

Bulletin



CHOOSING AI

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Let's Celebrate a Century of Accomplishments

The College will mark its 100th anniversary at ACR 2023, giving us a chance to honor what has been and what is yet to come.

The ACR is hosting back-to-back in-person annual meetings for the first time since 2018–19, and the College couldn't be more excited. This will occur as the ACR marks its centennial, celebrating the lifesaving impact our members have had on patient care, radiology and society.

Our 100th anniversary gives us an opportunity to recognize and celebrate the world-changing achievements and contributions realized by ACR members. The ACR Centennial Steering Committee, led by co-chairs James P. Borgstede, MD, FACR, and Catherine J. Everett, MD, MBA, FACR, has been hard at work planning what promises to be a perfect celebration.

Stay tuned for the May special issue of the *ACR Bulletin* as we take a trip through the history of the ACR to celebrate a century of quality, integrity, leadership and innovation.



Featured Speakers

ACR 2023 will take place May 6–10 at the Washington Hilton in Washington, D.C. On Sunday, May 7, ACR President Howard B. Fleishon, MD, MMM, FACR, will deliver his presidential address during the opening session, which is scheduled to take place from 1:30–4 p.m. EDT. William E. Flanary, MD, will take the stage on Monday, May 8, during the 8:30 a.m. to noon session to deliver this year's Moreton Lecture. Tuesday, May 9, caps off our featured sessions and speakers with the Economics Forum, moderated by Gregory N. Nicola, MD, FACR, chair of the ACR Commission on Economics. Our meeting program also features the first in-person Capitol Hill Day since 2019, set to take place on Wednesday, May 10 ([learn more on page 6](#)).

Dedicated Sessions

The annual meeting will feature four sessions dedicated to specific groups of College members. We hope as many ACR members as possible will attend these sessions, whether in person or virtually.

Chapter Leaders Workshop: Evelyn Y. Anthony, MD, FACR, chair of the Committee on Chapters, will facilitate a workshop on Saturday, May 6, from 1–5 p.m. EDT. The workshop will incorporate a wide range

of topics and presentations, including an overview of the FACR program, and updates from state and federal government relations teams. Panel presentations will highlight membership engagement programs such as the Radiology Advocacy Network, the Pipeline Initiative for the Enrichment of Radiology program, the Medical Education and Student Outreach team, the RFS and the Radiology Health Equity Coalition. There will also be a member services and chapter portal overview, as well as a breakout/open mic session for additional questions and comments from attendees.

Medical Students Session: From 10 a.m. to noon Saturday, May 6, this marks the first time medical student programming will be offered at the annual meeting.

YPS Programming: Part of the YPS program will be dedicated to reviewing parliamentary procedure to ensure YPS members can participate in the ACR Council sessions effectively. Attendees also will learn more about the Radiology Leadership Institute® and receive a government relations update.

RFS Programming: The program will include a variety of sessions with topics covering economics, consolidation in radiology, sustainability, AI/informatics, advocacy and government relations, malpractice and more. There will also be a panel discussion on practice types, which will include members who work in private practice, teleradiology, academic and hybrid work settings, as well as a session covering volunteering and ACR opportunities.

Centennial Gala

I encourage all those attending this year's meeting in person to register for the Centennial Gala on Saturday, May 6, from 6–10:30 p.m. EDT. This will be a wonderful time to come together to celebrate our success in providing quality patient care, paving the way for the ACR's next 100 years of accomplishments. During the event, we'll have the opportunity to hear our colleagues' reflections on the past 100 years in their own words and experience a video premiere highlighting the history of the ACR. This will be a time to give thanks to those who came before us, and enjoy food, drinks, music and dancing, while sharing stories and making new memories.

Please join us in Washington, D.C., next month by registering at bit.ly/ACR_2023. This is an exciting time for everyone to network and exchange experiences and ideas as we continue to improve the field of radiology. **B**

Check Out the ACR Centennial Interactive Timeline for a Look Back Through History

The ACR is set to begin a two-year celebration honoring the College's centennial. Festivities will kick off at ACR 2023 with a Centennial Gala on May 6 at the Washington Hilton. If you are unable to attend ACR 2023, don't fret — there are other ways to get involved in the celebration.

One is by checking out the interactive historical timeline set up by the ACR Centennial Steering Committee. The timeline outlines the history of both the ACR and the field of radiology. You can see pictures decades old and watch the field and the College develop before your very eyes.

Check out the timeline at bit.ly/ACR_Interactive_Timeline.

To register for ACR 2023, visit bit.ly/ACR_2023.



Plan Ahead and Save on the RLI Summit

The 2023 Radiology Leadership Institute® (RLI) Summit will be held Sept. 29 to Oct. 1, 2023, and the venue has been changed to the Seaport Hotel Boston. Located near Logan Airport in the popular Seaport District of Boston, the New England-themed hotel is in a historic waterfront area that is home to restaurants, parks and museums. This year's program will have the same compelling content and networking opportunities that attendees have come to expect from the RLI Summit. Renowned Babson faculty members will cover topics important to the leadership journey, including strategy, finance and negotiations. Radiology experts will share case studies designed to help you apply what you learn.

Register by April 15 to save up to \$400 at bit.ly/RLI_Summit23.

Amy K. Patel, MD, Talks About Kansas City Chiefs Fan of the Year Experience



In September 2022, Amy Patel, MD, chair of the ACR Radiology Advocacy Network and RADPAC®, was nominated by the Kansas City Chiefs for NFL Fan of the Year. Although a fan of the Seattle Seahawks won the top honor, Patel received recognition and perks, including a chance to

attend the NFL Honors Ceremony the Thursday prior to Super Bowl LVII in February.

The biggest bonus, she says, was the ability to use the publicity surrounding the nomination as a platform to raise awareness about what radiologists do and how important they are to providing quality patient care. Patel returned to her home state in Missouri to practice medicine and serve her community in 2018 and has made an impact ever since. She was the first physician to receive the NFL Fan of the Year nomination.

Read about her experience at bit.ly/Patel_NFL_FOTY.



IN FOCUS: Curated Content for You

Looking for in-depth information about the trends and issues radiologists face today? In Focus content packages are designed to highlight current topics in the specialty.

Created with ease of access in mind, these curated

packages present a broad spectrum of case studies, podcasts and related content with actionable steps that providers can follow to begin or enhance Imaging 3.0® initiatives in their own practices. Topics include scanxiety, lung cancer screening, sustainability, health equity and more.

Check out In Focus packages at bit.ly/In_Focus.



Clinical research is crucial to driving advancements in the field and practice of radiology.

JENNY HOANG, MBBS, MHS, MBA



Capitol Hill Day is Back

It's time for the first in-person Capitol Hill Day since 2019. On May 10, during ACR 2023, you will get an opportunity to meet members of Congress to discuss issues that affect any practice's ability to provide quality patient care. Capitol Hill Day is just one of the many perks of registering to attend ACR 2023.

For questions regarding Capitol Hill Day, contact Ted Burnes at tburnes@acra.org. For more information on ACR 2023 and to register, visit bit.ly/ACR_2023.

JACR

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3. Register by either using your ORCID or manually entering your contact information.
4. Click "Continue" and you should receive a registration confirmation email containing your login information and a link to set your password.

To update your information:

1. If you already have an account, log in.
2. Click "Update My Information" at the top of the screen under the *JACR* header.
3. Change your password, update your email address or institution and add personal classifications and keywords.
4. Click "Submit" when you're finished to save any changes.

To find out more information and to register, visit jacr.org/reviewers.

Register for the SIIM-ACR Data Science Summit 2023



What value does AI bring to your radiology practice? AI is here to stay, and its value continues to grow as more radiologists use it in their work. Properly implemented AI can improve workflow efficiency and provide radiologists with effective and more personalized care. Although the governmental regulatory requirements for clearance of AI algorithms for clinical use are well-known, the federal government's policy decisions will also play an important role in the speed of AI adoption.

Drivers for AI adoption will ultimately include:

- Who gets paid for AI and how?
- Who is responsible for AI?
- How well does it work?
- When does AI fail?

Join the discussion on these topics at the 2023 SIIM-ACR Data Science Summit in Austin, Texas, on June 13. This year's Summit explores the economics of AI and the operational and regulatory responses to those changes. As AI continues to advance the field of radiology, understanding the financial, operational and clinical impact is imperative for harnessing the future.

Register at bit.ly/DSI_Summit_2023.

Texas Radiological Society Presents Advocacy 101 Webinar



The Texas Radiological Society (TRS) and the ACR's government relations staff collaborated to produce an Advocacy 101 webinar series to eight radiology resident programs throughout the state of Texas. The goal of this project, according to Sarah S. Avery, MD, FACR, president of the TRS, is to educate residents on

some of the important issues facing the radiology profession and how they can get involved — whether they're in Texas or some other part of the country.

"We are encouraging all residents to go to the Radiology Advocacy Network website of the ACR and sign up," Avery says. "I would say to any member reading this, you can do something similar — your own version of educating residents on advocacy."

Start watching the series now at bit.ly/TRS_Webinar.



Explore the National LGBT Cancer Network Welcoming Spaces

The National LGBT Cancer Network, in collaboration with the Society of Gynecologic Oncology, has officially launched Welcoming Spaces: Treating Your LGBTQ+ Patient to help provide LGBTQ+ cultural humility training to healthcare professionals so they can provide quality patient care for everyone. There are eight modules available, each running about 45 minutes long. These modules are available for continuing education credits and are free for the first year of registration, covering topics that include terminology and pronouns, the root causes of health disparities and more.

To learn more and to register for the modules, visit bit.ly/Welcoming_Spaces.

A Historical Look at Race and Radiation

As far back as 1968, Howard Goldman, director of the New York Bureau of X-Ray Technology, recognized that X-ray technicians exposed Black patients to higher doses of radiation than White patients. But despite interest in race in medicine, race adjustments of X-rays have not received much attention. An article in the *New England Journal of Medicine*, titled “Race Correction and the X-Ray Machine — The Controversy Over Increased Radiation Doses for Black Americans in 1968,” says many feel it is essential to understand the beginnings of this practice, its rationales, its potential harms and related controversies in order to correct them. This historic look at race and radiation offers advice on how the practice can work toward health justice.

Read the article at bit.ly/Increased_Radiation_Doses.

Slate of ACR Candidates Announced

At ACR 2023, the ACR Council will vote on the following slate of candidates recommended by the College Nominating Committee (CNC).

Officers

- William T. Herrington, MD, FACR, of Athens, Ga., for president.
- Don C. Yoo, MD, FACR, of Lexington, Mass., for vice president.
- Timothy A. Crummy, MD, MHA, FACR, of Middleton, Wis., for council speaker.
- Rachel Gerson, MD, of Seattle and Kurt A. Schoppe, MD, of Grapevine, Texas, for council vice speaker.

Board of Chancellors

The CNC recommends the following members be considered for election to the BOC:

- Andrew B. Rosenkrantz, MD, FACR, of New York City has been recommended to run for a second three-year term to chair the Commission on Body Imaging.
- Eric M. Rubin, MD, FACR, of Media, Pa., has been recommended to run for a second three-year term to chair the Commission on Human Resources.
- Amy L. Kotsenas, MD, FACR, of Rochester, Minn., has been recommended to run for a first three-year term to chair the Commission on Membership and Communications.
- Peter S. Conti, MD, PhD, FACR, of Los Angeles and Eric M. Rohren, MD, PhD, FACR, of Houston have been recommended to run for a first three-year term to chair the Commission on Nuclear Medicine and Molecular Imaging.
- Shadi Aminololama-Shakeri, MD, of Sacramento, Calif., Michael A. Bruno, MD, FACR, of Hershey, Pa., and Arun Krishnaraj, MD, MPH, of Charlottesville, Va., have been recommended to run for a three-year term to chair the Commission on Patient- and Family-Centered Care.
- Harris L. Cohen, MD, FACR, of Memphis, Tenn., and Lauren P. Nicola, MD, of Summerfield, N.C., have been recommended to run for a three-year term to chair the Commission on Ultrasound.

- Join Y. Luh, MD, FACR, of Arcata, Calif., has been recommended to serve as the American Radium Society (ARS) representative for a three-year term.
- Alison Harris, MD, of Vancouver, British Columbia, Canada, has been recommended to serve as the Canadian Association of Radiologists (CAR) representative for a two-year term.

Council Steering Committee

Of the following six candidates, four are to be elected in a contested election by the Council to serve a two-year term on the CSC:

- Juan C. Battle, MD, MBA, of Boulder, Colo.
- Melissa L. Chen, MD, of Houston
- Elizabeth Ann Ignacio, MD, FACR, of Kahului, Hawaii
- Elizabeth P. Maitin, MD, FACR, of Syosset, N.Y.
- Frank J. Rybicki, MD, PhD, FACR, of Cincinnati
- Gaurang V. Shah, MD, FACR, of Ann Arbor, Mich.

College Nominating Committee

Of the following eight candidates, three are to be elected in a contested election by the Council to serve a two-year term on the CNC:

- Esma A. Akin, MD, FACR, of McLean, Va.
- Lisa F. Baron, MD, of New York City
- Avneesh Chhabra, MD, of Flower Mound, Texas
- Kevin W. Dickey, MD, FACR, of Charleston, S.C.
- Andrew M. Farach, MD, of Houston
- Arne E. Michalson, MD, FACR, of Coeur d'Alene, Idaho
- Sumir S. Patel, MD, of Atlanta
- J. Henry Williams, MD, of Jackson, Miss.

Private Practice Representative

- Adam B. Prater, MD, MPH, of Atlanta was selected for one two-year term as a private-practice representative to the Intersociety Summer Conference, effective in July 2023.

The election manual, featuring detailed information on the candidates, will be available to all councilors prior to ACR 2023 at acr.org/Annual-Meeting.

The ACR remains at the forefront of radiology evolution, empowering and educating over 41,000 members who serve patients and society by delivering exceptional patient care.

WILLIAM T. THORWARTH JR., MD, FACR



Madelene C. Lewis, MD

Member of the ACR
Commission on
Government Relations

Guest Columnist

The RUC: Impressions From a First-Time Observer

Once you get past the acronyms, the work of ensuring a balanced valuation process is fascinating.

As an outsider, one might think of the AMA/Specialty Society Relative Value Scale Update Committee (RUC) as a secret society where a small group of physicians sit around a table and heatedly debate valuation of work. I had the opportunity to attend the January RUC meeting as a first-time observer. I was fascinated by the complex nature of the process and hope to demystify it for others.

When preparing for the meeting, one of the first things that stood out was the alphabet soup — the enormous number of acronyms. Some reading and research helped me understand the lingo that is second nature to our experienced ACR team. Even with preparation, it felt like I was drinking from a firehose. For those reading this with little prior knowledge, I'll start with the basics. The RUC stands for the AMA/Specialty Society RVS Update Committee, with RVS the abbreviation for relative value scale. It is a volunteer expert group of 32 physicians and other healthcare professionals, including primary care and specialists.

The RUC makes value recommendations to CMS on the resources required to provide medical services. The resource-based relative value scale (RBRVS) is the physician payment system used by CMS and most other payers. It is based on the principle that payments for physician services should be founded on the resource costs for providing those services.

The RUC provides medicine with a voice in the federal government. The input from the RUC helps ensure the valuation process is balanced, where physicians volunteer their expertise while the government retains oversight and final decision-making authority.

Resource costs are divided into three components: physician work (just over 50%), practice expense (around 45%) and professional liability insurance (small remaining amount).

The first day of the RUC meeting was focused on practice expense (PE). The PE Subcommittee assists the RUC in reviewing PE inputs for new and revised codes as well as codes identified through the relativity assessment process or by CMS. The presenting society submits a list of equipment and supplies that its members consider essential to the code in question. These direct

expenses are reviewed in detail by the PE Subcommittee and are debated and amended if necessary. After approval by the RUC, the PE information is then submitted to CMS for inclusion in the payment formula used to reimburse that code.

On the second day, there was a report from the Relativity Assessment Workgroup (RAW). Federal law requires CMS to review all relative values at least every five years and on an ongoing basis to identify services that are likely to be misvalued. The periodic adjustments are intended to account for changes in medical practice or improved technology that make physicians more efficient, resulting in shorter procedure times. The RAW uses filters and screens to identify potentially misvalued codes.

Later on the second day, the RUC convened. The RUC's annual cycle is coordinated with the CPT® Editorial Panel's schedule for annual revisions of CPT, or current procedural terminology codes, and the CMS schedule for annual updates in the Medicare Physician Fee Schedule (MPFS). The CPT Editorial Panel meets three times a year to consider addition of new codes, deletion of codes that are no longer used and revisions in procedure descriptions. Changes in CPT necessitate annual updates to the RBRVS for the new and revised codes. The RUC meets after the CPT Editorial Panel to consider codes that are changed or added.

After the RUC has the list of codes to review, it consults with members of the physician specialty societies to gauge interest in developing a relative value recommendation. Members of the RUC Advisory Committee and specialty society staff with an interest in a code may survey society members to assess the time and intensity of a specific service as well as a recommendation for the total work relative value. Many of the codes are presented collaboratively with other societies.

The physician work component considers both the time the physician needs to provide the service and the intensity associated with performing it, including cognitive effort and judgment, technical skill and psychological stress. The RUC has established methodology for standards to ensure it is acting on the most reliable and robust data.

One point that struck me was the importance of surveys. The RUC requires a minimum number of respondents for each survey, depending on the use of the service. The survey contains a code descriptor and vignette. The vignette describes a "typical" patient.

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“We have been very pleased with our AI tools, which mostly use workflow automation for productivity,” says Adam B. Prater, MD, MPH, medical director of data science and analytics at Radiology Associates of North Texas and former director of imaging informatics at Grady Memorial Hospital. As a member of the ACR Commission on Informatics, Prater is part of the College’s movement to help radiology teams understand how AI can fit into their operations through resources including the ACR Data Science Institute® (DSI).

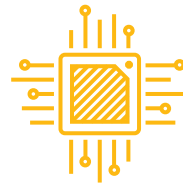
Prater’s practice uses an AI tool that summarizes a report as the radiologist is dictating and then creates the impression. “The AI tool customizes to the individual radiologist,” he says, “so it gets better over time.”

The implementation of AI has been a success, he says. “There may not be as much traditional ROI in terms of how much more productive it makes our radiologists, but we have found that our radiologists report being less burned out when they have it,” Prater says. “That little bit of brain rest that you get multiple times during a shift — especially from a complicated study — is almost like having a resident sitting next to you who knows what you want to say. It’s kind of a happiness quotient.”



“Part of why AI tools have generated so much interest in medical imaging is the promise of faster acquisition of data, less noise, less artifact and higher image fidelity. These things promise new ways to get patient images that previously did not exist.”

Richard J. Bruce, MD



VENDORS AND NEEDS

The market is full of medical AI algorithms, which employ machine learning (ML) that directs a computer to operate on its own. The FDA has approved more than 500 medical AI tools to date (see sidebar), and the overwhelming majority, almost 400 of them, apply to radiology. Choosing which product to employ can be daunting.

“We have an ambitious goal to implement several AI algorithms, both homegrown and commercial, over the next year,” says Gloria L. Hwang, MD, associate chair for clinical performance improvement in the radiology department at Stanford University. “We have several AI algorithms up and running already because our department saw a clinical need and believed that AI algorithms were likely the best way to meet our needs.”

The department at Stanford continues to bring in new AI technology strategically. “Many vendors come to us with shiny tools,” Hwang says. “Before considering the tools, we ask our department members to step back and ask themselves, ‘What problem are we trying to solve?’ That means considering whether the AI tool satisfies a priority clinical need, whether the implementation requirements align with the infrastructure we have, and whether the AI solution is better than non-AI solutions to meet that need. If the answer to all those questions is yes, we take the additional step of looking at competitors to make sure we are implementing the best option. This is a lot of work up front, but when well executed, an AI-based solution can become an indispensable part of the clinical workflow.”

All of these AI tools need to improve patient care quality and safety, Hwang emphasizes. “If this is not an expected outcome of AI, it has a limited lifespan in the healthcare environment.”

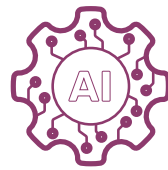


AI AND INTEGRATION

As early adopters of the technology ask for what they need and guide developers in creating new use cases, the selection of AI tools available to all sizes of radiology operations continues to grow. The possibilities seem endless.

“Part of why AI tools have generated so much interest in medical imaging is the promise of faster acquisition of data, less noise, less artifact and higher image fidelity. These things promise new ways to get patient images that previously did not exist,” says Richard J. Bruce, MD, vice chair of informatics for the University of Wisconsin-Madison radiology department. “AI is also very patient-centric. It can lead to improvements in the patient workflow — with fewer exams and less radiation.”

Until you venture into using AI, you won’t know what can be helpful, Bruce says. “There are two ways we bring AI into the clinical space,” he says. “One is to look at AI companies as potential partners. This means we have to provide value and they have to provide value.”



EFFICIENCY AND COST

The other way is developing AI internally. “That route has a lot of moving pieces — some of which we won’t be good at,” Bruce says. “We have to ask how we will actually package algorithms and integrate them with other clinical tools — with little or no help.

“Not so long ago, the number of commercially available algorithms was quite small. We saw this, however, as a tsunami that was coming,” Bruce says. “Even if we didn’t have the data to suggest that we needed a given algorithm, we knew we should start getting experience with AI that would inform future decisions.”

The University of Wisconsin has taken the stance, he says, that when working with vendors, it is worth giving almost everything a try.

“We have implemented several algorithms where staff feedback has been that the false positive rate is far too high — and that it wastes time and is not helpful,” Bruce says. At the other end of the spectrum, there are a couple of tools the organization has deployed that elicited feedback labeling AI as a game changer.

“Driving the improvement process forward for patients and radiologists is what is most important to us,” Bruce says. “What happens when an algorithm does not perform the way you want it to or expect it to?” Rather than conceding that AI is not meeting needs and discontinuing its use, the University of Wisconsin has reached out to its vendor partner and presented internal data to adjust and adapt.

“We have provided the vendor with quite a large volume of cases of data that demonstrated suboptimal performance in certain scenarios,” Bruce says. “This took us almost a year of significant effort, but the result was the vendor updating its algorithm. I think they learned a lot in the process about assumptions they made regarding underlying data. At the end of the day, that is a success story.”

From a technical perspective, the market has been maturing and there are multiple platforms available, so more radiologists are jumping into AI. But they need to be prepared for what is still in many ways uncharted territory.

“The technical barriers to integration have improved significantly,” Bruce says. “However, there still are not widespread, universally adopted standards for how algorithms might plug into a given tool.” Standards could address how AI tools can be delivered into the radiologists’ workflow and ecosystem, he says. They could address issues with PACS integration or the electronic records system or how results are sent downstream.

“A standard has not emerged, and so there remain many challenges,” Bruce says. “One of our biggest challenges is that maybe five years from now we may be looking at thousands of algorithms. We have to figure out how we could manage that scale.”

The reasons for using AI are just as varied as the technology solutions themselves. Among them: handling an increasing workload with fewer people.

“Where we stand now is with a shortage of radiologists — with a demand for imaging services growing and the complexity of imaging services increasing,” Hwang says. “Something has got to give. If there is anything out there to offload some of the more tedious aspects, then by all means we need to find solutions.”

The question is, can AI do it better than a human? Because if not, it still may be more cost-effective or better to have a human do the task, Hwang says. “You have a big gaping hole that needs to be filled, but the solution may not be using AI as a more efficient, faster way to solve a problem,” she says.

At the end of the day, you have this shiny new algorithm, but it’s not filling the hole. “Then you still have the hole and an expensive AI tool integrated into your system,” she says.

“If you make things more efficient with the same level of care — and if it costs less to use this algorithm than to hire one more radiologist — that might make sense for your practice,” Hwang says. “Or, if you can avoid a delay in care due to a missed finding — which is costly to the patient and potentially legally costly to a hospital or practice — that would be an important consideration in securing an AI tool.”

If you adopt AI, you must be prepared internally or through a third party to be able to identify how the AI behaves in your environment. “I would say take the hard sell by vendors with a grain of salt if you’re going to move forward and adopt AI,” Hwang says. “This is not a trivial undertaking. There should be a strong clinical need and you must find the right vendor partner. Put your energy into making each vendor work for you — shop around — but don’t spread yourself too thin in trying to adopt every AI solution that gets thrown your way.”

How Can You Use AI?

Radiologists are increasingly using AI in all types of practice settings. Here are some examples of the ways the technology is being applied in different types of practices, although many can be applied in multiple settings.

Private practice

- Scheduling patient visits
- Scheduling staff shifts
- Billing/reimbursement
- Automating detection and diagnosis

Community hospitals and health systems

- Triage patient cases
- Creating patient reports
- Reading MRI and CT images
- Processing radiation therapy images
- Sorting X-rays

Academic institutions

- Analyzing trends in imaging
- Automating image processing
- Triage scans
- Conducting nuclear MRI scans

FDA-Approved AI Tools

Of more than 500 medical AI tools the FDA has approved, almost 400 apply to radiology. See the list at bit.ly/FDA-AI-Devices.

Real-Life Examples

Watch on-demand videos of sessions from the DSI Summit “Using AI in Clinical Practice: A Practical Guide for Radiologists” at bit.ly/DSI-Summit-Videos.

5 Lessons in AI

To learn basic AI concepts and understand how the algorithms behind AI work, explore this online course on the ACR Informatics e-Learning Hub called “AI for the Practicing Radiologist: Understanding AI in Five Lessons” at bit.ly/5-AI-Lessons.



STAKEHOLDERS AND CHALLENGES

The FDA has cleared more than 20 AI algorithms for breast imaging, says Manisha Bahl, MD, MPH, a breast imager at Massachusetts General Hospital and associate professor of radiology at Harvard Medical School. Choosing which ones to implement is key because the process of adopting AI technology is not simple.

The steps involved in clinical implementation of an AI product include identifying all stakeholders, selecting the appropriate product to purchase, evaluating it with a local data set, integrating it into the workflow, and monitoring its performance over time.¹ Despite the potential benefits of improved quality and increased efficiency with AI, several barriers, such as high costs and liability concerns, may limit its widespread implementation.

“One of the first steps involved in the AI implementation process is to identify stakeholders,” Bahl says. “Stakeholders can be a large group — including end users like radiologists, other clinicians, technologists, clinical leadership, IT staff, data scientists, AI experts, compliance and legal representatives and ethics experts.”

One challenge is that not all of the various players will be convinced of the need for AI. “We have yet to demonstrate the ROI to some stakeholders because AI research in breast imaging up to this point is largely based on retrospective reader studies and retrospective simulation studies, and we haven’t yet studied the impact of AI on what is most important to us, which is patient outcomes,” Bahl says.

“AI in breast imaging may help us improve patient outcomes through higher cancer detection rates, lower false-negative rates and lower false-positive rates,” she says. “AI could also improve our efficiency by detecting and characterizing lesions, auto-reporting normal exams and prepopulating reports.”

Smaller operations can be more nimble in deciding to adopt AI. But they will face other challenges, she says: “Many practices may not currently have the capability to support and manage AI in a scalable and sustainable manner. An individual practice, healthcare organization or enterprise must have processes in



“I am a strong believer that the integration of human and AI is our future, period.”

Nina E. Kottler, MD, MS

place to be used for algorithm selection, workflow, integration and quality assurance.” In some cases, a hybrid governance structure involving both the radiology practice and hospital leadership may be appropriate, she adds.

“There are certainly differences among practice types. In terms of barriers, implementation costs can be high for an AI product. Also, the fee structure for many AI products is based on use, although flat rates are available,” Bahl says. In addition to investing in the product, other costs to consider revolve around infrastructure updates or improvements, as well as product user training.



RADIOLOGY AND COORDINATION

Radiology Partners in El Segundo, Calif., deployed AI algorithms several years ago and has seen positive results. “I am a huge fan of AI,” says Nina E. Kottler, MD, MS, the practice’s associate chief medical officer in clinical AI and an associate fellow at the Stanford Center for AI in Medicine & Imaging. “We have gained experience in identifying use cases that provide value for our patients and our practice, selecting AI products, piloting vendors’ algorithms, and creating our own,” Kottler says.

“Our radiologists have adapted to using AI tools and have integrated them into their clinical workflow,” Kottler says ([read more at bit.ly/ACR-Thinking-About-AI](https://bit.ly/ACR-Thinking-About-AI)). “The business case for implementing AI is not as variable from practice to practice as you might think. Variability comes into play when you are talking to different radiology stakeholders — a radiology practice versus a fee-for-service hospital system versus an integrated, value-based hospital system versus an outpatient imaging center. Value is in the eye of the beholder.”

Beyond finding a business case to afford the cost of innovation, groups need to be prepared for the next steps. AI models need to be evaluated and implemented. There are two main components to any AI implementation, and both should be evaluated before a vendor and model are chosen: technical and clinical.

“The technical implementation means you must figure out a way to get the right data into the right AI algorithm, then to get the relevant AI results to the relevant clinical applications so they are integrated with the radiologist workflow,” she says. “This process

LEARN MORE ABOUT AI



DATA SCIENCE INSTITUTE
AMERICAN COLLEGE OF RADIOLOGY

The **ACR Data Science Institute® [DSI]** is collaborating with radiology professionals, industry leaders, government agencies, patients and other stakeholders to facilitate the development and implementation of AI applications that help improve medical care. Visit the DSI website at acrdsi.org.

The **ACR AI-LAB™** offers a hands-on approach to educate radiologists on AI and demystify the process as algorithms are developed, trained and validated. View a free introductory webinar at bit.ly/ACR-AI-Lab.

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Incidental Findings in AI

Radiology is leading the way in determining how to handle unexpected results when AI is used in patient care.

Radiologists are using more AI in their practices, increasingly leveraging it for specific interpretive and non-interpretive use cases. When AI alerts a radiologist about an emergent finding, there is an immediate benefit for the patient and the patient's care team. But what happens when AI discovers pathology that was not suspected or that nobody was quite looking for?

Just as human interpreters looking for pneumonia might find a lung nodule instead or in addition, the ability to apply multiple AI algorithms to a single imaging examination means AI could identify potentially unexpected but important incidental findings that require management and follow-up.

This scenario raises several questions. If AI flagged an unexpected incidental finding in a clinical setting, a radiologist would be expected to review it and make recommendations for further workup if necessary. However, it is not that straightforward. How will the clinical team monitor and recognize when the AI in question has too many false positives, inducing alert fatigue for the human “in the loop” or causing more harm from unnecessary testing than benefit?

The questions we're facing about AI in radiology today are the same all our other clinical colleagues will be grappling with soon.

Running multiple AI algorithms one case at a time may make sense prospectively in clinical settings. But how will clinicians or researchers deal with multiple important incidental findings identified by AI on large retrospective cohorts when dozens of lung nodules or other incidentalomas are found in studies from years ago, as could occur when developing and validating new AI algorithms? Are they to assume these findings were all managed during the course of routine care? Or is there a higher burden of management — should all these patients be contacted, informed of the potential findings, and given a recommendation for follow-up?

Should AI results deemed erroneous by a radiologist be stored as part of the medical record, sent to referring or primary care providers, and released on patient portals “just in case”? Should they be treated in a different manner than the results of computer-aided detection software long in use in breast imaging, with its many false positive marks that are dismissed by breast imagers and not included in reports?

Clinical leaders and AI experts in our radiology and imaging sciences department at Emory University came together to discuss these questions and others. After some time, a consensus began



Nabile M. Safdar,
MD, MPH



Elizabeth A. Krupinski,
PhD



Alina Galaria,
undergraduate student

to emerge on some of the key issues. Most agreed that, in general, the responsibility to report incidental findings when AI is involved in prospective clinical care is no different than what would ordinarily be expected of a radiologist acting without AI. When AI is being used on a case-by-case basis, any incidental finding should always be reviewed by a physician and communicated as needed.

However, a different consensus emerged for when AI is applied retrospectively to large volumes of cases for quality improvement, administrative or research purposes. It may be impracticable to review every case, adjudicate it with the clinical record and communicate every incidental finding. Some things to consider may include the accuracy of the AI, what clinical diagnosis the AI is trained to look for, the volume of cases, available resources to review positive findings, details of any relevant institutional review boards, how old the exams are, and whether the patients or research subjects are still easily reachable. This scenario is also more likely to involve AI that is not FDA-cleared or is still under development, further complicating the calculus.

Establishing a group focused on discussing these issues helped our team carefully consider these scenarios before applying AI, whether prospectively one case at a time or with large retrospective cohorts. Each practice or department may want to consider establishing written guidelines or policies to document where it stands. While some points of consensus were achieved, on other issues our group did not reach a clear agreement, such as on whether erroneous or discounted AI recommendations should be stored in PACS or emergency medical records and shared in the patient portal. It was clear, however, that the exercise of discussing these issues helped the team establish common ground and a forum for hashing out these important decisions.

Establishing local guidelines on how to deal with incidental findings detected by AI is an opportunity for radiology leadership in healthcare more broadly as it moves to adopt predictive models in all aspects of clinical care. While some radiologists have been dealing with AI in their practices for years, these same concerns could be replicated for AI used to predict sepsis, readmission, clinical deterioration and a host of other clinical problems.

The questions we're facing about AI in radiology today are the same all our other clinical colleagues will be grappling with soon. Developing consensus and guidelines within the imaging community is critically important since at some point these will become medicolegal questions rather than those of institutional policy. **B**

By Nabile M. Safdar, MD, MPH, associate chief medical information officer, Emory Healthcare, and vice chair of informatics, department of radiology and imaging sciences, Emory University; Elizabeth A. Krupinski, PhD, professor and vice chair for research, department of radiology and imaging sciences, Emory University; and Alina Galaria, undergraduate student, Johns Hopkins University

A New Journey — Judicial Advocacy

Lawsuits involving implementation of the No Surprises Act have taken ACR advocacy work beyond the halls of Congress and state legislatures and into the courtroom.

The ACR has won many notable legislative victories, including continued coverage of mammography screening at age 40 and avoidance or reduction of cuts to Medicare reimbursement. But just because Congress passes a bill and the president signs it, that doesn't mean we can rest on our advocacy laurels. The ACR must strive for regulations that fulfill a statute's text and intent. A great current example is how the No Surprises Act (NSA) and its flawed implementation rules have taken the College and its members on a new journey of advocacy in courtrooms.

As the ACR reported to members in the December 2022 *Bulletin* (bit.ly/No-Surprises-Article), the NSA holds patients harmless from any unexpected or "surprise" medical bills for out-of-network services they receive, such as imaging services in emergency departments before they can consent and be transported to an in-network facility. Patients also benefit by not getting their balance billed for scheduled out-of-network services that occur at an in-network facility if they receive no notice of and have not consented to those services.

The ACR advocated strongly in Congress for these patient protections within the law. Yet, the College also sought to protect our members through a mechanism for resolving reimbursement disputes with insurers. Congress agreed. The NSA stipulates that physicians are to receive payment within 30 days of submitting a "clean" or eligible claim. If physicians disagree with the payment, they may dispute it after a 30-day period of negotiation with insurers. The NSA establishes an independent dispute resolution (IDR) process that calls for arbitrators to consider a "baseball-style" offer from each party and select the better one.

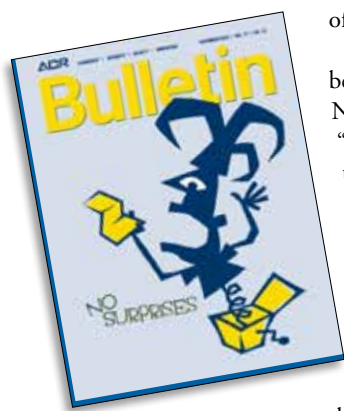
How did judges get involved with this law? The U.S. Departments of Labor, Health and Human Services and Treasury, and the Office of Personnel Management, issued two regulations in 2021 to implement the NSA — but did not do so properly. The departments decreed in an October 2021 interim final rule that IDR arbitrators must give more weight to the qualifying payment amount (QPA) than to other considerations such as a radiologist's training and experience or the complexity of

a patient's specific case. The rule defined the QPA as the median in-network rate for a service for a specific insurer based on contracted rates with physicians of the same specialty and geographic area as of January 2019, adjusted for inflation.

However, the ACR and other specialty societies maintained in comments that the government's QPA favoritism would enable insurers to reimburse care at lower rates and thereby could deprive patients of access to that care ([see comments and analysis at bit.ly/ACR-comment-NSA-July2021](https://bit.ly/ACR-comment-NSA-July2021) and bit.ly/ACR-Analysis-NSA). The ACR and other societies asserted that although Congress specified in the statute that arbitrators were to consider all factors equally, the regulators ignored that direction.

But the executive branch did not budge. In fact, it gave the public no customary opportunity to comment on the rule. Rather, the departments claimed there was no time before the IDR process had to begin on Jan. 1, 2022. Yet, the rule should not stand because Congress had spoken clearly. So the judicial branch was next.

The College took the unprecedented step of suing a government agency. We joined the American Society of Anesthesiologists (ASA) and the American College of Emergency Physicians (ACEP) to bring an action in Illinois federal court in December 2021. We alleged that the government lacked statutory authority to issue a regulation that disregarded the clear IDR provisions in the law. The AMA and the American Hospital



ON HOLD

In the wake of the Feb. 6 TMA II ruling in Texas federal court, CMS instructed IDR entities to resume processing payment determinations on Feb. 27 for disputes regarding items or services that ACR members and other physicians furnished before Oct. 25, 2022, the date that the August 2022 Final Rule took effect. But the IDR entities were to continue to hold issuing payment determinations for any items or services rendered on or after that date until the government issues further guidance.

[Read the ACR article at bit.ly/IDR-Payments.](https://bit.ly>IDR-Payments)

Association had sued previously on similar grounds in federal court in Washington, D.C. First in line was the Texas Medical Association (TMA), which sued similarly in Texas federal court.

Why did ACR sue with ASA and ACEP? The reasons were common interests and combined resources. While we prepared for a spring 2022 hearing in our case, the TMA won a convincing decision on its own. The judge in “TMA I” ruled in February 2022 that the government’s pro-QPA parts of the regulation violated the law because it arbitrarily and capriciously set a standard that Congress did not. Consequently, the judge invalidated those provisions and returned the rule to the agencies. This ruling applied nationally.

Did the government get the court’s message? Yes and no. It abandoned its “rebuttable presumption” standard in an updated final rule in August 2022. However, the government still placed that improper thumb on the scale. It told IDR arbitrators to consider the QPA first among all criteria. The government also mandated that arbitrators must disregard case complexity and specialty factors if the QPA already accounted for that other information.

Back to the courts. The TMA filed a second lawsuit in September 2022 (“TMA II”). The ACR supported the TMA with an amicus (friend of the court) brief, along with ASA and ACEP. Our coalition (the ACR, ASA and ACEP) renewed its “TMA I” arguments, emphasizing that the government could not do indirectly what the TMA I court ruled it could not do directly. We withdrew our Illinois case because the TMA’s win offered the best prospect for prevailing against the NSA rule.

On Feb. 6, 2023, the TMA court struck down the revised IDR provisions. The court concluded that they would deprive the plaintiffs of the IDR arbitration process that Congress established and

insert a new process that “unlawfully ‘puts a substantial thumb on the scale in favor of the QPA.’”

Second, the plaintiffs established that they “will likely suffer financial harm because the final rule creates an arbitration process that will cause ‘the systemic reduction of out-of-network reimbursements.’” Notably, the court cited our coalition’s brief, among others, to find that the QPA fails to reflect providers’ costs of rendering services in most cases. Arbitrators must consider all circumstances — not only or initially the QPA — in deciding which offer to select. The court further cited the government’s own admission during the hearing that it wanted to reduce costs.

Since the government missed two opportunities to write balanced rules, the TMA sued it again in November 2022. “TMA III” challenges the flawed QPA methodology in the July 2021 interim final rule and lack of transparency in QPA calculations. Then the government in late December 2022 dramatically and significantly raised the fees on ACR members and other physicians to file an IDR dispute. The 600% fee hike, with the 2021 rules’ very restrictive conditions on “batching” or combining claims of similar medical services, motivated the TMA to bring a fourth suit (“TMA IV”) against the government on Jan. 30, 2023.

Advocacy in court involves its own unique strategy. Like the ACR’s efforts in the halls of Congress and agencies such as CMS, a compelling story is invaluable. We believe our members and their practices have benefited from our newfound advocacy — as will their patients. Good facts tend to make good law. **B**

By Bill Shields, JD, LLM, CAE, ACR executive vice president of legal, governance and member services, and marketing, public affairs and communications; and Tom Hoffman, JD, CAE, ACR vice president of legal

TMA II RULING

A federal court in Texas ruled Feb. 6 in favor of a second legal challenge by the Texas Medical Association (TMA) to the improper implementation of the No Surprises Act. The ACR had supported the TMA in a “friend of the court” brief filed in partnership with the American College of Emergency Physicians and the American Society of Anesthesiologists. However, the TMA has gone back to the drawing board, filing third and fourth suits in the case, because the government’s approach to other parts of the independent dispute resolution process also violates federal law.

Read the press release at bit.ly/TMA-II-ruling.

Read the ACR statement on the ruling at bit.ly/ACR-statement-TMAII.



1. H.R. 133, Pub. Law 133-160, Sec. 104.
2. H.R. 133, Pub. Law 133-160, Sec. 104.
3. “Surprise” Billing and “No Surprises Act” Implementation, <https://www.acr.org/Advocacy-and-Economics/Legislative-Issues/Surprise-Billing>.
4. “Surprise” Billing and “No Surprises Act” Implementation, <https://www.acr.org/Advocacy-and-Economics/Legislative-Issues/Surprise-Billing>.
5. “Surprise” Billing and “No Surprises Act” Implementation, <https://www.acr.org/Advocacy-and-Economics/Legislative-Issues/Surprise-Billing>.
6. Federal Register, October 7, 2021, at <https://www.federalregister.gov/documents/2021/10/07/2021-21441/requirements-related-to-surprise-billing-part-ii>.
7. American College of Radiology, “No Surprises,” November 21, 2022, at <https://www.acr.org/Practice-Management-Quality-Informatics/ACR-Bulletin/Articles/December-2022/No-Surprises>.
8. American College of Radiology, “ACR Files “No Surprises Act” Lawsuit,” December 22, 2021 at <https://www.acr.org/Media-Center/ACR-News-Releases/2021/ASA-ACEP-ACR-File-Lawsuit>.
9. American Medical Association, American Hospital Association et al. v. U.S. Dept. of Health and Hum. Servs. et al., Case No. 1:21-cv-03231 (D.D.C., December 9, 2021).
10. Tex. Med. Ass’n et al. v. U.S. Dept. of Health & Hum. Servs. et al., 6:21-cv-00425-JDK (E.D. Tex., October 28, 2021).
11. Tex. Med. Ass’n et al. v. U.S. Dept. of Health & Hum. Servs. et al., 587 F. Supp. 3d 528 (E.D. Tex. 2022); appeal dismissed, 2022 WL 15174345 (5th Cir. Oct. 24, 2022).
12. Federal Register, August 26, 2022, at <https://www.federalregister.gov/documents/2022/08/26/2022-18202/requirements-related-to-surprise-billing>.
13. Tex. Med. Ass’n et al. v. U.S. Dept. of Health and Hum. Servs., et al.; Memorandum Opinion and Order (Case No. 6:22-cv-472-JDK; E.D. Tex.).
14. Tex. Med. Ass’n et al. v. U.S. Dept. of Health & Hum. Servs., et al., 6:22-cv-00450-JDK (E.D. Tex.).
15. Tex. Med. Ass’n et al. v. U.S. Dept. of Health & Hum. Servs., et al., 6:23-cv-00059-JCB (E.D. Tex.).

Empowering Future Physicians



Radiologists at the University of Puerto Rico School of Medicine give students a glimpse into the radiology profession to teach the power of imaging in all medical specialties.

The role of radiologic imaging is central to diagnosing and managing a spectrum of conditions across every medical specialty. Unfortunately, if medical school curriculum doesn't expose students to radiology early on, young doctors may enter the field without knowing which imaging studies to order, how to interpret common results or what value radiology adds to the continuum of care.

According to one study, the majority (63.7%) of first-year residents are frequently asked to preview radiologic studies before they're read by radiologists — even though many of those residents (12.6%) never received any formal radiology training in medical school.¹ Only a third of residents know which imaging exams to order, while 81% have never heard of the ACR Appropriateness Criteria[®] that provide evidence-based guidelines for making efficacious imaging decisions.²

When Wilma Rodríguez-Mojica, MD, FACR, attended the University of Puerto Rico (UPR) School of Medicine, she was intrigued by radiology, yet frustrated by the lack of organized radiology training. “Fourth-year medical students had the opportunity to shadow the diagnostic radiology department as a one-week elective, but the rotation was very informal and unstructured,” says Rodríguez, who graduated from the UPR School of Medicine in 1970. “We stood behind radiologists in the reading room and observed while they interpreted films. Some of them took time to explain the findings, while others were occupied with their work and did not get involved with teaching medical students.”

Few students signed up for the informal elective at UPR, which meant that many graduated from medical school without any knowledge of radiology. The lack of interest in imaging created vacancies in the school's radiology residency program. Rodríguez approached the chief radiologist and residency director at the time, Heriberto Pagán-Sáez, MD, with an idea.

“We should find a way to inspire medical students to learn about the field of radiology,” she told him. “We aren't just training future radiologists, but all doctors. Learning about the indications and limitations of studies, how to order appropriate procedures and how to recognize pertinent findings — these are essential skills for becoming a good physician in any specialty.”

By teaching the clinical reasoning for radiologic imaging in all

specialties, Rodríguez began developing an integrated radiology training program to make future doctors more informed about radiology's role in every practice area.

Shaping Radiology Education

Several months before finishing the fourth year of her radiology residency at UPR in 1975, Rodríguez read about Lucy Frank Squire, MD, a radiologist and medical educator at the State University of New York (SUNY) who wrote a radiology textbook in 1964 called *Fundamentals of Roentgenology*.³ Subsequent editions of Squire's book, named *Fundamentals of Radiology*, soon became a standard resource for medical students everywhere.

During the 1970s, Squire gained international attention for conducting a series of postgraduate courses about radiology for medical students. Medical educators from around the world visited Squire to observe her innovative small-group teaching style.



“They realized that radiology was important for all students, and that every physician should know how to order exams and recognize basic findings — not just the ones pursuing radiology.”

WILMA RODRÍGUEZ-MOJICA, MD, FACR

Rodríguez asked her department chair to send her to New York so she could learn directly from Squire. With Pagán's support, the department sent her to spend one month under Squire's tutelage, learning how to teach radiology to fourth-year medical students.

She observed as Squire introduced students to radiology using her textbook and pre-recorded seminars. Then Squire divided classes into groups of five to 10 students and gave each group a set of chest or abdominal films accompanied by a small case history. After half an hour of small group discussion, the students reassembled to share their findings with the entire class.

Rodríguez returned to Puerto Rico and submitted a proposal to add a radiology elective to the UPR School of Medicine, modeled after Squire's methods. The dean of the School of Medicine approved it. In 1976, as a junior attending radiologist, Rodríguez began teaching UPR's first formal radiology elective for fourth-year medical students.

“We integrated a lot of radiology knowledge into two weeks,” Rodríguez says. “We not only discussed film findings, but the history of each patient and the indications and limitations of the studies to help students understand the role of radiology in managing patient care.”

Before showing students a set of films, for example, Rodríguez shared the medical order for the exam to show the importance of including relevant details from the patient's case history to focus



First-year medical students take part in the ultrasound workshop developed by Wilma Rodríguez-Mojica, MD, FACR, to complement the OB-GYN rotation.

the radiologist's evaluation. By taking this big-picture approach, she emphasized the collaborative role of radiology early on, instead of feeding the misconception that imaging existed only in the reading room without intersecting with other specialties.

Expanding the Curriculum

Initial seminars covered chest and abdominal films, gastrointestinal and genitourinary studies, and bone lesions. As new imaging modalities entered the field, and as medical students inquired about other types of imaging, the course expanded.

A classroom was created inside the radiology department at the Puerto Rico Medical Center, near the medical school, which gave the students hands-on access to imaging equipment. When she added a sonography section to the course in the late 1980s, Rodríguez wheeled an ultrasound machine into the classroom and asked for volunteers to receive sonograms to demonstrate the technology in action.

"The students were excited to lie down on the stretcher as volunteers, and the rest of the class was amazed to see the images," Rodríguez says. "Those experiences made the course more interesting and interactive."

Rather than focusing solely on recruiting radiologists, Rodríguez tailored the program to be applicable to medical students who planned to pursue other fields as well. "It became so popular as an elective that the students made a proposal to the curriculum committee that it should be offered as a required course during the third year of medical school," Rodríguez says. "They realized that radiology was important for all students, and that every physician should know how to order exams and recognize basic findings — not just the ones pursuing radiology."

The UPR School of Medicine agreed and made radiology training mandatory for third-year medical students starting in 1996.

Learning by Teaching

Some members of the anatomy faculty approached Rodríguez and asked her to speak to their classes, exposing students to imaging during the first year of medical school. They realized that X-rays, CT scans and MRIs were the perfect tools to provide a glimpse inside the human body and illustrate anatomy beyond the textbook.

Additional requests to expand the radiology curriculum stretched Rodríguez's availability. She recruited other attending radiologists and also began pulling radiology residents into teaching roles.

"It was a necessity because I had to work as a radiologist also," she says. "I recruited slowly, because not everyone has the patience and ability to teach." Radiology residents began giving the hour-long anatomy lecture to first-year medical students, using the prepared teaching materials.

"The first-year course is usually assigned to the more senior residents," says Andrea N. Saldaña-Méndez, MD, a fourth-year radiology resident at UPR who decided to specialize in imaging after taking the required course. "As a resident, it's exciting because you get to go back to the classroom where you started taking your classes and teach a topic that you now use every day. It's so important to explain what radiologists do on a daily basis and how valuable they are because, for many medical students, it's their introduction to radiology."

Over time, lower-level radiology residents began offering lectures in the required course and proctoring small group discussions for third-year medical students. "When you try to teach radiology to medical students, you have to explain it in very simple words," Saldaña says. "You have to really understand a concept before you can teach it to someone else, so the residents and the students both learn a lot." **B**

By Brooke Bilyj, freelance writer, ACR Press

Read the full case study online at bit.ly/UPR-Program-Case-Study.

ENDNOTES

1. Saha A, Roland RA, Hartman MS, Daffner RH. Radiology medical student education: an outcome-based survey of PGY-1 residents. *Acad Radiol*. 2013;20(3):284–9.
2. ACR Appropriateness Criteria. bit.ly/ACR-Appropriateness-Criteria.
3. Becker JA, Lucy Frank Squire, MD. In Memoriam. *Radiology*. 1998; 208(1):273.



Andrea N. Saldaña-Méndez, MD, is a fourth-year radiology resident at UPR who decided to specialize in imaging after taking the required course to be able to teach it to first-year medical students.

Building Strategic Resilience

Radiology practice leaders exchange ideas about tough challenges, including how to recruit and retain the best people in a fast-changing market.

Keeping up with changes in medicine and technology can be daunting enough for radiologists. Add in the responsibilities of running a department or practice, and the challenges multiply: recruiting and retention, training, scheduling, billing, vendor selection, continuing education and more.

In January, radiologists and business managers gathered in Orlando, Fla., for the 2023 ACR-RBMA Practice Leaders Forum, where they exchanged critical strategies to boost the resilience of their operations in today's fast-paced business climate. Here are some of the highlights:

Optimal Versus Reasonable Productivity

In his keynote address titled “Radiology Practice Management: Navigating the Tension Between Optimal and Reasonable,” Kurt A. Schoppe, MD, asked for a show of hands from people in the room who were having trouble competing to hire radiologists, especially in subspecialties like pediatrics and mammography. Many hands were in the air. He has stayed up to date with trends in practice management as a member of the ACR Commission on Economics, former chair of the Reimbursement and Practice Expense Committee and an alternate radiology RUC member, among numerous volunteer roles at the College, and in his new position as the president of Radiology Associates of North Texas.

“A doctor’s role is not just to cure disease — it’s to cure disease within the confines of what’s reasonable and tolerable to the patient,” Schoppe said. “But we don’t always give ourselves the same grace.”

The key to keeping top talent is in staying flexible and looking for new ways of operating that will meet the evolving needs of radiologists and the teams that support their work, Schoppe said. “It’s a dynamic market that’s changing constantly. I would argue that rigid, inflexible work policies are just not going to play in this market.”

Your productivity policy demands flexibility because there’s a difference between optimal productivity and reasonable productivity, he said. Optimal is the maximum level of productivity achievable, while reasonable is the level that can be sustained without straining team members. According to Schoppe, it’s not sustainable to demand that people all perform every task the same way in the same amount of time. There are too many variables.

Schoppe’s keynote set the tone for discussions that would continue throughout the conference. He spoke about fairness — not only in handling radiology work but in hiring. It hurts when you’re 18 months into a new job and a new hire comes in making exactly what you’re earning, he said. It hurts when you see new hires getting a signing bonus when you never received one.

“You can’t count on what you did last year, five years ago or 10

years ago to work in the future because our economic landscape is moving, our relationships are changing, your reimbursements are changing, the rules are changing,” he told the audience. “You can’t lean on the past to enjoy the benefits of the future. We can try but it’s not going to work. You can’t ignore it. That can lead to financial risk, leverage risk, burnout of physicians or staff, safety and quality concerns. The past is not a reliable predictor of the future.”

Innovative Retention Strategies

In a session titled “Feeling the Pinch: Radiology Department Recruiting in Times of Shortage and Explosive Imaging Growth,” three groups shared innovative strategies for keeping their radiology teams engaged and satisfied. Eric A. Brandser, MD, representing Radiology Associates of Northern Kentucky, shared how his 33-radiologist practice solved an issue that came up repeatedly during team meetings: frustration with long daily worklists and how best to combat the anxiety that accompanies the long worklists. The number of daily work relative value units (wRVU) per doctor in the group could vary from 45 to more than 100 a day. Slower readers said they were being more thorough than their peers. Faster readers said the burden of reading most of the studies led to frustration and burnout.

The dilemma led to the birth of the “bunker shift,” a technique that involves working a shift to read a certain number of wRVU worth of studies, with focus only on reading cases and not handling consultations, phone calls, procedures or meetings. Doctors who are off duty on any given day can volunteer for an extra shift to read 40 wRVU worth of studies, no matter how long it takes. Cherry-picking for what they want to read is not only acceptable but encouraged. Doctors read what they like at the speed they like.

Faster readers jumped onto the concept, seeing it as a way to earn extra money. They stopped complaining about their co-workers. Slower readers saw it as a relief that no one was leaning on them to work at an uncomfortable pace.

The interesting result, Brandser shared, is that the practice increased its revenue by handling more cases more quickly. That way, all doctors in the practice, regardless of which camp they counted themselves in, earned more money. Another result is that bunker shifts eliminated “long list anxiety syndrome,” described in an August 2022 *JACR*[®] article as a state caused by a long unread worklist and the dread of another never-ending day ([see bit.ly/JACR-bunker-shifts](https://bit.ly/JACR-bunker-shifts)).

The practice’s CEO, Josh Dorsey, offered tips on another challenge Radiology Associates of Northern Kentucky solved through innovation: holiday scheduling. The practice instituted a reverse auction for radiologists to bid on voluntarily filling holiday shifts. The auction is set for a predetermined amount of time, and each doctor bids progressively lower shift values from a high starting point. The object is to determine how much pay you’re willing to accept to take on the shift.

According to Dorsey, Thanksgiving typically goes for the highest bid, with pay at three times the normal rate for that day. Christmas Eve might go for 2.6 times the rate and New Year’s Day



Steven Lev, MD, shares steps leaders at Nassau University Medical Center took to bolster the hospital's radiology team.

2.2 times. Mid-year and year-end bonuses for all the radiologists are adjusted to cover the costs of the auctions.

“If you never want to work a holiday shift again, you don’t have to,” Dorsey said. “You just have to pay for it.” About 50% of the doctors have taken the option to give up \$5,000 to \$6,000 a year to avoid working a holiday shift, he said. Meanwhile, those who are willing to work holidays can use this as a way to increase their earnings quickly.

Remote Work

The COVID-19 pandemic changed the world’s collective philosophy about working from home and whether it is possible and even preferable in some instances. Radiology was no different. A growing number of physicians prefer to read from home — a view especially popular among millennials, said Samir S. Shah, MD, FACR. He also spoke as part of the “Feeling the Pinch” session and later helped lead a breakout discussion about work-from-home strategies.

A new model some practices are trying is to allow radiologists to work from home at least part of the time — maybe two or three days a week. This will become more critical as organizations try to recruit younger radiologists.

Some practices are handling this new work-from-home model by implementing financial disincentives. For instance, they pay at-home radiology shifts 22% to 28% lower, Shah said. “If they are remote, there has to be a discount for that.”

A People Focus

After seeing it was losing too many good radiologists, Nassau University Medical Center, a safety net hospital in Nassau County, New York, decided it had to “stop the bleeding” and come up with a retention plan, said Steven Lev, MD, and Marc Fischer, MBA, LRT, CNMT, RT(N), who also spoke as part of the “Feel the Pinch” session.

The radiology department’s job descriptions were woefully outdated, and the salaries were below market. A lengthy onboarding process was slowing down new hiring, which created more pressure on the team members who were trying to cover the workload.

The department focused on a few changes to hold onto its team members — which eventually would make recruiting easier as well. First, it conducted some research to bring the

salaries in line with similar organizations in the geographic area. The department gave radiologists a voice by listening to what they wanted. It gave them a sense of purpose by touting things like the hospital’s residency program for people who love teaching and mentoring. And leaders personalized the experience by getting to know the radiologists better through group activities, including barbecues, marathon races and fun décor that turned the reading room into a mini art museum. All the efforts have turned things around, and the hospital has seen positive results.

“The people who work with you are not robots,” Lev said. “It’s important to get to know them as people.”

Advocacy Efforts

Several sessions dealt with reimbursement for radiology work and how the latest governmental actions have not met the expectations of the medical community. Radiologists are taking a stand on multiple fronts for issues ranging from Medicare reimbursement and preventive services coverage to non-physician scope of practice and surprise billing.

In a session titled, “How a New Congress Will Impact Your Practice,” Ted Burnes, MPA, ACR’s senior director of political affairs and RADPAC®, presented an overview of what the ACR is trying to do in Washington. Radiologists and their offices need to keep providing data and muscle to the advocates on Capitol Hill, he said, especially because there are 75 new members in the House of Representatives and six in the Senate for radiology advocates to bring up to speed on what is important to the specialty and how their concerns affect patient care.

In Congress, out of 535 members, only 19 are physicians — 15 in the House and four in the Senate — and none are radiologists, Burnes said. Healthcare is not top-of-mind this year for Congress, which is expected to be more focused on topics including inflation, crime and oversight. It will be hard to pull lawmakers’ attention to issues that matter to radiologists, like Medicare reimbursement and surprise billing.

That means radiologists need to continue speaking as one voice and making sure the specialty’s concerns become a priority on Capitol Hill, Burnes said. “We need to stop getting hit and just taking it.” **B**

By Diane Sears, senior content specialist, ACR Bulletin



MARK YOUR CALENDAR

The 2024 ACR-RBMA Practice Leadership Forum will be held January 19–21, 2024, at the Sheraton Grand at Wild Horse Pass in Phoenix, Ariz. Visit acr.org for details to come.



Bridging the Gender Gap

Women are still vastly underrepresented in radiology. That can be changed through mentorship and other measures that encourage female students to go into the specialty.

Women comprise more than 50% of the medical student population. However, according to the 2022 Association of American Medical Colleges (AAMC) *Report on Residents*, women make up only 27.7% of diagnostic radiology residents, a number that has not considerably changed since the 1980s.^{1,2} From difficulties finding female mentors to misconceptions about the field, there are several reasons gender diversity continues to be a challenge in radiology. However, there are various solutions that can encourage female medical students to consider a career in this rewarding field.

Identifying a female radiology mentor can be challenging for medical students. Women hold just 24% of academic radiology positions at the faculty level and a meager 9% of academic leadership radiology positions along a so-called “leaky pipeline.”³ This limits the availability of female mentors for students, which creates a feedback loop of decreasing female engagement in radiology.⁴ Additionally, the first (more junior) and last (more senior) author of a radiology publication are often the same gender.⁵ With radiology’s significant gender gap, this suggests a hurdle for female trainees who aim to be involved in radiology research.

In a study of 16 Canadian diagnostic radiology residency programs, investigators found programs with more female radiology faculty tend to have more female residents, heavily implying that prospective female radiologists prioritize working with female attendings.⁶ Therefore, retaining female faculty is an essential piece of the puzzle in increasing medical student interest. To that end, initiatives that maintain the female academic radiology workforce such as addressing faculty recruitment bias, ensuring fair parental leave policies, and implementing protections for pregnant and breastfeeding women are vital to improving the radiology pipeline.⁷

Misconceptions about the field may also influence a woman’s decision to pursue radiology. As suggested by one study, perceptions about a lack of direct patient contact and additional physics requirements deter women from considering radiology as a specialty.⁸ To combat these stereotypes, the American Association of Women in Radiology (AAWR) started its “Mythbusters” campaign on Instagram and Twitter (see bit.ly/Mythbusters-Twitter). This campaign addressed topics such as the family-friendliness of

radiology, including an AAWR initiative for increased parental leave in residency; the role of AI as a tool for radiologists rather than a replacement; and the patient contact available in various radiology subspecialties.⁹ Future studies should explore how effective such efforts are at bringing women into radiology.

Networking programs, social media and pre-clerkship radiology education are all opportunities to enhance female recruitment. It is well documented that women-in-radiology outreach efforts increase female students’ interest.¹⁰ Nationally, the AAWR uses a mentorship program that connects students to mentors and holds events at the ACR Annual Meeting. Social media represents an opportunity to expand the mentorship role, connecting students to role models in the field. Hashtags can be used to create a global community of women in radiology.¹¹ Finally, virtual content from creators like RFS Chair Yasha Gupta, MD, (see bit.ly/Yasha-Gupta-YouTube), a breast imaging fellow at Memorial Sloan Kettering Cancer Center, and Instagram/Twitter accounts from women in radiology are inspiring for female students considering this pathway.

From a curricular standpoint, radiology courses in the first and second years of medical school significantly increase interest in the specialty.¹² Such an addition to the pre-clerkship curricula may help close radiology’s gender gap. Additionally, the ACR’s Pipeline Initiative for the Enrichment of Radiology (PIER) Internship represents an additional opportunity for women and underrepresented minorities to get involved with radiology during their first year of medical school.

Retaining female faculty, creating mentorship opportunities, using social media as a networking tool, and increasing pre-clinical exposure are key factors in improving female medical student engagement in radiology. While there is more work to be done in understanding why the gender gap persists, with the adoption of these initiatives by diversity-minded programs, we can look forward to a more equitable gender landscape in the years to come. **B**

By Cailin O’Connell, BS, MS3, Texas A&M School of Medicine; and Glori Das, BS, BSA, MS2, Texas A&M School of Medicine

ENDNOTES available in the digital edition at acr.org/bulletin

How can radiology increase public awareness and understanding of the specialty?



“The public and our patients are often unaware of the significance of radiology and the essential role radiologists play in their care. To increase public awareness and understanding of radiology, a comprehensive approach is required. Informational sessions and public talks, social media, patient-centric reporting, outreach to those coordinating patient care, and partnerships with other healthcare professionals are all great places to start. It will take a multifaceted, multichannel approach to raise public awareness and increase the visibility of radiology. By doing so, we educate, foster understanding and empower the public and our patients.”

Richard J. Friedland, MD, FACR, CEO of Radloop and managing partner at Hudson Valley Radiologists, P.C.



“While many patients only learn about radiologists when there is bad news to be delivered or when they are about to have an invasive procedure, the best time to inform the public about our role in healthcare is when we can tell them how to prevent disease. For example, accept any opportunity to speak at informational sessions, especially on the subject of screening. Coordinate with your state radiology society to develop social media campaigns to teach the public about our role. Use social media to show people what we do and how it can keep them healthy. It is our duty to make sure our patients know that radiology can be the first step in saving their lives.”

Eric M. Rubin, MD, FACR, a physician with Southeast Radiology Ltd., medical director of the CT division for Crozer Health, associate chair of the Delaware County Memorial Hospital radiology department, chair of the ACR Commission on Human Resources and president of the Pennsylvania Radiological Society

THE RUC

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“Typical” is a word that came up over and over during the meeting. The surveys also include questions that compare the service relative to other selected services. The society then reviews the survey results and prepares recommendations for the RUC about the relative value of the specific service. I found that the RUC relies heavily on survey data.

The specialty societies’ advisors present their relative value recommendations to the entire RUC panel. RUC panel members are evaluators and must be unbiased. Many will be unfamiliar with the code so there is a portion of education built into the presentation. This is where it gets interesting. The RUC advisors must be master chess players — anticipating

next moves, flaws, questions and comments. They need to be 10 steps ahead. RUC members discuss and then vote on the recommendation.

CMS officials attend these meetings and often ask questions. The RUC then forwards its recommendations to CMS. CMS reviews the recommendations and publishes its preliminary relative value decisions as part of its annual proposed MPFS rule and later finalizes the values through the rule-making cycle.

Lastly, but most importantly, our ACR RUC team is brilliant. Few people realize the number of hours they spend preparing for and attending these meetings, which are not a vacation. The ACR staff keep everything on track leading up to and during the meeting. The amount of knowledge and experience on the ACR RUC team is astounding, and I can assure you after attending my first meeting that we are in the best hands. **B**

AI

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needs to happen before the radiologist opens the study.” Participating in a pilot gives you time to figure out that process.

The second part is the clinical implementation, which involves evaluating the accuracy of the AI system to ensure the product is high-quality for your patients and that the radiologists will use it. The work needed to optimize engagement by radiologists is generally underestimated. With any new tool, you must get radiologists to accept it, and there is a lot of education and change management that goes along with that process, Kottler says.

“It is best to jump in and get your feet wet,” she says. It is also helpful to talk to people who have implemented AI to see what technical and clinical barriers they needed to overcome, especially if that group is on a scale similar to your own, Kottler suggests. “Try using standards so that everyone isn’t recreating the wheel, so to speak. And have an AI champion in your practice who can begin to collect teaching cases for continuous education and the measurement of potential ROI.”

Kottler says there are two aspects of AI she’s excited about. “One is something that we can do today — using AI to standardize our data,” she says. “Humans are highly variable, and because humans are creating our healthcare data, it tends to be variable and unstructured. Computer systems, on the other hand, are highly structured. A combination of computer vision and natural language processing, or NLP, can be applied to structure unstructured data and map it to a national standard.”

If you think about how AI fundamentally works, you will find it’s good at adding structure

to unstructured data, she says. “We looked at our database, maybe two years ago, of how many study names we had, across our thousands of hospitals, for an X-ray of the wrist. We thought it would be maybe 100, but it turns out we have more than 500 different ways of naming a wrist X-ray,” Kottler says.

Imagine the exponential number of ways you could name each series of a CT scan, she says. “It’s the Wild West out there in terms of series names.” AI could help standardize not just the procedure name, but the series names as well, she says.

The other aspect Kottler finds exciting is the idea of using AI to do things humans can’t do today. That can mean everything from using imaging (pixel data) to make personalized predictions for malignancy risk on screening examinations, to combining information from genomics, radiomics, molecular imaging and other data to provide a personalized lesion evaluation and optimal treatment options.

“Regardless of the use case, I see AI augmenting the human,” Kottler says. “I am a strong believer that the integration of human and AI is our future, period.”

Those in the know about the technology are putting out a call to action that everyone in the specialty should be learning about AI tools. “If we are not doing that, we are not going to be in control of our own future,” she says. “AI is not replacing us, but it is going to fundamentally change how we practice.” **B**

By Chad E. Hudnall, senior writer, ACR Press

ENDNOTE

1. Bahl M. Artificial Intelligence in Clinical Practice: implementation considerations and barriers. *J. Breast Imaging*. 2022; 4(6):632–639.

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