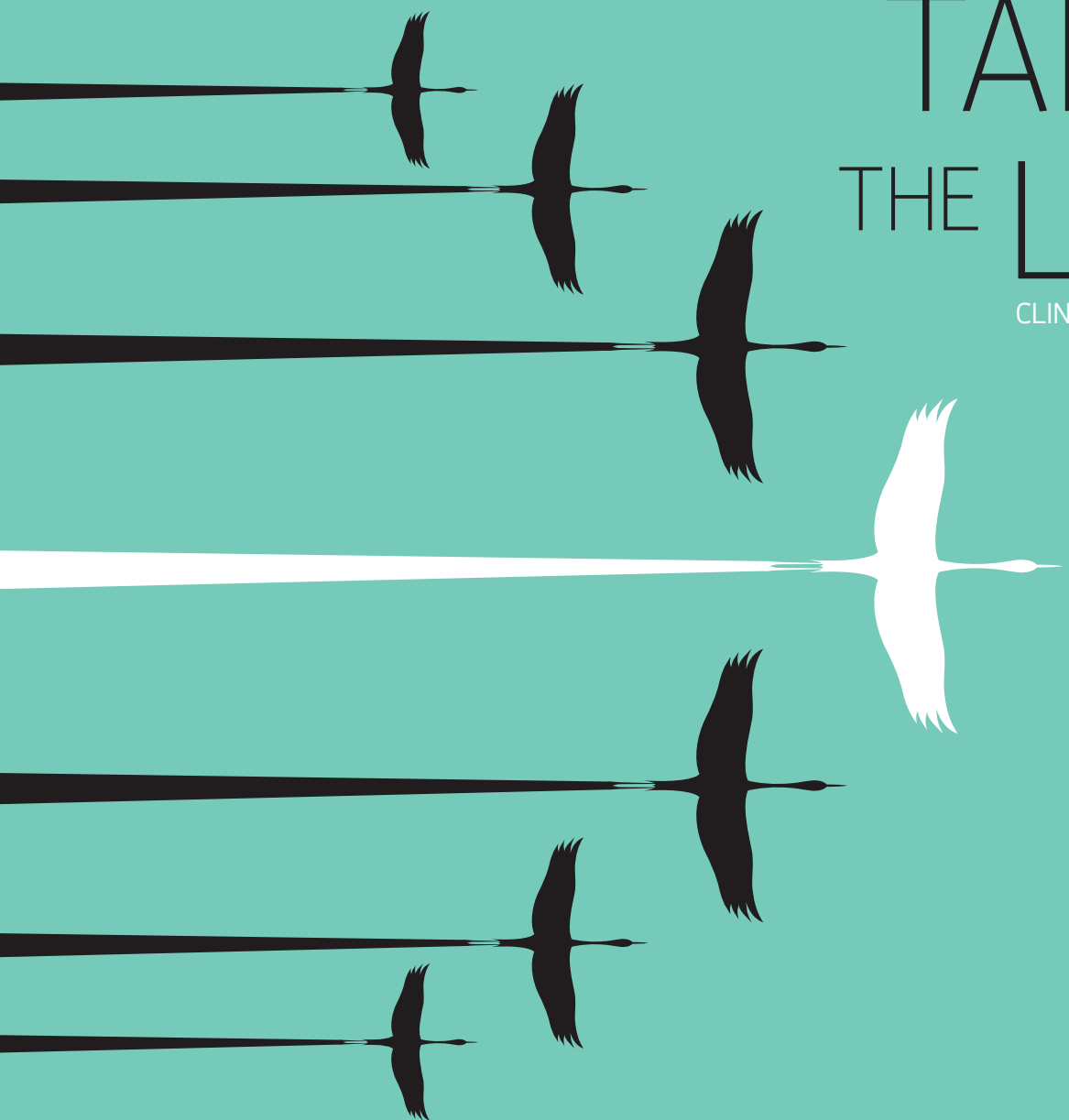
ACR LEADERSHIP | INTEGRITY | QUALITY | INNOVATION NOVEMBER 2018 | VOL.73 | NO. 11

Bulletin



TAKING THE LEAD

CLINICAL DECISION SUPPORT SPECIAL SECTION

iFIX Patient Stabilization System

Versatile • Comfortable • Sanitary

Comprised of both reusable and single-use components, iFIX's versatile design allows for a variety of uses offering a head-to-toe solution for patient stabilization in multiple modalities.

- Disposable iFIX Fleece stretches and gently "hugs" the contours of the patient's body for gentle, yet secure stabilization.
- Reusable iFIX Patches and Adapters strongly secure the iFIX Fleece to ensure optimal patient stabilization and minimize motion artifact.

Ideal for CT • MRI • X-Ray • Fluoroscopy • Ultrasound

Learn more at Beekley.com/iFIX

Visit Beekley.com/iFIX for related product safety information

Distributed in the U.S. and U.S. territories by Beekley Corporation, One Prestige Lane, Bristol, CT 06010

BEEKLEY MEDICAL®
when your diagnosis must be right®

REV: iFIX_AD-ACR_0918

ACR
Bulletin
NOVEMBER 2018 | VOL.73 | NO.11

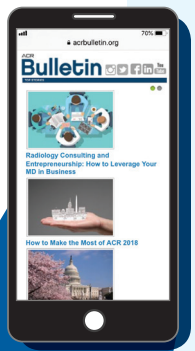
CONTENTS

SPECIAL SECTION

CLINICAL DECISION SUPPORT (CDS)

ALSO INSIDE

DEPARTMENTS



Check out the digital edition!
Read more at **acrbulletin.org**

ACR® AMERICAN COLLEGE OF RADIOLOGY
QUALITY IS OUR IMAGE

QUESTIONS? COMMENTS? Contact us at bulletin@acr.org
Archives of past issues are available at ACRBULLETIN.ORG

OUR MISSION: The *ACR Bulletin* supports the American College of Radiology's Core Purpose by covering topics relevant to the practice of radiology and by connecting the College with members, the wider specialty, and others. By empowering members to advance the practice, science, and professions of radiological care, the *Bulletin* aims to support high-quality patient-centered healthcare.

Geraldine B. McGinty, MD, MBA, FACR, Chair

The Value of Storytelling

Imaging 3.0® case studies show patient-centered care in action.

If you're an avid reader like me, you probably have a pile of digital or hardcopy books on your nightstand. While keeping up with my reading can be a challenge, an engaging book can still capture and hold my attention late into the night.

Since I love a good story, a tweet from ACR RFS Chair Daniel Ortiz, MD, recently caught my eye. Dr Ortiz tweeted, "Successful groups devote a surprising amount of time telling their own story, reminding each other precisely what they stand for — then repeat it ad infinitum." The quote was from *The Culture Code: The Secrets of Highly Successful Groups,* a book by Daniel Coyle.

At the ACR, we have long recognized the importance of telling the stories of what we stand for, and I'm delighted that a collection of these powerful stories accompanies this month's *Bulletin*. I hope they'll find their way onto your nightstand and that you'll share them widely.

In this issue, and in the accompanying Imaging 3.0® case study supplement (available online at acr.org/InPractice), you'll read about radiologists like Melissa M. Chen, MD, Christie M. Malayil Lincoln, MD, and Ryan K. Lee, MD, MBA, who are leading change by demonstrating the value of appropriate imaging and collaborating with referring physicians. You'll be inspired by the journey of Sabiha Raoof, MD, who drew from her experiences with a devastating breast cancer diagnosis to become a health system leader and patient advocate.

I encourage trainees to consider the work of David C. Mihal, MD, who enabled patients to review their results with a radiologist during his residency. Shlomit A. Goldberg-Stein, MD, conducted foundational work to engage her colleagues in the transition to structured reporting. Samir H. Patel, MD, FACR, undertook a creative approach to recognizing the value of non-interpretive work. These are all compelling examples of how we can adapt as a profession for the good of the patients we serve. Finally, if you haven't watched the Imaging 3.0 case study video about Elkhart General Hospital's patient-centered thoracic oncology clinic (also an initiative of Dr. Patel's), I encourage you to check it out at acr.org/PatientForward. It's incredibly moving.

When we started the Imaging 3.0 initiative back in 2012, we could not have imagined that we would collect over 100 stories of radiologists who are enabling more patient-centered, high-value imaging care. I can't imagine how difficult it must have been for our Imaging 3.0 staff team to select just seven for this supplement, and I hope you'll check out the many others at acr.org/imaging3. I salute the work of all of you who, with your colleagues, have submitted your stories to inspire our community.

> At the ACR, we have long recognized the importance of telling the stories of what we stand for.

While some of the threats we faced at the beginning of this project are unchanged, others (like the disruptive opportunities of AI) were barely on the horizon then. The lesson I take from this is that our core purpose must remain constant. The stories we tell must clearly articulate ACR's core values of Leadership, Integrity, Quality, and Innovation. Those themes must endure even as our stories evolve.

Branding is a concept that some are uncomfortable applying to medicine. However, to me, our brand is how we articulate what we stand for and the stories we tell about what's important to us. As branding expert Rosemarie Ryan said at the 2016 ACR Annual Meeting, "Invest in your story and the experience around it. That's what creates true differentiation, meaning, and value, for you and your patient… that is what I call a brand."

Our brand assumes critical importance when we have to counter misinformation about the value of mammography screening or try to convince CMS to pay for CT colonography. Our brand and the authenticity of our values are key to our ability to counter opposition from other physician groups to the implementation of the PAMA mandate. The stories we tell about our commitment to our patients are essential to our work on enabling appropriate data science solutions through the ACR's Data Science Institute™. Those stories remind us of our sacred oath to those we serve and, yes, we must repeat them ad infinitum. B

IMAGING3.0®

Call for Case Studies

ACR's Imaging 3.0® initiative is a roadmap to transition the practice of radiology from volume-based to value-based care. We invite you to share your stories at acr.org/Submit-CaseStudy.

Arizona Radiologist Wins GOP Primary for U.S. House

Stephen L. Ferrara, MD, a retired Navy captain and former Navy chief medical officer, made history as the first radiologist in the United States to win a contested primary race. Ferrara secured the GOP nomination for the open U.S. House seat in Arizona's Phoenix-based 9th congressional district, which is expected to be a high-profile race in November.

Following the primary election vote, Ferrara recognized the importance of the support from his specialty. "I am honored to have earned the trust and support of the voters of the 9th congressional district to serve as the Republican nominee in the general election," said Ferrara. "There are so many great people who have helped my campaign, but I would be remiss if I didn't recognize the tremendous amount of support I've received from the radiology community — I'm grateful beyond words."

To read more, visit acr.org/Radiologists-in-Primaries.

PHOTO: MICHAEL NUDO

Amy K. Patel, MD, breast radiologist in Kansas City, Mo., showed her support for Stephen L. Ferrara, MD, retired Navy captain and former Navy chief medical officer, at ACR 2018.

RLI Launches New Podcast

The ACR Radiology Leadership Institute® has launched a new podcast that will explore the world of healthcare leadership through a series of in-depth interviews with pioneers in the field. Duke University's Geoffrey D. Rubin, MD, MBA, FACR, moderates the podcast, diving deep with radiology leaders who inspire, connect, and build across a spectrum of clinical environments and organizations. There are challenges and opportunities within radiology that didn't exist just years ago, according to Rubin. The aim of this podcast series is to learn from those who are already shaping the future of healthcare and encourage those who want to join.

To listen and subscribe, visit bit.ly/RLI-TakingTheLead.

Is Your Medical Physicist an ACR Member?

The ACR has been a strong advocate for medical physicists over the years. Important technical standards, quality control manuals, accreditation programs, and policy guidance are driven by ACR's medical physicist members. Medical physics graduate students and residents enjoy free ACR membership plus reduced and graduated fees in the first few years after completing clinical training.

Encourage the new generation of medical physicists to get involved and help shape the impact of medical physics on the field of radiology.

Learn more at acr.org/membership.

Pisano Named ACR Chief Research Officer

Etta D. Pisano, MD, FACR, has been named chief research officer of the ACR. Pisano is the first woman to hold this ACR position.

"Dr. Pisano is a giant in the clinical research community. She will identify clinical and socioeconomic research opportunities that can advance the practice of radiology and improve patient care," said ACR CEO William T. Thorwarth, MD, FACR. "We are proud to have her as chief research officer for the entire College which will allow us to tap her talents and experience across the ACR."

Pisano previously served as chief science officer solely for the ACR Center for Research and Innovation™.

Learn more at acr.org/Pisano-CRO.

> **Some commentators have already predicted that AI will be the end of the practice of radiology. They are wrong, just as Thomas Friedman was wrong when he predicted in his book *The World Is Flat* that all of radiology would be outsourced to other countries.**
>
> **— James H. Thrall, MD, FACR, at bit.ly/RethinkingAI**

ACR Data Science Institute™ Chief Medical Officer Bibb Allen Jr., MD, FACR, co-chaired the National Institute of Biomedical Imaging and Bioengineering Workshop on AI in Medical Imaging.

ACR DSI Promotes the Value of Standardized AI Use Cases

The ACR Data Science Institute™ (DSI) made a case for standardization, interoperability, and reportability in the development of AI algorithms for medical imaging at the recent National Institute of Biomedical Imaging and Bioengineering Workshop on AI in Medical Imaging. Co-chaired by DSI Chief Medical Officer Bibb Allen Jr., MD, FACR, the workshop outlined opportunities in foundational and translational research related to machine learning in medical imaging. "We're basically taking AI and human intelligence and combining those together. The trick is to define where we focus attention in narrow AI for the next 10 to 20 years, as we wait for general AI to become more reliable," said DSI Chief Science Officer Keith J. Dreyer, DO, PhD, FACR, in a call for the reasonable implementation of AI to enrich the human-machine interface. Findings from the workshop will be published in two white papers.

Watch the recorded event at acr.org/ACR-DSI_NIH-Workshop and learn more about the ACR DSI's™ work on page 19.

INTERNATIONAL DAY OF RADIOLOGY

Nov. 8 is the International Day of Radiology

Nov. 8, 2018, marks the 123rd anniversary of Wilhelm Conrad Röntgen's discovery of the X-ray. International Day of Radiology celebrates radiology professionals' essential role in healthcare, and the importance of radiology research, diagnosis, and treatment for safe patient care. A joint effort of the ACR, RSNA, and the European Society of Radiology, the event highlights the tremendous advances in modern healthcare made possible by medical imaging.

Learn more at acr.org/IDOR, and join the conversation on social media using #IDoR2018.

Neiman Institute and Georgia Tech Partner on Policy and Imaging Research

The Harvey L. Neiman Health Policy Institute® has partnered with the Georgia Institute of Technology to establish the Health Economics and Analytics Lab (HEAL). The HEAL will focus on applying big data analytics and AI to large-scale medical claims databases — with an emphasis on medical imaging — to better understand how evolving healthcare delivery and payment models affect patients and providers. "The HEAL will provide needed research to inform the national medical imaging policy debate and develop new approaches for improving population health," said Danny R. Hughes, executive director of the Neiman Institute. According to ACR BOC Chair Geraldine B. McGinty, MD, MBA, FACR, "This partnership provides a tremendous opportunity to leverage the Neiman Institute's policy expertise with the analytical capabilities of a world-class engineering institution to address the pressing problems of improving population health, increasing access to medical care, and reducing medical costs."

Learn more about HEAL at bit.ly/HPI-HEAL.

IN MEMORIAM:

Alexander R. Margulis, MD, FACR

Alexander R. Margulis, MD, FACR, an ACR Gold Medalist, passed away in September at the age of 97. Margulis was a giant and a pioneer in the field of radiology, serving as the head of the University of California-San Francisco's radiology department for 26 years before joining the faculty at Weill Medical College of Cornell University. He was a founding father in gastrointestinal (GI) radiology and held one of the early leadership positions within the Society of Gastrointestinal Radiology (now known as the Society of Abdominal Radiology).

Margulis was a co-founder of both the International Society of Magnetic Resonance in Medicine and the International Society for Strategic Studies in Radiology. He served as president of the Association of University Radiologists, the Society of Chairs of Academic Radiology Departments, and the California Academy of Medicine. He published more than 280 manuscripts and 21 books, including the very first textbook on GI radiology. Among the numerous awards he received were eight honorary doctorates, the J. Allyn Taylor International Prize in Medicine, the University of California Medal, and the Gold Medal of the RSNA. Margulis will be remembered as a mentor, leader, and visionary who indelibly shaped the field.

To learn more about Margulis's life and work, visit bit.ly/Alex_Margulis.

What Has ACR Done for You?

In the next few months, you will hear about the ways in which the College has made strides to advocate for and protect your reimbursement, expand educational offerings to help sharpen your diagnostic and leadership skills, guide you through coding changes, and more.

With the year winding down — 2018 membership expires Dec. 31 — we want to hear from you. How has your investment in ACR supported you in your professional journey this year? Has being a member helped your career, impacted your practice, or expanded your network? Let us know.

Written or video submissions can be uploaded to acr.org/weareacr or sent to weareacr@acr.org.

Here's What You Missed

The *Bulletin* website is home to a wealth of content not featured in print. You'll find blog posts, extra articles, and other updated multimedia content at **acrbulletin.org.**

A Look at Lung Cancer Screening Programs

Jennifer Buckley, MD, chief radiology resident at the University of Missouri, discusses what she learned through implementing a resident-driven lung cancer screening program. **Read more at bit.ly/LCSPs.**

The Changing Landscape of Medical Education

A radiation oncologist shares his thoughts about education within the field and why collaboration is key at **bit.ly/ROCorner-Education.**

Women in Radiology: Are We There Yet?

Melissa A. Davis, MD, MBA, assistant professor of radiology and biomedical imaging at Yale University School of Medicine, discusses how women can progress in the field at **bit.ly/Women_Rads.**

> **Using CDS to access Appropriate Use Criteria will soon be mainstream clinical practice. We just have to connect referring providers with us — the imaging providers.**
>
> **— Ashima Lall, MD, MBA, FACHE, at bit.ly/CDS_Mainstream**

CALENDAR

November

2–4 Musculoskeletal MR of Commonly Imaged Joints, ACR Education Center, *Reston, Va.*

8–9 AIRP® Categorical Course: Neuroradiology, Pinewood House Education Centre, *Stockport, U.K.*

9–10 Prostate MR, ACR Education Center, *Reston, Va.*

9–11 Society for Pediatric Radiology Pediatric Oncologic Imaging Course, St. Jude Children's Research Hospital, *Memphis, Tenn.*

10-13 AMA Interim Meeting, Gaylord National Resort & Convention Center, *National Harbor, Md.*

12–13 Breast MR With Guided Biopsy, ACR Education Center, *Reston, Va.*

25–30 2018 RSNA Annual Meeting, McCormick Place, *Chicago*

December

7–9 Coronary CT Angiography, ACR Education Center, *Reston, Va.*

10–12 Neuroradiology, ACR Education Center, *Reston, Va.*

January

10–11 CT Colonography, ACR Education Center, *Reston, Va.*

11–13 ACR/RBMA Practice Leaders' Forum, Hyatt Regency, *Houston*

11–13 Emergency Radiology, ACR Education Center-University of Arizona Cancer Center, *Tucson*

14–16 Abdominal Imaging, ACR Education Center-University of Arizona Cancer Center, *Tucson*

17–19 Body and Pelvic MR, ACR Education Center-University of Arizona Cancer Center, *Tucson*

24–26 Breast Imaging Boot Camp With Tomosynthesis, ACR Education Center, *Reston, Va.*

28–29 Breast MR With Guided Biopsy, ACR Education Center, *Reston, Va.*

By Ezequiel Silva III, MD, FACR, Chair

Getting Back to Basics

Applying the AUC in a CDS program is necessary and worthwhile.

When PAMA passed at the end of 2014, it mandated a simple idea — at the point of ordering, referring providers must make sure the study is appropriate. Since then, translating this simple idea into reality has become far more complex than necessary. Hundreds of pages of regulatory language, and a surprisingly high degree of resistance from the rest of the medical community, have contributed to that complexity. The result has been a delayed implementation schedule, overly complicated reporting requirements, and a disappointing opposition letter from non-radiology stakeholders.[1]

Against this backdrop, let's return to basics and revisit the reasons why the ACR believed then, and continues to believe now, that the application of Appropriate Use Criteria (AUC) in a clinical decision support (CDS) program is worthwhile.

Radiology becomes part of the solution, instead of being viewed as the cause of rising healthcare spending.

Policymakers are committed to reducing government spending on healthcare. Current spending trends are not sustainable, which means that the search for savings is widespread.

Of course, one way to spend less is to pay less by cutting payments to providers. Radiology has certainly had its share of payment cuts. Repeatedly, imaging has been used as a "pay for," to enable other government initiatives or just to support other federal programs outside of medicine. Beyond the financial consequences of such action, the threats to patient access, quality of care, and innovation are real.

Amid these challenges, we wondered, could we find a more constructive solution? Was there a way to shift radiology from being viewed as part of the problem to part of the solution? Could more appropriate studies, lower radiation, less waste, better outcomes, and, yes, savings, be part of that solution? Implementing CDS powered by the AUC was the answer. Being viewed as part of the solution was a way to avoid more targeted payment cuts. It was a win-win.

The alternative to CDS was pre-authorization.

Several presidents' budgets, including President Obama's in 2010, sought pre-authorization for imaging studies across the Medicare program. Retroactive review by non-radiologists, or even non-physicians, was not — and is not — the best option for patient care. And, ironically, many pre-authorization programs use AUC to inform their actions and denials. Why not apply those AUC prospectively and constructively, achieving physician and patient education and engagement along the way? Think about it — do physicians want their patients calling them and saying, "You know that study you ordered? The government says it is inappropriate." Wouldn't physicians rather hear, "Thank you for including me in the decisions regarding the best exam for me. This decision tool is helpful."

Lawmakers will find cost-savings somewhere, and CDS presents a radiology-friendly, patient-focused option.

The Medicare program faces enormous funding challenges. Policymakers will find savings somehow, and proposals to move from volume to value will take years to mature.

However, the urgency is not going away. Provider cuts and imaging pre-authorization programs do yield savings but are not optimal for radiology or patient care. We can resist these detrimental policy changes through our talking points to policymakers, but actions in the form of a credible alternate solution are more effective. CDS is that solution.

In fact, a recent report found that the overall budgetary impact on Medicare would be a 2 to 3 percent decrease in total Medicare imaging-spending.[2]

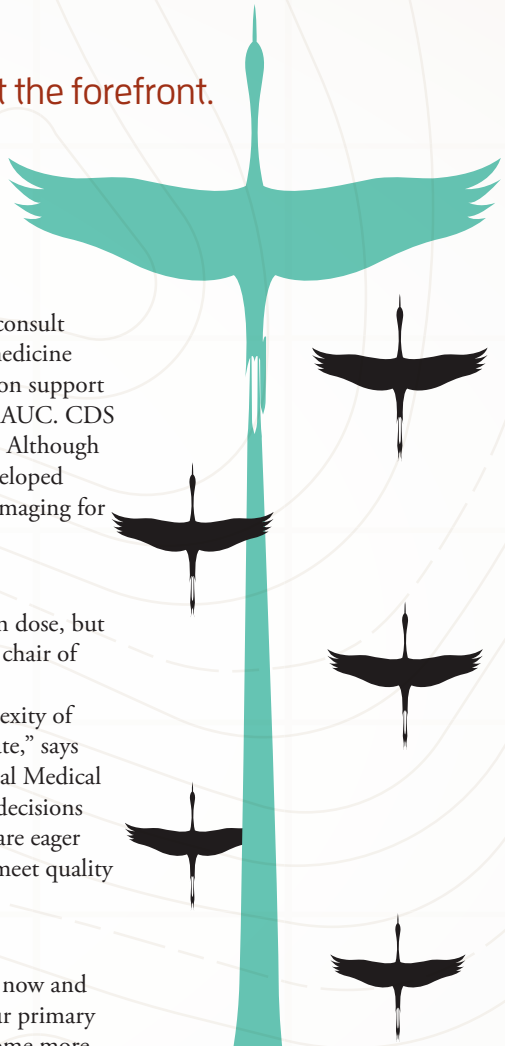
The current state of PAMA implementation is less than ideal, but there is reason for optimism. The voluntary CDS reporting period is underway, and a more active testing period begins in 2020. Full implementation is expected by 2021. I hope that revisiting three basic benefits of the program (better patient care, healthcare savings, and avoiding pre-authorization) reinforces our collective motivation to advance the program. If efforts to implement CDS fail, we will not like the alternatives. B

ENDNOTES

1. Appropriate Use Criteria for Imaging Letter to U.S. House of Representatives, Ways and Means Committee. Sept. 7, 2018. Available at bit.ly/AUC_Letter.
2. The Moran Company. Appropriate Use Criteria for Advanced Diagnostic Imaging Services: Evidence from Multisite Implementation of the ACR Select Program. February 2017. Available at acr.org/MoranReport.

TAKING THE LEAD

Clinical decision support is here, and radiologists need be at the forefront.



Radiologists have long provided guidance on the correct exam at the right time for the right patient. This advice was formalized with the 1993 introduction of the ACR Appropriateness Criteria® (AC), expert-created documents that detail the best imaging for a given clinical scenario. But even with this information available, not all physicians were on board.

That's about to change. Starting Jan. 1, 2020, PAMA will require referring providers to consult AUC prior to ordering advanced diagnostic imaging services (including CT, MR, nuclear medicine exams, and PET scans) for Medicare patients. To do this, physicians must use clinical decision support (CDS), which guides ordering physicians to the most appropriate imaging according to the AUC. CDS exists either as a stand-alone unit or through software embedded into the institution's EHR. Although several CDS systems exist, the ACR and the National Decision Support Company have developed CareSelect Imaging™, which uses the AC and other guidelines to advise providers ordering imaging for patients.

FINDING THE BENEFITS

"CDS reduces unnecessary imaging on patients, which not only lowers exposure to radiation dose, but also reduces costs across the healthcare spectrum," says Terence A. S. Matalon, MD, FACR, chair of diagnostic radiology at Einstein Healthcare Network in Philadelphia.

CDS can also function as an educational tool for physicians. "As the number and complexity of tests have grown over the years, it's difficult to keep track of what decision is most appropriate," says Sabiha Raoof, MD, FACR, chief medical officer and patient safety officer at Jamaica Hospital Medical Center and Flushing Hospital Medical Center in Queens, N.Y. "Physicians can look at the decisions they've made and learn from them." Adds Matalon, "I've found that a lot of our physicians are eager for that guidance." Reducing the amount of inappropriate imaging can also help providers meet quality goals based on utilization.

TAKING CHARGE

CDS holds a lot of benefits for radiologists as well — as long as they jump on board with it now and lead CDS efforts within their health system, says Matalon. "Ultimately, patient welfare is our primary concern. In addition, by being the ones to bring CDS to the forefront, radiologists can become more well-known around our institutions. We can be seen as partners in care rather than the people hiding in the darkroom," notes Raoof.

Although CDS is ultimately a mandate, and the PAMA deadline has been pushed back from its original due date (Jan. 1, 2018), radiologists will reap plenty of benefits if they get involved now, says Matalon. "By acting now and helping their institutions implement CDS, radiologists will be seen as individuals who bring in more value to their systems. And especially as we work toward a value-based healthcare system, those who bring value will be rewarded," he notes.

Ultimately, no matter whether radiologists lead the way for CDS or not, it's on the horizon. "CDS is going to happen. But by taking the lead, radiologists get to control and guide this valuable tool," says Matalon. "Either we do it ourselves or someone's going to do it for us. And I'd rather be the one in control." B

By Meghan Edwards, freelance writer, ACR Press

For access to the qualified CDS mechanism, visit *www.priorauth.org*.

PUTTING THE PATIENT FIRST

CDS implementation supports patient- and family-centered care.

Clinical decision support (CDS) places radiologists at the center of value-based care and connects them with ordering physicians — but there are just as many benefits to patients. The implementation of CDS has been found to decrease inappropriate imaging, help patients understand why the procedure they're undergoing is the most appropriate, and reduce the time it takes for patients to undergo a procedure. Research has shown that appropriate imaging also leads to costs savings, less patient anxiety, and reduced radiation exposure.[1]

GETTING IT RIGHT

"One of the top benefits of CDS implementation is that we'll reduce the number of inappropriate imaging orders," says Ryan K. Lee, MD, MBA, section chief of neuroradiology at Einstein Healthcare Network in Philadelphia. Lee, whose radiology team implemented a CDS algorithm to help ED physicians determine whether or not to order head CTs for pediatric patients, believes that CDS implementation will improve the overall workflow for the patient.

To illustrate his point, Lee points to a not-uncommon scenario — a patient comes in to an imaging center with an order and the technologist discovers that the ordered study may be inappropriate for the clinical indication. He or she then calls the radiologist about getting a new order. In the worst case scenario, a new pre-authorization has to be done, which means that the patient can't get the study done that same day — leading to inconvenience and potential anxiety for the patient.

"This situation pinpoints myriad problems," says Lee. "You've wasted the patient's time and he or she has to make another appointment. You've wasted the imaging center's time and there's now an unfilled slot that could have been used for somebody else. With CDS, the right order is placed at the right point of care and all those inefficiencies go away. The patient isn't inconvenienced and the imaging center and radiologist aren't inconvenienced."

Ashima Lall, MD, MBA, FACHE, system chief of performance improvement at the Radiology Associates of the Main Line in Media, Pa., agrees. Lall reviewed 90 cases of suspected pulmonary embolism in the ED and found that with CDS, the appropriateness of the ED physicians' CT orders for the indication improved by 45 percent. In addition to improving the accuracy of ordering, Lall believes CDS can be used by physicians to help patients understand why the procedure they're undergoing is the most appropriate for their condition.

"Because CDS is based on the ACR Appropriateness Criteria® (AC), physicians have evidence-based reasoning to explain the decision that was made," says Lall.

Lee asserts that CDS also reduces the time it takes for a patient to undergo a procedure.

CareSelect™ imaging | ACR select

The implementation of CareSelect™ Imaging led to significant improvement in the appropriateness scores of ordered imaging tests in a recent *JACR*® published study. Read the study at *bit.ly/CDS_Ordering*.

"A CLASSIC CASE IS A PATIENT HAS LOWER BACK PAIN WHO THINKS HE OR SHE HAS TO HAVE AN MRI — AND IN MOST CASES THAT'S NOT APPROPRIATE. THAT'S WHERE THESE PATIENT SUMMARIES CAN HELP."

— David Andrews

In some cases, CDS can reduce prior authorization time by eliminating the need for a radiology benefits manager who can take days or even months to receive approval from insurance companies. With CDS, patients can receive confirmation for a needed service in minutes.[2]

"It's a simple solution," says Lee. "When you have the appropriate order, you're doing the best thing for the patient. You're saving them time, money, and anxiety."

REDUCING INAPPROPRIATE IMAGING

David Andrews, a patient advocate, believes implementing CDS can strengthen patient trust and make care more patient centered. Andrews, who serves on the ACR AC Patient Engagement Subcommittee, believes it's important for radiologists to get behind CDS implementation.

"Most everyone knows that there's an overuse of imaging," says Andrews. "It's important for the ACs to become available — not just to the radiologists who may be familiar with them but also to the referring physicians who are then in a better position to request the appropriate imaging — or no imaging, if that's the right decision."

According to Andrews, CDS is an important vehicle for including the patient as part of the discussion as to what imaging is appropriate. As part of his work on the ACR AC Patient Engagement Subcommittee, he looked at how to better communicate with patients about appropriate imaging — which led to the creation of the patient-friendly summaries of the AC. These summaries are comprised of about 300 evidence-based guidelines, created and continually updated by multidisciplinary teams of expert physicians to help providers make the most appropriate diagnostic imaging and image-guided treatment decisions for specific clinical conditions (see sidebar).

"These days, patients often come to a medical encounter with some prior conceptions of what ought to happen," says Andrews. "A classic case is a patient has lower back pain who thinks he or she has to have an MRI — and in most cases that's not appropriate. That's where these patient summaries can help."

Lee agrees. He believes that without employing the ACs, a patient runs the risk of receiving unnecessary radiation exposure. "A patient comes and gets a CT scan, for example, and it ends up being the wrong study," says Lee. "So he or she has to come back for another scan or X-ray. Now, in addition to wasting resources, you've also given the patient radiation that could have been avoided."

According to Lall, what providers ultimately need to think about when considering implementing CDS is the patient's best interest. "From what I see, the stakeholders may ask 'what's in it for me? Why should I adopt this?" says Lall. "I will tell them that it is here to stay because it's all about doing the right thing. It's for the greater good. It's for the patient." B

By Nicole B. Racadag, MSJ, managing editor, *ACR Bulletin*

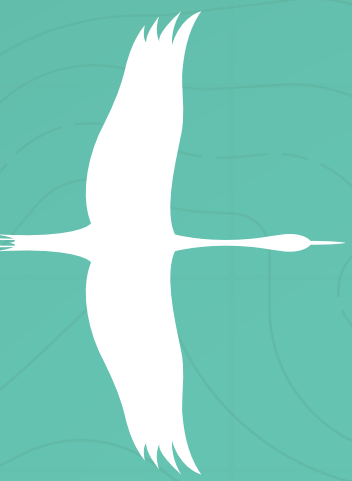
ENDNOTES

1. Boland G, Weilburg J, Duszak R. Imaging Appropriateness and Implementation of Clinical Decision Support. *J Am Coll Radiol.* 2015:12(6)601–603. Available at bit.ly/CDS_Implementation. Accessed Sept. 23, 2018.

2. Allen B. Five Reasons Radiologists Should Embrace Clinical Decision Support for Diagnostic Imaging. *J Am Coll Radiol.* 2011:11(6)533–534. Available at bit.ly/5Reasons_CDS. Accessed Sept. 7, 2018.

Have you seen the AC Patient-Friendly Summaries?

The *JACR*® earlier this year unveiled the first examples of the ACR Appropriateness Criteria® summarized in plain language to help patients better understand which imaging tests may be most appropriate for their particular condition. The new patient-written summaries are part of a larger effort by the ACR to provide more patient- and family-centered resources. To access the summaries, visit bit.ly/AC_Summaries-JACR.



CRITICAL SUPPORT

Teaming up with referring providers can preserve reimbursement and boost quality of care.

To ensure success under PAMA, radiologists need to take the lead in educating physicians and other referring providers on the importance of adopting an approved CDS in their workflow.

"CDS has the potential to create more of a dialogue between radiologists and ordering physicians about what constitutes appropriate imaging," says Timothy Huber, MD, vascular and IR fellow at the University of Virginia. "That hasn't been happening as much as it probably should be, and we need to make sure we're doing the right study on the right patient at the right time."

The dialogue is critical not only to quality of care, but also to radiologists' compensation. It behooves radiologists to encourage referrers who order advanced diagnostic imaging services — in outpatient and ER settings for non-life-threatening visits — to take advantage of CMS's voluntary reporting period for adopting Appropriate Use Criteria (AUC).

Even so, more than half of radiologists surveyed have yet to begin implementing CDS to provide evidence of AUC consultation when placing orders.[1] When CMS begins its first-year testing period for documenting AUC for Medicare patients in 2020, some form of CDS should be in place to protect radiologists' payments for advanced imaging studies. Ultimately, CMS will not pay radiologists for studies that were not ordered by referring physicians who have consulted a CDS system.

While there won't be any penalties that first year for referring physicians who incorrectly report their use of AUC, radiologists would be wise to preemptively facilitate CDS with referrers to avoid reimbursement cuts or claims denials by radiology benefits managers (RBMs). In fact, it is the radiologist, not the referring physician, who will be penalized when a referring physician fails to consult a CDS system.

BENEFICIAL OUTCOMES

CDS gives providers a tool through which to offer recommendations for the best imaging study for a given indication. Aside from it being mandatory under PAMA, the integration of CDS has the potential to lower total costs, result in shorter lengths of stay for patients, lower the probability of 30-day readmissions for patients, and reduce the number of complications when compared to patient encounters where embedded CDS alerts were not used.[2]

Studies have shown that a commercially available CDS tool integrated into the EHR has resulted in significant improvements in imaging study appropriateness scores.[3]

CDS also has the potential to protect payments for radiology services by reducing the number of claims denials. According to Huber, "It could replace RBMs or even prior authorization in some circles."

GUIDING ROLES

Beyond fair reimbursement and patient satisfaction, putting CDS into practice is an opportunity for radiologists to have their voices heard. "Referring providers and radiologists should work together so that decisions about the appropriateness of studies aren't being made in silos," says Melissa M. Chen, MD, clinical neuroradiologist in the department of diagnostic radiology at the University of Texas MD Anderson Cancer Center.

Using CDS to show AUC will strengthen communication between radiologists and ordering clinicians, Chen says. The system could eliminate unnecessary phone calls and a lot of basic questions, opening channels for a more sophisticated conversation. "With CDS, we could give more valuable input," she says. "We could triage questions pertaining to more personalized issues around a patient and their clinical condition. These are the questions that should be asked instead of the incorrect imaging studies being performed."

When Chen was at the Baylor College of Medicine, she was part of an effort to eliminate unnecessary imaging for lower back pain. She and her colleague, Christie M. Malayil Lincoln, MD, worked with ordering clinicians, coaching them on imaging appropriateness. And those clinics, in turn, made recommendations to other clinics whose physicians may have been ordering studies incorrectly.

This type of engagement with referrers is the only way to get them on board with CDS. "Come out of the reading room and engage," Huber says. "Talk to the physicians who are going to be ordering the studies. You have to do that on the front end to really get them to buy into it. Even then, not everyone will

RADIOLOGY™ TEACHES

Recognizing that medical education curricula often lack evidence-based guidance regarding appropriateness and cost of imaging examinations, radiologists at Baylor College of Medicine partnered with the ACR and the National Decision Support Company to create Radiology-TEACHES™, an online portal that uses case vignettes integrated with CareSelect™ Imaging to simulate the process of ordering imaging studies via integrated CDS. Learn more at *acr.org/radiology-teaches*.

be willing to adopt; people are always resistant to change, and doctors are no exception."

Residents have responded more to feedback from decision support systems than attending physicians, Huber notes, and will likely be more willing to accept feedback regarding the ACR Appropriateness Criteria® (AC). "This suggests that the next generation of physicians will be more willing to engage with the technology and take the advice of the CDS system."

There's no time to waste when reaching out to other physicians across departments to promote the use of CDS. An institution-wide health IT initiative often takes years to implement successfully. For the referring doctors you work with, "explain what you're doing now, and what you're trying to do down the road with the new software," Huber says. "Give them the rationale behind it and explain how they can use CDS most effectively."

For instance, CareSelect™ Imaging, the digital representation of the AC for diagnostic imaging that can be integrated into most EHRs, is one tool available to physicians. "The ACR has been very forward-thinking with the development of CareSelect," Huber says. "It basically takes the College's AC, which are compiled from an expert panel's guidelines for imaging, and delivers that knowledge and information to the ordering doctors at the time of order entry."

"Different radiologists within a group should volunteer to take turns visiting different departments to educate ordering physicians," Huber says. Tell referrers you want to help with a smooth CDS transition and that you are willing to meet with administration to make sure everyone is on board, he adds.

FIELD WORK

"Don't be a stranger," Chen says. Referring physicians sometimes think radiologists are too busy for them to pop in and ask a question, she says, and the onus is on radiologists to address this.

"A lot of people don't even know where the radiology department is," Chen says. There can be resistance, too, about taking the time to talk to people. "That doesn't make sense," she says. "We participate in a team, and they are referring patients to you. How are you going to potentially grow your practice if you don't develop a relationship with these people?"

There are many ways to foster a relationship. Start by choosing the right CDS vendor and mechanism — one that best aligns with the healthcare team. The size and scope of CDS tools matter. Don't be afraid to make inquiries of radiology leaders at other hospitals or health systems about how they have successfully integrated CDS into their physicians' workflow.[4]

Some radiology teams have had positive results from presenting information on CDS at healthcare conferences. It's always useful to solicit feedback from participants after training — either in person or through online surveys. A good rule of thumb is to find out what will work best and what people are willing to spend to accomplish integration.

FORWARD THINKING

"As a specialty, if we can take the reins and target inappropriate imaging, we'll be in a better position down the road to negotiate with payers like CMS and the insurance companies," Huber says.

Continued spending on inappropriate imaging studies will result in radiology continuing to be targeted by payers, Huber believes. "If we don't get ahead of the problem now, we will continue to see cuts to imaging reimbursement."

With the current legislation, practices are slated to incur costs down the road if CDS isn't implemented, Huber adds. The financial benefit in the long run is likely to outweigh the cost of implementing CDS. "It's kind of like implementing an EHR at a small practice group," he says. "The upfront costs can be expensive, but this is where the field is heading."

ACR recommends that radiologists direct referring physicians to CMS's website to explain upcoming requirements and available options. Preliminary findings have shown that CDS can improve outcomes, but study authors note that more research is needed because many groups have yet to implement CDS.[3]

"CDS will make it easier to defend growth in imaging," Huber says. "It's only going to keep growing, and we can strengthen our position now to secure our place in the evolving healthcare marketplace with evidence of what is medically appropriate." B

By Chad Hudnall, senior writer, ACR Press

"TALK TO THE PHYSICIANS WHO ARE GOING TO BE ORDERING THE STUDIES. YOU HAVE TO DO THAT ON THE FRONT END TO REALLY GET THEM TO BUY INTO IT."

— Timothy Huber, MD

ENDNOTES

1. Regulatory Affairs: CDS 05/2018. The Association for Medical Imaging Management. Available at bit.ly/CDS-Survey. Accessed Sept. 11, 2018.
2. Heekin AM, Kontor J, Sax HC, et al. Choosing Wisely CDS Adherence and Associated Inpatient Outcomes. *Am J Manag Care* 2018;24(8):361–366. Available at bit.ly/Choose_CDS.
3. Huber TC, Krishnaraj A, Patrie J, et al. Impact of a Commercially Available Clinical Decision Support Program on Provider Ordering Habits. *J Am Coll Radiol* 2018;15(7):951–957. Available at bit.ly/CDS_Ordering.
4. Khorasani R, Hentel K, Darer J, et al. Ten Commandments for Effective CDS for Imaging: Enabling Evidence-Based Practice to Improve Quality and Reduce Waste. *Am J Roentgenol*; 2014;203: 945–951. Available at bit.ly/CDS_QualityImprovement. Accessed Sept. 11, 2018.

HOMING IN ON QUALITY

Radiologists in rural western North Carolina are strengthening their relationships with local physicians and reducing inappropriate imaging via R-SCAN®.

For radiologists at Asheville Radiology Associates, paving a new route means success in educating their referring clinicians about appropriate image ordering. However, the group faces a unique challenge in doing so: Their referring providers are distributed across a wide geographical area in rural western North Carolina.

With the passage of PAMA, however, the leadership of Asheville Radiology perceived that their role as consultants was about to get a boost. PAMA requires referring clinicians to order advanced imaging procedures for Medicare patients through a clinical decision support (CDS) tool that is based on Appropriate Use Criteria (AUC).

Mission Health and the radiology group had already been evaluating CDS tools to integrate with the system's EMR. Given the geographic challenges involved in keeping their referring providers abreast of periodic changes in image ordering guidelines, the group's leadership saw an opportunity to demonstrate their value to the health system.

A CONSULTATIVE APPROACH

Bryon A. Dickerson, MD

Bryon A. Dickerson, MD, president and executive medical director of Asheville Radiology Associates, and his radiologist colleagues were already champions of using CDS to automate and improve imaging appropriateness across a far-flung rural area.

Beyond implementing CDS and simply increasing their consultation time, it soon became clear that another way to enhance efficiency would be for the radiologists to reposition themselves as educators. That's where the ACR's Radiology Support, Communication and Alignment Network (R-SCAN®) came in.

By providing free tools like CareSelect™ Imaging CDS software, scholarly journal articles, and educational webinars, R-SCAN brings radiologists and referring clinicians together to improve the ordering of imaging exams. The R-SCAN action plan is based on a growing list of Choosing Wisely® imaging topics, and is aimed at promoting selection of the best imaging exam based on evidence-based AUC.

Dickerson immediately saw R-SCAN as a powerful tool to introduce both bringing CDS into their workflow and engaging their referring physicians in a dialogue. "We realized that R-SCAN would help us move forward toward successful CDS implementation. To encourage success of the program, we identified physicians who are key stakeholders and leaders in their respective service lines," Dickerson notes.

AN EDUCATIONAL COLLABORATION

From the outset, health system administrators showed an interest in CDS that was not initially mirrored by the referring clinicians. "Physicians often feel that IT systems and EMRs are designed for billing purposes

"ENGAGING IN THIS UP FRONT IS GOING TO HELP US BETTER PREPARE FOR WHEN CDS IS REQUIRED FOR MEDICARE REIMBURSEMENT. WE'D RATHER BE IN FRONT OF THE CURVE AS OPPOSED TO BEHIND IT."

– Richard S. Arwood, MD

rather than for patient care and communication among doctors," Dickerson says.

The Asheville radiologists — in close collaboration with the ACR — agreed to take a random sample of patients and then plug image ordering data into the CareSelect CDS tool to find the physicians who had ordering patterns that reflected unnecessary imaging.

Armed with this information, the radiology group reached out to a small number of referring physicians, re-established relationships with their staffs, and began scheduling one-on-one appointments with referring providers to educate them about appropriate imaging guidelines.

James Murray, director of quality and safety at Asheville Radiology Associates, notes that since embarking on the R-SCAN initiative, the group has endeavored to balance education with efficiency. "We present the provider with their CareSelect results, and we review some specific cases with them," Murray explains. "Then we address any questions they might have and follow up by sharing the AUC documentation that was relevant to a particular case."

A WARM RECEPTION

The administrators of Mission Health took to R-SCAN from the beginning. "When Dr. Dickerson first came to me about R-SCAN, I was very enthusiastic," explains Marc B. Westle, DO, senior vice president of innovation for Mission Health System. "We need to transform healthcare. Dr. Dickerson had an excellent idea for educating physicians about how to order appropriate imaging tests in advance of when they're actually ordering them."

Referring clinicians within Mission Health agree with Westle's assessment. "Engaging in this up front is going to help us better prepare for when CDS is required for Medicare reimbursement," says Richard S. Arwood, MD, hospitalist at Mission Health. "We'd rather be in front of the curve as opposed to behind it."

"We'd had so many delays with prior authorization requests, because we may not have been aware of some of Medicare's standards for ordering certain tests," says Ernesto E. De La Torre II, MD, family medicine physician at Medical Associates of Transylvania. "But Dr. Dickerson proposed R-SCAN to speed things up and improve communication between radiologists and the clinicians in the outpatient setting, which we had sort of lost."

"As CareSelect is embedded into our EMRs, we'll have to make sure the process is streamlined and not especially onerous for our physicians," explains Norris W. Crigler Jr., MD, a 35-year veteran IR and the practice's regional director of community hospitals in the outlying regions of Asheville. "It's just easier if we head that off by educating referring physicians first and help them form an idea of what they'll be working toward in the near future. Hopefully, they'll become strong advocates of CDS." B

By Amena Hassan, freelance writer, ACR Press

Value-Based Imaging Activities For Referring Clinicians

As part of an R-SCAN® project, a wealth of resources are available for referring clinicians to help them get up to speed on using CDS tools, consulting AUC, sharing imaging guidelines with patients, and preparing for PAMA.

Free educational activities offer referring clinicians CME while learning about CDS and AUC, including:

- Imaging order simulations which provide hands-on experience using a CDS tool to consult AUC to optimize image ordering based on evidence.
- Value-based imaging podcasts that discuss strategies of image ordering and highlight how the ACR AC support Choosing Wisely® recommendations.

A flyer informs referring clinicians about what they can do to prepare for PAMA requirements before 2020.

Access these resources at acr.org/Value-Based-Imaging.

R-SCAN®
Radiology Support, Communication and Alignment Network

CDS DEADLINE MOVES FORWARD UNDER CMS

The PAMA requirement has been reconfirmed for referring providers to consult AUC for advanced diagnostic imaging services starting Jan. 1, 2020.

Following the implementation dates and guidelines for Appropriate Use Criteria (AUC) is both important and confusing. Here are the most current mandates to maintain your reimbursement status.

WHEN WILL PROVIDERS BE REQUIRED TO USE AUC WHEN ORDERING IMAGING?

Section 218(b) of PAMA directed CMS to establish a program mandating ordering physicians to consult AUC prior to referring Medicare beneficiaries for advanced diagnostic imaging services. The program was originally slated to begin Jan. 1, 2017. However, due to concerns about physician readiness and the timing of the Medicare Physician Fee Schedule (MPFS) rulemaking cycles, enforcement has been delayed. Implementation of the mandatory AUC consultation mandate is now scheduled for Jan. 1, 2020.

TO WHOM DOES PAMA APPLY?

PAMA mandates that AUC be consulted for all advanced diagnostic imaging services performed for Medicare patients in the physician's office, independent diagnostic testing facility, and hospital outpatient setting. CMS stated in the 2017 MPFS final rule that it does not have statutory authority to limit the consultation requirement to certain clinical areas.

The first qualified CDS mechanisms to support the rule were announced on June 30, 2017. In the 2019 MPFS final rule, CMS indicated that furnishing professionals (those performing the imaging) would be required to begin reporting AUC consultation on Jan. 1, 2020. The first year of the program will be an "operations and testing period" during which the AUC consultation will be required, but CMS will not impose penalties if the consultation information is incorrectly reported on the claim. The agency noted that this educational period would allow professionals to actively participate in the program while avoiding claims denials during the learning curve. It should also give CMS an opportunity to make any needed claims-processing adjustments before payments are impacted.

IS REPORTING IN 2018 AND 2019 VOLUNTARY?

CMS began a voluntary reporting period to begin in July 2018, using a new Healthcare Common Procedure Coding (HCPC) System modifier, "QQ." This is consistent with the Quality Payment Program provision to give Merit-Based Incentive Payment System credit to ordering professionals for consulting AUC using qualified CDS as a high-weight improvement activity for the performance period beginning Jan. 1, 2018.

HOW DO THE ACR APPROPRIATENESS CRITERIA FACTOR IN?

In conjunction with the release of the 2018 MPFS proposed rule, CMS announced the list of qualified CDS mechanisms and new qualified provider-led entities on its website. The ACR is one of the qualified provider-led entities, meaning that ACR's Appropriateness Criteria® (AC) are considered by CMS to be "applicable AUC." The National Decision Support Company's CareSelect™ Imaging, which incorporates the AC, is on the list of qualified CDS mechanisms and is one of three qualified mechanisms that currently include a free online portal option for providers.

HOW WILL THE AUC CONSULTATION BE REPORTED ON CLAIMS?

The agency proposed specific claims-processing instructions for the AUC program, namely establishing a series of HCPC System Level III codes in the 2018 MPFS proposed rule. These G-codes (reporting codes developed by CMS) would describe the specific CDS mechanisms that were used by the ordering professional. CMS also proposed the use of

several modifiers to indicate whether the ordered test was adherent with the AUC requirement.

ACR had some concerns with the proposed claims processing instructions and submitted recommendations to CMS suggesting the use of a unique consultation identifier (UCI) produced by the qualified CDS mechanisms. In the 2018 MPFS final rule, the agency indicated that it would move forward with exploring the UCI concept in the 2019 rulemaking process. Due to complications with Medicare claims forms, CMS was unable to come up with a proposal for the use of a UCI for the 2019 MPFS proposed rule. To move forward with the program implementation date of Jan. 1, 2020, CMS again proposed the use of G-codes and modifiers as a temporary solution while continuing to explore the UCI concept.

WHAT ARE THE CONSEQUENCES FOR PROVIDERS WHO DO NOT FOLLOW AUC GUIDELINES?

The PAMA statute requires the identification of outlier ordering professionals who will be subject to a prior authorization requirement beginning Jan. 1, 2020. With the delayed implementation, CMS will also delay the identification of outlier ordering professionals. This will be discussed in future rulemaking.

The list of priority clinical areas will serve as the basis for identifying outlier ordering professionals and includes the following clinical conditions: coronary artery disease (suspected or diagnosed), suspected pulmonary embolism, headache (traumatic and nontraumatic), hip pain, low back pain, shoulder pain (to include suspected rotator cuff injury), cancer of the lung (primary or metastatic, suspected or diagnosed), and cervical or neck pain. Future MPFS rules will provide further clarity on the concept of prior authorization.

ARE THERE ANY EXCEPTIONS?

PAMA allows for some exceptions to the AUC consultation mandate. Consulting and reporting are not required for orders for applicable imaging services made by ordering professionals under the following circumstances: 1) when emergency services are provided to individuals with emergency medical conditions, 2) for inpatients for whom payment is made under Medicare Part A, and 3) when ordering professionals are granted a significant hardship exception to the Medicare EHR Incentive Program payment adjustment for that year.

CMS acknowledged that most of the exempt emergent situations will occur primarily in the ED, but these situations may arise in other settings. Further, the agency recognizes that most encounters in the ED are not for an emergency medical condition. The rule states, "To meet the exception for an emergency medical condition, the clinician only needs to determine that the medical condition manifests itself by acute symptoms of sufficient severity (including severe pain) such that the absence of immediate medical attention could reasonably be expected to result in: placing the health of the individual (or a woman's unborn child) in serious jeopardy; serious impairment to bodily functions; or serious dysfunction of any bodily organ or part." In the 2018 rulemaking cycle, CMS proposed to create a G-code to indicate that an ordering professional is exempt from the requirement.

The 2019 MPFS proposed rule included the following situations that would qualify for significant hardship exceptions: 1) insufficient Internet access; 2) EHR or CDS vendor issues (including temporary technical problems, installation or upgrades that impede access, or CMS de-qualification of a CDS vendor); or 3) extreme and uncontrollable circumstances (including natural or man-made disasters).

WHEN WILL WE RECEIVE MORE INFORMATION?

The ACR submitted detailed comments on the proposed rule to CMS in September, and we expect to have received further information when the final rule is published in late October/early November (not available at the time of this issue's printing).

WHAT SHOULD I DO NOW?

The ACR recommends that radiologists communicate with their referring physicians to ensure that they are aware of the forthcoming mandate. ACR also encourages providers to participate in R-SCAN®, a collaborative action plan that brings radiologists and referring clinicians together to improve imaging appropriateness through the use of CDS.

In addition, as we get clarity around the claims-formatting requirements, radiology practices should begin the dialogue with their practice management vendor or billing company. Systems must be ready to accept the AUC data generated by the qualified CDS mechanism, because, as of January 2021, all claims will need to be properly formatted to be payable.

By Kathryn J. Keysor, senior director, ACR Economics and Health Policy

The "Be PAMA AUC Ready" webinar offers practical information and steps you can take to help get your practice and referring providers ready to meet the Jan. 1, 2020 Medicare CDS mandate. View the free webinar at acr.org/BePAMAReady.

CIRCLING THE WAGONS FOR CDS

One health system changed CDS from a top-down mandate to a team-based, patient-centered goal.

When Cambridge Health Alliance (CHA) set out to introduce clinical decision support (CDS), leaders carefully planned the logistics for its implementation. However, they also started early, getting buy-in from referring clinicians and radiologists — the ones who would actually be using the tools. Two CHA physicians (one radiologist and one family medicine physician) explain how it all came together and how CDS benefits both patients and clinicians.

A RADIOLOGY PERSPECTIVE

Carol A. Hulka, MD
Chief of Radiology

CHA is a vibrant safety net system in the Boston area with an extensive ambulatory primary and specialty care network of community-based providers and two hospitals. In 2016, we took our first steps toward implementing CDS for imaging ordering. While our provider community already had a very low rate of ordering advanced imaging studies and excellent quality metrics for appropriate imaging ordering, we recognized there were still opportunities to reduce costs and enhance efficient decision-making for imaging order entry. We also knew CMS was moving toward requiring CDS as part of PAMA.

We selected our CDS vendor after first identifying best practices locally and confirming we met all CMS requirements. We then assembled a multidisciplinary team to meet regularly with the vendor team to work through various configurations of their CDS product prior to implementation.

Our implementation team included radiology department members, the chief of surgery, chief of emergency medicine, chief medical informatics officer (who is also a family physician), and the IT team. We worked on configuring tailored study lists and common clinical indications for various departments. Our IT team worked with stakeholders and the vendor to streamline workflow and minimize the number of clicks for the ordering provider.

In the summer of 2017, prior to implementation, radiology department members and IT met with numerous departments to demonstrate the CDS-enabled workflow. We highlighted the potential benefits of CDS not only in reduction of low-value imaging but also to improve patient experience of care (by avoiding unnecessary procedures and radiation exposure, last-minute imaging orders, and potential follow-up clinic cancellations). The team delivered many online presentations, which most providers found very helpful.

Working with our vendor team to provide in-person and web-based demonstrations and explanations of the tool, how it works in practice, how clinicians gain confidence in decision-making with access to the evidence, and how much autonomy clinicians continue to have using CDS — all of this helped our implementation go much smoother when it was rolled out in February of 2018.

A REFERRING PHYSICIAN PERSPECTIVE

Kirsten Meisinger, MD
Family Medicine Physician and President of Medical Staff

So how did this feel to a practicing family physician who was not part of the implementation team? CHA has a rigorous system of provider and staff education for both ongoing training needs and new initiatives, so I felt very supported. All sites meet monthly to review training needs and provide valuable feedback to the teams implementing change across the organization.

Our baseline low level of imaging ordering meant that feedback took a while, but any questions or needed changes happened quickly and respectfully. The challenges I experienced were along the lines of what a practicing provider deals with every day: trying to think through something in the exam room while the patient is there or leaving it until later. CDS slowed me down enough to allow me to think through the imaging order in the room with guidance about which was the best test. Within a few months, we all started to notice improvements in our ordering habits (for example, is that CT with and without contrast or just with or without?) and efficiencies when we no longer had to call a radiologist to ask those questions.

During my time as a national faculty coach for CMS's Transforming Clinical Practice initiative (TCPi), I've learned that having systems for quality improvements like CDS not only makes us more efficient, but it keeps us up to date on the highest quality care for our patients. Having the American Board of Family Medicine and the ACR teams also participating in TCPi as two of the ten Support and Alignment Networks has helped us surface and now disseminate best practices like these to our family medicine and radiology colleagues. This is especially important as PAMA goes into effect in January of 2020.

Translating What's Relevant to Radiologists

The ACR DSI is putting radiology's priorities into a language AI developers understand.

When algorithms are asked to go beyond identifying images of cats and dogs and solve more complex problems, the data scientists developing the algorithms must first ask three questions: What problems will be valuable to solve? Will AI be a potential way to solve them? And is there enough data available for supervised learning?

Those are tough questions to answer when it comes to healthcare. And they aren't questions machine learning experts are prepared to answer alone. When left to their own devices, industry has often defaulted to identification algorithms that are easier to develop but of little use in clinical practice.

"Developers of AI will typically be savvy with the technical computing aspects of a problem, but have no clue what is of value in radiology," says Jay W. Patti, MD, of Mecklenburg Radiology Associates in Charlotte, N.C., and the chair of an ACR Data Science Institute™ (DSI) use case panel. "We are translating what is relevant to radiologists — and important to patients — into a language a developer can understand."

Patti chairs the panel focusing on musculoskeletal (MSK) radiology, one of 10 specialty areas defined by working groups established by the DSI. Within months of forming in 2017, DSI had recruited or been contacted by 85 volunteers (including Patti). Their task was to establish simple radiology problems to guide the AI development process. Their work provides guidance on the inputs and outputs for researchers and industry developers of deep learning software. These solvable problems (known as use cases) help identify and prioritize development so that AI tools can help radiologists provide the highest value for their patients.

With his background in informatics, Patti was well-qualified to lead six panel members focusing on MSK radiology use cases, including the Lisfranc Joint Injury. Patti's MSK panel selected Lisfranc as an initial use case because the diagnosis is easy to miss, yet fairly simple for developing an AI algorithm. Put another way, characterizing the Lisfranc joint as abnormal or normal is straightforward — as opposed to other use cases where findings are more subjective. The "black-and-white" nature of the condition makes Lisfranc an ideal problem for AI.

The Lisfranc joint use case was included with the DSI's October release of approximately 40 use cases to AI developers. Several hundred more use cases are expected to be released in the next two years as part of the Technically Oriented Use Cases for Healthcare AI (TOUCH-AI) directory, exposing researchers, developers and the health informatics industry to the important problems in radiology and radiation oncology that radiology professionals believe are most amenable to AI solutions. The comprehensive collection of use cases — organized by body part, modality, and disease type — provides a narrative description, specifications for image annotation for training, and explicit parameters for how the algorithm outputs will be integrated into clinical workflows in a machine readable format that uses common data elements to foster interoperability.

> "We are translating what is relevant to radiologists — and important to patients — into a language a developer can understand."
>
> **– Jay W. Patti, MD**

To date, a number of AI algorithms for diagnostic imaging have already received FDA clearance for widespread marketing, but for the most part these have been developed in conjunction with radiologists at single institutions. Building AI solutions around well-defined use cases allows for participation by multiple institutions and provides more diversity in algorithm testing and training, which could significantly improve algorithm accuracy and significantly diminish unintended bias. As algorithm development ramps up over the next several years, there will be an ongoing need for radiologists to define and specify more AI use cases, and the DSI use case project is a way for radiologists to become involved in the AI world. Additionally, radiologists can partner with industry developers by annotating cases based on the DSI use cases.

"There are many talented computer scientists out there," says Christopher T. Whitlow, MD, PhD, MHA, chief of neuroradiology and vice chair of informatics at

Continued on page 21

DATA SCIENCE INSTITUTE™
AMERICAN COLLEGE OF RADIOLOGY

The ACR DSI's™ freely available use cases in the TOUCH-AI directory will present a clear path to vendors, clinicians, and patients on where AI will be able to improve patient care. For more information, visit acrdsi.org.

Leading With Heart

The possession of emotional competency can make a great leader — and a successful radiology practice.

Arnel Pineda was a bar and club singer working in Manila in 2007 when he was approached by Neal Schon, the guitarist from Journey. Schon had seen Pineda's videos on YouTube and was impressed by the singer's voice, humility, and stage presence. Almost overnight, the once homeless young man from the Philippines transformed into Journey's new frontman, catapulted to stardom, and amassed a fortune with a net worth estimated in the neighborhood of $15 million.

How does someone of Pineda's background suddenly end up on the pinnacle of success? That was the question Scott Taylor, MBA, PhD, associate professor of organizational behavior at Babson College, posed during the opening session at the 2018 Radiology Leadership Institute® (RLI) Summit in Wellesley, Mass. The answer, according to Taylor, lies with the fact that Pineda led the band with heart. When Schon went looking for Pineda, Journey was on the brink of obscurity. The band had been searching high and low for the right voice to fill the void left by singer Steve Perry. Pineda's ability to sing with soul and emotion (by drawing from his impoverished background) put Journey's music in front of a new generation of fans.

"The difference between great leaders, like Pineda, and deficient ones is the possession of emotional competence," said Taylor, during the annual meeting of radiology's best and brightest. In Taylor's session, titled "Leading with Social and Emotional Competence," he noted that emotional competence involves making a connection with colleagues. "Human beings are not objects," said Taylor. "You can't just act upon humans and expect results. To be effective, you must first make a human bond. If not, you will get resistance, rejection, rebellion, and then revolution from your team."

Time spent getting to know your team can also be critical to avoiding burnout, added Alexander M. Norbash, MD, FACR, summit co-director and professor and chair of radiology at the University of California, San Diego. According to Norbash, effective leaders are attuned to the needs of others and inspire positive emotions, much like Pineda did. "As a leader our job is to activate the potential of others," said Norbash. "You have to be optimistic to be an effective leader. No one wants to follow a leader that has a bleak outlook on the future."

Cheri L. Canon, MD, FACR, chair of radiology at the University of Alabama at Birmingham's School of Medicine, agreed. Canon, who facilitated Taylor's session, pointed to recent research that shows U.S. physicians have one of the highest suicide rates of any profession. In addition, the number of physician suicides is currently more than twice that of the general population.[1] According to Canon, one way to combat the problem is to tackle the issue of burnout, which can lead to depression, substance abuse, and suicide. Features of burnout have been described as feelings of inadequacy combined with callousness or apathy toward patients and peers.[2] Canon noted that developing one's resiliency is only one part of the burnout solution. Institutional factors are a huge contributor to physician burnout and must be addressed as well.

> "You have to be optimistic to be an effective leader. No one wants to follow a leader that has a bleak outlook on the future."
>
> **— Alexander M. Norbash, MD, MS, FACR**

Learn more about leadership development at the ACR-RBMA Practice Leaders Forum, Jan 11-13, 2019, in Houston. Register at **acr.org/practice-leaders.**

RADIOLOGY® LEADERSHIP INSTITUTE
AMERICAN COLLEGE OF RADIOLOGY

PHOTO: PATRICIA BALTHAZAR, MD

ACR RFS Secretary Nathan M. Coleman, MD, RFS Chair Daniel Ortiz, MD, and RFS Education Liaison Patricia Balthazar, MD, left the 2018 RLI Summit with a deeper understanding of several of the biggest challenges facing healthcare and radiology today.

One suggestion Canon proposed is that leaders develop a positive mindset to help alleviate burnout. "Psychology determines one's success in the workplace," said Canon. "Developing a mindset of gratitude with your team can help stave off depression on the job."

This need for a positive mindset to bring about successful leadership and productivity in the workplace was also echoed by James V. Rawson, MD, FACR, vice chair for operations and special projects at Beth Israel Deaconess Medical Center, during his session, titled "A Tale of Two Change Agents." Rawson, who also chairs the ACR Commission on Patient- and Family-Centered Care, noted that radiologists tend to be resistant to change because they're addicted to their workflows.

"As radiologists, we need to become inwardly directed but outwardly focused," said Rawson. "Those are attributes that create effective and inspiring leaders."

According to Rawson, small changes can make a big impact when it comes to leading teams more effectively. He suggests that radiologists take the time to say hello and smile at their colleagues when they arrive at their practices every day. "You'll see, those around you will smile in response," said Rawson. "It's a small thing but it begins with you — changing what's under your control first: yourself."

By Nicole B. Racadag, MSJ, managing editor, *ACR Bulletin*

ENDNOTES

1. Anderson P. "Physicians Experience Highest Suicide Rate of Any Profession." Medscape. Available at bit.ly/Physician_SuicideRate. Accessed Sept. 25, 2018.
2. Nicola, R, McNeely MF, Bhargava P. Burnout in radiology. *Curr Probl Diagn Radiol*. 2015;44(5):389–390. Available at bit.ly/BurnoutinRad. Accessed Sept. 13, 2018.

What's Relevant to Radiologists

continued from page 19

Wake Forest School of Medicine and co-chair of the DSI's neuroradiology panel. "Many enthusiastic developers with great ideas are eager to jump in and help clinicians." According to Whitlow, partnering with physician groups is an ideal solution for developers who are interested in solving clinical dilemmas and improving workflows. With input from internal stakeholders, developers can establish the market for their products early.

Since deep learning requires large amounts of annotated and accessible data, Whitlow is sympathetic to the problems developers will continue to face, especially smaller ones with limited resources. At present, he says, "There is a growing understanding that data for developing AI can be a commodity. That's making it harder for companies to acquire data to use for developing new AI algorithms." Even if they determine a valuable problem to solve, developers will need huge amounts of accessible data for training their algorithms upfront and validating the output later.

Despite these challenges, Whitlow believes that within three to five years many small companies now developing AI tools will roll them out into the mainstream marketplace. In his field of neuroradiology, he expects to see tools that are involved in disease detection, image processing, and workflow. He anticipates many of these will also be add-ons to an existing task, rather than stand-alone products, and available at an accessible price point. According to Whitlow, vendors are getting very close.

"This is the time to get involved," adds Patti. "And we are expanding the palette developers have to work with, to create AI tools that support what we do as radiologists."

By Alison Loughlin, senior communications specialist, ACR DSI

JOB LISTINGS

CLASSIFIED ADS These job listings are paid advertisements. Publication of a job listing does not constitute a recommendation by the ACR. The ACR and the ACR Career Center assume no responsibility for accuracy of information or liability for any personnel decisions and selections made by the employer. These job listings previously appeared on the ACR Career Center website. Only jobs posted on the website are eligible to appear in the *ACR Bulletin*. Advertising instructions, rates, and complete policies are available at jobs.acr.org or e-mail careercenter@acr.org.

California – Beverly Radiology Medical Group (BRMG) is seeking ACR-accredited, fellowship-trained radiologists with a California state medical license for its Riverside, Bakersfield, Long Beach and San Francisco centers. The radiologists will have the potential to work primarily in their sub-specialties. BRMG is a large, well-established practice with over 100 members. The team is employee-based and offers incentives such as compensation, excellent benefits, 401K, no weekends/nights, and educational opportunities.

Contact: Barbara Deboi at barbara.deboi@radnet.com.

Missouri – A private suburban St. Louis, Mo., group has an excellent opportunity for a breast, fellowship-trained radiologist. The practice is an ACR Breast Center of Excellence. The position is partnership or salaried track. An excellent compensation and benefits package is available with flexible vacation, low cost of living, and many cultural and recreation opportunities.

A private practice in St. Louis, Mo., also seeks a skilled radiologist for an evening/night position with flexible scheduling. The position offers excellent salary and comprehensive benefits, including a professionally managed profit sharing plan (501K+ tax deferred benefit).

Contact: John Stephens, MD, at stephejj10@gmail.com

Pennsylvania – Quantum Imaging and Therapeutic Associates (QITA), a private radiology practice, is looking for general diagnostic radiologists to join the practice in central Pa. QITA is a dynamic young practice with a stable supply of current, well-trained radiologists, and ensures stability due to its focused strategic plans and growth.

Contact: Visit www.quita.com or call 717-932-5959 for consideration.

Washington – Vancouver Radiologists, PC, is seeking a versatile MSK radiologist to join and grow with the practice. Qualified candidates will be fellowship-trained in MSK, with strong general radiology skills. Mammography proficiency is desired.

Vancouver Radiologists, PC, is also seeking a neuroradiologist. Qualified candidates will be fellowship-trained in neuroradiology, with strong general radiology skills. Mammography proficiency is desired.

Contact: Cover letters and CVs can be sent to HR@vanrad.com. More details are available at www.vanrad.com.

Michael A. Chorney, MD, is an IR resident at Pennsylvania Hospital of the University of Pennsylvania Health System.

Why did you decide to become an interventional radiologist?

As a resident, I've found that the rotation that offers me frequent moments to turn off the dictaphone and converse with patients is IR. The daily workflow on the IR service provides us with the opportunity to share time and stories with our patients.

As an IR resident, my conversations with patients are frequently care-based, but not all the time. Every so often, a few extra minutes allow me to reconnect with familiar patients, share upcoming weekend plans, and provide my opinions on Philadelphia sports. IR allows me a few moments to sit, listen, and learn from the patients I know so well. I cherish those moments of connection, both professionally and personally, with my patients. As medical professionals, it's important for us to listen to our patients as we help them navigate the new waters that may lie ahead. B

IR allows me a few moments to sit, listen, and learn from the patients I know so well.

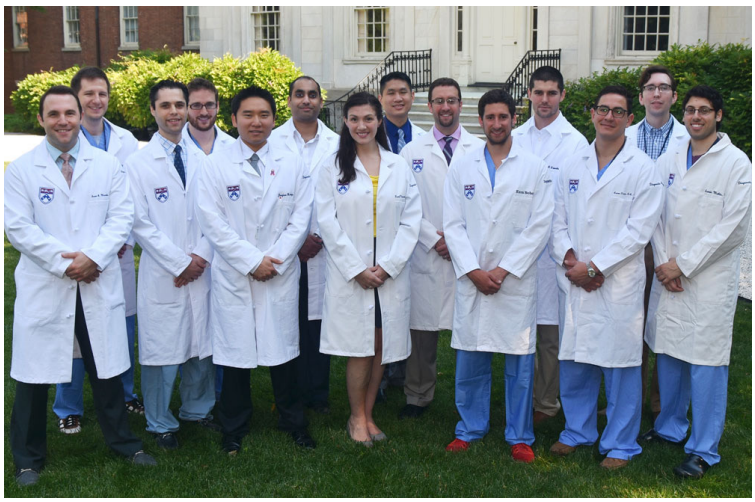


PHOTO: PENN MEDICINE

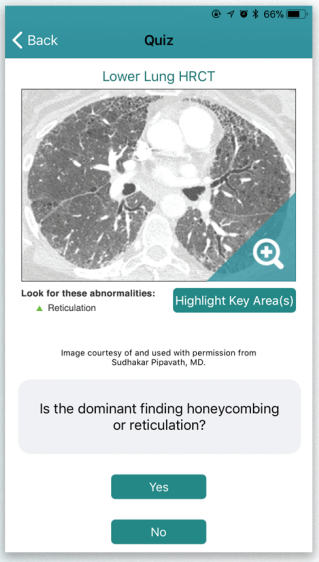
Left to right: Sean Maratto, MD, MS, Alexander Boikov, MD, Michael A. Chorney, MD, Moshe Grossman, MD, Junjuan Huang, MD, Nikesh Anumula, MD, Kerri Vincenti, MD, Daniel Lee, MD, Jonathan Masur, MD, Ezra Bobo, MD, Peter Szpakowski, MD, Aaron Dunn, DO, Jeffrey Schneider, MD, and Samir Mehta, MD, are pictured at Pennsylvania Hospital in Philadelphia.

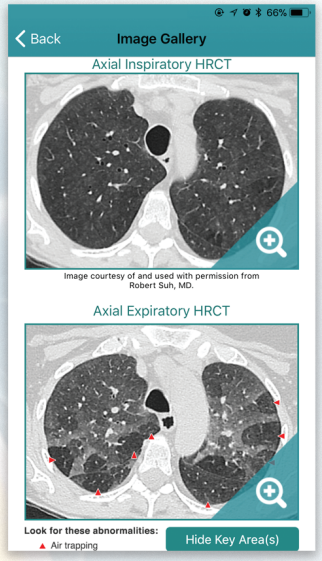
Introducing a Peer-Reviewed
Interstitial Lung Disease

Educational App

for Pulmonary Healthcare Practitioners

Utilize our **Interactive Diagnostic Algorithm** to assist HRCT reading, test your knowledge by taking our **UIP to IPF Quizzes**,view examples in our **Image Gallery** and **Glossary**, and learn more about UIP and IPF with our **Informational Videos**





Rad Rounds – UIP to IPF

Download on the App Store

ANDROID APP ON Google play

To learn more about idiopathic pulmonary fibrosis and the role of HRCT in the recognition of UIP, visit our website **www.InsightsinIPF.com**

To install on your iPhone text **RADIPF** to **313131** to receive link
To install on your Android phone text **RADIPF** to **313131** to receive link

ACHIEVE Success in the Era of Value-Based Payments

Earn IA Credit | **Access Free CME** | **Prepare for PAMA** | **Join CDS R-SCAN Registry**

R-SCAN®

Radiology Support, Communication and Alignment Network

> **"The biggest benefit of R-SCAN is that we will be able to demonstrate our value not only to hospital leadership and referring providers, but also to payers. This program will make it easier for us to show that what we do and, more importantly, how we do it can impact patient management."**
>
> **— Andrew K. Moriarity, MD**

Succeed in the transition to value-based health care and join thousands of radiologists across the country already participating in the Radiology Support, Communication and Alignment Network (R-SCAN™).

Join the R-SCAN national movement to:

- ***NEW!*** Be among the first to pilot the CDS R-SCAN Registry
- Earn Improvement Activity credits for the CMS MIPS Quality Payment Program — available to referring clinicians and radiologists
- Engage referring physicians in free CME activities (e.g., podcasts and image ordering simulations)
- Gain free access to the CareSelect™ Imaging/ACR Select® web portal
- Earn MOC Part 4 Credit by completing an R-SCAN project with one of many Choosing Wisely® topics

Questions? Contact us at rscaninfo@acr.org.

Join R-SCAN today.

TCPi Transforming Clinical Practice Initiative

rscan.org | 1·800·227·5463 |

ACR® American College of Radiology — Quality is Our Image

09.18