Host: Welcome to the ACE Behind-the-Scenes podcast, giving you an exclusive look at the creation of the popular continuing education program from the American Society of Anesthesiologists. ACE: testing your knowledge of the fundamentals of anesthesia.

Christopher Lace, MD, MBA: Welcome to the ACE Behind-the-Scenes podcast. I’m Dr. Christopher Lace, Perioperative Medical Director at the University of Colorado and one of the Editors at ACE.

Stacy L. Jones, MD, FASA: This is Stacy Jones. I’m the Vice Chair for Operations at the University of Arkansas for Medical Sciences in Little Rock and I’m the Co-Editor-in-Chief of ACE.

Joel L. Johnson, MD, PhD: And this is Joel Johnson. I am a Professor of Anesthesiology at the University of Wisconsin in Madison, Wisconsin and I’m the other Co-Editor-in-Chief of the ACE product.

Vidya T. Raman, MD, FASA: I’m Vidya Raman. I’m the Director of Perioperative Admission Testing at Nationwide Children’s and I’m an Editor in ACE.

Christopher Lace, MD, MBA: A little background on the ACE product. This is considered to be walking-around kind of general knowledge in anesthesia. This issue is published twice per year as a subscription service, published in April and October. We provide 100 questions per issue and it is certified for up to 60 AMA PRA Category 1 credits™ per year. [Physicians should claim
only the credit commensurate with the extent of their participation in the activity]. It is available in both the print version and as a web- or app-based product.

This time we are discussing items of interest that are in ACE 16B which is going to be published in October 2019. So, let’s talk a little bit about how we got some of the ideas for the items that are going to be published in ACE 16B. Dr. Johnson.

Joel L. Johnson, MD, PhD: Well, many of my ideas come from discussion with residents, since I’m an academic anesthesiologist. One of those is presented in 16B; it’s a neurosurgical case. And we were going along doing the case and this patient had a consistently low—somewhere around 92%—oxygen saturation. And this, of course, led us into a discussion of “Well, why is he desaturated compared to a normal person?”

And as is the case in most neurosurgical cases, we had an arterial catheter available and so we were able to obtain arterial blood gases and compare them to the oxygen delivery that we were presenting to the patient. And so, we were able to calculate an A–a gradient. And the question that I came up with in 16B is, what does an A–a gradient really mean and how do you treat A-a gradient issues?

So, this particular question had a lot of calculations in it and various discussions about the causes of a large A–a gradient. And this particular patient had a diffusion problem which we were able to correct his oxygen saturation simply by increasing the FIO2 whereas in some patients—shunt patients, other patients—other methodologies may be required.

But oftentimes those kind of clinical situations let us have ideas for specific items in the ACE product.
Christopher Lace, MD, MBA: Dr. Raman, do you have any of the items you’d be willing to share with us?

Vidya T. Raman, MD, FASA: Yes. I was going to tell you about my experience with autism in pediatric patients and part of the issue is as a pediatric anesthesiologist is that we’re noticing more and more incidence of autism worldwide, not just locally. And these children come for all sorts of routine cases like ear tubes or tonsils. And it’s a very noisy environment and there’s a lot of people coming in and we have to realize what is the best way to deal with it.

I also have a personal issue; I have my own child with autism, so it was a very personal question for me to try to develop this question because we are dealing with an increasing incidence and seeing more of these cases and having special ways to deal with them and not just like one-size-fits-all. So, it is a very intriguing subject matter.

Christopher Lace, MD, MBA: Dr. Jones, I understand you had an interesting case that may have prompted one of your items?

Stacy L. Jones, MD, FASA: Yes. I’m on a roll now; I’m doing a whole series on weird implantable medical devices I’ve never seen before. I had a patient come in and one line in their preop eval that came from our preop clinic, “Patient has CardioMEMS device.” And I’m like, what on earth is that?

And this prompted some investigation and this patient actually had this device implanted in their pulmonary artery as a mechanism for relaying back to his cardiologist, or the cardiologist’s office, their continuous pulmonary artery pressures.
And the purpose of the device is to be able to more closely manage patients with heart failure at home and some of the take-homes for this, when I started looking into it, were that there’s a mandatory one-month period of dual antiplatelet therapy prior to transitioning to warfarin for people that had this device. And I think that’s really important to know.

And with the pay-for-performance and value-based care, readmission for decompensated heart failure is an enormous problem; up to 30 billion annually in the US just in hospital admissions due to decompensated heart failure. So, we may see more and more of these devices for remote monitoring.

Since then I’ve had a couple other kind of interesting cardiac devices show up in our preop clinic. So, I think when I see something that I didn’t know what it was and it actually has anesthetic implications, writing a question about this is a good way to get it out there.

Joel L. Johnson, MD, PhD: And this might be something that comes up when we get feedback from readers that these types of questions may be the subject of some disgruntlement because we delve into some subspecialty minutiae and so we’ll get feedback like “too much cardiac, too much neuro” or something very direct like “I may never see a CardioMEMS unit.”

And so, we always sort of justify having these types of topics in ACE because we’re committed to providing a real broad range of subjects, but we really do appreciate when readers send in comments about their preferences. If there’s too much or too little of something, it really helps us direct many of our questions.
Christopher Lace, MD, MBA: And so all the readers know, all the Editors of the ACE publication actually read all the feedback that is presented and we review it at every quarterly meeting of the ACE Board.

Stacy L. Jones, MD, FASA: Yes, we do.

Christopher Lace, MD, MBA: Dr. Jones, do you have another case you’d like to talk about?

Stacy L. Jones, MD, FASA: There’s an item in 16B that I wrote about morbidly adherent placentas. And we here at University of Arkansas are a high-risk referral center for OB [obstetrics] and we’re doing really two or three of these a month, at least, and have engaged our trauma surgeons that will come in and put in a REBOA aortic balloon occlusion device for some of them and just how to identify the risk factors for this.

The incidence is increasing worldwide and probably because it increased in cesarean delivery. So, two of the important factors are – is a presence of an anterior placenta and a prior c-section. And I’m not sure I really appreciated these numbers until I really looked into this, but if you’ve had one prior section and an anterior placenta, you’ve got about an 11% increased risk in having a morbidly adherent placenta. And this – if you’ve had three prior sections, the rate goes up to about 61%.

So, knowing what the risk factors are for this pretty scary situation, I think it’s important and it helps you decide how you’re going to go about your anesthetic management.

Christopher Lace, MD, MBA: Sometimes we use this podcast to admit which items we would have gotten wrong and we see that during the editorial review process; we do write some questions that are somewhat challenging.
Does any of the Editors have some examples of questions that they were surprised by?

Joel L. Johnson, MD, PhD: I had a question that—where one of our Editors wrote that a patient had blue lips and a hemoglobin of around 10 mg/dL and gave me a list of possible saturations that this patient would have. And as everybody knows, direct observation of the patient and trying to guess what their oxygen saturation is is just terribly incorrect in most cases.

But there is a scientific basis for oxygen saturation and blue lips, let’s say. And this question dealt specifically with the fact that anemia, and severe anemia in particular, will mask hypoxemia.

Interestingly enough, this was written about in 1923 by a surgeon named Christian Lundsgaard. He observed that somewhere around a hemoglobin of 5 mg/dL patients are sufficiently anemic, that they no longer get blue when they desaturate. And ultimately, the point of this kind of question was that anemia will mask hypoxemia.

So, when you get something wrong, you tend to read all the discussion that follows and really get a lot of learning done.

Christopher Lace, MD, MBA: So, we have our pediatric specialist, Dr. Raman here with us today. Are there any special pediatric items that you would like to talk about?

Vidya T. Raman, MD, FASA: Yes. The media also is a good source of questions and one of it is the FDA came up with a black box warning against general anesthesia a couple years ago and that caused a lot of concern and a lot of “What are we doing? What should we do? What should we tell patients?”
And part of it was a resurgence of spinal anesthesia and we – when we did the question, this was a rather old procedure, however, and it’s very common in adults. However, we stopped doing it in pediatrics due to the variety of factors and now we are restarted and we’ve done over 300-plus in our institution and have a lot of publications on it and everything.

And it’s been another alternative to consider when we’re doing these cases and this has been a concern for a lot of families with when these warnings come out. And it’s also interesting how our specialty has to deal with not only the public, the legal implications and maybe consider alternative care for these patients who need surgery.

Joel L. Johnson, MD, PhD: And this is a good example of topics that get some press early on and then get repeated through different ACE subscriptions. And in particular, with spinal anesthesia, with children, what level should the needle be introduced at?

Many, many similar topics such as implanted pacemakers and AICDs comes up in that we continue to address the topic but try to address it in a different way each time so that the information is still valid and passed on, but at the same time the question causes the reader to go on and continue to either read the discussion or even the references that follow the discussion.

Christopher Lace, MD, MBA: Getting back to pediatrics, Dr. Jones, do you have anything to add?

Stacy L. Jones, MD, FASA: Another really interesting question I think in 16B was about Williams syndrome and it was not particularly a syndrome that I was very familiar with because I don’t really do pediatrics. But the thing that caught my
attention was the association with sudden death and the fact that 80% of patients with Williams syndrome have some associated cardiovascular disease and the vast majority of those are supravalvular aortic stenosis. But I think that’s probably something that the majority of surgeons that don’t do pediatrics are not aware of.

And the scenario that I keep seeing is maybe someone shows up in your ambulatory center for ear tubes or for tonsillectomy or something fairly routine that has Williams syndrome and it’s a good reminder that that child, or even that young adult, really is a very high anesthetic risk.

I think those sort of things are good for us to get out in ACE; it’s a good vehicle for that sort of learning.

Christopher Lace, MD, MBA: Dr. Raman, do you have any other topics that might be of interest to the listeners?

Vidya T. Raman, MD, FASA: Yes. As we’re having more medical advances and saving younger and younger patients, we have to also deal with the ethical issues and the question of DNR—do not resuscitate—and when do we need to do that and when do we not. And, we are saving 22-weekers right now; it’s a very valid question and I think it’s a very valid ethical concern.

And AAP [American Academy of Pediatrics] has recently revised some of their DNR statements. And so, this is some of the stuff we try to bring up in ACE is recent advances and recent statements that are made by those different societies to help keep our readers up to date on things that are being discussed and taught around the country.
Christopher Lace, MD, MBA: So, ACE tries very hard to focus on established knowledge in anesthesia, but over time things do change and items or topics that were previously held to be that gold-standard truth may change.

Dr. Johnson, do you have any examples of items from 16B that you think have changed over time?

Joel L. Johnson, MD, PhD: There are some topics that tend to make me think that they are going to become out of date, that they may not be things that are going to be even commonplace knowledge in the future.

And actually, Dr. Lace wrote of one in 16B. He was writing about isolation transformers in the OR. Now, this is a topic that when I was a resident was really quite hot; it was oftentimes talked about primarily because most of us worked in ORs that had been built when flammable anesthetics were still available and used in ORs. And it was always a textbook staple; it’s still in textbooks and the historical basis, of course, was this fire safety and then the ideas of microshock and macroshock.

Speaking of textbooks, Miller has a great discussion about this, the references are included. But essentially what it comes down to is that building ORs with isolation transformers is no longer required; however, the one sort of big advantage is the prevention of macroshock.

Now, Dr. Lace, you wrote the question, am I wrong?

Christopher Lace, MD, MBA: No, I think you’re absolutely correct. And we see in this area, as we’re building, that there are still some facilities that use line isolation for macroshock prevention.
But with the continually changing codes—and that’s what drives a lot of this is the national and local building code—a lot of facilities are moving towards ground fault interrupters as an attempt to try and do that.

But, as we see, this is one of those topics over time where there is some swing back and forth on what the actual standards are.

Joel L. Johnson, MD, PhD: What about you, Stacy? Anything on your end of things?

Stacy L. Jones, MD, FASA: Well, this item in 16B, again, was written by Dr. Lace looking at discharge protocols for ambulatory surgery centers, things like clear liquids. There have been changes over time. I can remember where everyone had to be able to urinate before they could go home; we’ve changed that.

And an interesting thing to me about this is that even though the ASA has recommended guidelines, not all institutions follow them. For example, our institution – our legal department has made the distinction that requiring the patient to have someone, a responsible adult, take them home actually violated their autonomy and might discriminate against our patient population that may not have someone to take them home or may not have transportation, anything other than the Medicaid van or Uber, for example.

So, those types of things really kind of open this up for discussion. Lace, what do you think about that?

Christopher Lace, MD, MBA: Yes, I think this is a – and part of the reason I wrote this question is that this is one of those topics that does seem to be changing rather rapidly currently, especially, as you were discussing Dr. Jones, with regards to a responsible adult to take them home.
The ASA guideline currently states that that’s recommended, but I think as patient-centered care and patient autonomy becomes a bigger focus, this is potentially something over time that’s going to continue to change and I think is going to be discussions between legal and medical ethicists about what is the best and safest way to proceed forward with this. And this is a topic down the road where it may change in five years from now.

So, a phrase that comes up at every ACE meeting, I think since the first, is the term “gratuitous information.” Dr. Johnson, do you have any examples of what may be considered gratuitous information in 16B?

Joel L. Johnson, MD, PhD: There is bunches of it all the way through our several editions. I would have to credit Dr. Ned Bowe, the previous Editor of ACE, for this phrasing and the continued use of it.

But good examples are, well, in 16B we had an item which talked about a Roux-en-Y and gave us a lot of information about Roux-en-Y-type procedures and what they meant and what they look like.

And then we added a bit of gratuitous information about who actually this is named after and this is César Roux who was a Chief of Surgery at the University of Lausanne in Switzerland.

The thinking is that, well, maybe that helps you remember some of the things that we are talking about just through association; other examples, I guess, we talked about Ondine’s curse and had a picture of Ondine, the Germanic figure in that story.

And all of these things seem to lend themselves not only to interesting reading, but also perhaps to remembering what you read.
Christopher Lace, MD, MBA: Before we close, do any of the other Editors have any items to discuss from 16B that they’d like to bring up?

Vidya T. Raman, MD, FASA: Yes. I had a topic about massive transfusion and in this day and age with all the unfortunate events that are happening with violence and massive violence and the need for us as health care providers to rev up and be prepared, it might seem like a semantic issue that – what is massive transfusion? But I think it is very important to understand in their institution and what is defined and how to get it activated and when to apply it clinically is very important and be prepared.

So, I think we’re all in an unfortunate state in this country right now, as in front lines, that we have to be prepared to deal with massive accidents or this violence that happens and when patients have to come in.

And so, I think it’s beyond just semantics and know when we have to activate these kind of protocols of massive transfusion as a signal to our blood banks, and whatever, to be prepared and help stabilizing the situation.

Christopher Lace, MD, MBA: Dr. Jones, anything?

Stacy L. Jones, MD, FASA: Well, I have one I think, again, triggered by a clinical scenario. We picked up someone with critical aortic stenosis because one of our residents remembered how to use their stethoscope. And we started talking about what types of heart murmurs should you be listening for, what’s the difference between the murmur for aortic stenosis versus hypertrophic obstructive cardiomyopathy. And even though they’re both ejection murmurs, how do they differ?
And once that ball started rolling, I really kind of went to town on this one and there’s the whole chart of types of murmurs and what they sound like in 16B that’s associated with that item.

Maybe, again, gratuitous information. Maybe something in the day of TEE and easily available transthoracic echo may not become as important, but still a really good clinical thing to think about, put to use.

Christopher Lace, MD, MBA: Well, thank you to everyone for participating today. To all the listeners out there, please watch for announcements about the launch of ACE 16B which will be available in early October. You can learn more about ACE at asahq.org/ace.

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Host: Thank you for listening to the ACE Behind-the-Scenes podcast. For more information or to subscribe to the ACE program, visit asahq.org/ace.

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