**Episode 32: Leading from Her Happy Place**
**Ruth C. Carlos, MD, MS, FACR**

March 18, 2021

[00:00:14]

Dr. Rubin: Hello and welcome to "Taking the Lead," a podcast from the Radiology Leadership Institute that profiles radiologists as leaders, seeking insight and inspiration from a variety of perspectives and experiences. I'm Geoff Rubin and today I'll be talking to Ruth Carlos, Professor of Radiology and the Assistant Chair for Clinical Research at the University of Michigan. Born and raised in the Philippines, Dr. Carlos came to Chicago at the age of 12. As a leader in the field of health services research and medical imaging, Dr. Carlos has pioneered work in comparative effectiveness, health outcomes, and financial toxicity of healthcare, and has led major clinical trials on prevention, surveillance, and cancer care delivery. She is a recipient of the gold medal from the Association of University Radiologists and chairs the GE AUR Research Radiology Academic Fellowship, or GERRAF, a national program supporting early-stage investigators in health services research and care delivery. In 2018, Dr. Carlos became the first woman editor-in-chief of a major radiology journal, the "Journal of the American College of Radiology," or JACR.

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Ruth, welcome.

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Dr. Carlos: Thank you for having me.

[00:02:17]

Dr. Rubin: So let's start at the beginning. You were born in Manila, in the Philippines. What was life like for you growing up there?

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Dr. Carlos: We were one of the few middle-class families in the Philippines. My dad was the first child of the second wife. My grandfather made and lost three fortunes. And his second wife, he asked to marry him after he had remade his second fortune. She was a daughter of a wealthy landowner and my dad grew up in relative wealth. He chose to step away from the priesthood and became a public defender. And he eventually developed a practice defending tenant farmers, which I found particularly interesting given the situation that he grew up in. My mother was born in the middle of seven children. Her father died quite young, and her mother, having to support the family, wound up being one of the wealthier women in Manila by bringing city products to the province and provincial products to the city. And she eventually parlayed that into real-estate and jewelry business. Nevertheless, I considered us middle class because of the vast wealth disparity in the U.S. I mean, in the Philippines, it was really, really remarkable how wide the gap was. And my dad, because of his focus on tenant farmers' rights, there were quite a few landowners who did not like my father, including Mr. Ackerman. Mr. Ackerman said, "I could die a happy man if I could see attorney Carlos spend one day in jail." And it was so contentious that my dad named our dog after Mr. Ackerman. He...

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Dr. Rubin: What did he name the dog?

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Dr. Carlos: Ackerman.

[00:04:27]

Dr. Rubin: Okay, okay. I thought maybe there was a more colorful name but I gotcha.

[00:04:32]

Dr. Carlos: Oh, no. It's like he...so my father was invited to meet with the Ackermans on a Friday in the province and he was arrested, and Ackerman thought that he...because of where he was remotely, no one would be able to come from the city where we lived to bail him out. So my dad called my mom, my mom called her aunt, who called a cousin, etc., etc., until money was actually sent to the province to bail my dad out. There's a newspaper clipping of my dad coming out of jail Friday afternoon, not spending a night in jail. So around that time, martial law was also implemented and there was a feeling in the family that we should try to leave if we could.

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My mother, back in 1967, 10 years before, she had applied for visas and we had the visas, so we were able to leave. Only recently were we let in on how she applied for those visas. My mother went...was a lawyer and she was on her lunch break. She saw her friend standing in a line so she asked her friend, "Well, what is this line for?" "Oh, this is for the American embassy. They're accepting visa applications." So my mom thought, "I think I should apply for some visas." So she stood in line and applied for visas. And had she not done that, we would not have had the opportunity to come to the U.S. when we needed to come.

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So, a lot of how I tend to approach opportunities, personal and professional situations, is framed by this overarching sense of serendipity and also the approach to, in some way, level the playing field or democratize access. And that informs the research topics that I choose and how I mentor.

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Dr. Rubin: Yeah, wow. That's quite a story. Super complicated. I gotta just ask you a couple of questions. You had mentioned, I think, if I'm getting this straight that your dad had essentially been the beneficiary of his father being a wealthy landowner and such, and that at some point he had been in the priesthood and then left the priesthood. I mean, usually, the relationship of deciding to be a priest and coming from, you know, a wealthy background is a little bit odd. And then he decided to leave the priesthood in order to become an attorney for tenant rights. I got that right?

[00:07:16]

Dr. Carlos: Yes. Yes. So my dad, like I mentioned, grew up in relative affluence, and there is a tradition for at least one son in a generation to join the priesthood. And my dad thought that was his calling until he actually entered the priesthood and realized...until he got to seminary and was training for the priesthood and he realized that...I think he just liked girls. But so, he had a rosary that he used throughout his priesthood, and when he and my mother married, he had the rosary made into a ring for her.

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Dr. Rubin: Wow. That's nice.

[00:08:02]

Dr. Carlos: You know, if he wasn't going...

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Dr. Rubin: Yeah, celibacy isn't for everyone.

[00:08:08]

Dr. Carlos: Yes. Celibacy is not for everyone. I understand. And I am glad because I think my dad had a lot of gifts that he was able to apply in his professional life that would not have been available...

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Dr. Rubin: It sounds like it. It does. And your story about him going to jail, how old were you at that time? Do you actually remember this?

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Dr. Carlos: I think I was 10. I don't... So as kids, my parents worked really hard to protect us from a lot of stuff like that. Like it took us a long time to figure out, "Well, why was the dog named Ackerman? What a weird name for a dog." And the family history would come out in bits and pieces. And a lot of it only after we moved to the U.S. because, you know, in the Philippines, it felt like my dad wasn't home as much as he was when we moved countries.

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Dr. Rubin: Did your folks treat Ackerman nicely?

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Dr. Carlos: Yeah, but he was a really mean dog. I mean, really mean dog.

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Dr. Rubin: So something seems a little bit incongruous about, you know, naming your dog after someone you hate, but wanting to treat your dog as a loving member of the family.

[00:09:29]

Dr. Carlos: What can I say? We are complex family.

[00:09:33]

Dr. Rubin: Indeed you are. And brother and sisters?

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Dr. Carlos: I do. I have one sister. She is in California. She went to Wharton Business School, spent most of her career with Deloitte. Her last job was reorganizing their human capital across their international business.

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Dr. Rubin: Wow. That's a big responsibility.

[00:09:56]

Dr. Carlos: Yeah. And I have two nieces.

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Dr. Rubin: Is she older or younger?

[00:10:00]

Dr. Carlos: Younger. Three years younger. And I have just...I have two nieces. So I live vicariously through her experience as a mom.

[00:10:10]

Dr. Rubin: I see, I see, yeah. And I mean, do you remember much of growing up in the Philippines? You know, dinner table conversations, family life. I mean, it sounds tumultuous based on what you were describing or was it...you know, was your home life reasonably relaxed and orderly?

[00:10:29]

Dr. Carlos: Yeah, our home life was incredibly stable. My mother came from a family of seven siblings and we all lived around each other. So I would go to...I would get picked up to go to school, I would go to school, and then I'd go to my aunt's house. My aunt was a teacher and I would spend the day doing homework, playing. I thought that it was a very normal childhood, and only in the background was there this stuff going on with my father and my mother. So most of my memories were things like going to school and ballet class and recitals. It was a very typical childhood.

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Dr. Rubin: Yeah, yeah. That's nice. And so at age 12 was when you came to the United States?

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Dr. Carlos: Yep.

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Dr. Rubin: And tell us about that move and where you settled and why you settled where you settled and...

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Dr. Carlos: So my mother's visa was for Portland, Maine because that was where visa applications were easy. And my aunts were in Chicago. So we got a ticket from Manila to Chicago, and the immigration officers asked us, "Why are you going to Chicago when your visa is for Portland?" And my mother was, "Oh, well, we haven't seen my sisters in quite a few years so we're going to spend some time with them, get on our feet, and then make our way to Portland," which we obviously never did.

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Dr. Rubin: I see.

[00:12:00]

Dr. Carlos: Yeah.

[00:12:03]

Dr. Rubin: So you were there with your aunts, and was it a big contingent of your family coming over at the same time?

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Dr. Carlos: My aunts...two of my aunts were here and then we came, and then my uncle and his family came and then my aunt family came. And those were the five of the seven siblings that made it to the U.S. So we all came over a span of six years, from 1972 to 1978.

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Dr. Rubin: I see.

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Dr. Carlos: We replicated our living situation where we all lived in adjoining suburbs and spent a lot of time...so I actually grew up with an extended family.

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Dr. Rubin: That's nice. That's really nice. And what was it like assimilating into American life coming from the Philippines?

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Dr. Carlos: It was hard. I think because of the age that I came, that's when kids start differentiating themselves by who was the other. And, you know, when you're a new immigrant and the way school was run in the Philippines was different from the way school was run in the U.S. It was just...it was a challenge. It was a challenge, I think, to make friends. It was not as difficult for my sister who came at a much younger age. Her ability to assimilate was much faster. And I consider myself Filipino-American. She considers herself American-Filipino, which is reflective of our situation. And asking questions like, "Oh, Ben. Did you know Ben? He's Filipino. Did you know him when you were in the Philippines?" "No." So they were just...

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Dr. Rubin: Yeah.

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Dr. Carlos: So it was...but, you know, I think everything is a formative experience. So, you know, reflecting on that, this sense of otherness gives you a lot of empathy for, you know, how our patients are because when they come into our space in the hospital, they're the other, and it can be a challenging experience for them.

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Dr. Rubin: Yeah. Yeah. Absolutely. And how long was it before you felt like, "Oh, I'm an American. I'm comfortable here"? And let me ask you a compound question. Did you take any active steps to get there?

[00:14:31]

Dr. Carlos: That is a very interesting question. I will say that constitutionally I was raised to be outspoken and to, you know, pursue excellence like a lot of Asian families. I also believe that because my mother had two girls rather than having at least one son allowed me to do a lot of things that I would not

necessarily have been allowed to do. And I remember being told, "You need to be more polite or you need to act like a lady." And I'm like, "What does that even mean, act like a lady?" So I think that my approach to life actually was really suited to the American narrative of individualism and pursuit of excellence. And this underlying narrative of meritocracy, you know, you work hard at something, eventually, you will achieve. And I know that that is not necessarily the experience of many people but it has been mine. And in terms of assimilating to the U.S., I think that constitutionally I was already open, very open to receiving messages about American culture.

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Dr. Rubin: Yeah. But was there a point in time when you suddenly, you know, examined where you were and what you were doing and said, "Oh, I feel comfortable here. I'm an American"?

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Dr. Carlos: I think in many ways I still feel a little bit like an outsider. I think that because of my experience, I feel like...or I can empathize with the outsider's perspective regardless of where I am. So I remember this...I remember having a conversation with a friend of mine. We were going to Europe together and as I was walking, he looked at me and he says, "You walk like an American." And that is such an interesting thing to say because I'm not aware of how I present myself and carry myself. And then I went back to the Philippines and, you know, you could pick us out. You could pick out the people who are visiting, even before you opened your mouth and had an accent. It was just the way you carry yourself and the vibe that you gave off. I think I feel comfortable in a variety of situations. I don't think that I think of myself as wholly American and I don't think that I will ever think of myself as wholly American.

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Dr. Rubin: What language did you speak primarily in the Philippines? Was it Tagalog or...

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Dr. Carlos: Well, we grew up speaking English actually because my mother thought we would eventually learn Tagalog in school and from our friends. You know, kinda like sex. So assimilating...integrating. Not necessarily assimilating but integrating into the school system and into American society was a lot

easier. And people are surprised when I tell them I grew up in the Philippines because I have no discernable accent.

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Dr. Rubin: Right.

[00:18:09]

Dr. Carlos: What's interesting is, as my parents have gotten older, they understand my English better if I speak it with a Filipino accent, which is really interesting. And as my parents have gotten older, I have rediscovered speaking in Tagalog in order to be able to communicate with them more fully.

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Dr. Rubin: Yeah, excellent. Well, I could chat with you about your childhood and your growing up all morning, but we probably should move along. You went to the University of Chicago.

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Dr. Carlos: Yes.

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Dr. Rubin: I can see why that was an obvious choice for you given that you and your extended family were in Chicago. What did you study there as an undergrad?

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Dr. Carlos: Biological sciences with a minor in art.

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Dr. Rubin: Was biological sciences something that you gravitated to from the start? You knew that that's what you wanted to study?

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Dr. Carlos: Well, I knew that I wanted to become a doctor so I saw that as the most linear path to becoming a physician.

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Dr. Rubin: And when did you decide that you wanted to be a physician?

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Dr. Carlos: My mother tells me when I was five. I've always liked the smell of hospitals. And then sometime when I was 12 or 13, I thought maybe I'll become an astronaut. And then after that, it was being a physician all the way, which I found really interesting because I almost quit medical school. After the first and second years that you were in clinic, I found clinic really challenging, you know. It was not the vision I had of clinical practice. And I felt a loss of agency in helping people because a lot of it...a lot of health really is about supporting patients and giving them the tools necessary to be partners in their care. And I remember formative experiences where I was waiting to see someone who had hypertension. It was our student outpatient clinic, and as I walked by, it was an overweight woman with a bag of potato chips in her lap waiting to see me and I thought, "I can't...this is not the kind of practice that I feel I can make a difference in." It was a journey to come to radiology. I eventually started working with an anesthesiologist, Mike Roytsen, who was the first person to introduce me to the McMaster criteria and evidence-based medicine. And he supported sort of like the crazy questions...at least at the time they seemed like crazy questions to ask, like did handing out books, free books and free stethoscopes lead to better memory and impression of the company? You know, so that was I think the first paper I wrote.

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And I did radiology as a two-week easy rotation so I could work on my anesthesia applications, and I sat with John Fennessy, chest radiologist, and Ruth Ramsay, neuroradiologist, and they completely changed my career. I rediscovered the things that I really liked about medicine, which was the diagnostic process. It was like solving the puzzle. And then once I solved the puzzle, I would give the information to their clinicians who would then manage their care. And it was revolutionary. And if I weren't a radiologist, I think I would be working for an insurance company designing better insurance plans.

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Dr. Rubin: Okay. Yeah, they're very similar. I wanna go back to the woman with the potato chips. And, you know, you had described how your dad's affinity for helping tenant farmers led you to want to, you know, help folks that were in need. And help me understand what it was about this woman who was in need clearly, maybe perhaps from multiple dimensions, you know, behavioral, physical, etc. But this was something that made you say, "No, this is not right for me. I don't have agency here." Could you unpack that a little bit?

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Dr. Carlos: Yeah, absolutely. I've thought about that encounter many times during my career. And I believe that in that moment I could not see or access the skills that I thought would be needed in order to give the woman agency. And what I find really interesting is that I've since come back to that through the work that I do in patient-centered care and patient-centered outcomes in how to help patients engage in behavior change and what the best ways of helping patients navigate their own self-efficacy in order to reach behavior change. I think, I also like the theory of behavior change and working on the research to advance the field. I'm not sure I would enjoy being the person implementing those types of encounters one on one. And everyone has skill set, and where I am, I think really allows me to implement my skill set and have a larger impact than if I had stayed in, you know, primary care or internal medicine, for example.

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Dr. Rubin: Yeah, it sounds like a lot of self-insight and particularly at the time that led you to just recognize something, that that wasn't the direction you wanted to pursue and to, you know, to take another turn. It's an interesting path. You stayed at the University of Chicago for a good, long time. You finished undergrad, you went to medical school. You then did your residency all at the University of Chicago. Did you ever consider going anywhere else or...

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Dr. Carlos: I applied to one college and one medical school, so I was very committed to staying. I did apply to seven residencies that matched the University of Chicago. The University of Chicago was comfortable in the sense that I... I'm very much a product of the college, the University of Chicago college. You know, the focus on reading primary sources and developing your own impressions and this focus on critical thinking. And I love my college experience. Medical school was a little bit more challenging because there you just needed to memorize a ton of data and it wasn't...it didn't allow for reading of the primary resources or doing all the research yourself. And a lot of that extended to residency. And I was not the best resident at the University of Chicago, and I think a lot of that really is that being a resident did not suit my skill set. But then again, being a resident doesn't suit anyone's skill set, or very many people's skill sets. And I moved to the University of Michigan when they offered me the fellowship. And I knew nothing about the University of Michigan other than it was a good program.

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Dr. Rubin: I gotta hold off there. I wanna get to the University of Michigan in just a second but you just...I have to ask you a couple of things before we leave Chicago. What makes you say that you weren't the best resident and that you weren't suited to be...what are you referring to?

[00:26:59]

Dr. Carlos: All right. So I was the shittiest resident in my class. I was the one that they were worried was gonna fail the boards. I ran away from my program for three weeks to go to Southeast Asia because I was just having such a hard time. And they didn't offer me the courtesy fellowship interview because I think they really didn't want me in that program.

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Dr. Rubin: How was it that you felt like you weren't measuring up? I mean, what was that?

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Dr. Carlos: I think a lot of it is...like I said, ingesting massive amounts of data just because didn't compute. Like, it was one of the most challenging experiences I have ever had, is to have to learn the bulk of radiology in order to make it through the four years and amass enough information to pass the boards. It was a challenge.

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Dr. Rubin: It is a ton of memorization. That's the part of it that was...you're referring to?

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Dr. Carlos: Yeah, it was just difficult. And in some...and it wasn't that I didn't see the point. It was more that I was having a hard time finding my place in, you know, in the residency, in the institution. It was a hard, hard time and...

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Dr. Rubin: Yeah. Sounds like it.

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Dr. Carlos: It's a bit of a cliché to say that, "Yeah, of course, residency was difficult." But it was very much a challenging time.

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Dr. Rubin: And then, you know, when you just sorta needed to step away for a moment, you headed to Southeast Asia. What was it about Southeast Asia that attracted you? Did you go to the Philippines specifically or...

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Dr. Carlos: No, I went to Thailand and Vietnam. And it was around the time that Vietnam was just opening and I wanted to spend time seeing how a country that has been closed cope with an influx of expats. And at the time, it was a lot of Australians setting up businesses. And then U.S. and Australian Department of State workers trying to establish relationships with Vietnam. And it was such an astonishing experience to be in Vietnam in that moment and to see a country transitioning. And it's...I had such a memorable time that I have not gone back because I don't want to spoil my memory of a unique place in time.

[00:29:54]

Dr. Rubin: Wow. That's such a purposeful rationale for heading out in a setting where it almost seems like the motivation to go was just you had had enough. You know, you just needed to get away. Yet, just getting away wasn't just getting away to some place where there's beaches or something like that, that, you know, there was an underlying agenda.

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Dr. Carlos: It's interesting that you say that because I think you're the first person who asked me why...who dug deeper about why I went. And in retrospect, the same thought process that I applied to selecting that country is the same thought process that I attribute my success as a researcher too. Really trying to understand why things are the way that they are and how to change it. And yeah, I was having a difficult time. Yes, it was time for me to take a break, but the process of taking a break had to be more meaningful than just stepping away. And [crosstalk 00:31:05].

[00:31:09]

Dr. Rubin: Yeah, I mean, it seems like a very intellectual approach to taking a break. And in a sense, it wasn't just, you know, saying, "I need to turn off my mind from all of this, you know, memorization and, you know, stress of being a

resident." It was, "I need to switch my mind to something different that..." Essentially, scratching an itch that...

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Dr. Carlos: Yes, yes. Very much. Very much. It's as if I had spent the last, you know, six years, medical school, up until that point of residency not being able to engage that part of my brain or not having the opportunity to be able to answer those types of, you know, deeper questions, things that had meaning for me, and this was my opportunity to do that. Yeah.

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Dr. Rubin: And what led you to come back after three weeks?

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Dr. Carlos: I had another rotation that I wanted to go to. You know, the rotation that I ran away from, it was supposed...it was...I'm sorry about this. It was our cardiac rotation. Cardiac was so poorly taught. I was supposed to spend some time with a cardiologist looking at EKGs and coronaries, and I thought, "What am I going to learn attached to his hip that I can't slip through a book and learn?" And that's what I did for the first week and I thought, "You know, I can be spending my time more fruitfully." And I had always planned to come back.

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Dr. Rubin: Yeah. Yeah. Excellent. Excellent. All right, now let's turn to Michigan. So after completing your residency, you finally left Chicago for a fellowship in Ann Arbor, and talk to us about what led to that choice.

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Dr. Carlos: So I interviewed, and when I was there, they kept asking me to interview for more fellowships. I wasn't actually sure what was going on because I came to interview for the body fellowship, and then they asked me to do it for the MRI fellowship, and then they asked me to interview for the bone fellowship. So I was a little confused by the day. And I was offered the MR fellowship, which was my second choice, and there was no possibility of being the body fellow. And I came, I worked with Martin Prince who, you know, helped develop the field of MRI angiography and it was a phenomenal experience. And truthfully, had the University of Chicago not turned me down for their fellowship, had they accepted me into their fellowship class, I think my career would've been completely different. My career trajectory would've been

completely different because being at the University of Michigan, I was truly at the right place at the right time, not just for me personally but for the people who were around me, you know. That was...I think Reed was entering his second...or was entering his next five years of chairmanship, and he was plugged into a variety of national opportunities and very committed to supporting his faculty. So I definitely benefited from having him as a chair. I learned so much from Martin about what it took to lead in a space, to help develop a field of imaging. And it also helped me think about the types of questions that I want to answer. When I started out as a fellow, I thought, "Why are people not ordering MR angiographies of the kidneys all the time? It's phenomenal." And then by the end of my fellowship, I thought, "You know, I could tell if the test was going to be positive just based on the specialty of the ordering physician." That led me to start thinking about heterogeneity in care and how to understand the value of imaging. And that really was the moment that I thought, "These questions need to be answered because we have all these tests and we do a lot. And are we getting value for what we do and is there a way to do it better?"

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I then became a Robert Wood Johnson clinical scholar where I was exposed to, you know, John Isenberg, Catherine...and I'm blanking on her name. She took over as GM editor. She came to...Catherine DeAngelis. Catherine DeAngelis came to speak at one of our national meetings. I met people in other fields who were also interested in the same questions. And what that focused for me was that it isn't about the technology necessarily that's going to improve care but really thinking about the care encounter and doing what was best for the patient in that particular time. And sometimes you need to do everything and sometimes you need to do nothing. And figuring out when to do what is critical to decreasing heterogeneity in care. It was a phenomenal, phenomenal experience that continues to frame how I think.

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Dr. Rubin: Yeah. Yeah. I mean, you know, clearly, this is the genesis of your particular niche in research and, you know, some of the characteristics that make you really very unique amongst our constellation of radiology researchers. I'm curious, you know, finishing fellowship and taking the turn to join the faculty at the University of Michigan, can you sorta put yourself back to that moment and say what were your aspirations for your career at that time and did you have any specific plans?

[00:37:10]

Dr. Carlos: My aspiration as a faculty member was to be in a position to continue to ask the questions that I wanted to answer. Everything else was meant to support that particular goal. You know, so that's why I seek funding, that's why I collaborate with the people that I collaborate with. And it was a lesson that I learned over and over again. But for me, I needed to go where the question took me. And sometimes that question took me really far out of radiology but that was the question that I wanted to answer at that particular time. So I'll give you an example. I did my GERRAF looking at the importance of the information that we give to patients who are one of our consumers. So is it important to tell a woman, "You know, we could do this test because you have postmenopausal bleeding and I can tell you for sure that it's not cancer but I don't know what it is and I'm not sure when it's gonna go away." Or, I can tell you, "I can do this test, tell you that it's definitely not cancer, put a name to it. Like it's an endometrial polyp or a fibroid. And if it were a fibroid, I can tell you that it should eventually resolve maybe in the next five years as you enter menopause more fully." So the information doesn't...the core information doesn't change. It's not cancer. It's benign. But there is uncertainty in one versus more certainty in the other, and how did that change the approach that women would have in their lives integrating that piece of information. And that started me thinking about the value of our work product, which ultimately is information that we give to clinicians, that we give to patients. And can we use those encounters to provide additional information to patients? So I was one of the first to evaluate screening mammography as a teachable moment or a teachable encounter to improve colorectal cancer screening. So I have a longstanding collaborator, now friend, who is a gynecologist, and we looked at screening mammography in cervical cancer screening encounters as ways to improve colorectal cancer screening, and then after that, ways to improve HPV vaccinations in their daughters because this was at the time that HPV vaccinations received FDA approval and the APA, the Pediatric Association issued guidelines about vaccinating girls.

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So that question took me really far out of radiology, which is developing behavioral interventions or tailored behavioral interventions to improve uptake of HPV vaccinations in kids and in college girls. And through that experience I realized that if women or if people were vaccine reluctant, if you try to change their mind, they became vaccine resistant. So the process of trying to educate them just made them really not want to get vaccinated. And for the people who

already say they want to get vaccinated, there's no need to give them the intervention. What you need to do is align the clinical practice so that when they say they would like to be vaccinated, you can take them to the vaccine clinic. They can get vaccinated and then you just bill out that procedure.

[00:41:01]

So, you know, even though it seems like it is so far outside of radiology, a lot of the things that I learned there I am applying to the practice of radiology. So now I'm thinking, "Can we use the radiology encounter as an opportunistic screening moment to understand who in our patient population is most financially burdened and how do we deliver that care of linking them to a financial navigator at the time that they express a need?" And this isn't just to improve patient care, patient satisfaction. From a practice perspective, if you can support these patients, one of the outcomes that you can track for the investment of expanding your financial navigator pool is, does it decrease the uncollected cost share from the patients, which we have to write off every year. You know, if you plug them into a better insurance plan or to external resources, will they have enough then to actually pay the copay?

[00:42:06]

So those are all really interesting questions that require more teasing apart, especially as there is this movement toward price transparency. And I really think that there is a huge, huge potential, unintended consequence of giving a patient the price without providing them with support. And to me, the consequence isn't that they're going to go to the cheaper clinic down the street. It's that they would get sticker shock and not get care at all. You know, they're gonna look at it and say, "Oh, I can't afford that." And then just stop so...

[00:42:46]

Dr. Rubin: Yeah, it seems like you've defined a whole set of research questions therein, right, perhaps something related to your next grant proposal. But, you know, I'm kinda interested in, again, rewinding back a little bit. You know, I've known Martin Prince for many, many years, and in those times when you were a fellow, he and I were jousting on podiums of CTA versus MRA at all kinds of conferences around the world. And I have to say that the sensibility of those conversations did not dive into the nuances of test appropriateness and of...certainly not financial toxicity but just, you know, the kinds of questions that you're asking about the nuances of the information, the value of the information and such. And I just want to, you know, unpack a little bit about

that turn toward having not just the interest but the tools to pursue those questions. Was that the Robert Wood Johnson program that really exposed you to people that gave you those tools?

[00:43:51]

Dr. Carlos: It was that and through the program I completed a master's degree in the School of Public Health. And there was a community of people who thought these thoughts, and I found that particularly appealing in a way that developing new technologies didn't have for me. So like I said, [crosstalk 00:44:16] to how can I answer these questions that I find interesting and then through there, it goes toward, "Well, where are these tools?" And I still use that today because it's not just tools but it's people that you can collaborate with, people who really work in the space, and you give them the opportunity to apply their skill set laterally to a different area that could really use their skills, you know. So I have this...when I look at careers that I admire such as yours, it's this ability to not focus on the hammer but really focus on the care that you're trying to change. And if you have a hammer, everything looks like a nail. That doesn't necessarily advance science. It just means you find more nails. But if you take a step back and really ask, "Is this the right tool? Do I need a screwdriver or do I need, you know, a penlight, whatever?" If you take a step back and really understand the question, then that helps you bring a team together, you know. And it's gotten to the point where I can't amass those tools myself but I'm in a position to encourage new investigators to think more deeply about the tools and skill sets that they would need and to interest them in these types of questions.

[00:45:42]

Dr. Rubin: Yeah, yeah, very well said. We haven't used the term yet but I think the term in aggregate that encompasses the direction that your research career has taken is health services research. And I wonder if...I mean, you have really been at the center of health services research for our field. It's a term that I think many people could go through an entire career in radiology and not necessarily have a direct familiarity with. Maybe you could just speak for a moment about health services research, what it is, and why is it that it seems like most of our radiology research isn't health services research.

[00:46:21]

Dr. Carlos: Yeah. So I've been privileged to essentially grow up with health services research in radiology and how it has unfolded. Radiology is rewarded

for innovation, developing a new test, developing a new tool, getting it reimbursed. That there is a lot of built-in incentive for people who want to do research, to focus on new applications and new technologies. And taking a step back and thinking, "Well, what are the downstream consequences of increasing this type of imaging or shifting care into imaging or away from imaging?" There isn't necessarily the same incentive to ask those questions. Especially if the answers are, "Well, you do less radiology." From a practice perspective, the results of doing less and taking away reimbursement is not necessarily the most attractive. And I am privileged to be able to ask those questions because I sit at an academic institution. I know that if I were in private practice, my lens would be completely different. So I do understand that it is...I understand why a lot of what we do isn't. I also think that part of it is that it's the way we ask questions and the way...and the type of skill sets that we build. Even though we are trying to get residents to integrate non-interpretive skills into their education and our residents complete a quality improvement project, part of it is really like...you need to ask the terminal question. You know, so if you have a quality improvement project, there are also...that is based in education, the appropriate outcome has to be a clinically relevant one, not just whether or not you remember what they taught you five minutes ago. You know, if you're teaching someone how to do a biopsy, the outcome really should be, "Well, how many repeat biopsies do they need because of insufficient sample?" You know, that is what is truly clinically relevant.

[00:48:47]

And I am optimistic that the field will evolve in that direction if only so that we can continue to be reimbursed in a model that is shifting away from fee for service to value-based imaging and really being able to define our value needs, needs more laterality in the types of questions that we ask. You know, value to whom? Value in what circumstance, etc.?

[00:49:20]

Dr. Rubin: Yeah. Thank you for that. Very well stated. Around the time that you were appointed an assistant professor, you were selected for the GERRAF program. You mentioned the GERRAF program a bit already. You know, you have been serving as the chair of the board of review for the GERRAF now for the past eight years. It's a program that you have been very closely aligned with from being a fellow all the way now to essentially overseeing its operations. Would you mind speaking a moment about what is GERRAF and what makes it special?

[00:49:49]

Dr. Carlos: The GERRAF is a 29-year-old program that trains early career radiologist with an interest in health services research and care delivery. It is a program that provides intensive mentorship through its retreats, and the fellows are assigned both external mentors through the GERRAF board and they come in with their set of internal mentors. Many of the folks who get a GERRAF eventually do things other than their GERRAF project. And what that says to me is that we don't train people to do a particular research project. What we do is we train future leaders in radiology such as yourself. We have many chairs who have come through the system through GERRAF. We have vice chairs of research, we have people who are now in integrated healthcare systems managing service lines outside of radiology. And obviously, we have people who have built incredible research careers. When I look at the GERRAF class year over year, I don't think, "Oh, this is a great project." I think, "These are the people who are going to be leading the field 5 years, 10 years, 15 years from now." And that is what I am most proud of, is the ability of the program to really invest and provide an experience that will transcend the research project that they have.

[00:51:35]

Dr. Rubin: Yeah. Yeah. Again, very well said. It's been a real privilege from me to serve on the board with you at the helm over these last...oh, my gosh, I don't know. You know, 10 years or so. It's fantastic. It's an inspiring endeavor. Truly inspiring. You know, one other health services research organization I'd like to ask you about is the Radiology Alliance for Health Services Research. What is RAHSR and what is its relationship to the Association of University of Radiologists?

[00:52:11]

Dr. Carlos: RAHSR is an alliance within the larger AUR umbrella. I've heard it described as the land of misfit toys because it's where a lot of GERRAF alums wind up. It's really a community. And the goal of RAHSR, in my mind, is to show that there is a linear trajectory that people can join after GERRAF. And the GERRAF, but you enter community of thought leaders and people who really want to improve care along the lines that you have been thinking about during your GERRAF. And it's also an opportunity for them to gain leadership experience pretty early in their career because it's a small group, there is a lot of opportunity to make it on to the board a lot earlier than some of the other organizations. And RAHSR's represented at the larger AUR board by its

president, and that's another opportunity to understand not just organized radiology, but really to look at how other people lead, you know, how they raise questions, how they conduct themselves in that setting. And it's a way for younger folks to pick up the best and model that to continue their professional growth.

[00:53:48]

Dr. Rubin: Yeah, yeah. I imagine also it is a great way for folks that are just getting interested in health services research. Maybe they aren't yet ready to apply for GERRAF, to find like-minded individuals and to gain exposure and understanding to the discipline.

[00:54:09]

Dr. Carlos: Very much.

[00:54:11]

Dr. Rubin: Yeah. We have had a lot of radiology society presidents on this podcast, but I believe that you are the only guest who is the president of the AUR as well as RAHSR. You also have been awarded the AUR gold medal. With so many radiology societies vying for radiologists' attention, what is unique about the AUR and why is it important?

[00:54:36]

Dr. Carlos: The unique aspect about the AUR is the focus on University of Radiologists. And this spans the quadruple missions of academic institutions, clinical, service, training and education and leadership. So under the umbrella, the AUR has an affiliation with SCARD, the Society of Chairs of Academic Radiology Departments. We also have an affiliation with APDR, the Association of Program Directors in Radiology. A lot of our programing is directed toward the how-to of education, how-to of research, and how-to of leadership. And there are unique issues of academic institutions and the range of academic institutions including the range of resources, the focus that they will put on education versus research. It's an opportunity to meet with your peers and discuss issues and arrive at concrete solutions that are appropriate for one to take home to one's institution. It isn't just providing how we do it, but it provides the opportunity for you to shape how one would do it given your circumstances and your resources.

[00:56:02]

Dr. Rubin: Yeah. Yeah, it's interesting. You know, university radiologists and academic radiology is where future radiologists are developed. And that's a fairly consistent characteristic. There are residencies associated with community practices as well, but having an organization that really helps to define all aspects in the environment that is supportive of assuring that we're training leaders for the future, you know, great clinical radiologists, all of the characteristics that we seek to perpetuate in our field is a lofty endeavor and makes good sense. It's good that we have the AUR.

[00:56:45]

Let's talk about the JACR, the "Journal of American College of Radiology." How did you first become involved with the journal?

[00:56:51]

Dr. Carlos: Kimberly Applegate, I believe, nominated me to be on the board, and at the time, the journal was still finding its footing, that all the board members were required to write an article for the JACR in order to assure a pipeline. And I thought after I wrote my first article, "Man, that was really hard. I think what I should do is get a bunch of other people to do the work and all I would do is put it together." So I proposed to Bruce, "Bruce, why don't we have a special issue on, you know, whatever topic I was interested in at that time?" And he said, "Well, okay. No one's ever done that before so why don't you go ahead and do that?" So I invited a bunch of people, put out a table of contents, and then I realized that, nope, it was easier to wrangle oneself than it is to wrangle 10 selves and getting them to write the articles, stay on time, stay on target, review all the manuscripts, provide intelligent feedback that will help them improve and then deliver it to Bruce when I said I was going to deliver it so that it could go to Elsevier and be set up in the queue. So I guess what helped me was that I underestimated the effort because if I had actually known what it was like, I would've just written that paper and gotten it over with. Instead, Bruce said, "You know, I really like the way the special issue turned out. Why don't you just make this an annual endeavor?" And then this is where you insert this emoji, the facepalm emoji. But it was such a great experience.

[00:58:38]

Dr. Rubin: Yeah, wow. Yeah, yeah. And so impactful. Now, when you speak of Bruce, you're of course referring to Bruce Hillman?

[00:58:46]

Dr. Carlos: Yes. Bruce Hillman. I met Bruce Hillman...we were matched as a mentor-mentee through the AUR mentorship program run by John Eng who is also a former GERRAF and is professor at Johns Hopkins. So I met him for a 30-minute chat. We wound up going to the member party event that evening. We continued our conversation. And I am very lucky that he kept me in mind for future opportunities. So it was a good relationship. And I do consider him a friend beyond being a mentor.

[00:59:34]

Dr. Rubin: Yeah. A remarkable individual who was a guest on our podcast just about a year ago. And, you know, certainly very inspirational. Is it fair to assume that you would characterize him as a mentor?

[00:59:49]

Dr. Carlos: Very much. Very much. Yeah. He is up there in the impact he has had on my career and career trajectory, and even beyond the JACR.

[01:00:02]

Dr. Rubin: So if you were to try to identify what it was about the JACR that led you to lean in, I mean, there's a number of different journals that you could have been involved in, and the JACR back in those days was relatively young and, you know, establishing itself. What was it that led you to lean into the JACR?

[01:00:23]

Dr. Carlos: I really saw its potential and its niche. Like, I send a lot of my stuff...even before I became a deputy editor, I consistently sent a lot of my stuff to the JACR. I believed in its mission of really providing quality science in the space that we don't traditionally have exposure to. I also believed that the people who read the JACR were a part of the group that I wanted to expose my ideas to, get feedback from, and to better understand what the context was for how they delivered care and how I could ask questions to improve care delivery in a variety of settings. So that's why I invested a lot of my effort in the JACR. Even before it had an impact factor. And I remember having this conversation with one of my residents. You know, should we send it to the JACR because the JACR doesn't have an impact factor? I said, "Yes, because it's gonna get an impact factor and you don't wanna miss the boat." And I don't know what happened to that particular paper but I revisited that discussion later on with the

same person, and the same person said, "Oh, no. Definitely. We should send it to the JACR. Have you seen their impact factor?" So...

[01:01:53]

Dr. Rubin: Bravo. Success. Now three years ago, you were named editor-in-chief of the JACR, the first woman to lead one of the three major radiology journals. And that was a major accomplishment, one well deserved in light of all your previous contributions. Why do you think it took so long for a woman to fill this important role for our field?

[01:02:19]

Dr. Carlos: Part of it is potentially pipeline. And you've seen Caroline Meltzer's slide of the leaky pipeline. And once you...the higher up you go, the smaller that glass of potential candidates are in. So there is that problem. And part of it might also be that it was the right moment in the right time. I cannot discount that. And it may also been, because, in part, I was there in part doing part of the job. So it's a constellation of opportunities and time.

[01:03:13]

Dr. Rubin: Yeah. Well, you know, thank goodness that you had fulfilled all of the steps along your journey to get to this point because, you know, when you just sort of look at it, you know, kinda broadly and say, "Here we are, you know, in the latter part of the 2010s and there hasn't been a single woman serving in this role," it just seems really surprising and shocking. I mean, you know, we've had women presidents of a number of the major radiology societies. And so, you know, kudos to you and everything that you've accomplished to have broken that glass ceiling.

[01:03:54]

Dr. Carlos: Thank you. It's funny because Bruce initially asked me to be his deputy editor and he wanted someone to expand their digital presence. You know, basically, grow social media and establish a blog. And I remember turning him down. I said, "Bruce, I think you want someone younger who actually understands this." And then my husband said, "Call him back right now and say you're going to accept the job." So I called him and I said, "You know, I revisited the issue and I think I'd like the opportunity." And it's just been such a thrill ride ever since. I mean, really it is one of the best jobs and such incredible potential. We recently...

[01:04:39]

Dr. Rubin: Yeah. Bruce described it during his interview as the best job he ever had. And he had a lot of jobs.

[01:04:48]

Dr. Carlos: And he had a lot of jobs. It's so true. It is so true. And it's not a job that I take lightly. You know, I know what a platform the JACR provides to be able to consistently provide quality information that I hope makes us think critically about the practice of radiology. And not just, you know, our utilization's going up or down or reimbursement's going up or down, but really understanding why those trends are there, what drives those trends, and are we fulfilling our mission of good patient care.

[01:05:32]

Dr. Rubin: Yeah, now when you began your editorship, what would you say were your main priorities?

[01:05:38]

Dr. Carlos: My main priorities were to continue to increase the diversity of the editorial board, our authors and our reviewers. And I am pleased to say that we have definitely accomplished that goal. If you look at our [inaudible 01:05:54], we bring a wide variety of perspectives. The same with the content in the journal. I am very much interested in giving airing to both sides of the issue. If the evidence is there, if you can show me the data, I want both sides reflected in the journal. And you know this being a scientist, which is science is heresy until it becomes dogma. It can be challenging to ask certain questions because it can push a lot of people outside of their comfort zone. But that is...I genuinely believe that that's how science grows. You know, someone has to ask the question that says, "But why don't we do it this way?" So luckily, you know, it's no longer an excommunicable offense to ask a difficult question, and it's important for the field to continue to engage in these thought processes.

[01:07:02]

Dr. Rubin: Yeah. Yeah, for those who may not be familiar with the work of the editor-in-chief of a monthly journal, can you share some things about the role? You know, for example, you know, how much latitude do you have to set the vision and the strategy for the journal?

[01:07:19]

Dr. Carlos: I work to align the vision of the journal to support the ACR, to support the ACR's vision and the ACR's mission. So we have five pillars linked to the five pillars of the ACR and we have a section devoted to each one. And I'm committed to providing the best evidence that people send us for each of those areas. Within that, I am fortunate that the ACR does support editorial independence in the same way that they supported it with my predecessor. We've been able to provide special issues and emerging topics. For example, we were one of the earliest to focus an entire issue on health equity. Another one of our special issues on data science remains one of the most highly cited set of articles, which is great considering that that issue only came out in 2018. And I pay a lot of attention to what articles are read, the commentary that people have in different spaces. For example, on Twitter. Who is citing us? Where are we being cited? And that informs the type of papers that I would like to solicit in addition to the ones that are submitted to me because it's part of our mission.

[01:08:48]

Dr. Rubin: Yeah, yeah. You know, I can't help but reflect on the sort of hybrid characteristic of leadership within the context of being editor-in-chief, where aligning with the sort of larger organization is fundamental to having the broad base support and consistency, but then being creative and innovate within that structure is ultimately the way to succeed and no doubt the expectation of the organization giving you the charge of being editor-in-chief. And, you know, this role...this characteristic repeats itself whether you're a department chair, whether you are, you know, running, you know, a big center, even if you're, you know, a president of a practice and needing to align with all of your partners.

[01:09:37]

Dr. Carlos: I think everyone has a boss, you know, and that doesn't go away regardless of the position that you occupy. And with the ACR, a lot of their constituency really are private practice radiologists. And to make sure that we continue to provide information that they need, I've recently appointed an associate editor for private practice so that there is visible representation at the leadership level of the journal. We have also put together a column called the "Private Practice Perspective" to ensure that there's going to be reflection of their concerns more consistently. And we're going to also issue a few calls for papers on case studies specific to AI implementation in a private practice setting, which is quite unique compared to academic settings. And I am really

optimistic that we will get some information that will allow us to more fully understand a particular issue like AI and implementation of AI. So I'm very much looking forward to those initiatives getting going.

[01:10:54]

Dr. Rubin: Yeah. Yeah, super. Now, you know, we've talked a lot about strategy and goals, but how much of your time is spend in the nitty-gritty of reading manuscripts, making publication decisions and composing journal issues?

[01:11:09]

Dr. Carlos: A lot. I would say that of the time that I devote to the journal, about three quarters of the time really is looking at manuscripts, thinking about the next issue, thinking about a call for papers. And I also want, as part of leadership, you know...I really believe in see one do and teach one. And I have charged my associate editors with putting together a focus issue, which is a portion of our regular journal, to give them the experience of what it's like to actually act like an editor. And who knows? I need to train my successor so I'd rather that they have the appropriate skill sets.

[01:11:55]

Dr. Rubin: That's great. Deepening the bench. Now as editor-in-chief, you rely... Sorry?

[01:12:00]

Dr. Carlos: I said exactly.

[01:12:02]

Dr. Rubin: Yeah. Yeah. Now as editor-in-chief, you rely on an extensive team of staff and volunteers. Tell us about your team, its organization, and how you coordinate and support the work of your teams.

[01:12:15]

Dr. Carlos: We have staff currently in three different groups. We have the ACR staff that support the JACR. We have an editorial management team at J&J that helps us with the submission process and the review process up to the time point that it gets accepted. And then we also have a team at Elsevier that then takes the accepted manuscripts, typesets, copyedits, and then prints our journal. We also work very closely with our Elsevier publisher. The front part, in

addition to discovering new information in what people send me...because it really is a privilege to be one of the first places that people tell you what they did and what their results are. In addition to that is the strategy of developing and defining our niche and continuing to keep the JACR abreast of new issues and challenges. That is fun, just as much as reading someone's new submission is fun.

[01:13:27]

Dr. Rubin: Back in the day, a journal was a fairly simple construct, a physical magazine mailed out to subscribers every month. With print media fading into the background, as online distribution takes center stage, how do you view the many channels for distribution of information available today and how do you assess and strive to meet the needs of a diverse readership?

[01:13:49]

Dr. Carlos: So that's a great question because, fundamentally, I believe what we're trying to do is build a community. And the gateways for communication have just exploded. I think print may eventually go away, but when we talk to our constituency, they still like to cuddle up with the physical journal, you know, because it's manageable, it gives them a sense of satisfaction, being able to read through the journal rather than feeling that they just don't have enough time to devote to it. But I am sensitive to those changing needs. So being able to meet readers and learners where they are means developing new ways to deliver content. So we pioneered the visual abstract in radiology, which is now a common feature across other radiology journals. That allowed us to expand our social media platform under Amy Patel's leadership to ensure that we have information to share in ways that some would like to consume. Sort of the info snack or edutainment. And I remain value neutral about how people want to learn. If they want to learn using info snacks, I wanna have snacks for them. And if they wanna dive deeper, well, that's what the journal is for. It doesn't serve us to criticize that way of learning. It's just better if we are able to meet those needs.

[01:15:42]

Dr. Rubin: For the past six years or so, the emails that I've received from you have been sent from your happy place. Where is your happy place?

[01:15:53]

Dr. Carlos: My happy...I try to make my happy place wherever I am in that particular moment. You know, as with many goal-directed people, often it's the goal and getting of the goal that can define whether it's going to be a good day or a bad day. And what I've realized is that every goal has an upside, you know, if I achieve it, great. If I don't achieve it, great. And it's this reframing that I really think has built a degree of resilience in how I approach questions. And it has also allowed me to maintain true equipoise, like be interested in the answer regardless of whether the answer is positive or negative because, you know, every answer should lead to the next question. And what it does is it allows you to say, "We're gonna pursue this line of questioning versus another line of questioning," rather than approaching a result as a terminus. It's just a station. So I try to make my happy place every place that I'm in.

[01:17:16]

Dr. Rubin: I think it's fantastic. And let me offer you another lens as a recipient of many emails and very few of which contain the word happy. And I know that every email I get from you has that word, and it can't help but bring a smile to my face. And, you know, for a moment, certainly has an influence on how I'm feeling. So, whether you know it or not, it has a profound effect.

[01:17:46]

Dr. Carlos: I am so glad to hear that. I am so glad to hear that.

[01:17:50]

Dr. Rubin: So you're a very, very busy person. How do you unwind? Do you have any hobbies or activities that you pursue outside of work that re-energize you?

[01:18:01]

Dr. Carlos: In the pre-COVID days, I loved to travel. And I have a list of places and things that I would like to do that have sort of been put on hold. One of my dream trips is to take an overland trip from Iran to...through the stans into Western China. I would love to do that if I could get a block of time. I've also wanted to do the Orient Express, starting from Russia going through Mongolia and all the way out to Shanghai. You know, more locally, we love the national parks, and we made a decision a few years ago that we were gonna spend, you know, the next 10 years trying to visit as many national parks as possible. And that has also been fantastic. At home, I like to garden, but my garden is in such a deplorable state right now. So mainly I'm out there digging in dirt.

[01:19:08]

Dr. Rubin: Where to begin? Now I couldn't help but notice that you described art as an interest in college. You minored in art. Tell us a little bit about, you know, what art meant to you back then, what mediums you pursued, and is there a, you know, a hibernating opportunity there.

[01:19:31]

Dr. Carlos: I did oils. I worked with Vera Clement who was very well known in the '60s for her very controlled way of approaching art. And I loved the classes that I took with her. I did oils. You know, we played with what is reality versus what is not. While I would like to go back to it, I think that will have to wait a little while longer. I don't feel the itch yet. And there are other things that I would like to explore first.

[01:20:17]

Dr. Rubin: Looking ahead, what excites you most about the field of radiology?

[01:20:25]

Dr. Carlos: That is a great question. What excites me about radiology is the promise and the potential of the field to make an impact in ways that we may not necessarily view as traditional, but it's where our field...members of our field are doing critical work that cannot help but evolve how we think of delivering care in radiology. Things like Bhavika Patel at Mayo arranging with Uber and other rideshares to bring folks, women from Maricopa County to Mayo so that they can participate in the TMISTmi trial, or Efren Flores, creating vaccination messages to reach the Latino community and developing interventions in the Latino community to improve lung cancer screening, or the way that folks in the ACR are leading the charge to help shape what value-based reimbursement would look like and what the metrics are for practices in order to participate. So that's what really excites me about radiology, and I am consistently both impressed and inspired by people who step up to the contemporary challenges and who genuinely want to improve how we deliver care, wherever that may take us. So I am bullish, totally bullish. If radiology were a stock, I am doubling down.

[01:22:27]

Dr. Rubin: Excellent. Well, Ruth Carlos, you are such a unique star in our universe of radiology leaders and one that is shining very, very brightly. And

the special attributes that you have brought to our field to lead it in directions that I am confident we might not have headed in without your leadership are truly inspiring. And you have much, much more to give, but I really appreciate your taking the time to open up your journey with us today and being a guest on "Taking the Lead."

[01:23:06]

Dr. Carlos: Thank you so much for the invitation. You know, Geoff, I think this might have been the deepest conversation you and I have had, and I would like to have the opportunity to ask you those questions as well.

[01:23:21]

Dr. Rubin: We'll work on that. Okay. Beautiful.

[01:23:26]

Dr. Carlos: For our next draft.

[01:23:29]

Dr. Rubin: There we go. I'd be delighted.

[01:23:41]

As we close this episode, I want to once again thank our newest sponsor, the Isenberg School of Management Graduate Programs at the University of Massachusetts, Amherst. Isenberg Graduate Business Programs prepare you to advance your career on your terms, and their online and on campus degrees are tailored to your schedule and timetable. Learn more at isenberg.umass.edu/followyourdrive.

[01:24:05]

Please join me next month when I speak with Doctor Laurence Miroff, Adjunct Clinical Professor of Radiology at the University of South Florida. He has continuously led major leadership roles within the American College of Radiology for the past 42 years, including within the council, board of chancellors, and the boards of the Neiman Policy Institute and the Radiology Leadership Institute. He served as president of his 45-member radiology practice, president of 7 additional professional imaging organizations, including the American College of Nuclear Physicians and Educational Symposia Inc., and was chairman of the Board of Radiologics when it became a publicly traded company. A highly sought-after professional practice consultant, Doctor Miroff

has advised over 100 radiology practices on practice management and provided mentorship and guidance to countless radiology leaders. "Taking the Lead" is a production of the Radiology Leadership Institute and the American College of Radiology. Special thanks go to Anne Marie Pascoe, Senior Director of the RLI and coproducer of this podcast, to Port City Films for production support, Linda Sowers, Meghan Swope, and Debbie Kakol for our marketing and social media, Bryan Russell, Jenn Pendo, and Crystal Macintosh for technical and web support, and Shane Yoder for our theme music. Finally, thank you, our audience, for listening and for your interest in radiology leadership. I'm your host, Geoff Rubin from the University of Arizona, College of Medicine in Tucson. We welcome your feedback, questions, and ideas for future conversations. You can reach me on Twitter @geoffrubin or using the hashtag #rlitakingthelead. Alternatively, send us an email at rli@acr.org. I look forward to you joining me next time on "Taking the Lead."