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, an anesthesiologist at the University of Colorado and the Perioperative Medical Director. With me today are two Editors-in-Chief: Dr. Jones and Dr. Johnson and our Guest Editor Dr. McAllister.

Stacy L. Jones, MD, MHA, FASA: Hi, Chris. This is Stacy Jones. I’m an anesthesiologist at the University of Arkansas for Medical Sciences in Little Rock.

Joel O. Johnson, MD, PhD: And then I am Joel Johnson. I am an anesthesiologist at the University of Wisconsin in Madison, Wisconsin.

Russell K. McAllister, MD, FASA: Hello, everybody. This is Russell McAllister. I’m the Interim Chairman at Texas A&M College of Medicine Baylor Scott & White, Department of Anesthesiology in Temple, Texas.

Christopher Lace, MD, MBA: Thank you, everyone, for joining us today. We are recording this on Friday, April 3, 2020, so we are recording this as the COVID edition of the ACE Behind-the-Scenes podcast. We are appropriately social distancing at this time, so none of us is closer than six feet as we’re recording this.
A little bit of background on ACE: it is designed to be walking-around knowledge of anesthesia, it is published twice per year, each issue contains 100 questions and the publications occur in April and October. It is certified for up to 60 *AMA PRA Category 1 Credits™* per year and it is available both in a print or in a web- or app-based format.

Today we’re going to be discussing items of interest in the ACE 17A issue that just launched and is available now. Let’s start with our special guest. Dr. McAllister, what item did you find most interesting in the 17A issue?

Russell K. McAllister, MD, FASA: I really liked Item 9 which was about postoperative vision loss. We’ve talked a lot about that in the last 20 years or so as we’ve learned more about it. The item deals with central retinal artery occlusion, but it also causes you to review the other causes of vision loss, especially one that I’m more familiar with which is ischemic optic neuropathy.

I recall when I was in training there was not a lot known about ischemic optic neuropathy, but quite a bit was known about central retinal artery occlusion. I found it interesting how the incidence of ischemic optic neuropathy kind of came about. It was really kind of a confluence of a lot of different events that kind of brought it to the forefront; most notably, we were dealing with the idea that blood transfusions caused HIV and there was a big fear of blood transfusions.

At the same time we were also doing much larger surgeries and because of all of these fears, a lot of our surgeons were wanting to minimize blood loss and so controlled hypotension came into fashion around the same time and we knew from our Jehovah’s Witness patients that lower hemoglobins were tolerated fairly well.
So, because of the fear of HIV that transfusion triggers, nationwide were dropped significantly and I think all of those factors came together to lead to this unexplained higher incidence of vision loss that we saw. I just found that very interesting.

Christopher Lace, MD, MBA: Often we find that ACE items are based on personal experience. So, often we will experience cases, they raise our interest, people tend to write questions about those. Dr. Jones, was there an item like that for you in the 17A issue?

Stacy L. Jones, MD, MHA, FASA: Well, actually, Chris, there were several. Joel and I encourage our editors to write about things that maybe they’ve encountered in their actual clinical practice. I think it leads to more interesting discussions and gives sort of more of a clinical feel to the product as a whole. We try to balance sort of the “science-y” questions because at the end of the day we are kind of science nerds and we try to balance that with the collection of more clinically relevant questions and I think it makes for a really good overall product.

I think several of the questions that I pulled out of 17A to talk about were things that I’ve actually seen or encountered. The first one that comes to mind is Item 35 which talked about undiagnosed coarctation of the aorta.

Over the years, I’ve had four or five patients with this and I took care of someone just the other day that had essentially undiagnosed until the age of 30 because if it wasn’t all that severe at the beginning and no one ever had reason to check blood pressure at different sites; this could go on really to the second and third decades of life.
And when I was researching some of this, I discovered some things that I just really either didn’t remember or hadn’t really thought about in a while and I think of those the association with other factors, for example, Turner syndrome or bicuspid aortic valve, those are associated with coarctation of the aorta as is VSD or also interesting cerebral aneurysms occur more commonly in association with this coarctation.

So, that sort of reminds you that if you’re evaluating somebody for this procedure, you might want to maybe look in these other areas because they may have other associated issues that will cause problems later on.

Russell K. McAllister, MD, FASA: Chris, this is Russell. And I think actually one of your questions is one that I was drawn to from clinical practice and that’s Item 16, the one related to the shortage of the spinal bupivacaine.

I think most of us in this country had to deal with that throughout a long period of time as we deal with all drug shortages and it causes you to have to get really creative in how we manage those patients that we used to do bupivacaine spinals for. And I really liked the way that you incorporated that real-world issue into the question that you presented to us.

Joel O. Johnson, MD, PhD: And sometimes the real world sort of gets encountered in a non-clinical setting as well. One of my items was based on a time that I was in an airplane flying about 30,000 feet on a red-eye about 2:30 in the morning and an overhead page came for a physician on the plane and so I wandered up there and there was a woman that was having difficulty breathing.

The flight attendants brought a box with a pulse oximeter, a blood pressure cuff, a stethoscope, some over-the-counter medications; they also said that there was oxygen available if I needed it. And so, I put the pulse oximeter on
and it read about 91% on this woman. She wasn’t really breathing hard; she seemed like she was more anxious than anything else.

But what it did, it led me to write this item about, well, what do we expect to see when somebody is flying at 30,000 feet and recall that the cabin pressure is maintained so that you’re really at about 8,000 feet. So, for us flatlanders in Wisconsin, we don’t quite have what you might have if you’re skiing up in – at Steamboat or someplace.

The other thing that I thought was interesting was going through the equipment that was available on an airline and what is required to be on every US flight. So, even though this wasn’t a real clinical situation, I thought there was some valuable medical information and information that all of us—at least, when flying resumes after this COVID scare—need to know what is available in an airplane.

Russell K. McAllister, MD, FASA: Yes, I’ve seen that in the press a lot. There’s been a lot of talk about physicians and medical personnel responding on airplanes and my understanding is they have very little equipment available for you, but I was stumped by this item.

I found it to be a tough one; it really makes you think about the factors that affect oxygen saturation and it’s useful for real-life scenarios, but it also, I think more importantly, it strengthens our understanding of pulmonary physiology.

Christopher Lace, MD, MBA: Dr. Jones, did you have any other items from this that were based on real-world experience?
Stacy L. Jones, MD, MHA, FASA: Well, actually I do, Chris. I think if you look at Item 1 in 17A, this is something that actually happened to me fairly early in my career. So, for all you all in Little Rock who are listening, this did not happen in Little Rock. But my former practice, we covered the city hospital and I think probably half of us had stories that all started with “There I was minding my own business at the city hospital in the middle of the night.”

So, there I was, minding my own business at the city hospital in the middle of the night and I was running the board with the OB charge nurse and we got to this patient and she said, “They’re probably not going to need labor epidural; the obstetrician is going to do a paracervical block.”

And literally before I could get the words out “You know that can be really associated with fetal bradycardia,” we got the stat C-section for fetal bradycardia and everybody went running back to the operating room.

And you don’t really see them doing paracervical blocks much anymore; however, I think it’s important that we know what some of our surgical colleagues have in their armamentarium that they may decide to pull out and one of the complications with that particular procedure is profound fetal bradycardia.

So, I think that has some real-world application. I think that we may not see it much anymore, but it’s certainly something to sort of keep in the back of your mind.

The other thing to me about this item that is so exciting is that the image for this and, again, I think one of the things that makes ACE really stand out among other – in the offerings is our use of images.
And, if you’ve noticed, I want to put a shout out for Jennifer Kincaid. She’s sort of our artist-in-residence. It’s her artwork that you see on the cover of the last three volumes of ACE and it’s just spectacular and the cover for 17A is essentially highlighting obstetrical anesthesia and the image from that is the one we chose for Item 1.

So, my big plug for Jennifer and I think you’ll be impressed when you look at some of the images in ACE.

Russell K. McAllister, MD, FASA: Jennifer does a great job on the artwork. I was just reviewing something that was sent to me to review and I just made the simple request for some artwork and she did a phenomenal job.

Christopher Lace, MD, MBA: And I remember from the meeting, Russell, we were editing these items, you had some comments on this item, didn’t you?

Russell K. McAllister, MD, FASA: As Stacy noted, I think this is one that could eventually become completely out of date, but as she said, there are still some people out there doing these types of blocks. So, I think as these things become less common, I think it’s even more important that we know about them for those instances when they do show up so that we can be acutely aware and have a high level of suspicion for any complications.

Christopher Lace, MD, MBA: So, Dr. Jones, I’m just curious if you don’t have any other stories from the community hospital you’d be willing to share with us?

Stacy L. Jones, MD, MHA, FASA: Well, I do have some more stories from my clinical practice that I can share with you. Item 20 is about a patient with osteogenesis imperfecta and I honestly had a patient last year that was 20 years old with OI and was coming for an aortic valve replacement. So, pretty complicated,
pretty interesting. When I started looking into this, I, again, found out a couple things about osteogenesis imperfecta that I didn’t know.

We typically think of this also as more of a pediatric disease, but this patient was 20 years old, had a milder form but there are all these associated things that I hadn’t really thought about: platelets dysfunction can happen, these patients can experience intraoperative hyperthermia.

And so any time an anesthesiologist hears the word hyperthermia, it gets us all excited and that really led me to research what’s the mechanism of that: Is it truly associated with MH? Are they susceptible to malignant hyperthermia? And I discovered that, no, they really are not.

But in researching that, that really led me to another item that kind of followed in this volume, Item 28 is about diseases that are susceptible to MH and the driving force for that was an article in ANESTHESIOLOGY, I think 2018, 2019, and it’s really fantastic.

Some of the congenital disorders that, when I was training, we were essentially taught were associated with MH probably are not. So, there were some surprises for me in that article and, again, the image for it was fantastic and the image of the RYR1 receptor showed where in the receptor different disorders have an effect is really – I mean, really cool.

So, sort of one experience led to two questions and we hear sometimes that some of the things we talk about in ACE or that we write about in ACE are obscure, but, frankly, I’m at just a standard issue medium-size teaching hospital and this patient showed up, at about 20 years, infected aortic valve and osteogenesis imperfecta.
Christopher Lace, MD, MBA: So, we try to keep ACE as clinical as possible, but sometimes we include items that are a bit esoteric. I am personally responsible for providing the item on zero gravity intubation that was published sometime in the past, but we do have these things that are a bit more esoteric and we do hear comments about them. Are there any questions like that you can think of in this current issue? Dr. Johnson, you got any perspective on that?

Joel O. Johnson, MD, PhD: Yes, and I would want to add in that Dr. Lace did get quite a few interesting comments about his space anesthesia question. But the one that I had written about was an item, Item 3 on POCUS or point-of-care ultrasound.

And it’s interesting that the person who wrote this, Ned Bowe, our former Editor-in-Chief, I think was a little bit of a visionary because more and more there are classes and review courses on POCUS where ultrasound imaging is advancing beyond cardiac function and regional anesthesia.

And this bedside imaging looking at, for instance, pneumothorax as a technique that any anesthesiologist can acquire easily and I think is probably not only a little bit esoteric right now but eventually will move itself into the realm of something that an anesthesiologist might do on a regular basis.

Christopher Lace, MD, MBA: And to Dr. McAllister, when we were going over this issue, did you find any items that you thought were a bit more on the esoteric side?

Russell K. McAllister, MD, FASA: Well, we had a lot of discussion about one of Dr. Johnson’s items, Item 96 with regards to xenon anesthesia. As everybody knows, it’s not used in the US but I was a chemistry major in college so it – this really appealed to my chemistry background and I found it fascinating.
I’ve read some about xenon and the rumor is that xenon was used for Boris Yeltsin’s cardiac surgery. I’ve tried to confirm that but never have been able to. But I’m also kind of a word nerd, so I’m always trying to increase my vocabulary and find out where words come from. Xenon comes from the Greek *xenos* which means foreign or strange. So, anyway, I found that really interesting.

But these questions, as I discussed, can be really polarizing during board meetings and generate a lot of discussion. It seems like from comments that the polarizing questions either you find them really intriguing and interesting or you find them potentially a waste of time. I find them personally quite interesting. I think it broadens our minds and it encourages to think outside the box. And who knows? One day before my career is over we may be using xenon in the United States.

Christopher Lace, MD, MBA: So, in contrast to what some people may consider to be the esoteric items, maybe we can talk for a little bit about some of the more everyday clinical content in this issue of ACE. Dr. Johnson, any items you think that come to mind for clinical content?

Joel O. Johnson, MD, PhD: Well, just as a brief example, Item 11 which was written about the innervation of the larynx and the trachea is an example of anatomy items that we often find in our various ACE products.

We want the practitioner to appreciate and review and really understand what we are doing and – but more using this as a reminder of what the anatomic basis of some of our – for instance, our regional anesthesia is about rather than just sticking a needle in and not thinking about “Where am I putting that needle? What’s the name of this structure?” et cetera.
And over the course of several issues, we might touch on a variety of topics that are pretty standard anesthesia topics such as double-burst stimulation, dead space, the definition of mean versus median. We do try to restrict to less than two items about statistics in any particular ACE issue, but sometimes we get a little carried away. And then, of course, we do a lot with airway anatomy.

So, if you look at, for instance, 17A, about a third of our items start with a clinical scenario and so while we talk a little bit about the sort of things that you might see in an ITE if you are a resident, much of our work is clinically oriented.

Christopher Lace, MD, MBA: So, I’m just curious, Dr. McAllister, do you think there’s some items in this issue that might be described as being tricky items?

Russell K. McAllister, MD, FASA: Yes, I think so. They’re not necessarily tricky, but they are the types of items where either you know them or you don’t. And one of the items that I wrote related to the mechanism of action of gabapentin, Item 65, and that with enhanced recovery after surgery protocols, we are using gabapentin more and more often.

In the pain world they had been using it for a long time, but I think in the perioperative world we’re seeing more and more use of that and the name is kind of a misnomer. You would think with the name gabapentin that it would be related to the GABA receptor in its mechanism of action, but in reality it’s actually – functions at the calcium channel and works as an antagonist there. So, I think that’s one of those that you either know it or you don’t.

The other item that I found fit in the same category is the one about cardiac valvular lesions associated with carcinoid syndrome, that’s Item 19. That’s
one that you either know it or you don’t. The key factor is that the right side is more commonly affected, affected because of the vasoactive products are released by the tumor, get inactivated by the liver, lungs and brain but the hepatic metastases may allow substances to reach the right side of the heart, though in that way more commonly you’ll see the right-sided lesions.

And so, that’s one that you either understand that mechanism and have read and learned that or you haven’t.

Christopher Lace, MD, MBA: So, often during the editorial process when we’re sitting down as a group and editing these items and putting the items together for these issues, we have some items that are bit more controversial than others. Dr. Johnson, any chance you want to kind of give us an inside look into kind of what that looks like and what sort of items bring up those issues?

Joel O. Johnson, MD, PhD: Well, we have controversy about subject somewhat like we have been talking about more recently here as to whether something is esoteric or not esoteric or too common or those sorts of problems. But for the most part we are truly editing and we’re trying to improve clarity in both our stems and the choices that you have when you’re looking at the correct answer and then mostly in the discussion.

And so just as an example of the kind of wordsmithing that we do in these meetings is I had written an item about mask ventilation and it was based on a couple of articles where they described mask ventilation as impossible.

And there was controversy within the editorial board as to whether or not there is such a think as impossible mask ventilation: Should we be using the term difficult instead of impossible? And we went back and forth on that a little bit and finally settled on unsuccessful.
And that is sort of an example of where we have controversy, but the controversy is trying to achieve that clarity in writing so that our readers do not have issues with “Okay, well, what exactly are they meaning by this question that they’re asking?” Or what are we meaning when we talk about a specific correct answer?

Christopher Lace, MD, MBA: So, before we finish up today, I’d like to kind of toss this out to the group and see if anybody out there has any other items in this issue that they’d like to talk about?

Stacy L. Jones, MD, MHA, FASA: Well, Chris, Item 52 sort of one subject kind of near and dear to my heart because I did anesthesia for cardiac transplantation and was really involved in that program at my prior place.

The item itself stems around the consequences of immunosuppression and the first thing that comes to mind when you have a patient who’s received a solid organ transplant is that they’re at risk for infection and that we really need to make sure that they get their immunosuppressants on time because they’re also at risk for rejection.

But all of those drugs in and of themselves have consequences and side effects that affect other organ systems and sort of like the great paradox of cyclosporin: you take it so that you don’t reject your kidney and have kidney failure but one of the side effects of that drug is kidney failure.

One of the cool things about this item is the table that we created that has a list of all the immunosuppressant drugs that you commonly see and their effects on other organ systems. For example, some are more associated with
hypertension, can actually cause hypertension, some associated with an accelerated cardiovascular disease, things like that.

So, I think that table in and of itself will be useful because it’s commonplace, you don’t have to be in a major teaching hospital to see a patient that’s had a kidney transplant. If they’re otherwise fit and healthy, they could show up at your ambulatory surgery center tomorrow and maybe looking at the drugs they’re on, they give you pause to realize “Well, there may be other things I need to watch out for.” So, I think it’s applicable.

Joel O. Johnson, MD, PhD: I’m going to swing back to talking about topic selection. One of the things that we tend to do is we will sometimes go a little bit far afield or somewhat far afield from actual clinical anesthesia and a good example of that is an item written by Dr. Lu, number 70, where he was talking about crisis resource management.

Now, it’s something that we all participate in to a certain extent and, of course, it was championed by David Gaba at Stanford University and perhaps not all readers would really appreciate the intricacies of crisis management, but it is something that we do every day, it identifies the importance of communication and, again, it’s a topic that might be apart from clinical work, but it is a vital part of our roles as anesthesiologists in the OR.

Russell K. McAllister, MD, FASA: I would just add that I think these two examples by Dr. Jones and Dr. Johnson show that the discussions that follow each of these questions really are valuable and bring together some information that we don’t normally think about.
And in my time using ACE, that’s the value that I’ve gotten out of it is the discussion of each of the questions and the resources that people have brought together into one place.

Stacy L. Jones, MD, MHA, FASA: The question is really just the hook to get you to read the discussion. ACE is really not designed the way you would design a high-stakes exam, but the question-and-answer format really just serves as a hook to get you to read the discussion which is where really the meat of the product is and the educational value, I think.

Russell K. McAllister, MD, FASA: I agree.

Christopher Lace, MD, MBA: Well, thank you all for taking the time out of your day to join us. ACE Issue 17A is available now 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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