



**American College
of Radiology™
Radiology Leadership Institute**

**Episode 58: Centennial Perspectives
Five Experienced Radiology Leaders Share Their Perspectives on Radiology's
Evolution and the Opportunities and Threats Ahead**

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Geoff: 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. Over the course of the next two episodes of "Taking the Lead," I'll be discussing the ACR Centennial and the evolution of the field of radiology with two panels of radiology leaders representing different career stages and perspectives. Today's panel embodies a more experienced set of perspectives with each of today's panelists representing radiologists who began their radiology training in the 1970s or 1980s. The field of radiology, or at least the use of electromagnetic radiation-based imaging, was already in its eighth decade at this point, and approximately half of the ACR's history to date had been written.

[00:01:08.037]

As a regular listener to the podcast, I know you understand the importance of leadership development, and so I have a very special program to tell you about. The 2023 RLI Summit is an immersive weekend of high-impact education, inspiration, and collaboration with the best and brightest in the specialty. You'll learn from radiology thought leaders and business school experts about topics like sharpening your business strategies, understanding private equity, creating value in your organization and health system, and mastering negotiations.

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You'll also have a chance to put your learnings into practice during an interactive, real-world case study session with your peers. This will be my 12th summit, and I can tell you that it is truly transformative. This year's RLI Summit is being held September 29th to October 1st at the Seaport Hotel in Boston, just minutes from Logan Airport on the historic waterfront. To celebrate my 12 years of summit participation, we're offering our "Taking the Lead" listeners 12% off current rates. Simply register at acr.org/rlisummit and use the code RLITTL12 at checkout. I look forward to seeing you there.

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[00:02:43.780]

Panelists, welcome. I'd like to ask each of you to introduce yourselves and tell us what led you to pursue the field of radiology. Carolyn, please start us off.

[00:02:53.634]

Carolyn: Hi, Carolyn Meltzer, great to be here. I look forward to hearing everybody's perspective. I guess I started out kind of a nerdy science person, intrigued by technology, particularly PET imaging, which I'd been working on during my training at Johns Hopkins. Then went to the University of Pittsburgh where I had the pleasure of working in the really young PET imaging center there and working on helping to develop and test the first PET-

CT scanner. I got thrown into administrative work early on and found that I really liked serving people and went on to further leadership at Pittsburgh in neuroradiology at the department level, and then at Emory as chair of the Department of Radiology and Imaging Sciences and multiple roles in the dean's office. And now I'm on the West Coast as dean of the Keck School of Medicine of USC. There aren't too many radiologists as deans, so we need more.

[00:03:55.373]

Geoff: Indeed we do. John, why don't you go next?

[00:03:58.268]

Jon: Thank you, Geoff. And, again, it's a real honor to be here with this group, and I'm looking forward to having some fun over the coming time as we get to hear each other's stories. So I'm Jon Lewin, and I started out as a science nerd as well, a physical chemist, and really was interested in the science side of medicine. So after my radiology residency and an MR research fellowship, I did a fellowship in neuroradiology and ended up very early on getting recruited back to where I did my residency, University Hospitals of Cleveland, to be the director of the division of MRI. And the main thing I did there, I was lucky that the MR research group had just upped and left. The whole group left and was recruited to Wash U and Mallinckrodt. So I had a building with no people, and I was able to recruit essentially a scientific team, which included most notably Geoff Dirk, and Geoff and I built a research group of about 25 people over the 10 years or 11 years I was there.

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And really I loved being a physician-scientist, but like Carolyn, I got drawn into administrative work as a vice chair there and ultimately was recruited to Johns Hopkins to be chair of their department of radiology and radiological science. And I spent 12 years in that role, 4 or 5 of which I was brought up into the C-suite as the co-chair for strategic planning for Johns Hopkins Medicine and a senior vice president for integrated healthcare delivery for Johns Hopkins Medicine and found that I really loved healthcare transformation and really change management.

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So I was recruited to Emory, and I took what had previously been two full-time roles, which was not perhaps a wise decision, but did it nonetheless as the executive vice president for health affairs for the university to whom the deans of the school of medicine, public health, nursing, head of the cancer center, head of our research center, and the CEO of the health system reported.

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And then I also took the role of president and CEO of Emory Healthcare, which was the Emory's Health System and the only real academic health system in Atlanta, and really in the state of Georgia, you look at a comprehensive academic health system. I did that role for just under seven years and happily went back after the pandemic after doing both roles to step back to the faculty. And so now I'm back to being a professor of radiology, biomedical

engineering and neurosurgery, and health policy and management in the School of Public Health as well.

[00:06:55.173]

Geoff: Thank you. Mary, please introduce yourself.

[00:06:58.531]

Mary: Thank you so much. It's an honor to be here with this last group of folks, and I really resonate with being with the old folks. So thank you for inviting me to be with this group. I'm Mary Scanlon. I went to Einstein in Philadelphia for my residency, my chair when I was a second-year residency, "I want you to stay on and be a neuroradiologist." So I apprenticed. I learned how to do that myself by that model. And I started the MRI there, and I was a director of MRI, read 10,000 scans on a 0.15 Technicare until we got a Supercon in 1990. And I left Einstein when there was a change in chairmanship, and it was a joint recruitment between Penn and the VA, and I became chief of radiology at the VA.

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And then I was associate chief of staff running clinical service line, I ran Vision 4 radiology. I got to work with Eliot in that capacity. And at a certain point in time, I decided medical management in the VA system is a little...you know, so I decided it was time to leave, and I was going to go into private practice for the Penn group, and my chair at that point in time, Nick Bryan, called me on the phone. He says, "I have the best job in the whole world for you." Do you wanna be program director? And so I've been program director since 2006 and then the vice chair of education. I have both roles, and I plan to do this until I'm 75 at least

[00:08:31.081]

Geoff: Awesome. Larry Muroff, tell us about your journey.

[00:08:35.562]

Larry: Thank you very much. I wish Mary hadn't looked at me when she was talking about old people, but I'm delighted to be here with both colleagues and friends. I'm Larry Muroff from Tampa, Florida, and I have had a long and varied career in radiology. I started by having a fellowship or an elective as a medical student with Judah Folkman and then went on and did two years in the public health service. And I was all set to be a pelvic cancer surgeon until I discovered nuclear medicine. A friend had been doing this at the NIH when I was at the Bureau of Radiological Health. And I went into radiology at the last moment and was an NIH fellow. That meant that I made \$5,000 less than all the other residents, but I got an opportunity to go to one meeting a year, which was the RSNA.

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I then got involved with some committees, both the ACR and the RSNA, and that led to being appointed to the Board of Chancellors a few years later. And, subsequently, I've been involved as the president of a half a dozen state regional and national imaging societies. I

have had both academics and private practice experience. I was involved as a consultant and an entity and also involved very heavily in medical education.

[00:10:14.399]

Geoff: Marvelous. Thank you. And Eliot Siegel.

[00:10:17.011]

Eliot: Thanks. So let me give you the elevator version. So I am Eliot. I'm at the University of Maryland as vice chair, and also I have responsibility within the VA for the region of VA medical centers, radiology, and nuclear medicine in West Virginia, Maryland, and DC. And I did an undergrad in computer science and also in the visual physiology that determines optical illusions. And so as a, you know, student of visual phenomena and as a student of computer science, it really, in medical school, really couldn't be anything but diagnostic imaging. And so I made my decision fairly early.

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And then I had a really interesting kind of inverted career where I started out as chief of radiology at the VA right out of my residency, as I've mentioned, started doing interventional radiology and found out that you really can't be in charge administratively and try and have a schedule that lets you do interventional radiology and then transitioned to body imaging and most recent years to nuclear medicine, which has been a, you know, really fantastically fascinating and interesting specialty for me.

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For me, my emphasis during my career has been positive disruption and fun. And so kind of, you know, creating the first digital department was fantastic, being able to do a number of different firsts with regard to precision medicine, with regard to advanced visualization, with regard to AI applications. And, most recently, theranostics has been really fascinating and kind of, you know, sort of staying within the flow and then going out and trying to, you know, pioneer something new and interesting has been an endless fun challenge for me during my career.

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And so I currently am an adjunct professor at the undergrad level of computer science and biomedical engineering. And working with the students has been fantastic and invigorating. The other thing that I've been really very much involved with has been industry and entrepreneurial activities, which has been a real emphasis for me with our residents and trainees. And it's always a little bit fun for me, you know, when it's time to disclose, you know, industry relationships or research grants, etc.

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You know, to have 50 different things that are up there in that list, and in some ways, I really believe that that interface with industry has allowed me to be able to have an impact on radiology that I might not have if I just stayed in my regular lanes of just doing NIH and

other types of research. Most recently, I've pivoted, as I mentioned, into doing theranostics and moving in the direction of being more of a radioligand, a medical oncologist, which has been fascinating, and it's an area that I think is just brand new, incredibly exciting, and emerging.

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And the idea of creating a data-driven practice to be able to sort of reinvent or pioneer that specialty is kind of my latest disruptive play, which has been really fascinating. And so over the years, I think the thing that is most important to me is being a mentor to so many students, residents, fellows, college students, high school students. And that's where I derive the majority of satisfaction in my career. So thanks for asking.

[00:13:39.428]

Geoff: Let's first focus on the state of radiology and radiology practice as you entered and emerged from your training. So let me start with you, Carolyn. In what year did you complete your radiology training, and what at that time excited you the most about entering your chosen medical specialty?

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Carolyn: Oh, okay. I finished my training in 1994 and was very excited, I mean, as I continued to be throughout my career about the interface of technology and the art and science of being a physician.

[00:14:16.952]

Geoff: Marvelous. And, John.

[00:14:19.242]

Jon: I finished my training in 1992 after, again, a pediatric internship and then residency and three years of fellowship. When I started, what really most excited me was the beginning of my residency, I first saw MRI and MR physics. And as a physical chemist, as an undergrad, I was really excited by the physics of MRI, and just the idea that radio waves could create an image just blew me away. So it was really watching that technology evolution that sort of lit my academic fire, and watching the technical innovation that's happened subsequently has been truly remarkable to see.

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Geoff: And, Mary.

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Mary: Well, let's see, I finished in 1984, and MRI is also the thing that excited me. I vividly remember reading the first article in radiology, I remember, 1982 and then learning MRI myself and then teaching it to my fellow residents and to the attendings at Einstein and then running the first 0.15 Tesla, mind you 0.15 Tesla unit in 1985. So it was very exciting.

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Geoff: Marvelous. And, Larry.

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Larry: Well, I completed my residency in 1973, which probably makes me the only one on the panel to have fluoro with red goggles and also perform pneumoencephalography. I'm not saying I'm old, but I have neckties that are older than Carolyn and John, so...

[00:16:02.564]

Geoff: Excellent. And what led you into the field of radiology then?

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Larry: You know, I entered the specialty because I was very interested in nuclear medicine and I was excited to work with both anatomic and functional technologies. I mean, that was the draw for me to enter the specialty of radiology.

[00:16:22.687]

Geoff: Great. And, Eliot.

[00:16:24.672]

Eliot: So I completed my training in 1986, and the chairman of radiology when I was a first-year resident took me to a conference in Boston with him that ended up being the start of Deck Rad. And, you know, with a computer science background, I was really thrilled about the idea of beginning to apply computer technologies in diagnostic imaging. And so I had a really interesting start of my career where I went directly from being a resident to being the chairman of the department at the VA in Baltimore, which was really interesting.

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And so what really excited me was the opportunity to be the first hospital in the world to go from analog to digital and to solve some of the issues that were plaguing us back then with regard to availability of medical images to allow image interpretation and stack mode, which ended up, you know, really revolutionizing what we could do in MR and CT as far as visualization and making the transition to where the computer could actually assist us in detecting disease and making diagnosis. And so the whole idea of getting in just at the right time with kind of a computer science background to be able to be the pioneer to make the transition from analog to digital was really exciting and really, you know, shaped so much of my career subsequently.

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Geoff: Marvelous. So let's fast-forward to the present day. Looking back upon the many arcs of change that you've experienced throughout your careers to date, I'd like to ask each of you what you identify as being the most impactful to you personally and most impactful to you from your perspective for the field of radiology. And, John, why don't we start with you?

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Jon: Absolutely. So, when I think about change, the impact of the tremendous rate of technical innovation during my career on the field, you know, the impact on the field is obvious, but it's also had a corresponding and somewhat intertwined personal impact. And I kind of look at the personal arc by breaking it down into people, processes, and product of radiology in my career. And when I think about the people, really what drove me and the arc of my learning was the collegiality of the scientific community and MR technology and application development during, you know, that time of tremendous advancement really helped me understand the power of positive relationships, empathy, collaboration in driving transformational change.

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And while the transformational change fundamentally changed how we look at radiology, it changed how I looked at working with people. And when it comes to processes, my first real job was running a technical division, the MRI division at the University Hospitals of Cleveland and then had the opportunity to sort of build that into running both the faculty and technical side of a large department at Hopkins.

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And these really gave me the operational, the financial, the leadership opportunities to see, you know, how that worked and to see how change management worked on processes. And during that time, the processes within radiology markedly changed. And whether it was looking, as Eliot alluded to, the transition from analog to digital, we were a little bit later. I had the digital in 2006 project at Hopkins where we closed down our entire film library in 2006, maybe nowhere near as early as some others but still a major, major work.

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And those operational aspects really allowed me...or operational learnings allowed me to step up to my C-suite roles first at Hopkins and later with broader responsibilities at Emory. And then with regard to product, our product as radiologists, the increasing centrality of radiology and imaging in almost every patient's journey through the healthcare system, whether that's inpatient or outpatient, and the increasing impact of the radiologist on that journey that I've seen during my career has clearly had a huge impact on the field of radiology and the importance of the radiologist's product. And in my own career, sort of the chance to see our product, not just a dictated report or an interventional procedure, but instead seeing it as an integral driver of each patient's journey, you know, toward health, towards providing hope.

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That was really a critical part of reframing my understanding of how imaging impacts the broader healthcare system. And I think as I was in charge then of the broader healthcare system, it helped me look at really all of the processes and products of healthcare moving forward. So that's kind of a little bit of a look at how I might break down the arc of change in my career and my perspective on the field.

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Geoff: Marvelous. Thank you. Mary, what do you identify as being the most impactful to you personally and to the field?

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Mary: Well, I think, just like Eliot and John said, just going from the film alternator, the pedal to the metal, and having all those films up there and half of them falling down to what we now have in terms of digital imaging and to go from sitting there with a microphone and a tape, right? And you dictated something, and you put all the requests there, and then somebody would come, and a couple of days later they'd come back with reports, and you'd have to fix them, and then they'd go out again. And then maybe the provider would get it two weeks later to now us dictating everything with our reports being instantaneously available practically is like monumental from two to three weeks turnaround time to what we have now. So I think that's had the biggest impact.

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Geoff: Eliot, what do you identify as being the most impactful to you personally and to the field of radiology?

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Eliot: Yeah. Well, for sure, it really has been this switch from, you know, analog film to digital and then the various arcs of implementation of digital as the years have gone on. You know, Mary mentioned a little bit about film, I mean, that the chief of medicine at the Baltimore VA, you know, mentioned that Baltimore VA was always filmless because you could never find the films when you wanted 'em. And, essentially, you know, that was kind of a rallying cry for us when we went digital. And so, initially, you know, with regard to digital, our arc of achievement was really just any image anywhere, anytime.

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And then, you know, we went on to, well, what can we do for advanced visualization and stacking images? And then, of course, there were developments with radiology information systems and the electronic medical record, structured reporting, and speech recognition ended up being major arcs of change that ended up reducing our turnaround times in imaging from, you know, days to actually minutes, which has been huge. The whole idea of genomics and proteomics and a variety of different forms of personalized and precision medicine.

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I had some responsibility at the National Cancer Institute for Imaging Informatics and putting together a variety of different programs to cross-correlate radiology and genomic information. And then, you know, there was the evolving field of radiomics, which really was the radiology analog to genomics and proteomics and then, you know, precision and personalized medicine and, of course, AI, which is something that I've been interested in for many years, you know, from my experience with SPIE and CAD and radiomics types of handcrafted algorithms as we ended up being able to essentially learn by example.

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And starting in 2011 with the emergence of convolutional neural networks and GPU processing has really revolutionized AI, and so that has been another arc and, you know, sort of going from the initial arc that, gee, if we have images that are digital and everyone has access to 'em, it's gonna kind of be the end of radiology because everyone will be the radiologist, and it really didn't turn out that way. And kind of the same fear and excitement associated with AI really to me seems like an arc of deja vu. You know, no, AI is not going to be the end of radiology. No, we're not going to be replaced, but we have an arc where we have an amazing, you know, companion and an amazing tool to really advance the science and field. And so those arcs have been really fascinating for me, and, you know, it seemed to continue during my career, so thanks.

[00:25:36.905]

Geoff: Superb. Carolyn, what do you identify as being the most impactful to you personally and to the field as a whole?

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Carolyn: So I might think about sort of three areas. One is, you know, the role of the radiologist that's changed over time, the technology, and the community of radiologists. I wish I'd had a dollar for every time the end of radiology had been predicted and obviously every time incorrectly. So when I think about the sort of technology aspect, I started out my career and my training during the early days of PET imaging and Neuroreceptor PET imaging. And, you know, I was just really excited by the thought of, gee, it's not just about the structure of organs and particularly my beloved organ of the brain, but it was about function as well and understanding how, you know, our brains worked to produce the creativity, the knowledge, and the very interesting parts of being human and keeping people healthy.

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You know, and working in groups with physicists, neurologists, psychiatrists, computational folks, even though it was sort of an early day age of computation compared to where we are now, you know, that was really striking to me to work in those interdisciplinary teams. And that certainly foreshadowed my career going forward. You know, and I will also add that this sort of initially this idea of looking at function with the brain and then as the arc of our role as radiologists in therapies and in theranostics, I've been just really thinking much more broadly about the impact of the field.

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You know, when I was trained, people said, oh, radiologists are the doctor's doctor. I think we've evolved through that arc to very much be the patient's doctor. And that's probably been one of the most significant trends and progress, I think. When I got out of training and worked at the University of Pittsburgh on the first combined PET-CT scanner that could be used clinically, I mean, just the impact of having patients come from all over the world to see how their cancer might have progressed and to use this unique modality in its first clinical trial and talking to each patient individually who came to be part of that trial, you know, very much felt, not like the doctor's doctor, but certainly like the patient's doctor.

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And I'd also say the community of radiology has really grown and prospered. We used to joke about how we were all, you know, introverts in a dark room, and really the community is so vibrant, it's become more diverse over time. We've embraced a much broader scope, so it's been, again, both a professional journey of joy, but also, you know, just fueled by this excitement around technology and innovation.

[00:28:55.468]

Geoff: That's beautiful. Thank you. And, Larry, what do you identify as being the most impactful to you personally and to the field?

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Larry: Well, let me just start by everybody described some incredible technology, and I think we now take for granted image quality that really wasn't present before. I mean, when I was a chief resident, the group from Hounsfield's colleagues came over to the Neurological Institute and proudly displayed their 64 by 64 matrix CT head scanners or images, which were taken in a water bath or the patient was enclosed in a water bath. We had the first body CT scanner on the West Coast of Florida. It took two and a half minutes to generate a two-slice image.

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And as for ultrasound, I think you had to be on mind-altering drugs just to be able to interpret them. So we've really come a long, long way, perhaps the most impactful action by the ACR of many impactful actions that the organization has taken, but the one that I think is most impactful for the benefit of all radiologists occurred actually in the late '60s when a small group of radiologists persuaded Congress to take radiologists out of Medicare Part A and put us in Part B, like other physician specialists. And I think that really was a defining point for the specialty as a whole.

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From my personal perspective, I've been incredibly fortunate to have a diverse and professionally satisfying career that included both academics and private practice as well as medical education and consulting. The most impactful for me was the opportunity to co-found an educational entity as a town-gown initiative. It gave me the opportunity over a 27-year period to work with dozens of outstanding radiology teachers, many of whom were young and gifted but not as known as they are today in a large number, including a couple on this panel have gone on to incredibly outstanding careers. So that to me has been very gratifying.

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Geoff: Larry, you mentioned the criticality of the radiologists having our field, not in Medicare Part A, but in Part B. Could you provide just a little more context and explanation for folks who might not readily appreciate what that means?

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Larry: Well, Medicare Part B is where all physicians are compensated or considered to be unique specialists and practitioners. Medicare Part A basically is a hospital function, and if we had remained in A, we would've been, you know, an appendage of the hospital, much like a laboratory test. So it was incredibly important to establish us as co-equal physicians in the physician community. I mean, everybody who spoke before me mentioned how important it was for them to be involved with patient care and to interact with referring physicians in a co-equal way. That would probably not have been possible under the old construct.

[00:32:39.495]

Geoff: Excellent, excellent point. Thank you for clarifying. I'd like to ask each of you individually to opine on specific domains for the practice of radiology. And I'd like to start with you, Eliot. Technology development has been fundamental to the advancement of radiology. Back in the '70s, '80s, and early '90s, radiology advanced through the development of novel image capture methods, but by the end of the decade, image display and analysis tools emerged as engines for practice innovation. From your perspective today, what do you foresee will be the most important technological advances to the practice of radiology in the coming decade?

[00:33:17.882]

Eliot: Yeah. Thanks, Geoff. That's a really interesting question. And, of course, anybody that tries to, you know, predict 10 years out as I have many times can, you know, find that very fraught with Harold. But let me try and talk about four things that I think may be really interesting, important trends. And, of course, the first one that's most important, AI and deep learning and some of the implications of the large language models that we have currently.

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One of the things that I think is really critical is looking at AI as a way to improve radiologist efficiency. One of the things that we did many years ago when we first went to digital operation is we had a team of people from Johns Hopkins who were doing time-motion studies, and one of the things that they found is that radiologists make our diagnosis and our idea of what we're going to say in only about 15% of the time it takes to do an image interpretation, and the other 85% are sort of calling up the images, arranging 'em, looking at prior information, etc.

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And so I think that there's a tremendous amount of improvement that we can make by having automation. You know, we so much go to work every day and call up our images and just think that, you know, the way that things are done from an efficiency perspective really doesn't change. But I believe that there's the ability to increase our efficiency by five, six, seven times. And so I've seen radiology practices, there's one in Chicago where there's a radiology group that uses scribes, and they use human scribes, and they've increased their output by a factor of more than fivefold and efficiency while decreasing stress and decreasing burnout.

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And so the whole idea that AI could essentially do what these scribes are doing to call up the studies, arrange them, have the radiologist give a very impression type of report, and then to be able to elaborate and turn that into a more structured report, I think is incredible. And I think in 10 years we're going to figure out how to decrease stress and burnout by utilizing AI more intelligently.

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I think we're going to be able to read and synthesize what's in the electronic medical record. So often we either have to make the determination of do we just take the limited history that we get or do we go back and look in the patient's chart. And I think we're going to be able to have computers synthesize what's important to know as the radiologist. And I think we're gonna be able to generate imaging reports much more rapidly and efficiently.

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I think one of the most important challenges that we have is closing the loop on communication and being able to make sure that as we make recommendations there's a system that actually follows up to make sure that those are done. And incidental findings, I know the ACR has been very interested in following up on these incidental findings and looking at the impact of those. I think we're going to have much more data-driven diagnosis and detection, looking at a priori probability of disease, looking at patient history, phenotypic information, genetic proteomic information, change over time, and family history.

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Our AI algorithms right now are still kind of in the Flintstone era and treat each imaging study as though it's an independent entity, which is unlike the way we actually operate as radiologists, and I think that we're also gonna see AI that tracks changes over time and is tailored to individual populations and learns and grows. When we talk about machine learning, we really, I think, need to move to a paradigm where the AI algorithms actually learn over experience. My residents and fellows learn over time, and I think we're gonna see more of that.

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The second major trend I think we're gonna see in the next 10 years is going to be toward automation, increasing automation in radiology. We have a dire shortage of technologists, radiologists, and other personnel and imaging departments. And I think we're going to see faster and lower dose image acquisition using deep learning. We're going to see an increasing utilization of remote scanning and an increasing amount of wizards that will be built into our imaging modalities that optimize and provide feedback on quality.

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And I think we're going to see an increasing amount of imaging that's done remotely in patients' homes or assisted care facilities. And then I think the next thing that I think is a trend number three is going to be the philosophy of screening for early detection and

prevention of disease. I think that the days are numbered where we only do imaging and it's only indicated when patients have disease. If you take a look at the ACR criteria for doing a variety of different studies, I don't think they really emphasize enough population screening and screening patients essentially who really should be screened earlier to detect disease at a much earlier phase.

[00:38:21.539]

And so, for example, I've been doing some work recently looking into PET-CT at a dose of a chest radiograph, a PA and lateral, for screening cancer. And I think we're going to see an era in which that happens. Whole body MR scanning is proliferating and, of course, liquid biopsies where the pathologists are now analyzing DNA and RNA fragments circulating in the bloodstream. What's going to happen in 10 years when patients come to us and say they've been told that there is adenocarcinoma or squamous cell carcinoma or other fragments that suggest they have cancer now can we image them and try and figure out where the cancer is?

[00:38:59.198]

And then, finally, I think the fourth major trend, and Dr. Meltzer mentioned this, you know, kind of being the patient's doctor, I think we're gonna see a whole new era of being able to kill individual cancer cells with alpha and beta radiation with theranostics. And so I think that's gonna result in the new branch of radiology and nuclear medicine. We're gonna have diagnostic trainees, we're gonna have interventional radiology, and then we're gonna have molecular interventional radiology and molecular interventional nuclear medicine with being able to have radiologists become primary patient care providers.

[00:39:35.759]

This is a huge trend and a huge opportunity for radiology and nuclear medicine and creating a practice that's data-driven, that is like a clinical trial that uses genomic and proteomic data to be able to create a clinical practice where we treat patients primarily with prostate cancer and neuroendocrine cancer and another dozen that are coming down the pike, I think will be major changes in the next 10 years.

[00:39:59.823]

Geoff: Well, that is a very exciting future.

[00:40:02.918]

Eliot: Yeah.

[00:40:03.592]

Geoff: Very exciting future that you laid out, a lot of dimensions that you presented. I wonder if any of our other panelists would like to extend this topic and speak a little bit about technological advances that any of you might see in addition to what Dr. Siegel mentioned.

[00:40:21.550]

Mary: So may I just say one thing? I think it's very interesting what you've said about combining interventional radiology with molecular imaging, and we have done that at Penn. So we have put together the ability in the course of five years to turn out folks that are triple-boarded, so in interventional radiology, diagnostic radiology, and nuclear radiology. And so we think that's so important to be able to circumferentially treat patients from, you know, the IR suite to the clinic, and that's what we've been...

[00:40:56.220]

Eliot: That's very prescient of your of your department. I think that's going to be a trend in other places. And so congratulations for anticipating that trend early on.

[00:41:03.947]

Jon: And I think I'll just jump in with one other aspect. I think, Eliot, you covered a wonderful array of different advances. I'll throw in interventional, not theranostics, but, you know, conventional interventional because I think, over the next 10 years, I think we're gonna continue to see innovation transformation in minimally invasive therapy in general, whether it's robotic, the introduction of robotics into our angio suites, into our interventional suites, whether it's a really more and more sophisticated intravascular and percutaneous technologies. I think we're gonna see more and more things that are currently done in the surgical OR coming into our interventional radiology, interventional neuroradiology suites and really changing the invasiveness of therapeutics across the board.

[00:42:02.677]

Carolyn: Yeah. I also wanted to refund Eliot's point about imaging being used sort of as proof of concept for diagnostic processes that then could be brought to a level of a liquid biopsy where we can then have greater impact. When I think about some of the work we did at Pittsburgh developing and validating the ability to diagnose Alzheimer's disease and predict Alzheimer's 10, 20 years before someone actually developed the disease.

[00:42:37.045]

Now, yeah, I look at my colleagues who are working on therapeutics, and they can go back because we did that work to identify the neuropathology before it happens, but that technology's very expensive. So how do you now take drugs that will be slowing cognitive decline and get them out to the masses if you had to identify everybody with a PET scan? So, now, you can use blood markers and serum markers and CSF markers to screen a population. So, you know, one of my colleagues said, "Are you upset that now we don't need that technology?" No, that's a dream come true, and imaging can go on to the next thing and localizing disease. So love that thought.

[00:43:24.182]

Geoff: Fantastic. Terrific. Well, that was a very inspirational discussion. Carolyn, while new technology provides essential fuel for innovation radiology, the developments have limited value without scientific investigation to establish the value of these advances in medical practice. While imaging scientists contribute immeasurably to technology development and

application, the role of radiologists as researchers has been fundamental to the clinical assessment of technology developments.

[00:43:56.640]

Recently, however, many academic radiologists are finding limited time to pursue research owing to growing clinical demands. How do you foresee radiology maintaining the role of the radiologist as scientists and driver of medical imaging innovation in the coming years?

[00:44:12.719]

Carolyn: Yeah, great question, Geoff. I think one of the superpowers that all radiologists have is this love of innovation and drive for innovation. So we're always looking to make things better and to embrace technology to have greater impact on the patients we serve. So, you know, when I think about early on what research in the field of radiology was often the technology focused on sort of the instrumentation and then the retrospective, gee, we applied that technology in a bunch of patients, and here's what we found.

[00:44:51.258]

When I think of the scope now in the breadth of scholarship and innovation and radiology, there are people who spend time on, you know, in-depth in laboratories and working on instrumentation and working on the molecular markers of disease. But everybody has a role also to the clinic, to the point of AI. I mean, who's going to think of the innovations that will help stretch the radiologists and have them working at the top of their creativity and judgment if we don't use AI and other tools to get rid of and streamline processes for patients and for our own internal workflow? How many times do we get asked, you know, our allergies when we come in and check boxes on computers? It is time, and we are in the cusp of really applying tools to be able to take knowledge from all of the data we have and have that help us.

[00:45:55.890]

So, hopefully, we will have a little more time and gain efficiency. Certainly, pax-added efficiency. I think this next era of AI in the clinical realm and healthcare realm will also help us to be more efficient. And you know, there's a shortage of radiologists, so we also have to balance what is appropriate imaging, what are our workforce needs of the future, and what can be done with technology to aid in this gap.

[00:46:29.477]

But there's also, obviously, you know, all the simple questions have been asked. So, now, we're working in much broader teams. So an imaging scientist can have a greater impact part of a team that's working along, you know, biomedical engineers and computer scientists and physicists, and clinicians in every area of medicine. So, you know, I still am very hopeful that we have an important role and we have important impact, but we can't forget that innovation is absolutely...it is our product. It is what we do. So while somebody is more focused on the frontline of patients, someone is teaching the residents, someone else has to be, you know, focused on the next, you know, refinement of how technology will advance our field.

[00:47:26.504]

Eliot: Carolyn, as associate editor of some journals, I'm seeing a trend where we're seeing a higher proportion of research that's being done outside of the U.S. as the years have progressed, and, you know, other countries don't seem to have some of the same forces that seem to be driving, you know, decreased numbers of people in academics and some of the pressures that we're feeling.

[00:47:51.061]

Do you think that that trend is going to continue or, you know, are there ways that we might be able to reverse that trend? It's great to see the rest of the world doing better, but I just see the U.S., you know, really kind of proportionately falling a little bit while they're rising as time goes on.

[00:48:08.177]

Carolyn: Well, yeah, I think there's a couple of trends there. Certainly, that observation is very accurate, and we're glad that the global community is advancing. There also is much more opportunity now the world is flatter, and we can collaborate across, you know, the globe in areas where others may have greater expertise or labor to do some of the work of the researcher.

[00:48:34.435]

You know, we could get into the economics of medical education and how debt to our students continues to drive high salaries despite lower reimbursements, and, you know, shortages, we are always predicting that we're gonna have too many, a surplus of radiologists. It has never been true. So we've gotta think about that. And in this country, we don't do workforce planning very well, and I think COVID has really laid that bare. So love to have those more in-depth conversations, and ACR's always a great place to bring minds together to think about these bigger issues.

[00:49:11.826]

Geoff: John, why don't we turn to you? Academic medical centers have faced many external pressures and have undergone a remarkable evolution over the past decade, consolidating community practices to gain market share, merging to realize efficiencies, and affiliating with corporate partners to oversee clinical operations. What do you foresee as the future of academic medical centers in the U.S. over the next 10 years? And what is needed to ensure that academic medical centers remain strong so that healthcare innovation can continue to be driven by physician-scientists?

[00:49:47.552]

Jon: That's a great question, and the importance of academic medical centers is clear certainly to everyone on this panel. But, you know, for the listeners, it's critical nature to our teaching, and our research missions are pretty obvious, but people may not realize that only 5% of hospitals in the U.S. are academic medical centers, but they operate over 70% of accredited Level 1 trauma centers, almost 70% of burn units, almost all of the comprehensive

cancer centers in the country. The vast majority of pediatric intensive care unit beds, most are a quarter of all inpatient psychiatric beds, they have sort of an outsized impact on the country's really critical healthcare, health system capabilities.

[00:50:40.539]

And even when it comes to more routine care, recently, there was an article in JAMA a few years ago that showed that mortality in Medicare patients is up to 20% lower in people who go to major teaching hospitals. So it's really critical part of our whole U.S. health system, and so while the value's never been higher, the risks to sustainability of the nation's academic medical centers has also never been greater.

[00:51:11.726]

When you look at the pandemic, I think the oversized positive impact of academic medical centers was seen where the more complicated patients were taken care of, the innovations and care, almost every step of the pandemic was positively impacted by the concerted efforts of the academic medical centers, many of which took on really the role of the country's public health response to the pandemic.

[00:51:41.801]

You know, when you look at the finances of the academic medical centers, 2022 was a disaster. And if you look at 2023, things are looking up over the last couple of months, but still over half of all hospitals across the country, not just academic medical centers, but all hospitals are losing money over the first half of the calendar 2023.

[00:52:09.247]

So the health system in general writ large has challenges, and the need to fund the academic mission on top of the funding needed to keep a major medical center going adds a stress to that financial foundation, which we don't have in our non-teaching hospitals. So things like the workforce challenges, the financial stressors are even more challenging for AMCs as for the country as a whole. So there's a need to do something, and there are some creative solutions that I think many of the major academic medical centers across the country are really looking at carefully and are putting all their efforts into.

[00:52:53.232]

So to list a few of those, one that's been very successful on the financial side has been going upstream in the value chain by taking risk. You know, if you look at our country right now, the average hospital's losing money, but the average health insurance company is making record profits. So one thing that the hospitals can do is to go upstream, and whether it's creating or growing their insurance subsidiaries, something someplace like University of Pittsburgh has been incredibly successful in doing, or whether it's taking more risk through value-based contracting and getting more pay for performance and taking on downside risk, we need to get closer to the primary healthcare dollar.

[00:53:40.805]

And the hard part is, once you take that risk, you have to be able to deliver on the value promise. And that's where a lot of health systems run into trouble, but we need to figure it out. And if not academic medical centers first, who's going to do that? A second and maybe even a bigger area of sort of creative solution to our challenges is going back to some of the things that Eliot has really highlighted, that's investing in the digital bricks and mortars of our health systems.

[00:54:10.198]

You know, we've all built beautiful buildings, and, you know, the physical bricks and the physical mortar are important, they're all fixed costs as well that continue to accrue and to cost us going forward. We really need to invest wisely in the digital infrastructure. First of all, to help us transition patients from the higher cost settings into lower-cost settings, whether it's from inpatient facilities to outpatient or where I see a lot of promise is getting people out of hospitals and into the home using wearables, using other digital monitors, using AI to help monitor patients and to alert the patients, the families, the healthcare system when someone's going to be running into trouble before they do, to really be able to enable virtual care. I think that that's gonna be one of the important roles.

[00:55:05.992]

I think reducing costs in our current healthcare delivery settings, every other industry you look at across the country has reduced costs through the implementation of digital technology. Yet we in healthcare seem to add cost every time we add technology. You know, what are we doing wrong? Let's figure it out. Let's look outside of our own four walls and look at what worked in FinTech for the financial services, what's worked in the other service industries, what's working in consumer goods right now. And we need to adopt those as well.

[00:55:40.413]

And then digital bricks and mortar is also gonna help us move much more towards customer-centered service, and we're gonna need to be more customer-centered. And I don't say patient-centered, I'm saying customer-centered because we need to compete with some of the disruptive influences that are out there. So we need to be able to compete with Walmart, with Amazon, even now the Dollar Store is gonna be offering healthcare services.

[00:56:08.278]

We as academic medical centers need to figure out how to invest digitally to be able to compete or we're gonna find them eating our lunch instead of us continuing to succeed. The third area I think we're gonna need to really look and move carefully at, and I know at Emory we spent a lot of time, you know, pre-pandemic I spent about the five years before the pandemic that I was there really pushing on lean and other quality and process improvement methods. These are widespread in other industries. Other industries have shown you can improve quality while reducing waste, reducing associated costs.

[00:56:46.626]

I think we in healthcare don't have any choice but to go full force into looking at reducing the cost basis of the products we create or we're not gonna be competitive in doing that. And

then the last is a theme that we've heard now from several on the panel in the prior questions. And that's the fact that academic medical centers are gonna need to invest to continue to improve physician and really the overall healthcare staff well-being by reducing burnout.

[00:57:22.631]

And I agree with Eliot completely. I think the way we're gonna do that is using technology, in particular generative AI, to reduce the mundane tasks in each person's workday, which will allow, again, whether it's a radiologist, another physician, a nurse, staff, to get back to what brought them into healthcare in the first place, which was really the personal relationship with the patients, the relationship with their families.

[00:57:50.035]

For us as radiologists, the enjoyable aspects of looking at images, at making diagnoses, at impacting patients, at doing interventions, at innovating, the things that we don't have time to do when we're busy. Again, typing on a computer, much of that can be done with a smart application of AI.

[00:58:14.740]

I think we're gonna need to do that, and it's not only gonna impact radiology, but I think it's going to allow academic medical centers to thrive. And, in fact, if you look at the academic medical center as a whole, what better living laboratory to develop those AI algorithms, no matter how smart a tech company is, without having the actual processes, the actual patients, the actual problems in front of them? They're never gonna do as good a job as we can do to define those problems and to define the AI solutions. So that's just sort of a quick list of some of the creative solutions, but we're gonna need to apply those and others to really make academic medical centers thrive over the next decade.

[00:59:01.791]

Geoff: Thank you. That was a very thoughtful reply. Does anybody else have anything to add about the preservation and the thriving of academic medical centers moving forward?

[00:59:14.252]

Mary: I think it's so important what you said about taking risk and having value-based contracts. We need to be incentivized not to image, and the whole payment model, I'm sorry, needs to change. And that'd be a huge thing for utilization, and we need to take ownership. We need to be the one writing a note in the chart saying why we don't think something should be done.

[00:59:34.952]

Geoff: Great point. Larry, while consolidation and corporatization have been progressively influencing academic practice, one could argue that their impact on private practice has been far more profound. How do you view the current state of private practice radiology in the U.S., and what can we expect to be its evolution in the next several years?

[00:59:55.576]

Larry: Well, thank you very much. Everybody has gotten these wonderful questions that they thank you for. I get a question that nobody wants to touch with a 10-foot pole, so you have to make me a promise, Geoff, when you reconvene this panel for the 150th anniversary of the ACR that I get a good question.

[01:00:17.268]

Geoff: You got it.

[01:00:17.328]

Larry: Well, lemme start with corporatization, and I better start with a disclaimer that these are my views, they're not the views of the ACR, nor are they the views of the RLI. And to Eliot's point, if I could predict accurately what was gonna happen in the next 10 years, I'd be in Vegas right now and not on this panel discussion. So with that in mind, let me say that it's my opinion that corporatization is a disruptive and destructive force that has the potential to alter what we do, how we do it, and how we're gonna be compensated for the work that we do.

[01:00:58.915]

And to make sure that everybody's on the same page, let me begin by saying that my definition of corporatization is that it's a term that's loosely applied to a national radiology entity that's supported by venture capital. And venture capital companies are not necessarily bad, but they're not structured as philanthropic entities. They invest money with the idea that there will be a return on that investment and the return will be substantial.

[01:01:32.699]

That return, at least to me, means that money has been taken out of the system and the major impact of this most likely will occur with radiologist compensation. Now, the typical scenario for corporatization is that these entities exchange money in the form of cash or shares in exchange for the radiology practices that they acquire. The narrative or justification that they give is that medicine is a fragmented industry, and if consolidation is achieved, there will be profit to be made for all.

[01:02:13.566]

The promise of these entities is that they will provide practices with increased value for the shares that they pay to them. They'll bring regional and national contracts to the groups that these groups could not have obtained on their own. They will provide management expertise and practice efficiencies, economies of scale, CME, and back office expertise. Now, although it's too early to truly assess the validity of this hypothesis, in my opinion, the early results are not encouraging for young radiologists or for the specialty. At least as of now, practices are just acquired, and a large number are given the autonomy to conduct their affairs as they always have done in the past.

[01:03:07.822]

So I would ask everyone, if these entities could reliably provide new revenue sources, management expertise, and the other benefits that they have promised, why should companies have to pay groups to join? I mean, if somebody's going to do all of these wonderful things for me, wouldn't I or other radiologists be willing to pay for these opportunities? So let's look now at what I believe to be a truly scary scenario.

[01:03:42.165]

The phenomenon of corporatization starts with these venture capital-supported national companies pursuing what I believe are two simultaneous strategies. They overpay or pay generously to acquire practices, preferably for them dominant practices. And, simultaneously, they curry the favor of national radiology organizations, notably the ACR, by offering to work together, share data, and have their member radiologists all join or stay in the organization.

[01:04:21.299]

And, in my opinion, they do this currying a favor to hopefully, for them, prevent the national organizations from taking a strong stand against the corporatization of our specialty. Unfortunately, the spending spree puts the companies in substantial debt extending into the low billions of dollars. And just last week at the Florida Radiological Society, one of the faculty members said that one company was already at a level of \$3.8 billion in debt.

[01:04:58.375]

So this leads to what I am really afraid of, and that's the next phase, where instead of buying [inaudible 01:05:07.126], they displace them. I mean, that's the logical progression, and we're starting to see that now. The entities can approach regional healthcare entities and directly compete with the existing groups for hospital contracts. These companies also now need to conserve money, and this can occur in a variety of ways, but the most troublesome is to lower significantly the compensation of radiologists practicing in their groups and by dropping out of the national organizations that they once had courted.

[01:05:42.165]

The Florida Radiological Society and presumably the ACR has already experienced a significant drop in membership. It's 20% this year, by the way. And while corporatization is not the only reason, I believe that it's a major reason and one that will only get worse. If a tipping point is reached, then it will become the norm for radiologists to work for these entities, and we'll have a monumental cultural change from owner practitioners to shift workers. And one only has to look at emergency medicine to see how that plays out.

[01:06:18.290]

And, Geoff, I'd like to end by noting two important things. The first is that the phenomenon of corporatization is not new in radiology. This is actually the third iteration, and both previous times it's failed. And groups that have joined these entities merely step up and reclaim their practices. Rather, these practices become an asset that is sold to the highest bidder. So practices may be owned by entities that don't share the commitment to patient care or quality and safety that we all aspire to. And then the last point is the impact of

corporatization, whether it's successful or not, in my view, will be borne by the young generation of radiologists and by the organizations that work on our behalf.

[01:07:10.788]

Geoff: Well, Larry, thank you for those thoughts and a sobering perspective. What possible, you know, rescue mechanism might there be? I mean, you know, when you think about market power, and this is essentially a conversation about market power, no one trumps the government. Is that ultimately a way out? How do you all foresee greater government involvement to potentially control and govern this current free market process?

[01:07:41.393]

Larry: Well, I don't think the government will control it or want to control it. I think some of the rescue options that you raise or ask us to discuss, the first is that Dan Ortiz and his group did a survey of the RFS and the YPS at the ACR meeting, and 80% plus of the young physicians there in attendance were not happy with corporatization and would rather not be involved. So young people standing up to this is one, I think, important mechanism, and right now it's a hot job market. So young people do have power that they might not have in the future.

[01:08:30.958]

The second thing is something that I brought up, and that is it's failed twice already. So there's no saying that this is gonna be successful this time around. In fact, one could, I think, argue compellingly that given the leveraging that is occurring, it may not, there may be no way to dig out, and this may fall flat. So those are the two things that I see as standing in the way. Also, I think only about 15% to 17% of radiologists belong to these corporate entities right now. I mean, that's still a significant number. One of the entities has over 3,000 radiologists, so that's not an inconsequential number, but still, in all, it's not a majority yet.

[01:09:23.011]

Geoff: You know, if the current market conditions were to implode, as you indicate have happened in the past, what can be done to assure a soft landing?

[01:09:33.748]

Larry: Well, it hasn't happened the other couple of times, and I don't think there's anything in the regulatory horizon that will provide a soft landing. These radiology practices are assets, and they're very significant assets, and they will go to the highest bidder in any kind of a bankruptcy. So, to me, that's frightening. If I were a radiologist, I worry about what would happen if my group then fell into this situation and was acquired by an entity that may have nothing to do with radiology and may not care about radiology and may only wanna optimize profit and not care about patient care that all of us find to be very important.

[01:10:25.775]

Geoff: You know, I mean, Larry, I find your prior observation about the power of young radiologists and their preferences as being, you know, potentially an important factor and

force in this set of conditions. And, you know, I think that's a source of encouragement for us all. And so, you know, Mary, I'll turn to you and ask to you, you know, clearly, we've discussed a lot of change and a lot of change being anticipated ahead for radiology practices. What steps do you see being necessary to adapt radiology training programs the demands of radiology practice in the coming decade?

[01:11:04.690]

Mary: Well, that's a great question. I think there's a couple of little buckets how we train, how we teach, and how we test them. We have a shortage of radiologists right now. We need more radiologists. Are we training them the way we should be? We have a competency-based medical education, but yet it's still time served. Do medical students really need three, four years in medical school? Can they get out sooner than that? Does one model fit everybody? I don't think so.

[01:11:35.476]

Does everyone still need to do an internship? And some of this is gonna sound like deja vu going back again, but does everybody need to do an internship? And then the question, does everyone need to do a fellowship? You know, we are starting to do R4 embedded fellowships, and we're having people leave after four years. I know the job market is such that it really allows for that, but does everybody need to do a fellowship?

[01:12:01.074]

So we can certainly get people through the pipeline faster. You know, I think people are looking at new payment models. We only have a certain number of spots that are paid for, but should we look at private practices, this is out there, private practices who want to support training residents to allow more in the bucket and also fellowship positions? So those are all very interesting things to be thinking about.

[01:12:27.933]

How we test everything is cyclical. Again, how we test, we went from way back when, if you're in this game long enough, you see it, all right, come back again. So, you know, before, years ago, we had multiple-choice tests, but after the fourth year, there was an oral exam, right? And then we went in 2010, 2012, it was decided we needed to be subspecialists, right?

[01:12:52.370]

And so we then went to strict multiple-choice questions at the end of your third year and then a certifying exam after your fellowship that's really a specialized exam. You get to pick, you know, three things that you wanna concentrate in. Granted, there was 40% that was general, but really it was specialists, and that was also a multiple-choice test.

[01:13:15.542]

So we have this generation of 12, 10 years of folks that don't know how to discuss a case, I'm sorry. And everything is high-yield, multiple-choice, right? I don't know about you, but when I sit down at my computer, it doesn't come up, you know, A through D of which head and

neck cancer I'm looking at at that moment. So a big thing that's gonna happen over the next 10 years is that whole board structure has now changed as of the folks that just started, you know, July 1st, and so we're going back to training to be a generalist, that your four years in radiology should be general, and then you can do your fellowship and stuff afterward if you so choose.

[01:13:59.188]

And there's gonna be an oral exam. So how we train them is gonna be very, very different over the next few years. And you know, I think it's important that not every model fits the same person. You know, I wanna be training specialists, right? But I wanna be training specialists who have a can-do attitude, right? You have these people going out, these young folks going out, and they're like, "I can't do a para. I can't do this." You know, and that's not meeting the needs of the populations we serve or meeting the needs of their practices, right?

[01:14:34.507]

Not everybody's in the hospital with all specialists there. They may have to go out to an outpatient center, and they may need to do something that's outside of their specialty. And we have to be training people to be comfortable with being a little uncomfortable. They're really comfortable in their specialty, but, you know, we're trained to do all of this, and we need to make sure they understand they're lifelong learners and they have to keep these skills up or reconnect with these skills. So I think that is the three points I wanted to make.

[01:15:07.641]

Geoff: You mentioned the concept of the fourth year of residency essentially fulfilling the role of fellowship but then also discussed the importance of generalist development, particularly in anticipation of oral boards. How do you see those two perspectives aligning and not creating conflict?

[01:15:30.577]

Mary: I guess the answer is one model doesn't fit everybody. So some people really can do that 11 months in a specialty, and that's good for them. They've learned everything in their general stuff in their first three years, and other people do different things. So I think it's different things work for different people.

[01:15:49.905]

Geoff: Okay, terrific.

[01:15:51.964]

Mary: Now, that you brought us back to that topic, one thing that we have to look forward to is how we train our residents in terms of how they learn. And, like, millennials are done, right? Now, we have the Gen X and the Gen Z, and then in a couple of years, we're gonna have Gen Alpha for God's sakes, you know, and how these people learn are very, very different than how we learn. And that's something we as educators really have to be on top of.

[01:16:21.168]

Geoff: Marvelous. Excellent. Any other thoughts about education and training in radiology and, you know, what competencies we may need to develop in our learners that will be new?

[01:16:33.693]

Mary: They still have to remember how to do procedures expected of a general radiologist, just like you were talking about, John, where we're doing all these fancy interventional stuff and training all these interventionalists to do things. They wanna do those high-end things, but we have patients that need to have the low-end things, and our general radiologists and our other specialists need to be able to do them too, so...

[01:16:57.207]

Eliot: Yeah. You know, one other skill that I think is really important is radiologists talking with patients, and, certainly, our interventionalists, you know, have a lot of practice with that. The emerging specialty of theranostics, you know, is requiring us to essentially become medical oncologists. And one thing that I see increasingly in the era of answering and taking multiple-choice questions is not only the inability to discuss a case but also the inability to carry on a detailed, in-depth, empathetic conversation with patients. And I think that is a skill that is slowly, you know, atrophying, and I would very much like to see us do that for so many reasons as we anticipate how radiology will evolve with time. I think that's an essential skill.

[01:17:46.447]

Mary: Absolutely. And that's something we really do. Laurie Loevner is the queen of this, so we actually have a macro that says macro, I called the patient. And so we encourage our trainees to actually pick up the phone and call the patient and get the history if we can't get it, and we have a macros document, and, you know, she started that for us.

[01:18:07.680]

Eliot: Wow. I don't know any other program that does just that. That's fascinating. I wish that was more prevalent and we had more of an emphasis on educating our trainees in how to interact not only with colleagues but with patients.

[01:18:21.444]

Mary: Yeah, that's critical.

[01:18:22.947]

Geoff: There are some who would suggest that they'd be concerned about overstepping the primary refer by directly reaching out to the patient. Mary, how do you view that and Laurie view that and overcome it within the context of your practice?

[01:18:38.156]

Mary: We really haven't had any problems with that at all. I think they're happy that we're reaching out and we're talking to them and providing a better exam report for that patient and for them. So it's very helpful. We haven't had a problem.

[01:18:51.790]

Geoff: Terrific insights from all of you, and I think a very, very rich discussion. Before we bring this conversation to a close, I'd like to turn our attention to the American College of Radiology for whom we're celebrating this, you know, marvelous anniversary of 100 years. And I wanna ask each of you to describe how the ACR has contributed to your career personally and what you see as key priorities for the ACR in the coming years as well. Eliot, perhaps we could start with you.

[01:19:22.846]

Eliot: Sure, I'd be delighted to. So the ACR has contributed tremendously to my career. First of all, the ACR was very instrumental in the development and popularization of the DICOM standard, which allowed me the opportunity to be able to, you know, help lead the transition from analog to digital. And, you know, I think that was a major factor in our ability to be able to make that transition. I was a counselor from the Department of Veterans Affairs to the ACR at the start of my career and really had the opportunity to learn all about the many things that ACR has to offer from that position.

[01:19:59.260]

One of the things I've been really very impressed with with the ACR and that it's contributed tremendously to my career has been the ACR's research network, ACRIN, has had a major contribution to research. We talked about the importance of research in radiology in the U.S., and ACRIN has been an incredible leader in my position at the National Cancer Institute as sort of the creator of the NCI's National Cancer Imaging Archive.

[01:20:26.521]

The ACR and its work had a profound impact on that and the data that we utilized to share for that. I had the opportunity to give the Moreton Lecture at the ACR quite a few years ago, and yet at that same time, the ACR established an informatics committee, a Commission on Informatics, and now the Data Science Institute, and all of those have contributed tremendously toward, you know, our being able to improve our understanding of the impact of informatics in diagnostic imaging and have advanced it tremendously.

[01:20:58.830]

And then just, finally, you know, as a fellow of the ACR, I've had the opportunity to serve on many ACR committees, one that I'm on right now is a really interesting one that is looking at measuring the impact of radiology and nuclear medicine on healthcare. How can we determine what is the impact? I mean, what's the impact of academic centers, impact of private practice? Are there ways to quantify finally and do outcomes analysis on what it is that we're contributing?

[01:21:27.379]

Because I think our power and strength is going to depend on to what extent we can essentially demonstrate our added value in a more quantitative way and demonstrate that outcomes are much better utilizing radiology for all sorts of different things. And so I personally [inaudible 01:21:44.641] that is a priority for the ACR in coming years, is looking at how can we analyze the impact of radiology in a much more quantitative way.

[01:21:56.431]

Geoff: Terrific. Carolyn, how has the ACR impacted you, and what do you see as key priorities for the ACR?

[01:22:04.740]

Carolyn: Yeah. So this is an important milestone, 100 years. It's amazing. You know, the pillars of quality with practice guidelines and really always bringing the community together, what is standard of practice has been a critical thread, certainly registries that added to that. I was fortunate to be engaged in the financial advocacy, which I think has been important government relations, and also to serve on many task forces and on the board of counselors, both for the neuroradiology, but also for sort of the inaugural separation of the research pillar.

[01:22:48.661]

And that contributed to sort of reorganizing the ACR image metrics pillar. And it's just been, you know, constant innovation and just being part of that and working across so many of the areas of strength and, you know, pushing the envelope forward with the ACR, a JACR has been, you know, one of the most impactful practical journals and thought platforms. So it's been wonderful to be involved at many levels, both engaged in the leadership, but also just collaborating with colleagues. I certainly hope that innovation and keeping us toward excellence in all that we do continues going forward. I'm confident it will.

[01:23:35.160]

Geoff: Great. Excellent. So, Larry, how did the ACR contribute to your career, and what do you see as key priorities for the college?

[01:23:43.390]

Larry: Well, I was very fortunate and had early mentors who happened to be leaders in the ACR. So before the ACR started putting young physicians on all of the committees and commissions and boards, I think I was the youngest member of the Board of Chancellors and hopefully learned leadership, collaboration, inter-discipline dialogue. One thing actually I wasn't aware of that I had been advocating without being able to bring it to fruition is the fact that Eliot is talking about, our ability to cost justify what we do because it was always my view that great, this MRI of the knee is fantastic and we ought to do more of them, but what does it mean in the overall healthcare system?

[01:24:37.852]

And until we prove that what we do saves money, saves patients' stay in the hospital, saves them from morbidity, until we prove that definitively, I think that we can't take those giant steps that other of the faculty members have discussed earlier. I have seen the ACR's impact on government affairs evolve to the point where I think it's spectacular today. Their ability with RADPAC to influence the government, the governmental agencies as well as Congress has been very important for radiologists.

[01:25:22.424]

And then I've seen an evolution of quality and safety with accreditation, imaging wisely, and those patient-centric initiatives that really weren't a part of the college in its early days. So those are the things that have impacted me. And when we're all talking about future priorities, I think that's where it's going to be very important for the ACR to define who it is and what it wants to do because I don't think there's going to be infinite funds available to do everything that everybody wants.

[01:26:02.592]

What several panelists alluded to, but none of us came out directly and said, and that is radiology practices, both academic and private, are depreciating assets. And what I mean by that is our reimbursements are declining while our expenses are increasing and at the same time, membership is starting to decline, and if corporatization gains a greater foothold, membership, in my view, will decline further. So money for membership in professional societies will become significantly tighter. And the leadership of these societies, particularly the ACR, are gonna have to make difficult decisions in a manner that they haven't seen before.

[01:26:51.146]

So whether we like it or not, the ACR is gonna have to prioritize its activities. And to me, that may mean that some of the basic pillars of the college will have to take a backseat and may unfortunately be eliminated altogether. I think that government relations are something that the members lean heavily on. Socioeconomic affairs, quality and safety, including accreditation and leadership training, in my view, should be the major priorities of the ACR in the future.

[01:27:28.499]

And it would be great, although I don't see it happening, if some calm, intelligent, forward-thinking heads could get together from different societies and somehow apportion the duplicative efforts that we see. I mean, several societies do clinical education, several societies duplicate the efforts of the other societies. And I think in the future it would be far better, although I don't see it happening, if we could not duplicate or not duplicate as much the efforts of other societies and focus on what our members are looking for us to do.

[01:28:17.964]

Geoff: Thank you for those perspectives. Mary, how did the ACR contribute to your career, and what priorities do you foresee?

[01:28:24.548]

Mary: You know, it's been my go-to organization. It's like part of my identity. I have, you know, been a member since an R1. I don't think I've missed 1 meeting in 30 years, I'm always down there. I learned so much. You know, I, unfortunately, was there in San Francisco during 9/11. I don't know if any of you else were there...

[01:28:45.564]

Larry: Yeah. I was there.

[01:28:46.261]

Mary: ...for that meeting, and that just brought us all together. Oh, my God. Just sharing that experience with our colleagues. But you know, as I said, it's my organization, and everything you've said about government relations and advocacy and the Capitol Hill Day is so important. Like, since I've been a program director, I actually pay for my residents to come down. I get two hotel rooms, and the boys and girls share because that's so important to me to get them down there to see what the college is doing and get them to the Hill Day and see what we do there. So that's also important. And education. So what they've done with RLI and the ACR in-service and RAD exam and the scholarships that they offer, the Moorefield, the Rutherford, all of those things are so important to education. So it's my organization, it's my people, my family.

[01:29:35.183]

Geoff: Beautiful. John, how has the ACR contributed to your career, and what do you foresee in the future of its priorities?

[01:29:42.966]

Jon: Well, being on the panel, the elder panel, I'll say.

[01:29:48.113]

Geoff: Experienced.

[01:29:48.968]

Jon: The experienced panel. I realized in looking back and preparing for this that it's been almost 20 years that I've been doing task forces and committees. And I really started out, unlike Mary, in R1 when I was a resident, I really didn't know a lot about it. I knew, you know, the Cleveland Radiological Society, but I really didn't understand the ACR. I really started getting pulled in more effectively when I became a chair. And I got asked to be on the Technology Assessment Committee in 2004 and spent four years looking at technology and realizing that, you know, someone was out there, the ACR, trying to make sure that what we did was making a difference.

[01:30:33.387]

I ended up going onto the metrics committee, my chair, the subcommittee on academic medical center policy in those early years and really learned a lot about the organization. And so when I ended up getting asked to actually take the Roentgen Ray seat on the Board of Chancellors in 2008, you know, I really learned sort of the heart of what the organization did. And Jim Thrall, who was the chair that year, put me to work and said, "Well, it's great you're the Roentgen Ray, but you need to have a committee."

[01:31:05.500]

So actually the predecessor of Carolyn's committee, he asked me to reconvene a clinical committee, a commission rather, on clinical research and information technology. And so the predecessor which they had subsequently split when I finished my terms into two committees really started getting motion in both of those, and I have to credit Jim Thrall and his vision for doing that.

[01:31:31.994]

But in the meantime, I learned a lot on a board of directors for image metrics, the relatively short-lived, but incredibly valuable company, a CRO to really learning about the private practice network, again, throughout the college in addition to the academic network that I already knew. So it was an enjoyable and a great part of my career.

[01:31:58.669]

When I think about priorities, we've heard a lot, you know, from the others. There are two priorities that I think I'd like to see the ACR continue to lead on. And one of them is the ACR is perfectly positioned to help radiologists understand what is the role of generative AI and AI in general for the radiologist. You know, while academics, I think, is gonna be part of the engine of innovation to figure out what can AI do, you need an organization like the ACR that reaches not only the academics but also our private practice colleagues to really help educate the field and to, you know, evaluate the field on the impact of AI and how to make AI a positive force in what we all do.

[01:32:51.566]

And then the second priority that I'd love to see and I think the ACR has a lot of reasons to be involved is looking at burnout and well-being in radiologists. And, again, that intersects with the first priority in AI, but I think it goes beyond that. And having a mentally and behaviorally healthy workforce in radiology and happy workforce in radiology is what's going to keep our field thriving. So I'm looking forward to the ACR, and I certainly hope that those make it onto their priority list over the coming years.

[01:33:28.419]

Geoff: Well, you know, you all are tremendous stars in our field, and the breadth and depth of your experiences that you've shared and the richness of your perspectives, I think, really have been rewarding to hear and is perfectly befitting of the centennial celebration of the ACR. I can't thank each of you enough for coming together and participating in this conversation about your careers, your perspective on radiology and the ACR both for today and moving forward.

[01:34:14.012]

Please join me next month for the second of our two special episodes of "Taking the Lead" in celebration of the American College of Radiology's Centennial. Our second panel will include the perspectives of distinguished radiologists within the first 10 years following the completion of their training, Judy Wawira Gichoya, Matthew Hawkins, Amy Patel, and Kurt Schoppe.

[01:34:36.308]

Together we look at the field from the perspectives of radiologists with many years of professional activities ahead and who will thus contribute to defining the future of our field. Before closing this episode, I want to remind you about the RLI Summit. This will be my 12th summit, and I have thoroughly enjoyed each one. Spending a few days away from the practice to focus on leadership insights provided by top business school professors and radiology luminaries is a truly transformative experience.

[01:35:08.960]

This year's RLI Summit is being held September 29th to October 1st at the Seaport Hotel in Boston, Massachusetts just minutes from Logan Airport on the historic waterfront. To celebrate my 12 years of summit participation, we are offering our "Taking the Lead" listeners 12% off current rates. Simply register at acr.org/rlisummit and use the code RLITTL12 at checkout. I look forward to seeing you there.

[01:35:41.588]

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[01:36:08.664]

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 #RLITakingtheLead. Alternatively, send us an email at rli@acr.org. I look forward to you joining me next time on "Taking the Lead."