar condition. So we want to make sure that we treat that pain just like any other patient that needs it.

The self-reporting pain skills kind of complement the behavioral pain skills as well, and there's no interactive variability between the two. So someone on the Wong Baker faces scale picks a three that might correlate to a flat score of three. So it's helpful sometimes to to use both if you're not entirely sure where the patient stands.

DR. STRIKER:

What do you think as a clinician about using these scores along with clinical assessments rather than either or? I mean, we've all had patients that may indicate a pain level that doesn't seem to correspond to what they look like one way or the other. Either they look really comfortable and they say their pain scores a ten or the other way. They look incredibly uncomfortable, especially I've seen kids like this to who are incredibly uncomfortable. They look uncomfortable, but they're like, No, you know, I'm two. And it looks like they're just trying their best. So there's a role for a combination of both clinical expertise and assessment and these skills.

DR. ROBERTSON:

You can't use one or the other you have to use I mean, you don't have to use the pain scale necessarily, but I think it adds a lot to the clinical situation. I mean, again, taking it case by case, there have been lots of patients that I've had, though, that are like looking at their caregiver to tell them what they're supposed to be feeling. I get that a lot from some overbearing parents or parents that don't care as much about their child's pain. So you kind of have to take that into consideration to if you've got a child that is brought up in a household that's like grin and bear it, you know, you're a big girl, that kind of thing. And they're going to probably be a lot less likely to act or to tell you that they're in pain than the average child. So you might want to go ahead and treat that, even though they're telling you that they're not in that much pain.

DR. STRIKER:

Is it typical in pediatric patients that they underrate the pain?

DR. ROBERTSON: Y

You know what? I don't I don't know the answer to that question because I come across both ends of the spectrum. You know, you have a slightly histrionic 15-year-old girl that's had scoliotic surgery, and she's writing at a ten out of ten, you know, and you're sitting here going, but your heart rate is 55 and your blood pressure is 110 over 70. So it's kind of hard to to base it on just one generalization. I suppose.

DR. STRIKER:

Across the board, patients can be all over the spectrum

DR. ROBERTSON:

All over the spectrum. Peds and adults.

DR. STRIKER:

Is there anything we need to know regarding opioids? Chronic pain when coming to the operating room? Is there anything special the anesthesiologist needs to consider?

DR. ROBERTSON:

Yes. So for sure, if you have a kid, say, for a sickle cell patient, that comes in for a routine case, an elective case or non-elective, you really want to know how much they are on at home at baseline. So if they they have a fentanyl patch or they take Norco or whatever, so you want to basically figure out how much they take on a daily basis and take that into consideration. They're definitely going to need more pain medicine than the normal child undergoing that same procedure.

DR. STRIKER:

Right. Again, highlighting the fact that every patient we treat is different.

DR. ROBERTSON:

Every patient yeah.

DR. STRIKER:

Every patient has heir own needs, their own anesthetic, prescription, if you will.

DR. ROBERTSON:

Right. And also regional is a great way to go, if you can, obviously, based on the procedure itself for those chronic pain patients.

DR. STRIKER:

So actually, let's talk about that just for a minute. This topic we could spend hours talking about. Oh, yeah, regional anesthesia.

DR. ROBERTSON:

Yes.

DR. STRIKER:

Talk about how that has evolved in pediatric pain. It's so common in adults. Yeah. As far as anesthesia.

DR. ROBERTSON:

Yes. No, it absolutely is. And of course, you know, we do a large majority of our blocks under anesthesia, under a general anesthetic, which can pose a lot of pluses, but also a lot of minuses. Doing neuraxial lateral, it can be quite challenging sometimes in the bigger teenagers, but even just in the span of the amount of time I've been practicing. So I started residency in 2010. Regional anesthesia and pediatrics has exploded. Like I just learned how to do pecs two blocks for bilateral breast reductions on our patients. They're fantastic and the patients just absolutely are at zero pain basically when they get to the PACU, if the procedure is done correctly. Also, tab blocks have been amazingly wonderful. If you cannot do a neuraxial anesthetic for, say, an ex-lab for a patient, even for lap API's, we've been doing top blocks and they come to the PACU and they basically express zero pain. So it's just a joy to be able to learn how to do these new techniques and also for our patients to be so incredibly comfortable after these massive procedures that we do.

DR. STRIKER:

Well, a couple of follow up questions. Just again, this is a huge topic and have our own specific show about this. But number one, how best -- because I know there are programs out there where surgeons are very resistant to pediatric blocks. I think that prevalence is dropping, as you said, as you have stated, it's regional anesthesia and

pediatrics has exploded. But what are a couple quick tips, if you have any, on how to get your surgeons on board or how to get by in?

DR. ROBERTSON:

Well, I feel like with our surgeons, we just have really good relationships and I think it just starts there. Basically good communication, good follow up. So if you have if you placed an epidural in a patient and you're going to check on them, you're you're making sure the the adjuvant pain medication is ordered correctly, that you've talked to the parents, that they're well educated on what the regional does and does not provide. So we with epidurals, we'll say it takes away sharp pain. It doesn't take away dull pain. And at least if the patient doesn't understand that, at least the parent understands that. So they're not too excited about their child whimpering, but they're not like dying out crying, especially if they can't express what their pain level is. Also showing that it works, right? So if you do, a couple say, Hey, let me do this on this patient, this is the benefits and just have them come to the PACU. You have them come see their patient sitting up, you know, with a smile on their face, playing on their tablet and not having any issues with pain after after a larger surgery, it will convince pretty much any stubborn sergeant, I promise.

DR. STRIKER:

Comment a little bit about the follow up once the blocks wear off.

DR. ROBERTSON:

So we actually have a sheet that we send home if this is an outpatient procedure and we've done like, say, a popliteal block. I explain thoroughly all of us do to the parents and to the patient if they can understand what we're saying. Your block will wear off in X amount of time. This is the medication that we used. Please don't get behind on the pain. That's the biggest thing for me, is that I want them to make sure that they're just because they don't feel anything right now doesn't mean that they're not going to be the blocks eventually going to wear off. So we're going to need to take some medicine before it starts wearing off. And usually if you're good about the communication and also have a follow up phone call with them afterwards, they usually do really, really well know.

DR. STRIKER:

Exactly. And then finally, one last question I want to ask you about this. If pediatric anesthesiologists want to learn blocks, let's say they have a practice that encompasses

every case or every patient across the spectrum of pediatric anesthesia. Are there a couple of blocks or a few blocks they should focus on rather than try to learn every specific block that can be done now?

DR. ROBERTSON:

Well, there are so many that can be done now. And I'm still learning how to do some of these because they were not taught in my fellowship, but some of the main ones are same for the adults. So this may be different than some of the other children's hospitals in the country, but we do mainly blocks for lower extremity. So like femoral nerve popliteal adductor canal are the the main ones. If you know how to do those really, really well, that will serve your patients quite fantastically. Mainly for a lot of the ortho procedures. I utilize for the upper extremity, a lot of super curricular, but not nearly as many as the lower extremity blocks. So if I had to focus on those, it would be it would be the lower extremity ones.

DR. STRIKER:

Gotcha. Well, finally, is there anything else that you would like our listeners to know about the ACE issue? Yeah, specifically.

DR. ROBERTSON:

So overall, I feel like the audience of ACE actually gives really wonderful reviews. We have like a 99.9% approval rating about the questions that we pick. But one of the things we have gotten feedback on is that our questions need to be more relevant to everyday practice. So to the community anesthesiologist who's doing bread and butter cases all day. We have really taken that feedback to heart and we're really trying to craft all of these questions that are like supremely, clinically relevant. So you walk away from several hours from CME feeling like either you've brushed up on your knowledge that you know or you learn something new. So some of the questions that are asked in this specific issue, we have anything from the oxygen fail safe valve ventilator question. We have several questions on TEE images that look really professional pictures and really drive home that knowledge. There's also a question about delirium and post operative cognitive dysfunction that I knew nothing about. And I really enjoyed learning, learning more about that because obviously that's on the far end of the age spectrum for me. And then also there's a question on case intra so prothrombin complex concentrates, which we have actually several cardiac anesthesiologists on our board. So we we kind of have to draw them away from from writing those those tough cardiac questions, but that one I knew very little about. And so I feel like then the amount of knowledge that you are gaining and or brushing up on in these ACE booklets is just absolutely fantastic.

DR. STRIKER:

Yeah, the times I have utilized the ACE program, it's I've always found it very valuable and so, so it's great to hear you talk about it. I appreciate all the time today and sharing your insights and your experience with the ACE question. It's been great talking with you, Dr. Robertson.

DR. ROBERTSON:

Great talking to you. Thank you so much, Dr. Striker.

DR. STRIKER:

And thanks to all our listeners for tuning in again for this episode of Central Line. Please join us again next time and tell a friend if you like the episode. Take care.

(SOUNDBITE OF MUSIC)

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