Pioneer Perfusionist Interview: William De Bois

Mark Kurusz: Today is March 23rd, 2024. We are in New Orleans, Louisiana, for the 62nd annual AmSECT conference. My name is Mark Kurusz, and we are going to be interviewing William De Bois, otherwise known as Bill. Right? What do you prefer?

Willam De Bois: Bill De Bois, yes.

Mark Kurusz: Bill De Bois. Bill has been in the field for a long time. What we'd like to do is go through a series of questions, Bill.

William De Bois: Sure.

Mark Kurusz: But enough of them are open-ended so that if you want to go into one area in more depth than another, feel free to do that. We've got about 60 minutes that's allowable. So, the first question I'd like to simply ask is, what were the circumstances that led you to become a perfusionist?

William De Bois: Well, first, I'd like to thank you for inviting me here to do this presentation and question and answer. I don't have an amazing heart story, but I did have a heart murmur when I was a little kid, and I guess it closed by the time I was in grade school. I started school at Stony Brook University in New York. At Stony Brook, I was an economics major. And in one of the courses was a research study where I went into the hospital, and we were comparing a panel test (SMA 12) versus several individual tests that doctors would order. The outcome was that the SMA 12 panel provided all the information at a much less cost. And then you saw that popularized, and it got to where we are today. That was a long time ago.

But while I was in the hospital, I did get an interest in healthcare. My family were mostly bankers. I had done internships in banks, but I just didn't find myself sitting behind the desk calling people. So, I did look into the hospital health sciences center. I had been an athlete all my life and was interested in performance, either performance improvement or monitoring performance of high-level athletes. They had a cardiorespiratory sciences program. I got into the program, and then in the program, one of the electives was perfusion. So, we did get to look at that. I went to North Shore University Hospital and worked with Yehuda Tamari on that. And from there, most of my work was with research on animals. They were studying cardioplegia at the time. And I met a surgeon, Dr. Anthony Tortolani, one of the first surgeons I met. He was an athlete himself. His son was a big athlete as well at Princeton. We got to know each other. I wasn't allowed in the OR, really, but I think during my experience with Yehuda, I learned probably a lot more than I would have by just sitting behind the pump, not really knowing what was going on. I got to do some surgery, some research, learn research skills, and then also operated the pump.

Mark Kurusz: And who was at Stony Brook at that time who preceptored you or taught you to do perfusion?

William De Bois: Well, there was Bill Treanor and Edgar Anderson. They were the two program leads, and Lou Caramante was our perfusion instructor. Lou has passed away since. However, when we learned about the system, he had us draw what we thought a [cardiopulmonary] bypass system would look like, for example. In retrospect, it was quite hilarious what people were drawing. We then we got into the clinical aspects, and then we learned a lot more. And then took it from there.

Mark Kurusz: Sure, well, you mentioned Dr. Yehuda Tamari, and that was all in the laboratory.

William De Bois: Yes.

Mark Kurusz: Did you work with animals as well?

William De Bois: Primarily animals? Yes. So, we got to do some surgery, learned about hemodynamics and the engineering aspects of the heart-lung machine. I learned a lot from Yehuda. We would go up to the operating room, but we didn't really do all that much, so I thought my time would be better spent with Yehuda, and I feel it did.

Mark Kurusz: Sure.

William De Bois: The Stony Brook program was very theoretical, and years later, you got to appreciate all that you learned. But initially it was a little tough.

Mark Kurusz: Now, the Stony Brook program at that time really didn't have several affiliate hospitals where you went to see or do cases, is that right? You mentioned...

William De Bois: Yes.

Mark Kurusz: …Longshore.

William De Bois: North Shore University Medical Center. We went to St. Francis, which was a big hospital. They were two of the biggest hospitals on Long Island.

Mark Kurusz: I believe LIJ, as well.

William De Bois: Yes, and Long Island Jewish. Stony Brook wasn't performing open-heart surgery back then.

Mark Kurusz: Okay. And how long was your training period, Bill?

William De Bois: That was primarily a little over a year with the training, and then at the time, they weren't credentialed. So, we went through the process of that, and I later went back to school because initially I wasn't board-eligible.

Mark Kurusz: I see.

William De Bois: So, it was probably six or seven years later.

Mark Kurusz: So, what you're saying is Stony Brook was not an accredited training program.

William De Bois: Correct.

Mark Kurusz: Okay.

William De Bois: So, it was a little work. They let you what was called "petition the board." So, the alternate requirement was to put together, for example, a whole manual of all the courses and clinical training that you were involved with this track, but it didn't work out for me, so I later entered an accredited perfusion training program.

Mark Kurusz: It must have been a disappointment to get turned down from sitting for your boards.

William De Bois: It was but then I went to Newark Beth Israel with Dennis Fox.

Mark Kurusz: Yes.

William De Bois: I trained with them, learned more, and met Dr. Parsonnet, another great surgeon. This experience actually pushed me to do well on the exam—did quite well on the exam, and then continued my career.

Mark Kurusz: So, after Stony Brook, or let me back up a bit…you spent a little over a year in training. Do you remember your first solo case without somebody standing over your shoulder?

William De Bois: So, yes, that was when I had a job I started at Maimonides Medical Center. Dr. [Joseph] Cunningham was the program lead surgeon, and Richard Brunner was the perfusion chief director at the time. So, I worked with them quite a while, clinical work, and actually a lot of research work with Dr. Cunningham's lab.

Mark Kurusz: So, that was in 1982 to 1988, from what I gather.

William De Bois: Yes.

Mark Kurusz: As a staff perfusionist in Maimonides first, and then you became chief for three years, 1988 to 1990, is that right?

William De Bois: Yes, I was chief at the program during that time. We were starting a perfusion program at Downstate, SUNY Downstate. So, I got started, and then right around 1990, I left there and went to The New York Hospital, which is now called New York Presbyterian Weill-Cornell Medical Center.

Mark Kurusz: What were the circumstances of you becoming the chief after being on staff?

William De Bois: Right, so chief at Maimonides and then chief on a bigger role, bigger program at Cornell. And that was with Dr. O. Wayne Isom. So, I remember interviewing with him, and I was kind of proud of the LVAD work that we had done at Maimonides.

Mark Kurusz: Yes.

William De Bois: So, I was talking to Dr. Isom about that, and he kind of said, "Well, we try not to be experts at LVAD. You'll learn quickly we don't do many of them."

And actually, we didn't. We saw a lot at Cornell, and one of the big advancements I'd seen in the technology was the retrograde cardioplegia. So, they used a lot of that. Very rarely did we put intra-aortic balloon pumps in. The results were quite successful. Then the programs got bigger, and we opened up two other programs through Cornell, and under his leadership, probably over almost 60,000 cases that I was over in my 30 years there.

Mark Kurusz: That's a very big number. I'd, for example, like to rotate back to what sort of research you did with Dr. Cunningham. Wasn't he a myocardial protection guru?

William De Bois: Big on that. So, a lot of work with that. Different additives to the cardioplegia and venting strategies. He also did a lot of work with LVADs. We actually worked with a company, they're out of business now, but we did pulsatile. It was a very interesting system. It was fluid-filled and activated, and they wanted it synchronized to the EKG. The reason I mention that is because the system, for example, the [Abiomed] BVS-5000, was something that seemed to follow that, but it was not fluid-filled and it was not synchronous, and that became successful to many of the devices.

Mark Kurusz: This was not the Tamari-Kaplitt pulsator, was it?

William De Bois: No, that was a different system.

Mark Kurusz: Who was that? The balloon pump doctor.

William De Bois: Oh, Dr. Adrian Kantrowitz.

Mark Kurusz: Yes.

William De Bois: That was developed there at Maimonides.

Mark Kurusz: But had he moved on to Detroit when you were at Maimonides, or did you know Dr. Kantrowitz?

William De Bois: I did not know him. I think he had left right before I got there.

Mark Kurusz: Okay. Are you still practicing perfusion, Bill?

William De Bois: Yes, I do primarily ECMO.

Mark Kurusz: Okay.

William De Bois: Yes. So, I maintain certification with that. And then also I'll assist on cases, yes.

Mark Kurusz: So, when did you get into the field? When did you finish at Stony Brook?

William De Bois: So, I finished in 1982.

Mark Kurusz: Okay.

William De Bois: Then I was in Maimonides until 1990 and then Cornell from 1990 to 2020.

Mark Kurusz: That's a long time.

William De Bois: Yes, a lot of good experience.

Mark Kurusz: Well, I really wanted to follow up on the Cornell-Weill Medical Center because it was very, very busy. You were doing 1,500 cases a year average, is that right?

William De Bois: In Cornell yes, and then 500 to 800 at the other two sites, each one.

Mark Kurusz: And you had to manage the perfusion teams for those two sites?

William De Bois: Yes, well the three sites.

Mark Kurusz: Could you tell us a little bit about the challenges of managing a very heavy clinical load, and scheduling and, obviously, personalities come in, and call. I mean, tell us how you managed a huge program like that, Bill.

William De Bois: Well, it was interesting. When I started at Cornell, I was a bit younger than most of the staff there. In addition, I remember there was one of the staff members, who I remember coming up to me, and they said, "You know, this was all fine until you got here."

So, I remember talking with Dr. Isom, and he said, “Well, what seems to be the issue?”

I replied, “Senior staff are questioning every change that we are trying to make…even established standards of care.”

He responded, “Well, ask them. What’s your idea? What do you think we could be doing better?”

And then I did do that and got no response. I learned a lot from him. So, we went with some of the scheduling changes we did, we hired more staff. We had some perfusion assistants at the time, which helped, and then we opened the other programs, and we added some more staff. We had site leads at each of the programs, so that helped manage that. I always believed in delegating some of the responsibilities for the staff. So, for example, doing scheduling, we had staff do that. Protocols and processes for manuals—some people, for example, to write, and we had many nurses on the staff, nurse perfusionists, and they were very good at that. So, they did a better job than I could have done. So, in writing up protocols and the manuals, we had that done.

Mark Kurusz: Well, historically, nurses were some of the earliest perfusionists, weren’t they? And I imagine not all of them were certified.

William De Bois: Correct.

Mark Kurusz: You obviously were certified. Were you sort of the outlier when you first went to Cornell?

William De Bois: When I first started, yes. Then as the programs developed and some people retired, every perfusionist was certified or board-eligible. But the nurses had very good skills, their organizational skills, managing everything that we needed. They stuck to part of, I think, obsessive compulsive behavior is very good for a perfusionist. They stay focused on what they need to do. Organized, very neat. Therefore, yes, I think that is why we were not a very heavily staffed group, but we managed to keep everything working smoothly.

Mark Kurusz: Well, you have mentioned some surgeons, Dr. Tortolani, Dr. Cunningham, Dr. Isom. Are there any other surgeons that stand out in your mind as memorable or even carrying it one step further, Bill, who helped you in your career?

William De Bois: Right. Dr. Len Girardi. He’s a very busy surgeon performing every aspect of adult surgery with a primary focus on aneurysms. I’ve worked a lot with him, developing techniques with either blood conservation or managing patients on either left heart assist for the aneurysm surgery or even full bypass with circulatory arrest.

Another surgeon, Dr. Leonard Lee, I did a lot of work with him on just the pharmacological management. When patients started being treated with the antiplatelet drugs in the cardiac

catheterization labs, we needed to learn how we managed that. Catastrophic bleeding was a big concern. So, we wrote up strategies to help manage this.

Dr. Karl Krieger was another active surgeon that led our blood conservation work. He helped Cornell lead the way for bloodless cardiac surgery. Dr. Krieger is a nephew of Ernest Hemingway. So, when Dr. Isom said that he wanted me to write a chapter with Karl Krieger, it caused a bit of anxiety for me. Dr. Krieger was such a great mentor for me, and it turned out to be a great experience.

Mark Kurusz: Really?

William De Bois: So, I remember writing it up the chapter, and he probably cut it down in half. It was maybe 20 pages. And he said, just stick to the facts. I also read a lot of Dr. Gerald Buckberg's work. I liked the way he wrote and tried to copy that style. So, yes, Dr. Krieger cut it down and it worked well. Working on this chapter with him helped to develop other aspects and research. The bloodless surgery program was extremely successful, and I just kept up the momentum and continued writing up strategies and manuscripts. Another technique that we developed was retrograde autologous priming, or RAP. Dr. Rosengart helped to advance the technique that eventually became a standard of care.

Mark Kurusz: That's Dr. Todd Rosengart.

William De Bois: Yes, so he's moved on. He's down in Texas now, but I worked a lot with him on developing that procedure. Dr. Bob Helm was a fellow of ours. He's up in New Hampshire now, but I worked with him a lot on developing all these procedures. That was quite rewarding. Then most recently, well, I worked with Dr. Arash Salemi. He did a lot of the coronary work and structural heart. So, with the structural heart work, I got involved with the Cath lab a little more, and then he moved on and invited me to join him. Moreover, that is the new position I have now as the Vice President of Cardiothoracic Services.

Mark Kurusz: In New Jersey?

William De Bois: Yes, in New Jersey.

Mark Kurusz: Okay, so you would consider Dr. Krieger, from what you just shared with us, he mentored you in a way, at least in the writing.

William De Bois: Sure. Yes.

Mark Kurusz: But he was the one, as I understand it, who really said we need to minimize or eliminate blood transfusion during surgery. Is that fair to say?

William De Bois: Basically, we had a goal of we want to do 100 patients bloodless.

Mark Kurusz: Wow.

William DeBois: Figure out how we could do it. So, some of the ways were we looked at the Jehovah's Witness population, and we had worked with some of their staff, and they had their liaisons at the hospital. We got close with them. Obviously, they don't want any blood transfusion. So, we got to work with the Jehovah's Witness population, and we were very successful with them. Then we moved some of those techniques to the general cardiac surgery population. Dr. Krieger was instrumental in making sure that this worked. He was a diligent planner. We stretched some of the general guidelines on some, and actually managed to do the cases bloodless and develop new techniques. Looking back, we developed low prime circuits, even smaller caliber tubing, the RAP technique, and more advanced hemodilution techniques.

Mark Kurusz: Sure.

William De Bois: Some people call it normovolemic hemodilution.

Mark Kurusz: Yes.

William De Bois: We called it intraoperative autologous donation, or IAD. With this technique, we took on average 1,500 cc of blood off and on some cases two liters. We created a nomogram for this that was based on weight and hematocrit. In addition, that was quite successful. In retrospect, it is interesting how all these techniques worked out. When we presented these techniques, initially, we were highly criticized. I remember the first one, not with bloodless surgery, but with the centrifugal pump represented. There were significant clinical differences when we used centrifugal versus roller pumps. And initially, the audiences were, "It's too expensive." After some time, everything seemed to catch on. Most of the cases now are done with centrifugal pumps.

So, we had that, and then when we did the RAP, it was somewhat interesting. People thought it came out by mistake—for example, someone left the clamp off the line, and you just invented a technique. But we saw that it worked well. And event to this date, I hear people say it does not work. However, if you don't quantify what RAP is, RAP was basically removing the entire pump circuit, then it wasn't retrograde autologous priming. Some groups took off maybe 200 cc and said it didn't work, or they had techniques that what I thought were kind of dangerous. Disconnecting lines during the drain or disconnecting the pump, for example, on a centrifugal pump. So, we explained it pretty well. We had diagrams and I think that technique has served our surgery population well.

Mark Kurusz: Sure. When you do retrograde autologous priming, you must coordinate with the anesthesiologist, because they tend to give a lot of fluid pre-pump, which negates anything you're trying to do to minimize.

William DeBois: Yes, I mean, some of it was counterintuitive, though, that we needed them to give that volume because we're going to take it off anyway. And they typically gave a liter to

liter-and-a-half, but we removed it. So, when you went on bypass, you didn't get that full flush of crystalloid. We called it crystalloid rush. That caused edema and low blood pressure. So, we avoided that.

Mark Kurusz: Sure.

William De Bois: We did it slowly, and we maintained the pressure over 100 mmHg. People said, "Well, it's dangerous."

I said, "Well, no, we always maintain the pressure 100."

People said, "Well, when you drain, you're going to be sucking air out of the cannula."

And it was no, because the bag was actually higher than the patient, so it was always the patient's blood pressure." So, even if you forgot to clamp the line, you could never exsanguinate the patient. But some groups were draining from the bottom of the floor, and maybe it's just an uncomfortable position. I think as a perfusionist, you don't realize when you're taking care of someone's life how long you are in that awkward, injury-prone position, for example. A lot of perfusionists have neck injuries from that, and not just from RAP, but just, you know, hunching over while clamping lines or adjusting the low-level apparatus. So, I think we designed it well and kept it safe, and it served us and all of our patients very well for a very long time.

Mark Kurusz: As you acquired experience with Jehovah's Witness patients, did that lead to more referrals to your center for Jehovah's Witnesses who needed open-heart surgery?

William De Bois: It did, but I don't know if the disease rate or the coronary vascular disease rate of Jehovah's Witnesses might be less. Just the lifestyle they have, both diet and social kind of things.

Mark Kurusz: Now, the other big center in New York City that everybody hears about, of course, is Columbia-Presbyterian. How much collaboration was there, or was Cornell-Weill a sister institution? I guess what I'm getting at, Bill, is obviously, there were regional meetings where you met people from the other hospital. How much collaboration or interaction did you have with the Presbyterian people?

William De Bois: Right. So, I believe it was in 1997 that Columbia University Medical Center merged with Cornell or The New York Hospital, and the resulting program was the New York-Presbyterian Hospital.

Mark Kurusz: Okay.

William De Bois: So, you had the Weill-Cornell campus and the Columbia campus. Linda Mongero, a friend and colleague of mine, we worked well, I mean, as much as perfusionists for

example to think they manage the whole program, and it is up to the surgeons and hospital administration to see how it works. So, yes, we had different ways to do things. Still, I think most mergers to hospitals remain somewhat competitive, and I think in a good way to continue advance therapies Columbia had developed some techniques that we've eventually brought over. And, I think, vice versa.

Mark Kurusz: Did your team, or vice versa, the Columbia-Presbyterian team ever help you if there were any manpower shortages?

William De Bois: No, they also unionized uptown, so we couldn't actually.

Mark Kurusz: Okay.

William De Bois: I think in program development we assisted each other with that. My son actually worked up there.

Mark Kurusz: Is that right?

William De Bois: Yes, my son's a perfusionist. Same name.

Mark Kurusz: I did not know that.

William De Bois: And his wife.

Mark Kurusz: His first name is not William, is it?

William De Bois: Yes.

Mark Kurusz: It is.

William De Bois: Yes. But he's actually recently moved. He just became chief perfusionist in Morristown Hospital in New Jersey. Big program.

Mark Kurusz: So, do you commute together?

William De Bois: No, he lives in New Jersey as well.

Mark Kurusz: Okay, well, I'd like to shift now, Bill, to some of your career highlights or lowlights, whatever the issue may be. What do you think have been some of the one or two major technological changes that you've seen over the course of your career?

William De Bois: I think some of the work on blood conservation, not just me, but the entire section has done, and myocardial preservation, I think is another big one. Retrograde cardioplegia and just refinement in the additives to cardioplegia and management. Another one

I think was off pump. While it didn't help us, it forced us to do bypass better. So, throughout my career, I remember my father, the banker would be saying, "Oh, the stents are going to put you out of business."

And then this off pump, he says, "I'm reading, they say by 2000, no one will need a heart-lung machine, and that'll put you out of business."

But it forced us to look at emboli. Bob Groom has worked on that, the fat emboli. It forced us to improve clamping techniques, be more cognizant of calcifications, and to look at blood pressure. Cornell developed CPB blood pressure protocols to help reduce the incidence of stroke. And I think it just made bypass better. Another aspect of perfusion was, and is, ECMO. Typically, we would use a standard oxygenator, and they would typically be leaking after six hours. And the mortality was almost 100%. But then when we came out with the new systems, I thought that was incredible. Patients could be on so long, we expected them now to survive.

Ventricular assist devices, or VADs, became popular as well. I remember getting involved with them. Actually, our first patient, I got kind of close to him, and I remember the system was developing a clot. I guess the circuit had a luer connector in it, and a clot was developing. Probably shouldn't have had it in there. So, we go to replace it. And at the time, we got closer to the nurses because we never had really worked with the nurses much. We usually dropped the patient off, but now we were sitting with them a little longer, and I remember surgeon said, "We have got to change this connector out." Oh, boy.

So, they said, "Oh, we got to bring the code team."

So, it was, for example, such an easy thing to do and takes less than 30 seconds. Then we had everybody in there watching, and anesthesia came. And I remember they asked me, "How long will this take?"

I said, "Literally 15, 20 seconds. We're going to create a sterile environment. I'm going to scrub in with my assistant."

And this guy, the patient said, "Okay."

So, anesthesia said, "We want to put him to sleep for this." I remember the patient saying he was a tough guy.

He said, "Bill just said it's going to take 20 seconds. I can hold my breath for 20 seconds."

I'm, for example, whoa. So, we did change it. He didn't feel the thing. It was kind of interesting. He went on for a transplant eventually, but I thought the VADs were a big thing, not just the technology, but bringing perfusion more up into the ICU, which eventually led to ECMO, and we actually started rounding on patients after that.

Mark Kurusz: Well, that really is a segue into my next question. How was ECMO managed in your experience? Did you follow the University of Michigan pattern where ICU nurses were trained to become ECMO specialists, or did the perfusion team sit some shifts?

William De Bois: Well, initially we did sit the shifts. We did receive training with the University of Michigan. I got to meet Dr. Bartlett. Very nice man. Yes. To be a surgeon that was a mentor and influencer for me. So, we did start, initially, we started significant simulation training, and then it probably took six months or so where then the nurses were trained, and they actually embraced it. We would go on rounds with them, follow up. If there were ever any instances where they needed us, we would come in on call, and that's how we managed it. And still to this day, and that's probably, I don't know, 15 or so years.

Mark Kurusz: So, the institution essentially credentialed the ECMO nurses after they had gone through the didactic and simulation, probably preceptoring, as well, before they were actually considered ECMO specialists who would sit the shifts. And I imagine in your experience, too, for example, many places, infant ECMO, newborn ECMO was the way it started. But then that expanded to the pediatric population, and now adults, of course, are probably the largest group. What percent currently are the patient populations you're seeing in your setting?

William De Bois: I would say maybe 10% infant and pediatrics and 90% adult.

Mark Kurusz: Okay.

William De Bois: Yes. The peds are a bit more dynamic, so we do have people who stay for those.

Mark Kurusz: Sure.

William De Bois: Yes, that's been rewarding as well with the pediatric population.

Mark Kurusz: Sure. The other thing that people, some perfusionists have said is that when a patient is on ECMO, as opposed to cardiopulmonary bypass, the bedside team may get to know the family...

William De Bois: Oh, sure.

Mark Kurusz: …a little more than during open-heart surgery when we really don't have much interaction at all with the family. Speak a bit about that aspect. Has that been a good thing, in your view, or a bad thing? What has it meant to you to meet some of the patients' families?

William De Bois: Right. Therefore, when we started with the VADs, that started then moving more to ECMO. As ECMO became more successful, we started the staff rounding and then meeting the family. And I think it does have impact on how you manage things in the operating room. You respect more of the work that the nurses did. That is what I really saw, that they had

to deal with the intensivists, advanced practice providers, such as physician assistants and advanced practice nurses, physicians, anesthesia team, and then the family, as well. Sure. I remember speaking with the family, and they asked me, “Oh, we hear this is a death sentence for my loved one.” So, we had experience where they actually came off ECMO, and it was kind of new to the nurses. So, I explained, well, if we thought that, I mean, this patient is sick as you can be, so we do have hope for this patient that we can turn this around. It will take some time, though. I mean, sometimes it’s months.

Mark Kurusz: Sure.

William De Bois: And I remember the nurse pulling me out of the room. She said, “Why are you giving this patient false hope?” I said it’s not false hope. And that patient actually did survive.

Mark Kurusz: Is that right?

William De Bois: Yes. I mean, very rewarding. You get someone as sick as they can be, and then, you know, months later, they send you pictures of them traveling through Europe and having a great time. It’s for example, yes.

Mark Kurusz: Are there any other memorable cases, whether it be for cardiopulmonary bypass or ECMO or VADs, that stick out in your mind, Bill, that you’ll probably never forget? And these can be poor outcomes or very rewarding outcomes, but are there any that you’re reminded of today?

William De Bois: I mean, the one with the VAD patient, that was one, and that was quite a while ago, and there was one that was more recent. We did a lot of celebrities where I worked. So, actually, no really bad events with them, but one was it was a senior physician’s wife. He was a chair, and it was his wife. We start the case, start cooling. And all of a sudden, I can’t flow. So, I was thinking what it could be? And we were down, and we couldn’t flow at an acceptable rate. So, thought of possibly rewarming. We were concerned if that would make a difference. And we had cooled down pretty low. And I remember telling the surgeon, I said, “I can’t flow.”

And he’s, for example, responding this is not the time to tell me this. For example, you know who this is? I said, yes, I mean, it doesn’t matter who they are.

But I said, “Well, whatever you’re thinking, I’m changing out the system.”

So, I was concerned that even if I change, would it happen again? So, we changed out the system, and it worked well. My surgeon says to me, “You have to come talk to the husband.”

Mark Kurusz: Oh, boy.

William De Bois: So, I said, “Sure.” So I go, and as I walked...

Mark Kurusz: Did he accompany you, by the way? Sorry to interrupt.

William De Bois: No, he did as he usually did, then he walked away. So, the husband says, “So you’re the guy.”

I reply, “Um.” She had just literally got up there.

He further states, “So, I know the whole story.”

I said, “Okay, well, we’ll have to see and see how it turns out, and we’ll keep an eye, very close eye on her. Everything indicates that it should be okay.”

But she had been at low flow for quite a while. So, the next morning, I came in, and her son is outside the door—a real pleasant guy. And I’d never really met this woman before. And I walk into the room, and she says, “Who were you just talking to?”

I said, “Oh, it was your son.”

She said, “Which one?” She was very critical of that son.

I say to myself, whoa, this is a tough woman. From my experience, this is a good indicator that she’s going to be okay. The nurse comes in, and she mentions something about the patient can’t see out of one eye. I go, oh, boy. All the things I was thinking last night, trying to fall asleep, are coming true now. So, I asked her, I said, “Have you ever had this problem before?”

She said, “What do you mean?”

I said, “Well, they said you’re having trouble seeing.”

She said, “Oh, yes, I wear special lenses.”

I said, “Oh, did you tell anyone?”

She says, “No, no one asked me. You’re the first one to ask.”

So, they get her glasses, and then she’s fine. I felt so relieved. I still never forget that. And it wound up it was probably cryoglobulinemia. And people said, “Oh, don’t you monitor pressures on the inlet and the outlet?”

I said, and, for example, I mentioned, “…overseeing 60,000 or so cases in my career, I’ve never seen this before.”

And I had looked it up, and there’s only one paper that was referenced, for example, it was just one. And they recommended inlet and outlet pressures. And following that, I asked people, I

don't know anyone who did that—mostly outlet line pressure. Nevertheless, yes, we tried to rinse the oxygenator out. Even when it was warm we could never rinse it. We couldn't flow anything through it.

Mark Kurusz: So, did this change your practice? Did you then begin measuring inlet and outlet pressures?

William De Bois: We did not, no. We talked it over with the surgeons, because we've had instances where lines were cracked on those pressure monitoring lines. And depending on how the transducer was set up, we actually had a couple of cases where air, the transducer was up high, and air was in the arterial line. And we had just started using the incorporated arterial filters. They were part of the membrane.

Mark Kurusz: Yes.

William De Bois: So fortunately, we would see that air in the system before we went on. And either the luer was tightened too much or something was cracked, or the glue was insufficient. So, we thought the risk of the solution was riskier than not doing it.

Mark Kurusz: Okay, I don't know either. We never monitored both pre- and post-pressures, just post. So, in your settings, either on Long Island, New York City, or now in New Jersey, do you have students rotate through for clinical affiliation?

William De Bois: Yes. So, I mentioned, starting a school at Downstate in Brooklyn, New York. It didn't last too long. Then we associated with Richard Chan's program when it was Eastern Heart, and then he went to Long Island University, and now it's part of Hofstra. So, we took their students, and we've also worked with the Midwestern program. We work with the program in Philadelphia, and we're looking at Lipscomb University as well. So, we always have students. I find it very, very rewarding working with them. I think it keeps you on the top of your game.

Mark Kurusz: Has the staff embraced having students?

William De Bois: I would say a majority does, but there are some that typically don't want students with them. Okay, I mean, even from when I was a student, you could tell the ones for example, "You can leave now."

Mark Kurusz: I'd like to ask you to drill down, if you could, Bill, on teamwork. Obviously, I think everybody agrees that teamwork, when you're involved in something as complex as cardiopulmonary bypass or the other extracorporeal technologies, is very, very important. What aspect of teamwork have you either learned or used over the years to make it work well?

William De Bois: Sure, some of it is, sometimes you don't need to work on it and get lucky that people just get along, for example. Sometimes, it's not as easy, it's not as organic as you think.

So, you have to come up with some plans to make it work. So, either some conference time in the hospital where it's multidisciplinary, you work with that. Invite the surgeons, the anesthesiologists, the nursing, sometimes we even bring administrators in. So, meetings, for example, that where everyone has to describe their role on a certain procedure. Sometimes we've set up a set of behavioral standards, how you have your code of conduct in a hospital, and a lot of times that's something basically, if you do, you'll get fired. So, much short of that, you need to find ways to make people want to work together or at least be respectful. And on that is how you leave your area when you're done shows a sign of respect. When people come into clean rooms, you don't be dropping stuff on the floor. More respect with that. Respect everybody's role, and you do some of their role and help them out because respect and dignity maintaining that, I think, is the important thing that makes people want to work with you, want to be with you. I think mentoring, not mentoring, managing up.

Mark Kurusz: What do you mean by managing up?

William De Bois: Yes, by that, let's say someone's either talking about your staff or someone in a negative way, just don't contribute to that conversation. Or better yet, find ways that are positive there. Another example would be when someone comes to work late—don't just give them the worst case of the day. Maybe have a cup of coffee for them. They may feel guilty, but that's on them. It treats them in a respectful way. I mean, if it continues, then there's other issues that you need to manage. But don't assume the worse. For example, I see that still in stories.

"I heard this happened."

I said, "Well, you just heard part of the story." For example, you don't know the whole story, why, what happened, how it happened, and get all the information. I think that helps the team because they always hear, for example, somebody talking negative about them. So, that takes work, and as a leader, you're responsible to maintain that. Sometimes you can bring it up at meetings. For example, if people go offline, or if you say, "Okay, let's just park that for now. We'll get to that later."

But maintain respect, because if you look at typically when we're talking about a problem, especially in healthcare, some patients have been injured or, you know, they're killed or something. So, that's you have, I think we had one of the talks here, the second victim, there's the patient and then the one who actually caused the injury. So, you should be careful with that. We have these root cause analysis meetings. That's when you have some serious events. So, as a leader, you need to show people the respect, show them how they should act, and just keep the conversations positive. I don't know if that explains it all.

Mark Kurusz: Well, it does, and I'd like to follow up on what you said a few moments ago, and that is the multidisciplinary team meetings. That's not really a debriefing, is it? And are these meetings set up regularly, Bill?

William De Bois: Yes.

Mark Kurusz: Once a month?

William De Bois: It depends on what we're doing. Sometimes they may need to be more if we're starting something. Sure. Therefore, we'll do it weekly or sometimes even daily. For example, the M and M meetings, I think it's big. Typically, it's just doctors and maybe the chief perfusionist. So, I try to bring staff and have them come to the meetings because they see what we're trying to do to correct some of the problems. And then just having a small group of the small cohort of people, either nurses or technicians, they will get the message out to everybody else. So, I kind of force that. So, get the story, the correct story out.

Mark Kurusz: Sure. Well, I may be dating myself, but you ever heard the phrase "shared governance"?

William De Bois: Yes.

Mark Kurusz: Is that still in vogue? I mean, I think that came from the nursing profession.

William De Bois: Yes. I think it's bigger with nurses. But, for example, I said earlier, we learn a lot from nursing, the discipline that they have, and I see that discipline is helpful because I see sometimes people, whether it's perfusionists or not, they kind of invent in the moment. For example, what were you thinking there when you did that? I thought it's, for example, whoa, just stick to the program. Make the job boring, and, you know, you can have your exciting time when you leave work. Someone once mentioned that perfusion is 95% boring and 5% sheer terror. And during those moments of sheer terror, people typically don't get any smarter. And with the surgeons yelling or someone else yelling, it doesn't help the situation. It is extremely difficult because of the consequences and what can happen.

Mark Kurusz: Sure. Well, for the last section of this interview, Bill, I'd like to ask you about some perspectives, philosophies, and reflections. Specifically, what do you think is one or two of the most important personal attributes to make a good perfusionist?

William De Bois: I think one of them, availability, mean being on call, being available in the moment.

Mark Kurusz: Oh, in the whole scheme?

William De Bois: Yes. I think it's also what you do when people aren't looking. I think that's important. I mean, we have all the training, supposed to be considered a prerequisite, but those are the things, and I say being available, sometimes people are doing other things while they're ready to go on bypass. They got other things going on at home. But being in the moment and focused is important. And I learned that with Dr. Krieger. One of the things he did before the case, he would review everything that could happen that could go wrong, and you

wouldn't want to talk to him at that moment. So, I think that's important. He would focus. Then I have had administrators who maybe weren't the kindest to us, and they said, "Oh, I need to talk to the surgeons about something."

I said, "Oh, well, Dr. Krieger, at 8 o'clock you'll be at the sink. That's the best time to get them."

Mark Kurusz: Well, what does it mean to you to have been a perfusionist as long as you've been a perfusionist, Bill?

William De Bois: I found it very, very rewarding. You get to use a lot of different skills. My original training was in business economics, and that has helped me with some administrative work. It is quite rewarding work, as I get to leave the hospital every day, but the patients do not. So, we need to offer them the very best we can. And I think we have all the resources that we need, but it's usually what's inside of you that's going to make that difference. So that's what I get out of it.

Mark Kurusz: And you did get an advanced degree after somewhere along the road of your career, didn't you? Don't you have a master's degree?

William De Bois: I have an MBA. So, yes, I found that very helpful. I focused more on statistics with it and process improvement, so I've used that. We also learned finance in some of the projects that we did. You did learn about billing, coding, things, for example, that you need to be profitable to keep the organization running.

A technique I use to this day is drawing things out, kind of a fishbone diagram. And it's amazing, a lot of the problems we fixed. If you take people, process technology, and equipment, you can put everything associated with that. And one of the projects we worked with was recently door-to-balloon-time, or DTB for emergency STEMI. We looked at the process closely, and the numbers weren't very good. DTB time is the time to get a patient with a documented ST elevation myocardial infarction from the emergency room to the Cath lab where a balloon is inflated in their coronary artery. So, we looked at all those components I mentioned, and the big thing was the equipment. So, we started the meeting. I said, "All right, how do we get EKGs?"

"We get an EKG."

And I said, "Okay, but some of these times, I see you had a thousand minutes here. For example, what's going on with that?"

"Oh, the clocks in the EKG machine are sometimes not calibrated. They're a couple days old."

I said, "Okay, so basically, door-to-balloon, before we do anything, it's going to be 48 hours, so what are we doing for that?"

“Well, we have got to get them calibrated.”

I said, “All right, we can end the meeting right there. Let’s work on getting them calibrated.” So, we got that done.

I said, “Who does them?”

“Well, we can’t find a technician all the time.”

I said, “Well, who’s responsible for them?”

So, we fixed that so they’re ready to move on to, for example, getting the patient in the room.

I said, “Let’s just get the EKG first to see if it’s really a STEMI.”

So, we go through all this process, and it was quite rewarding. Within three months, we went from 72% up to 100% under 90 minutes. And that’s a big deal patient wise. It’s safer, and more lives are saved as a result for the program. It’s very positive for us as well.

Mark Kurusz: You were also involved with helping set up the licensure in the state of New York. Can you tell us a little bit about that?

William De Bois: Yes. So, working with Richard Chan, he was the primary energy behind that. And he had warned us, it would be a tough process. We went up to Albany a few times, and I remember meeting with the local government officials, and it was like, a three-and-a-half-hour drive up there, and we were well prepared and had our stack of papers. Basically, the legislators that we met were going to end the meeting within a couple minutes. One said, “Okay, so I’m not sure what you guys have.”

But the secretary says, “Well, Your Honor, here’s all of the supporting documentation that they sent to us.”

“Okay, good to know.”

And so, it was interesting. We quickly realized that we had to get a lobbyist.

Mark Kurusz: Okay.

William De Bois: And fortunately for us, they didn’t charge us the typical rates of a lobbyist. It was basically for some of his expenses. And I remember going up with him, and I was saying, “How's this going to help?”

He walks in, “Hi, everybody. And Senator, we need you to sign this.”

I'm like, holy moly, look at that. So, we had to do that. And then there were some ideas with people that hadn't been certified yet, and what we were going to do for that? So, we grandfathered them, and people were upset, but you had to start somewhere. Sure. It was very positive. There was an issue with blood gases where they said we could not do the blood gases as perfusionists. So, we had to demonstrate. And I just said, "Let's draw this out."

And we drew it out, for example, what it would cost, what the process looked like, et cetera. Who's going to do it? Hospitals would have to change everything that they're doing, get machines in the ORs, bring a lab in. And I think that we had it on posters and showed them what it would look like. And so they agreed to that, that a perfusionist could do it. Then I guess there were things with ECMO. Are those considered, would they be licensed? So, we worked with that. And that was successful. I've been on the state licensing board since, and we haven't really had any issues of, you know, licensing or criminal actions or anything like that. So, I guess New York state is in good hands with their perfusionists.

Mark Kurusz: Can you tell us just a little bit about your time as a leader of AmSECT? You were president from 2018 to 2020. Prior to that, you were in charge of organizing the annual meeting. That must have been quite a big undertaking. Tell us what that experience was like, Bill.

William De Bois: I forget who said it, but if you're not part of your professional organization, you're not a professional. That is true. So, I found it as a good opportunity for leadership development, organizational skills. You have a group that you're working with. You have to work well with them. There's a big expectation the meeting has to be profitable. It has to be something that people want to come to. So, we worked on that, we developed some new ideas. We did some education in the conference, in the exhibit halls, that they would give presentations, so you could get some points there. It's a lot of good information. I still learn when I go talk with the vendors. So, we did that. We added, it was basically—we'd give scenarios. I forget what we called it, but the meeting delegates would sit at tables, and we give them a scenario, and they would discuss how they would manage that. That was something we put together.

And then the ICEBP [International Consortium for Evidence-Based Practice] committee further developed, and I think that's helped our profession. It's led to a higher level of engagement with the physician staff. If you look, we're involved with the best practices, the guidelines for blood and patient management. So that's been helpful. I was also secretary for AmSECT, and then the latest was the president. It's a tough job. It's a big time commitment. But I learned a lot. I mean, actually, things I do now to this day. For example, there's some tough decisions you have to make. In addition, not everybody on the board says, "Oh, yes, whatever he says is a great idea." So, there's some conflict. So, you have to learn how to manage conflict and rely more on organizational skills. Learned a lot with that. The actual management group was helpful in guiding me or consulting, actually the whole team, but I took every opportunity I could to work with them.

Mark Kurusz: So, I had skipped over this question. You mentioned going around to the various exhibits and learning about new equipment, even some techniques, probably from the manufacturers. Just in general, what is your view of the cardiopulmonary industry?

William De Bois: Very high. I think they have a lot to offer. They have, I mean, their margins are very thin now, so they don't have much to work with, for example, revenue-wise. So, they have to bring out a good product. They have to market it well. They have all these regulations that they have to be careful with. I mean, it's a lot different than many years ago where they would really entertain everybody. But I think they're very good with helping. They educate us how to make the products work, when it works, when it doesn't work. They're liaisons, helpful in getting us education. There's less of them now. So, it's interesting. We don't have many choices for oxygenator systems, even heart-lung machines. Basically, of the two out there, the other techniques are these long-term assist devices, which they help educate us. I think that's more the work we're going to be doing because people were concerned that there wouldn't be jobs for perfusionists. But you see help wanted everywhere, and it's hard to find people.

Mark Kurusz: Well, as we get towards the end of this fascinating interview, frankly, do you have any closing thoughts you'd like to share with the people who will be viewing your interview online, Bill?

William De Bois: Sure. I was interested in a conversation this morning about perfusionists, what do they do outside of the ORs, and the respect they have. I see a lot of enthusiasm for a perfusionist who wants to get more involved, possibly administratively. I actually did a talk recently about this moving from being a perfusionist to administration. There was a lot of work that I had done through all the various aspects in the hospital administration, business degree, working with cardiologists.

Mark Kurusz: Transfusion committee?

William De Bois: Yes, the transfusion committee and perioperative services. I was a director in perioperative services, so I learned a lot about the perioperative business. Also, I was administrator over the anesthesia group as well. So, you should take all this opportunity, all these opportunities beyond committees. It's a little extra work that may not be part of your wage. Some late nights. Also, with the professional organizations getting there, that's basically a free opportunity to learn a lot of these organizational skills, administrative skills, conflict resolution.

The other piece, I would recommend is knowing your job as well as possible. For example, any opportunity you have when you're waiting for a case, read about perfusion issues or things that could help your career rather than the new car you may be buying.

And the other piece, always maintain respect and dignity. I think that's important. Understand that the surgeon, when they're working, they have a whole crowd watching them. Things could go wrong. And even I've had times where, I don't know, a line was clamped, and I said, "Oh,

drainage is a little slow down here." And they move a clamp, for example. Just go on with it. You don't have to comment on anything. It's a very stressful job for them. It's for us as well. And I think when you give the respect, you get it back with anesthesiologists, as well, and just about everybody, because we're in a very unique business where, you know, when bad things happen, it's very bad. As an administrator, I can lose some money, but it's not as bad as if someone loses a life because of a mistake I've made. You don't forget about those things.

Mark Kurusz: No, you don't. You don't.

William De Bois: And I appreciate, Mark, everything you've done for safety. I've read those books, the green book and the burgundy book, and I use that a lot. Just helps me, for example, you have to be the best on your game because you don't want to be part of those legal events or whatever.

Mark Kurusz: That's very kind of you to say that, Bill. The last question, and I promise it's the last. If you have any what I would call historical papers from AmSECT? Bob Groom and I did go to the national office when the previous management company was in Chicago, and we retrieved a lot of very old issues of the journal and the famous letter when the American Medical Association recognized perfusionists in 1977. But you may have something in your file cabinet, or even, I hate to say, go back to the old slides. But you may have some historical slides from all your cases if you could share that with us?

William De Bois: I mean, I was envious with Bob, all the pictures he had. I don't know, maybe I was the youngest in my family, and they stopped taking pictures by then. But one thing I do have from Dr. Wayne Isom, the Gibbon Award. He had a video made of several of his patients. They were all entertainers and news broadcasters, and they gave a talk on their sets about perfusion and what perfusionists did.

Mark Kurusz: I remember that. David Letterman. Larry King.

William De Bois: Yes, I can probably get that. I don't know if that would be worthwhile for you.

Mark Kurusz: It would be very worthwhile. I remember when Dr. Isom showed that at the Academy meeting. Well, I'd like to thank you very, very much.

William De Bois: Yes, thank you very much.

Mark Kurusz: This has been just terrific. We really appreciate you taking the time to fly down here for this interview.

William De Bois: My pleasure. This has been a great career. Both my teams and I had the opportunity to have an impact on not only the patients, but their families and friends. Additionally, I appreciate all of the dedicated people who helped train me and be trained by me.

Mark Kurusz: And we will be in touch as we get a transcript made, full approval from you, and we'll certainly let you know when it's posted to the AmSECT website.

William De Bois: Okay, thank you very much, Mark.

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