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Does radiology have a bright future?



**Prof Geraldine McGinty, MD,
MBA, FACR**

*****@**acr.org

Chief Strategy Officer - Weill
Cornell Medicine Physician
Organization
President - American College of
Radiology
Assistant Professor of Radiology -
Weill Cornell Medical College
Assistant Attending Radiologist -
New York-Presbyterian Hospital-
Weill Cornell Campus

[LinkedIn](#) [Twitter](#)

Do AI and machine learning herald the end of radiology?

I could answer in one word: Yes. But HealthManagement has given me 700 and I'm delighted to have the opportunity to expand my hypothesis.

I might as well start with the "elephant in the room". How many radiologists cringed when they read President Obama's assertion that "radiologists are losing their jobs to AI" (Remnick 2016). As far as I know, that hasn't happened yet and isn't likely to any time soon. But it's hard to escape the hype and that has some in our community worried. Much worse it has some actively dissuading medical students who are considering a career in radiology. At the American College of Radiology we are not running scared from the power of machine learning and artificial intelligence. On the contrary, we established a Data Science Institute in 2017 (acrdsi.org) that is "collaborating with radiology professionals, industry leaders, government agencies, patients and other stakeholders to facilitate the development and implementation of artificial intelligence (AI) applications that will help radiology professionals provide improved medical care." The ACR DSI is developing a framework for implementation of machine learning in the radiological professions that:

- "Defines clinically relevant use cases for the development of AI algorithms in medical imaging, interventional radiology and radiation oncology
- Establishes a methodology and provides tools and metrics for creating algorithm training, testing, and validation data sets around these use cases
- Develops standardised pathways for implementing AI algorithms in clinical practice
- Creates opportunities for monitoring the effectiveness of AI algorithms in clinical practice
- Addresses the regulatory, legal, and ethical issues associated with AI in medical imaging, interventional radiology, and radiation oncology"

To put it a little more colloquially: AI won't replace radiologists but those radiologists who leverage the power of AI may replace those who don't.

So who are those radiologists of the future? I am continually inspired and energised by our @ACRRFS #radres and @ACRYPS communities on Twitter.

You might also like: [Radiologists are the Stewards of Appropriate Imaging](#)

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Current ACR Resident and Fellow Section Chair elect, Dr. Dan Ortiz, Chief Resident at Eastern Virginia Medical School, and Data Science Institute Advisory Board member Dr. Judy Gichoya, a resident at Indiana University, have launched an online journal club centred on AI (youtube.com/playlist?list=PLsh1jAUzVC48XbH-YuUz4f-oYfV6mKBQ4). They've had hundreds sign up and worked through challenging topics with an array of industry stakeholders.

Our trainees are excited about the potential of leveraging technology to deliver better care to our patients. When I think back to my own choice of radiology as a career, it was exactly that same combination that engaged me. Our trainees are also clear that they want to deliver on the promise of Imaging 3.0 to be visible and valued as part of the healthcare team. My choice to become a breast imager 25 years ago was predicated on the exact same goal. I'm using technology in my daily practice that wasn't even invented when I started my residency and I hope and anticipate that breast imaging will continue to evolve even in my own career timeframe because my goal is the most accurate and high-value care for my patients. Our trainees are the ones who'll deliver those innovations. For example, I am intrigued about how we might better integrate diagnostic information across specialties like pathology and genomics along with imaging data. I'd like to see us recruit the best and the brightest into radiology and challenge them to achieve goals like that rather than scare students away. Innovation and adaptability is part of the "DNA" of a radiologist.

Our profession's commitment to quality improvement is also a source of great optimism. Radiology led the way with the mammography accreditation programme and we continue to pursue the goals of measuring our performance through use of registries and collaboration with payers like Medicare to develop meaningful metrics to inform value-based payments.

It's no secret that I'm a cheerleader for our profession but I'm also not naïve. No other industry has as many complexities and imminent disruptions as well as embedded barriers to change as healthcare. Our practice as radiologists may look very different in the years to come. But will we still add value? I'm confident that we will.

Key Points

- AI will not make radiologists redundant
- In the U.S., initiatives such as the ACR Data Science Institute are addressing the implementation of machine learning in radiology
- Radiologists will continue to add value in healthcare

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