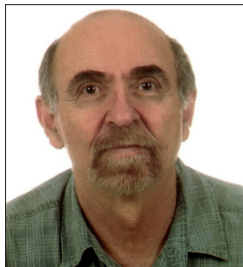


Fast 5 at RSNA '22: Looking into Radiology's Crystal Ball

Kerri Reeves

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Donald L. Resnick, MD, professor emeritus in the department of radiology at the University of California, San Diego, kicked off the RSNA Fast 5 with “Of Skeletons, Scholars and Sleuths: A Look Back, a Look Around and a Quick Look Ahead.”

“It is always wise to look ahead,” Donald L. Resnick, MD, said, quoting Winston Churchill, “but difficult to look further than you can see.”

Nevertheless, Dr Resnick, professor emeritus of radiology at the University of California, San Diego, along with almost a dozen of his colleagues took a cautious attempt at clairvoyancy in the 2022 edition of the “Fast 5” at December’s Radiological Society of North America (RSNA) Scientific Assembly and Annual Meeting in Chicago.

In brief TED talk-style presentations on topics ranging from climate change, artificial intelligence (AI) and telemedicine, to the COVID-19 pandemic and emergence of corporate medicine, the radiologists shared their predictions of how these developments could change medical imaging technology and practice during the next five years.

Looking Behind to Gain Perspective on What’s Ahead

Dr Resnick spoke about how dramatically radiology has evolved over decades, portending a potential rebranding of the field. He recalled how his late father, Benjamin, in the early 1960s developed films in the darkroom, analyzed the images on a single view box, typed up his report and then handed it to the younger Dr Resnick to hand deliver to the referring physician.

Could his father ever have foreseen the field’s evolution from basic radiography to ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), mammography, positron emission

tomography (PET), and molecular imaging? Dr Resnick asked rhetorically. Obviously not, he concluded and proceeded to predict the terms “radiology” and “radiologist” eventually will be replaced.

“Radiology is the science of dealing with X-rays and other high-energy radiation, but we also deal with ultrasonography, MRI, and many other techniques. We’re medical imagers and interventionalists, no longer just radiologists,” he said, adding that AI holds great promise for the field. But he cautioned his peers to apply the technology wisely and to ensure the technology works alongside them, not in place of them.

Radiologists as “Masters of Medicine”

Will radiology survive? It’s a question that’s been asked in one way or another during the past several years as the healthcare field overall struggles with burnout and workforce shortages. Of course it will survive, said William B Morrison, MD, FACR, professor of radiology and director of the division of general and musculoskeletal radiology at Thomas Jefferson University in Philadelphia.

“We’re on the cusp of major change in medicine,” argued Dr Morrison, who went on in his presentation to propose that, “after the next decade, [radiologists] could be the ‘masters of medicine’ if we play our cards right.”

Given the expansion of telemedicine, the growth of radiologic consultation, and the emergence of new and improved diagnostic modalities—such as hybrid PET-MRI, photon-counting CT, new nuclear



medicine radiotracers, and theranostics—as well as minimally invasive imaging-guided procedures and implementation of AI, Dr Morrison predicted the role of radiologists eventually will go beyond simply supplying and interpreting the images.

“We need to be on the front lines, guiding primary care physicians regarding what imaging exams to order, and then following through with them. We can also suggest imaging-guided, minimally invasive treatments for their patients in early stages of disease,” said Dr Morrison, who also foresees greater radiologist direct interaction with patients, especially via telehealth, to provide support and education.

“Radiologists have a wide knowledge base and a 10,000-foot view of health care. If we leverage our talent and position, we can be involved in all stages of patient care,” he said. “This impact and empowerment will neutralize burnout; we will be doing a variety of important jobs without the explosion of unnecessary exams we currently face.”

Dr Morrison added that professional organizations must commit to investing in and demonstrating radiology’s value to patients and payers, including through developing and testing AI applications and innovating new diagnostic and therapeutic tools.

“We need to retrain ourselves and train residents differently to optimize our value in the new medical environment,” he concluded.

Making Friends with Teleradiology

Bethany U Casagrande, DO, chair of the department of radiology and imaging institute for Allegheny Health Network in Pittsburgh, Pennsylvania, shared her thoughts on teleradiology as a “friend or foe” of academic radiology.

“We historically have raised concerns in our academic practices because [we] value items that can be lost in teleradiology,” Dr Casagrande said, pointing to in-person education, professional relationships, and side conversations with colleagues that can inspire research and other scholarly activity.

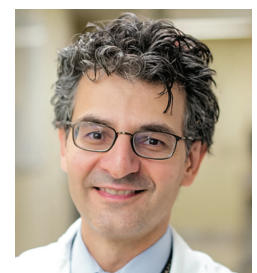
Twenty years ago, Dr Casagrande said, she viewed teleradiology as a foe that threatened such human-centered, foundational functions of academic radiology.

“You did [everything] all together, and teleradiology threatened that togetherness,” she said. “You’re breaking up the family, and you don’t want to break up the family.”

But today, Dr Casagrande said, she considers teleradiology a “friend” of academic radiology. As



William B Morrison, MD, FACR, professor of radiology and director of the division of general and musculoskeletal radiology at Thomas Jefferson University in Philadelphia, AKA “Optimist Prime,” says we are entering a “Renaissance period” in radiology.



Reed A Omary, MD, MS, Carol D and Henry P Pendergrass Professor and chair of the department of radiology at Vanderbilt University Medical Center in Nashville, Tennessee, presented on ecoradiology at RSNA.

a radiologist working in a system with 10 hospitals and 28 outpatient imaging centers that generated over 1 million work RVUs in subspecialty reads in 2022, Dr Casagrande said such large volumes of studies can no longer be performed over such large regions under the “old-fashioned way” of doing radiology.

“In recent times, ignited by the pandemic, there’s been a seismic shift in how we do work,” she said, citing challenges such as after-hours and multispecialty interpretation amid increased case complexity, growing expectations of faster turnaround times, and meeting the needs of the underserved through teleradiology.

She expressed her view that academic radiology and teleradiology can coexist without a “tug of war on control” by engaging junior staff early, meeting the changing expectations and demands of an evolving workforce, and prioritizing inclusivity to attract the best and brightest minds to radiology.



Mark E Schweitzer, MD, vice president of health affairs at Wayne State University, Detroit, voiced concerns about the corporate practice of medicine in a Fast 5 presentation at RSNA 2022.

A Shorter Work Week?

One of the defining expectations of the next generation of radiology employees is flexibility—a trend that was accelerated by the pandemic. In some cases, this may mean being able to work from home; in others it may mean a work week that of 32 or even just 30 hours, said Timothy J Mosher, MD. Dr Mosher is a physician advisor for the Center of Excellence for Improving Diagnosis and the Kenneth L Miller Chair of the department of radiology and distinguished professor of radiology and orthopedic surgery at Penn State University. Mosher predicted flexibility will become the watchword of full-time employment across many industries, including health care.

“You’re not going to have a choice. This will not be an internal disruptor but an external one that comes from the bottom up A huge change [is coming] in the demographics and availability of the workforce. [They are] expecting different things in their work/life balance,” said Dr Mosher, noting that many companies outside health care have already switched to a 30-hour week.

“The future is a lot closer than it would appear,” he said.

The Advent of Green Radiology

Reed A Omary, MD, MS meanwhile, had a similar take on the future of radiology with respect to

environmental issues. The Carol D and Henry P Pendergrass Professor, chair of the radiology and radiological science department, and a professor of biomedical engineering at Vanderbilt University Medical Center and School of Medicine in Nashville, Tennessee, addressed the imminent dangers of climate change and radiology’s role in both contributing to and helping alleviate those dangers.

“As climate change disproportionately amplifies existing social and health inequities, ecoradiology fits squarely into health care’s current diversity, equity, and inclusion initiatives,” Dr Omary said, explaining that climate change, which the World Health Organization cites as the biggest health threat facing humanity, puts annual direct costs of over \$2 billion on health care.

“Outside of health care, these issues are clumped together into what is termed ‘ESG,’ or environmental, social, and governance reporting. In coming years, I predict we will see ESG reporting of our outcomes in a similar way,” he said, adding that the health care industry is a major contributor to greenhouse gases.

Predicting that more than 100 papers will be published by radiology experts in 2024 on environmental sustainability and climate change, Dr Omary urged his audience to help combat climate change by establishing “green teams” in their departments to develop programs to reduce their environmental footprint and foster a culture of sustainability.

He also recommended evaluating vendors based not solely on prices, but on the environmental impact of supplies, and selecting vendors who, for example, reduce the amount of plastic in their packaging or design imaging devices with replaceable and/or modular components.

Preparing for “Corporate Medicine”

The corporate practice of medicine doctrine, which originated near the turn of the 20th century, prohibits corporations from practicing medicine or employing physicians to provide professional medical services. The doctrine does not, however, ban the business administration of medicine; these include such functions as billing and operations.

But what was once meant to protect physicians will become a major threat to radiologists over the next several years, says Mark E Schweitzer, MD, vice president of health affairs at Wayne State University in Detroit, Michigan.

“Corporations have intrinsic advantages over physicians when practicing medicine. They have access to capital, efficiencies of scale, vendor informatics staffing, and statutory legal protection. Radiology groups have none of those advantages,” Dr Schweitzer said, detailing various microeconomic biases that hurt individual physicians.

Among them:

- **Rent-seeking:** Rules and regulations that are designed to benefit one group over another (corporations over individual physicians);
- **The Matthew Effect:** The rich will always get richer as corporations push the envelope in terms of billing, find workarounds for rules, and lobby successfully for additional rent-seeking opportunities; and
- **Negative externalities:** The occurrence of a “product” exerting a negative effect on a third-party independent.

“I can run a corporation and say that the radiologists have to read 200 films an hour. That radiologist who [misses a lesion] can be sued for malpractice, but me as the overlord, I can't be sued for malpractice,” he explained. “[These] economic effects are well known and biased against individual physicians and practices.”

The percentage of acute-care hospitals with corporate investments has steadily risen from 6.3% in 1975, to 9.9% in 1981, to 49.1% in 2010 and skyrocketing to 59.9% in 2015. As a result, more physicians are now employed by corporations than are self-employed or employed by small private practices.

This, Dr Schweitzer said, could lead to scenarios in which the corporation's obligations to shareholders do not align with the physician's judgements and obligations to patients.

“I think there will be more and more radiologists employed by publicly traded and privately-owned

corporations,” Dr Schweitzer predicted, advising radiologists to gain an understanding of the legal and statutory advantages of corporate health care systems.

“It's also beneficial to become your own leader, so that even if you work for a corporation, physicians and radiologists are placed in positions of leadership,” Dr Schweitzer added.

Radiology Education, Sports, Radiomics

In other Fast 5 presentations, experts predicted that over the next half-decade:

- Radiology training will be driven by AI and tailored to each resident's own strengths and weaknesses.
- Return-to-play decisions for players at all levels of athletics will increasingly be guided by radiologists using advanced imaging techniques such as quantitative imaging, T2 mapping, and elastography.
- Radiomics will become routine, going beyond applications in cancer to playing a role in imaging Alzheimer disease, cardiac conditions, pancreatitis, kidney stones, and musculoskeletal conditions. Together with proteomics, genomics, and metabolomics, clinicians will create increasingly accurate models of health and disease to advance precision health care.

It's Only the Beginning

The takeaway message from all the Fast 5 presentations amounted to an overall belief in the power and ability of radiology and its practitioners to embrace change and play a greater role in the practice of medicine over the next decade.

“We can take the reins of medicine,” Dr Morrison said. “The majority of diagnoses are made through imaging. We're at the forefront of AI development, and we have new diagnostic and therapeutic tools at our fingertips.”