Pioneer Perfusionist Interview: Greg Mork

Mark Kurusz: Well, today is March 23rd, 2024. We are in New Orleans, Louisiana, for the 62nd AmSECT National Conference. My name is Mark Kurusz, and today we're going to be interviewing Greg Mork. Greg has a long history in many leadership roles within the field, and we want to learn a little bit more about what your career has been like, Greg. Could you start by telling us what were the circumstances that led you to become a perfusionist?

Greg Mork: Well, I think like a lot of the people that ended up in perfusion at the time, I sort of stumbled into the field. Nowadays kids go to college, they look it up, and they apply for perfusion schools. But my sister was a cardiac nurse at Mount Sinai Hospital in Chicago, and I was finishing up my math degree, and I had no idea what my plans were after that. So, my sister said that they were going to start a pump tech school at Mount Sinai.

Mark Kurusz: What was that year?

Greg Mork: It was in the 1970s, the end of 1977. I completed my schooling in 1978. The interesting part about that, they had me come and observe a case, and back then, having observatories in the ORs was common. It was just a little glass room, and it had a little two-way microphone so we could speak back and forth. I was absolutely petrified standing up there, but the case started, and it was a long case. I had no idea really what I was watching other than the fact that come 4 o'clock in the afternoon, I was still up in that room watching a procedure. But the key was, and this is sort of the cryptic part of how, during my first case, they brought in all these pieces of equipment. Later I found out that one piece of equipment was an Avco balloon pump, they had problems with the case, and I had no idea. They had the balloon pump in the room and obviously, the heart-lung machine was in the room. A lot of different people were coming and going. And then at near the end of the case, I saw there was just a fellow, a resident in the room, and he was taking this big stitch and closing the chest. So, you know, the patient expired on a table.

Mark Kurusz: Oh, boy.

Greg Mork: And I'm sitting up in this room. I mean, I was up there for about nine hours. And it was a good thing I restricted my fluids on that day because I would have never made it. But, you know, in retrospect, you look back and in the early days, and anybody who was in cardiac surgery in early days, we lost people in the room, and now we don't. I mean, now there's always a way to get these patients out of the room, but back then, it was not that uncommon. So that was my introduction to perfusion.

Mark Kurusz: Sure. And that observation was set up by the program director at the school, or did you do that on your own?

Greg Mork: No, it was very informal because my sister was a head cardiac nurse at the hospital at the time. She contacted the perfusionist. The perfusionist contacted me, and they said, this is when you need to come in, and I observed the case and it was extremely, extremely fascinating to watch this case. Again, I had no idea what was going on. In retrospect, I learned quite a bit about what happened, but that was my introduction to my first observation and kind of my first starting of perfusion school.

Mark Kurusz: Sure. Can you tell us a little bit more about what your training period consisted of, both in length and how they taught you to become a perfusionist, Greg?

Greg Mork: Well, my training was a certificate program. At the time you didn't even need a college degree to enter perfusion school, but it was a certificate program, and it was yearlong. And my faculty, most of the faculty were part-time perfusionists who came in and would give me lectures. But the reality is it was not a very structured program whatsoever. I mean, it was essentially on-the-job training, and a lot of the perfusionists who were sitting with me, I mean, basically my lectures were given while I was sitting behind the pump. And there was no simulation at that time and no real structure. I had two lectures, and I remember one of them was flow and how you get the pressure to go up, and diameter times a fourth, and all that stuff. It was a very unstructured type of a program, as I said, it was pretty much an on-the-job training. The perfusionists that I was mentored in that program were very, very knowledgeable and had a lot of experience. Donna Earley and John Hill were two, and there was a number of people who were involved in it, and that's how I picked it up. But it was a continual learning, but when I graduated, I don't think I knew that much about perfusion at the time. It wasn't really until I started working and then began picking it all up as I went along.

Mark Kurusz: Sure, well, here's a two-part question. How long was it from the time you officially started the program to when you were able to do a case, not necessarily solo, but when they allowed you to operate the heart-lung machine—how long was that period?

Greg Mork: Well, during training, near the end of my training, I was able to operate a heart-lung machine under supervision. At the time, our circuit was simple, although we did not have custom tubing packs. Every day we had to come in, cut our tubing, set it up, put it in a basin, and we had measurements that were two hand lengths. That's how long we made the tubing that went through the [roller pump] boot. But pretty much my whole training, it was all custom cut tubing every day. We had to get there at five in the morning, get everything set up, and then we moved along with it after that point. But near the end of my training—it was a year of training, near the end of it, I was doing cases relatively independently. But again, we didn't give cardioplegia. We just went on bypass, and we came off bypass.

Mark Kurusz: Sure, and I imagine you were using bubble oxygenators.

Greg Mork: Oh, yeah, yeah, we used a lot of those.

Mark Kurusz: And after you again, "graduated", what was your first job?

Greg Mork: My first job was at Cook County Hospital. In Chicago, they have this area, it's called the Illinois Medical District. In that area, there is Rush University, which is the large private university medical center, the University of Illinois Medical Center, and Cook County. It was called Cook County Hospital at the time. And then there was a VA hospital. All these hospitals were within a short walk of one another. I was hired by Cook County Hospital. However, we covered cases at the VA hospital, University of Illinois Hospital, and Cook County Hospital. And my first job was with three perfusionists, Frank Hurley, Michael Djuric, and then Mike Hurdle. And those are the people who really mentored me in the beginning.

Mark Kurusz: Sure, and the VA hospital, that was not the VA in Hinds, was it?

Greg Mork: No.

Mark Kurusz: Was it?

Greg Mork: No, this was the Westside VA which is what it was called at the time. VA Hinds still does open-heart surgery. We did about 150 cases every year. It was where the residents really started to take over for the attendings, and they kind of ran the program at the VA hospital. It was all CABGs and some valves, but it was certainly nothing like we're doing nowadays.

Mark Kurusz: Sure, and are you currently still a clinical perfusionist?

Greg Mork: Oh, yeah. Yeah, I still take a lot of call. Last year, I did 100 cases. I'm still 100% clinically active doing cases. There was a time when I thought, well, geez, when I became chief, maybe I wouldn't take call or maybe I wouldn't do this. But at the end of the day, I think it just built so much more team cohesiveness if I just took call and did the same thing everybody else did. The way I looked at any of my leadership roles is I tried to do things by example, so I would never ask my staff to do anything that I wouldn't do.

Mark Kurusz: Very good. Well, we're going to get into some of the team aspects a little bit later in this interview, Greg. Are there any surgeons that you worked with who stand out in your mind as being particularly influential when you worked at your first or second job in Chicago?

Greg Mork: Yes, there was one of the surgeons who was a pediatric surgeon, and as we worked as perfusionists, adult surgeons and even pediatric surgeons come and go—I've worked with probably 50, 60, 70 heart surgeons over the years. But there was one surgeon who was a pediatric surgeon in the Chicago area, and he was contracted to do peds at the University of Illinois Hospital about four or five years after I started there. And believe it or not, he's the one surgeon who I've spent the most time working with over my years, even to the point where I worked at the University of Illinois until 2003, I believe it was. And this surgeon kind of talked me into going across the street over to Rush. He said, you're going to get a lot more pediatric experience there, and you're going to have a much more dynamic experience as a perfusionist. So, he's the one surgeon who I worked with the longest, and he was one of these surgeons that

demanded the best out of everybody who was in a room. We always feared when he was allowing the fellow and or the other surgeon to do the case where he was down at the foot of the table, because then he would turn around and look at the pump, and then it was quiz time for the perfusionist. But one of the things is that I really enjoyed working with him because he just squeezed the best out of everybody who was in the room, and he would not accept anything under the best performance from everybody in the room. Some people might call it controlling, but he was an extremely talented surgeon, and he's the one surgeon that I have had the longest experience with. I've worked with him for about 20 years, and that's a lot for cardiac surgeons.

Mark Kurusz: It is.

Greg Mork: Surgeons come and go, but this is the one surgeon who kind of kept popping in and out of my perfusion life over and over again, and I still run into him; he's retired now. He's not doing any more cases. He retired and bought a farm somewhere up in Michigan but he's just a very thoughtful person; he had all the pediatric patients that he operated on, and he would have a party every year at the Forest Preserve and invite everybody there. And we all got to go to those events, he was just the most caring, hardworking—this surgeon would do rounds at four and five in the morning, and they covered a lot of different hospitals, and I don't know how they did it, but he was a hard worker. He's a workaholic and he just had a passion for his profession.

Mark Kurusz: Sure, and what was his name?

Greg Mork: Doctor Michel Ilbawi, and you might have heard of him.

Mark Kurusz: Yes.

Greg Mork: And one of the things about Doctor Ilbawi is he, when he did cases at Rush, he would do everything. And even though Rush did not do that many open-heart pediatric cases, we did about 80 or 85 pediatric cases a year at Rush, but he would do them all. Norwood's, canals, you name it—everything got done there, and that changed over the years and a lot of that stuff went to specialty pediatric hospitals. But that was one of the things I really appreciated about him because he was involved with the care from the beginning of the case until the patient was discharged from the ICU.

Mark Kurusz: So, as a follow up to that, obviously you had a very strong professional relationship with Dr. Ilbawi, did that carry over to become more of a personal friendship or not? Or was there always a bit of a barrier to expand that, Greg?

Greg Mork: Well, in the beginning I thought that was possibly the case. It was very professional, he was a surgeon, I was a perfusionist. We had a very good working relationship, but it was, I think it was the first AmSECT meeting that was held in conjunction with the Society of Thoracic

Surgeons' meeting in Boston, and I was walking down the hall when I saw him, and he came up and hugged me.

Mark Kurusz: Oh, boy.

Greg Mork: And it was a very, very touching moment. One of the things that you learn in perfusion is that a lot of the things we do will eat you alive if you don't love what you do, otherwise there would be no way we'd go back to do it the next day.

Mark Kurusz: Sure, sure.

Greg Mork: And it was a very touching moment, and that's when I realized that he was my friend as much as my mentor and the surgeon I did probably the most cases in my life with.

Mark Kurusz: That's wonderful. What a nice compliment to him and to you, the fact that you worked with him so long. I'd like to shift a bit now to some career highlights. I know you've had a lot of leadership roles, but I'd like to talk technical right now about what you think have been the most notable perfusion practice changes that you've seen since 1978 to the present? And it doesn't have to be limited to one. It could be one or two or three most notable changes in practice, Greg.

Greg Mork: Pretty much all of them.

Mark Kurusz: Well, can you expand on that?

Greg Mork: When we started, I can remember how we used to cool and warm patients. We would go on [cardiopulmonary] bypass, and that heater cooler would go down to zero until the patient's temperature made it down to 28 degrees. And then one of the things that happened to me when I was a student is I forgot to turn it back to 28, it was on zero for a good part of the case, so I ended up inadvertently cooling the patient down to about 18 degrees.

Mark Kurusz: Oh, boy.

Greg Mork: And things happen but cooling and warming was, I think, one of the biggest and most beneficial changes we made in our practices. Because we, and I'm not sure when this happened, but we learned that when we crash cool, it's not good. Some of these people would have heater coolers that would have two settings, zero and 42 degrees. And back then, when we warmed the patients up right to 42 degrees, and we really didn't have a good sense of what we were doing to the patient's brain, and they were sweating under the sheets. So that was one of the big things and clearly, the techniques that we've used over the years using CDIs, online monitoring, there is not much that we're doing now that we aren't doing a thousand percent better than we were when we started. But we didn't know. We really didn't know—it was all the people who put out all the literature and told us that all the things that we were doing probably weren't the best for the patient. And you just have to practice evidence-based

medicine, because one of the things that I noted when I was giving my award reception speech is that one of the most dangerous things you've ever heard is, "Well, we've always done it this way. That's why we do it, and it works."

I'm involved with a lot of students, and I coach them a little bit before they go on their rotations. And I tell the students, if you ever have somebody tell you that they're doing something just because that's how we do it here, they have to be a little bit politically correct, they can't really push it, but you really need to push them, ask them why they do these things. And maybe it is because they've done it this way all along, but maybe you're going to challenge them a little bit to think about changing techniques a little bit to put some science back into what we do.

Mark Kurusz: Sure, as a follow up to the cooling mode, and I think those of us who practiced in the seventies, that was routine to cool to 28 degrees. Do you think that was in part to buy some extra time in case there were some equipment problems, or was it more physiological because everybody knew the oxygen consumption would go down the cooler the patient was? Why do you think 28 degrees or even 24 degrees for an aortic valve replacement became the way to do it in those days, Greg?

Greg Mork: Well, I think a lot of it was a safety margin because it bought you a little bit more time in case the equipment had some issues with it. Back then we did have equipment failures, we had pump failures, we had oxygenator failures, oxygenator leaks, and by us cooling the patients down, we were able to drop the flows and give a little bit more safety net time just in case something were to happen.

Mark Kurusz: Sure.

Greg Mork: But it was beneficial to do that at the time.

Mark Kurusz: I'm going to ask you sort of a loaded question here. What is your opinion of the cardiopulmonary industry? Good or bad?

Greg Mork: It's good. We've partnered, and one of the things that, as I've done a lot of work with meetings and bringing manufacturers in, they really have served to be our good partners over the years, and they provided a lot of education for us. I think the telling was back during COVID when suddenly, the supply chain started being interrupted.

Mark Kurusz: Oh boy, sure.

Greg Mork: Some of the manufacturers, the metal for their cardioplegia needles were coming from Mariupol, and we all know what happened over there. All of a sudden, their supply streams just dried up so fast, and they were scrambling for a good year, two years, even to this day, we open up our tubing pack, and we never know really what's going to be in it because they still have supply chain problems. But the manufacturers have been good. I think they've

had a lot of bad cards thrown at them, and they're getting better and better at supplying and communicating with us and helping us through all these troublesome times. So, I think manufacturers have had it tough, and I can understand their position and how they ended up in the areas that they ended up with, with all these supply chain shortages.

Mark Kurusz: Sure. Now, you were involved with helping to set up some ECMO programs in your career, is that right?

Greg Mork: Yes, ECMO programs and heart programs, too.

Mark Kurusz: Ventricular assist?

Greg Mork: Ventricular assist, as well. We were the original, we had the Abiomed "hearts on a stick", we used to call them, and the original pneumatic HeartMates. I did my original training for the HeartMates down in Texas. As a matter of fact, Dr. Bud Frazier was one of our instructors for that. Second time around when we were trained for our VADs, we did it in New York, and Dr. Mehmet Oz was our instructor, but now he's gone onto TV, and I don't even know if he does cardiac surgery anymore. But he was our instructor in New York when we went through the training program there. But at the University of Illinois, we did VADs, we did heart transplants, we did lung transplants, we did liver transplants. Sometimes we did them all at the same time. And that was my introduction to the heart transplant world. We had a lot of outreach programs where we set up a lot of smaller community hospitals that would feed into the University of Illinois. So, I've set up four or five of those different programs, and those have all thrived and are all still doing cardiac surgery to this day.

Mark Kurusz: Tell us a little bit more about the challenges of setting up an ECMO program—namely personnel, and who sat by the circuit? Was it the perfusion team, or did you have it much like the University of Michigan system, where they trained ICU nurses to become the ECMO Specialists? Obviously, ECMO today is very important to most clinical perfusionists, but in the eighties, when the coronary artery bypass operation was in its ascendancy, many perfusionists just did not have the time to sit by an ECMO circuit. So how did you handle that challenge, Greg, at your setting?

Greg Mork: Well, fortunately, we did not do a lot of ECMO patients, not like certainly two or three years ago with the COVID ECMO wave, but we owned them. I mean, the perfusionists sat by all the ECMO patients. Fortunately, our staff was large enough that we were able to handle it without too much of a problem. But early on, we handled all the ECMO bedside sitting, monitoring the patients postoperatively, and for all their trips to the OR and things like that. The interesting thing is now we continually get asked by one of the hospitals that I'm on staff now, which is Cook County Hospital. They said, "Well, we would like to start an ECMO program."

I said, "Oh, boy, it's easy to buy the equipment, and the patients are certainly no problem to find these days."

But it's a huge, huge, huge undertaking, because the best model now—what we have at Rush is we have ECMO Specialists. We have a team of about 22 ECMO Specialists who are combined between RNs, respiratory therapists—lots of different disciplines. And formerly, the ECMO program at Rush was run by a perfusionist, and now it's run by nursing, and it's an ELSO Center of Excellence, as well. They've really done well. The amount of work—what will happen is if we put a patient on ECMO over at Cook County, we know that they just don't have the facilities or the support to successfully manage one of those patients. So now what we do is if we must put somebody on ECMO there, we just run them across the street, get them to an ECMO program, because that's their best chance of survival.

Mark Kurusz: Sure, that anticipated the follow up question. Now, you mentioned the ECMO Specialists who are being used where you're working now. Who trains them and how are they qualified or certificated by the institution, or did they go to Ann Arbor and take the ECMO course? How is an ECMO Specialist qualified in your setting right now?

Greg Mork: In our setting, we have an extensive didactic training program first, then we go to the wet lab, and then they're competency-checked every quarter. Now, who's involved with the training? It's all of us. Perfusionists come in and help because we're responsible. Currently we're responsible for initiation and weaning and obviously troubleshooting. And we're supervisors of the ECMO equipment, so we're always on call when patients are on ECMO. However, it's been, as the numbers go up and down, sometimes it's a little tough to keep everybody competent the way we need to. But it's a big training program with how we handle it and keep their competency up for every quarter. And it's a very good team that we have now. And they know when to say when, and they know when to ask for help. And we're lucky that the program has gone the way it has at Rush.

Mark Kurusz: And the perfusion team has embraced that model?

Greg Mork: Yes.

Mark Kurusz: Okay. Shifting gears a bit, Greg, do you have any cases, without naming names obviously, cases over the course of your long career that stand out as particularly memorable?

Greg Mork: Yes.

Mark Kurusz: Why don't you tell us about one or two of those?

Greg Mork: Well, the first case I'm going to tell you about is an ECMO patient. And this is a patient who was pre-COVID.

Mark Kurusz: An adult or a pediatric patient?

Greg Mork: An adult ECMO patient. He was in his mid-fifties, and he was placed on venovenous ECMO because he couldn't oxygenate. And during the course, we attempted to wean this patient several times, but he just wasn't going to wean. It turns out he had some end-stage cancer that didn't show up until after he was on ECMO. This patient was on ECMO for three or four months—it was a long time. We round on these patients quite a bit, and one of the tough things that you see, and I'm not sure how much the cardiac surgeons see of this dynamic, but you see the amount of time the patient's family ends up spending bedside. And honestly, I don't even know how they can work because they're showing up every day, and they're supporting their father, mother, whomever it is that's on ECMO.

And this patient, he knew he wasn't going to come off, and the reality set in at some point. So, then a discussion took place. What are we going to do? Now, one of the problems was he lived about 80 miles away from Rush in a rural area, and there was not an ECMO program near his house. And we were trying to figure out some way, so his family didn't have to make these trips in and out of the hospital as much as they did. And it was really tough on them. The first discussion bounced around legal [at the hospital] for a good two or three weeks. They were talking about discharging the patient on ECMO to his home and training the family members on how to run [the circuit]. They would give them one circuit, and when that circuit was gone, it would be over.

Mark Kurusz: That sounds nuts to me.

Greg Mork: It was, and I was so vehemently against this. I said, "My God, talk about setting somebody up for a catastrophic situation." You can only imagine—what if the lines blew up or something? That would be traumatizing…

Mark Kurusz: It would.

Greg Mork: …to anybody who was even around when that happened. And I understood the push to make the patient as comfortable as possible but, I fought that until the end. I even fought the plan the legal people ended up coming up with, which was we were going to transport the patient home. They were going to get all this hospital equipment into the patient's house, but we were going to transport the patient home, and then we were going to do a terminal cannulation at his house.

And, on the surface, it sounds awful, but for the events that took place that day, we rolled, we took a couple ambulances. We had one ambulance with the patient, and we had another ambulance with extra equipment and all the other people we needed to bring into this house. We got to the house about 9 o'clock in the morning, and there was a row of chairs around the hospital bed, and there was a buffet set up in the kitchen, and all these people were there. And the minute we got the patient stabilized on the bed, I mean, he was extubated, he was talking, he was fine. And the minute we got the patient in, settled in his bed, then the grandkids were jumping up and down on him, they brought him beer, they bought him burritos, they brought him everything he couldn't have when he was in the hospital. And it was possible, and the

family endeared us. They treated us like family and, you know, we were involved in lots of conversations, and it was a very touching experience.

And then at a certain point, hospice was there. At a certain point, things got quiet, and I was really not aware of the script that was going to take place from this point on, but I kind of figured it out as we moved along. And then they ended up, everybody got quiet and sat around the outside of the room, and we weaned the patient off ECMO. And because we were in their family room, I mean, you can imagine when we ultimately ended up discontinuing ECMO support, they were able to give Versed and all these things, and the patient just pretty much peacefully passed away. And it was such a touching moment in the room—it was very emotional. And I remember a PA and the ECMO coordinator and myself were the three representatives from the hospital running this equipment, and they decannulated, and I remember having to be so careful when they handed me the lines because you know how lines get. They flip around and you spill blood all over the place.

Mark Kurusz: Right.

Greg Mork: And I was just so petrified that I was going to make a mess in their living room. We terminally decannulated and then we quietly just packed everything up and headed out. The family was just so endearing to us, and they hugged us, and we went back to Rush. I would never say that that's something that should be the practice, but in his situation, because where he lived and because there was no ECMO center near his house, what are you going to do?

Mark Kurusz: But he died at home.

Greg Mork: With dignity.

Mark Kurusz: Yes, a case like that will never leave your memory, I'm sure.

Greg Mork: Obviously, it really does not, and I've given this presentation a few times, and each time I choke up trying to get through the whole thing because that's how much it affects me. And you realize how much of an impact you've had on somebody's life, and it's really an event that you'll never forget.

Mark Kurusz: Sure, well, it's a very moving ...

Greg Mork: That was.

Mark Kurusz: We appreciate you sharing that, Greg. I think that will resonate with all those who view your interview online or read this transcript once we get them posted to the AmSECT website. Next, I don't want to get too bogged down in the teamwork aspect, but obviously teamwork is very important. Can you drill down and tell me one or two gems from your experience as a Chief Perfusionist, what is the most important aspect in fostering teamwork?

Greg Mork: Well, I'm sure everybody's worked in institutions where there was one perfusionist who was the knower of all things. They would always say, "Call Greg, call this person, call Bob, call Mark," and that's going to happen whether you want it to or not. But possibly the most impactful thing that I learned early on was when the surgeons would call me in the room if they were questioning what the perfusionist was doing on that given case, I would come into the room, look around and say, "It's the exact same thing I would have done."

Mark Kurusz: Sure. So, you're backing up your team members.

Greg Mork: You find out that you really have to back up your team, and once you do that a few times, then they realize that, you know what—this is an alright place to work, and there is no superstar in any—I mean, of course, I've done cases for a long time, and I can probably work my way out of a lot of different jams, but I also hope that those type of things rub off on the staff. And that's one of the reasons I still take call today, because I'm part of our team, and I want them to look at me as not a leader or anything else, but somebody that supports them. And hopefully they'll get to the point where they'll be a leader at some point and carry on the same way I did.

Mark Kurusz: That's a wonderful, wonderful philosophy. Before we move on to the last section, which is called perspectives, philosophies, and reflections, how many students do you think you have mentored over the course of your career, Greg?

Greg Mork: Well, at this meeting, there are probably 20 students that have passed through either our rotation or are currently Rush students right now.

Mark Kurusz: Wow.

Greg Mork: And just one of the things about teaching students is you realize how smart they are. I mean, when we started in perfusion, we didn't know anything.

Mark Kurusz: Right.

Greg Mork: We were hunting in the dark, we didn't have a clue what was going on. But, these students, and especially because of AmSECT, which has this leadership program, and you can see how smart they are. They're excellent students, and they've got all this computer knowledge, all this knowledge on physiology and kinesiology and acid-base and all these things that we learned after the fact when we were doing cases. And they're smart, they're just so smart, and one of the most impactful things—it just happened in the last year with us. We take the first-year students in the school, and we bring them in to watch liver transplants. So, at first blush, I thought, well, geez, a liver transplant, what are the chances of it going on venovenous bypass—5 or 10%, maybe? So, it's going to be a cell saver. So how am I going to keep a student engaged for an eight-hour cell saver? And as it turned out, it has been an incredibly enriching experience for me to sit there and talk to them for eight hours. And we talked, 20% perfusion, 80% life, and the things that I've learned about where these students are coming from and

where they want to go. We have discussions about where they want their first job to be, because there's this perception in perfusionists that when you get out of school, you have got to go to some busy place and get your butt kicked for two years, and then you're going to be ready to go anywhere.

Well, I challenged them at that. I said, "Why wouldn't you look at a job where you think you want to stay there forever?" I mean, a lot of times when you interview, and I know that's what happened when I interviewed at Rush, you meet somebody, and all of a sudden, you say, "You know what? This is the place I want to be, and this is a place that I'm going to be happy working."

But a lot of the things we would talk about was, where do you think you really want to work? And you can put it into perspectives from the candidate and the employer. And I know from an employer's standpoint, when you lose somebody after two years, you have just invested all this time, and then, boom, off they go. So, from an employer's standpoint, it's not fun when that happens to you, and I know there's places that continually have a rotating door.

But the thing I kind of stressed to him, I said, "Don't think you have to do that. You just go someplace, and if you learn how to run the pump really well, the VADs, the transplants, the livers, all the ancillary things, they're all going to come very easily. But once you understand the mechanics of cardiopulmonary bypass and you know how to run a good case, do not worry about all that stuff. No matter where you go, you're going to be trained on how to do it, and if you have a strong background in cardiopulmonary bypass, you're going to be fine. I mean, really, you go anywhere you want to go. So don't think you have to go and get beat up for two years and then go someplace else."

These are the things that, and believe it or not, the liver surgeons listen to our conversations, you don't think they hear what you talk about, but they hear every word. As low as we try to talk, they hear every word, and they like the fact that the students are there. Even when I was the first rotating location for the Rush School of Perfusion, and the surgeons always told me back then, because they hear our conversations, and they say, "You know, we understand. We like the fact that you have the students here because it validates what we do." We have to explain everything that we do to the perfusion students and teach them the physiology and everything behind it. And our surgeons love that aspect of things, so they like it and even now, we don't have students all the time for liver transplants. They say, "Where are the students at? Because I like them there, plus it keeps me in a room."

Mark Kurusz: Sure. So, in one way, you're educating the newer surgeons to some of the specifics of operating cardiopulmonary bypass. I think in the past, we've certainly all read how physicians used to run the heart-lung machine in the fifties and even in the early sixties. But for the new generation surgeon, it's quite interesting what you just said, that they're learning what you're teaching the student, and they're probably picking up things along the way, too. Wouldn't you agree?

Greg Mork: Yes. And we took that one step further. So now at Rush, we run all the surgical fellows through simulation.

Mark Kurusz: Oh, good.

Greg Mork: And we're not friendly to them.

Mark Kurusz: Okay.

Greg Mork: And we have a lot of fun doing it, and they said, "Geez, we had no idea this is the stuff that's going on behind the pump." We challenge them quite a bit, but they like it, and they expect it, and they expect they're going to get, you know, the more challenging cases when we bring them into the SIM lab. But that's one of the things that the fellows have really endeared, and they like it, and even the director of the residency program, he was happy when we started doing that. So that's been a lot of fun.

Mark Kurusz: That's terrific. Now, perspectives, philosophies, and reflections. Greg, in your opinion, what do you think are some personal professional attributes that contribute the most to a person becoming a good perfusionist?

Greg Mork: I had the luxury of being on the interview committee for the school for several years, and one of the questions that I would always ask the prospective students is obviously what their hobbies are. But I tried to drill down to find out what their mechanical aptitude was, because what we do, there's a lot of mechanical knowledge that you must have to be able to run a heart-lung machine safely. And there's also that side of things where what happens if something happens to the pump? What are you going to do? And I've worked with perfusionists who, when something breaks, they say, "Well, call clinical engineering, they'll take care of it."

But you have got to set the stage right for clinical engineering. You have to be able to tell them what it is that went wrong, you've got to give them a pathway or some hints to what it is that they're trying to fix. So, I think, I really do believe that mechanical aptitude is one of the really big things in perfusion. And, boy, I run across some of these perfusion students now; one of them bought a Sprinter full-sized van, outfitted it complete with all his RV equipment. That was the mechanical aptitude I was looking for. And this guy takes his van, and when he goes on rotation that's where he stays.

Mark Kurusz: Okay.

Greg Mork: Although he had a little challenge a few weeks ago when it was below zero, his water pipes froze up. So, he had a little challenge with that.

Mark Kurusz: Great, well, I think you've conveyed this in so many words, but I'm going to ask it again anyway. That is, what does it mean to you to have been a perfusionist for as long as you have been, Greg?

Greg Mork: I consider myself extremely lucky because I would have never chosen perfusion as a profession. I didn't even know about it and who did it back then. Nobody knew what perfusionists were.

Mark Kurusz: Your degree was in mathematics.

Greg Mork: Mathematics, that's right. Nobody knew what perfusion was back then, and the beauty of when I got into the field, as opposed to now—I've seen, we all remember when angioplasties came around and everybody was worried about their cases. They were worried that they're not going to use the pump anymore. But we quickly realized that when one door closed, two or three more opened up. So, yes, if you were just sitting in the hospital doing your cases and that's it, and going home, you might be a bit of a dinosaur. But if you get involved with groups like transfusion committees, all these other areas in the hospital, suddenly you're going to be a very busy and valuable person to your team.

And it's been exciting to watch the advancements that have come from the late seventies to today—it's gone light years, even in education. With simulation and all these other things that students have now, they have such a great opportunity to learn without having to practice on patients like we all had to do back then. But it's been just phenomenal watching these things happen.

And, you know, we've all had those days when we've had bad cases, and you ask yourself, why do I do this? The way I look at it, you're allowed to want to quit maybe once every six months, but if it gets to be once every week or once every month, then you probably want to look at something else. I think the only way to really embrace what we do is you've got to love what you do, because if you don't, it'll just easily eat you alive. And how many times have we done "emergencies" on Saturdays out of convenience? You can come in and complain all you want about that, but guess what? It doesn't change anything because you're still going to do the case. You'll just be far more miserable doing it after you spend all that time complaining about it.

Mark Kurusz: Sure.

Greg Mork: You must love what you do. And people see it quickly in perfusionists how passionate they are about what they do.

Mark Kurusz: Well, this is a nice segue into the next aspect of what perfusion has meant to you. Besides being somebody who just sits in the OR doing cases, you've done a lot with the Illinois State Perfusion Society. You've also been in two high profile national roles with the American

Board [of Cardiovascular Perfusion]. Now you're president-elect of AmSECT. Can you tell us what drove you to move into that sphere as opposed to just being in the trenches for 40 years?

Greg Mork: I think a lot of it comes down to my first job. And as I said, I was working with Frank Hurley, past president of AmSECT and Mike Hurdle, past president of AmSECT. These are all people who were very involved in the professional aspect of our careers, and Mike Djuric, he went on to start the Rush school in 1992. When he left the University of Illinois, I took over his role as Chief Perfusionist there. He went over to Rush, and it's just been an amazing journey, and I think I was raised by very good perfusionists, and I know another, I don't know any other aspect of perfusion. And I personally, I can't imagine doing my cases at the hospital and ending it at that. I've always had this drive to be involved with the professional community, and I think Jeff Riley summed it up pretty good. He said, "How can you call yourself a professional if you're not involved in your professional society?"

And we have had that conversation over and over as we try to build the membership in AmSECT. We try to find new ways to convey that message, and the organization is getting stronger because of it. But I think I just got lucky. I think that because of the people I worked with, it kind of cemented my pathway into the professional side, and when I was originally involved with AmSECT, back when it had regions, there were certainly several growing pains that happened back then. And then I took a couple years off, and I didn't do anything, but then I thought, "Geez, I miss this stuff." So that's when I got involved with the board.

Mark Kurusz: Okay.

Greg Mork: And then also, as far as the Illinois State Perfusion Society, I was the first secretary, and this is when AmSECT was advocating the Government Relations committee. They were promoting licensure.

Mark Kurusz: Yes.

Greg Mork: We started our state societies, and with our state society, in our first year, we were able to get licensure through Illinois. It was a very enlightening, yet very challenging procedure, especially when you're dealing with all these courts. And that's one of the things I try to harp on the students is that if you don't belong to your professional organization—AmSECT is the largest organization that represents perfusionists. They're going to make decisions, and these decisions are going to go into individual state licensure. So, if something goes into that and you don't like it, how can you do anything about it if you're not a member? You can't complain about it because you had the opportunity to voice your opinion, but you chose not to do that.

Mark Kurusz: Sure. Well, in the remaining few minutes, can you tell us a little bit about your time on the board? The American Board, which was responsible for certifying perfusionists, you were there for twelve years, and you rose through the ranks. You were first a director, then vice president, and then president. What were some of the challenges during that period? I know that when you first got involved with the board, they were still giving the oral exams, I believe.

Greg Mork: Mm-mmm.

Mark Kurusz: And could you tell us about any memories that stand out from your time on the American Board, Greg?

Greg Mork: Well, with the writtens and the orals, we saw very quickly with the orals that they were just not very reproducible. As much as we would like to put students or candidates through an oral exam, there were so many different examiners, it was difficult to make each one of those exams the same. And I think, by and large, the oral exams, most people passed them, even though you walked out of there thinking you just made every mistake under the sun, as I did when I took my oral exam. But it was, it had to progress into something far more reproducible, reliable...

Mark Kurusz: And measurable.

Greg Mork: …and measurable and validateable and all these other different things. So that was, I think, a huge step forward for the organization. Now, we still give our students oral exams because we want them to feel that pressure a little bit for when they go out on rotations. But that was one of the big things that happened.

The second big thing that happened, when I was president, I received a letter from a perfusionist in New York, and it was somebody who was possibly getting ready to start a family. And she said, "Look, if I have two or three kids right in a row, I'm going to lose my certification. And it's just a shame to do that because CCP is such a hard thing to keep, and it's even more difficult to get back into it once you lose it."

So, one of the things that we considered at that point was the old certification system used to be if you didn't do all your cases in one year, whatever you didn't do this year, you had to do those and your [required number of] cases for the following year. Well, if you're at a slow program, you're just going to circle the drain, and ultimately, you're going to end up losing your certification. So, we came up with a thing called conditional certification. And as a consideration, I was on the board already for ten years. I knew how to get motions passed, but I refused. I brought the motion up one year, and I didn't even want to, it wasn't a motion, it was a discussion. I didn't want it to go to vote because I knew that if I said something, and considering I was a senior member on the board, I could push anything through I wanted to, but I did not want that to happen, because, you know, when you make changes, you have unintended consequences of some of these changes. But I think ultimately, we discussed it for a year, came back to it the following year, let everybody digest it, let the younger board members completely understand it, and we ended up landing on the idea that we have this conditional certification. So, if you don't get your cases one year for whatever the reason—originally it started off as a maternity thing, but then it was a maternity, medical leave, or deployment, because at the time, a lot of people were being deployed to Iraq and Afghanistan.

Mark Kurusz: Yes.

Greg Mork: And all these different areas, and they just weren't able to do their required cases. And then there was this other group of people. People went into sales, and maybe they didn't want to stay in sales, or they didn't like it. And they were still extremely engaged in our profession, but just on a different side of it. So, I felt it was kind of harsh to take away their certification if they didn't do cases for a year. So, we established a system where they could do their cases. If they didn't do any cases one year, they could do their cases the following year. But the beauty of the new system was that you are judged by your peers at the hospital. They're the ones who must sign off on your competency.

Mark Kurusz: Okay.

Greg Mork: Because we all know the American Board exam is just a measure of knowledge. It has nothing to do with competency. Even though people try to tag it that way, it has nothing to do with competency, and we felt that the best way to determine whether somebody returning to the field was competent was by their peers and the people they're working with. And that's been well received, and it's really given a lot of people the opportunity not to lose their certification. But, you know, and one of the things about even if you don't do cases, you still have to do your continuing education.

Mark Kurusz: Sure.

Greg Mork: So, it keeps you involved in those type of things. We never got rid of that requirement, but the case requirement, we were able to let you defer it. So that was, I think, of my time on the board, that was probably one of the most beneficial things I think we accomplished for the rest of the perfusion community.

Mark Kurusz: I'm not sure everybody is aware of that tweak to the system.

Greg Mork: They are now.

Mark Kurusz: Thanks for sharing that.

Greg Mork: They really are not and even my staff, I have one perfusionist who was on medical leave for a year. I said, look, you're going to be fine. Just, you know, do your cases, we'll submit them, sign them off, and you're going to be good to go.

Mark Kurusz: Good.

Greg Mork: But, yes, a lot of people don't, you know how many people really read the Booklet of Information, right? One or two, maybe. But, yes, that was one big change. And, you know, I'd given several presentations at national meetings about that change, but still people forget about it.

Mark Kurusz: Sure.

Greg Mork: They're so used to losing their, you know, running the chance of not doing their cases and losing their certification.

Mark Kurusz: Sure. Well, in our closing minute or so, Greg, if you have any historic documents or even a historic slide or two that you'd like to share with the history committee, we'd be very interested. Before the interview began, you mentioned some early paperwork you had on one of the very early AmSECT meetings in the 1960s that was held in Minneapolis, I believe. But we would be very interested in seeing some of that material if you can put your hands on it and share with the committee.

Greg Mork: Yeah, I have it, and I have the original documentation from that meeting, and I would be more than happy to sign it off to the history committee in its original binders and everything else. And, you know, it's fascinating. I mean, we did not have word processing, and this is all hand-typed on typewriters. And it's just the amount of work that went into doing something like that was just hard to even conceptualize. But that's what we were used to back at the time.

Mark Kurusz: Sure.

Greg Mork: But, yeah, I'll be very happy to. And I have a lot of old carousels with all my old slides in there, and there's some pretty good ones in there.

Mark Kurusz: Well, thank you. Any closing thoughts before we wrap up this? It's been a fascinating interview, Greg, and I've gotten to know you a lot better just in the last 60 minutes by hearing you tell some of the stories and tell us about your experience. We very much appreciate you taking the time out. I know there are sessions going on now, but you have carved out a good hour to spend with us for this interview, and we want to thank you very much for that. Do you have any closing thoughts that you want to leave for the young people?

Greg Mork: Well, my closing thoughts are there's a lot of people who donated so much to this profession, and I listed a lot of those people. But there's more. I mean, Bob Groom and Jeff Riley and all these guys who have done so much. And one of the things that I didn't really have a good perspective of is how close AmSECT was really to going belly up at a certain point. And I do remember when some of the senior people were recycling themselves into the executive offices because they couldn't get anybody to do it. Now if you look and see the elections, you always get two or three or four people running for each office. So, I think that part of it is good, but I mean, I really think that I don't consider myself a pioneer. I've done this for a long time, and I've seen a lot of changes, but a lot of the people that did this before me, I really look up to them and am in awe about some of the accomplishments that they made. And I don't look at what I've done is earth-breaking or land-breaking or anything else like that. I just love what I do,

and that's what keeps me involved in it and that's what I could convey. It's hard to teach that to people.

Mark Kurusz: Sure.

Greg Mork: But I think they see it in your face when you talk about it, and that's when they realize what's going on.

Mark Kurusz: Well, very good, Greg. We really appreciate your time, and this has been a great interview, and we can't thank you enough. Thank you very much.

Greg Mork: Thank you.

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