Implementing clinical decision support for advanced medical imaging studies

Mary Beth Massat

When the Protecting Access to Medicare Act of 2014 (PAMA) was passed, radiology leaders applauded its mandate requiring a qualified clinical decision support mechanism (qCDSM) utilizing appropriate use criteria (AUC) for the ordering of all MRI, CT, PET and nuclear medicine medical imaging studies in all outpatient settings. The RSNA and ACR both released statements that the provision was "a long time coming," a victory for imaging and one that, if embraced by referring physicians, would provide significant improvements in patient care.

In November 2015, the U.S. Centers for Medicare and Medicaid Services (CMS) postponed its January 2017 deadline, agreeing with public and industry feedback that the aggressive timeline wasn't feasible.

The agency ultimately set January 1, 2018, as the deadline for all ordering physicians to utilize AUC in a qCDSM for every advanced imaging exam, and for furnishing providers to submit documentation of qCDSM use on all Medicare claims for reimbursement.

Mary Beth Massat is a freelance medical writer based in Crystal Lake, IL.

Rasu Shrestha, MD, MBA, Chief Innovation Officer, UPMC, and Executive Vice President, UPMC Enterprises, says the final rule and unique set of requirements for clinical decision support (CDS) from CMS indicate there is a push for broader industry-wide adoption.

"There is an impetus in the industry for broader adoption of the CDS tools and algorithms and AUC to be more directly integrated into clinical workflows and systems—both in the EMR and radiology," Dr. Shrestha says. "This opens up an opportunity for the industry at large to adopt the AUC in a much more meaningful way into the workflow."

Looking at the issue broadly, Dr. Shrestha says that when an unnecessary order comes into the radiology worklist, there is not much a radiologist can do at that point. They have to report on the study and hopefully use that opportunity to educate the ordering physician on what to do the next time.

"We need to effect change up front and ensure they have a set of AUC tightly integrated with their physician order entry system," he adds. "How do we in radiology become more available through applications and communication collaboration capabilities so as the ordering physician is making that decision we can aid them?"

Lincoln L. Berland, MD, FACR, Chair, ACR Body Imaging Commission and Professor Emeritus, Department of Radiology, University of Alabama at Birmingham, adds, "This new legal mandate for using AUC is a key chance for radiology groups to reorganize their services to support these concepts and enhance collaboration."

There are a variety of methods that radiology groups can use to support the use of PAMA requirements. Dr. Berland suggests creating an "on-call" service for referring physicians who encounter questions or "rejections" at any time by utilizing a centralized method of communication or clearinghouse. In a radiology group practice, multiple specialties should be available to address these concerns; radiologists must also become familiar with the system being used, how ordering physicians interact with it and the likely outcomes for study requests across various scenarios, he adds.

"Radiologists have traditionally been reluctant to assume the role of gatekeeper for imaging examinations for a variety of good reasons," Dr. Berland says. "However, in the new payment models being developed, it will be to

Clinical decision support solutions for radiology

Clinical decision support solutions fall broadly into two categories: Solutions that assist with ordering advanced medical imaging studies and solutions that assist with interpretation and reading. It is the former that are required by PAMA 2014 and Meaningful Use Stage 3. Currently, several solutions are commercially available.

- NDSC is the exclusive licensing agent for the ACR Appropriateness Criteria, ACR Select™, a comprehensive national standards CDS database comprising over 3,000 clinical scenarios and 15,000 criteria that provides evidence-based decision support for the appropriate utilization of all medical imaging procedures. NDSC has expanded its CareSelect solution to cover a wide variety of care settings and healthcare services, including medication, lab and blood management. **www.nationaldecisionsupport.com**
- MedCPU's Advisor is a platform that captures and analyzes relevant clinical data from both structured and unstructured data such as physician encounter notes and narrative data entries. It supports a variety of specialties and conditions through modules assembled from evidence-based publications, guidelines authorities such as the American Colleges (eg, ACR) NIH, CDC, Joint Commission and others. **www.medcpu.com**
- Medcurrent's CDS features an intelligent search functionality that adapts to real-time ordering behavior and is configurable to meet a facility's specific requirements. Users can choose from different content sources or their own local best practices. **www.medcurrent.com**
- Medicalis is a content agnostic platform that provides a range of evidence-based and best practices guidelines developed through collaborations with professional societies and luminary sites. Medicalis has designed its implementation to leverage multiple AUC. **www.medicalis.com**
- Nuance announced in November 2015 its partnership with NDSC to provide an integrated set of tools for clinical decision support, radiology reporting and image sharing technology to provide real-time information sharing between referring physicians and radiologists. **www.nuance.com**

radiologists' advantage to help decrease use of inappropriate examination and to better communicate with their referrers. Hopefully, radiologists will come to perceive this new mandate less as a burden and more as a way for them to improve relationships with their referrers that have often become too distant."

Bob Cooke, Vice President of Marketing at National Decision Support Company, agrees, noting that "This is a great opportunity for radiology to leverage this legislation for prior authorization," and the industry through compliance will further help to provide high-quality imaging services.

Gearing up for implementation

In his blog on the company's website, Cooke notes that the main difference between the proposed rule and final rule is the option for ordering physicians "to 'attest' that no applicable AUC were found in the qCDSM in addition to an automated response." Although the claims process is currently not specified, more information will be forthcoming in the next two rule-making cycles. However, Cooke continues, the indication together with the Decision Support Number generated by the CDSM, "will be the cornerstone to the claims process. Limiting an implementation, specifically indication and AUC coverage at the front end, will risk proper claim formation."

Facing substantial consequences for non-compliance, Dr. Berland presumes, most institutions have already decided to proceed. He advises institutions to evaluate and provide the IT resources needed to deploy the solution while developing plans to manage the shift in personnel and resources from a manual process of pre-authorization from radiology benefits management (RBM) organizations to the software solution. "Furthermore, because the nature of the process will change in terms of who interacts with the system and when such interactions occur, process analysis should take place as part of planning."

Steve Oden, Sr. VP, Product Operations, medCPU, says the top challenge for an institution implementing these solutions is to obtain cross-department buy-in and that the approach designed from the facility's best practices are jointly agreed to and jointly designed. "If the implementation of CDS is taken from just one perspective, then it may not represent the other stakeholders. Cross function, cross department and in some instances, cross institution in the design and review is critical," Oden said. While the decisions are informed by a radiology perspective, there can be different sets of rules or clinical protocols in the ED or the CCU, for example. "It's not a one size fits all for multiple departments; the solution needs to have the flexibility to adjust," Oden adds.

PAMA 2014

PAMA 2014 directs CMS to establish a program to promote the use of AUC for advanced diagnostic imaging studies, such as MR, CT, PET and nuclear medicine. In the Act, AUC is defined as "criteria that are evidence-based (to the extent feasible) and assist professionals who order and furnish applicable imaging services to make the most appropriate treatment decisions for a specific clinical condition."

The program was introduced in the CY 2016 Physician Fee Schedule Final Rule, which also specified qCDSM. According to the CMS website, all qCDSM applications are due by March 1, 2017, and the list of qCDSM will be posted by June 30, 2017.

Several provider-led entities (PLE) are responsible for the creation of AUC and must apply to CMS to become qualified. A PLE must adhere to the evidence-based processes described in the Act [42 CFR 414.94(c)(1)] when developing or modifying AUC. As of June 2016, 11 organizations are listed on the CMS website as qualified PLEs, including ACR and SNMMI.

More information can be found at: **https://www.cms.gov/medicare/quality-initiatives-patient-assessment-instruments/appropriate-use-criteria-program/index.html**.

Christopher Deible, MD, Medical Director of Radiology Informatics, UPMC, says having an intelligent solution as well as flexibility in the integration is advantageous and a driving force in why UPMC has implemented three different systems over the last few years. The content is also important, particularly the utilization of ACR criteria.

"We are reviewing that content to make sure it matches our own practice patterns. If a physician or department has protocols, we need to match it with the ordering physician and the patient." And it's not just a matter of the ordering physician being in the ED or outpatient, but rather the type of physician, he adds. "There is a marked difference between a specialist and a general practitioner. The specialist typically knows what they want; the general practitioner is typically more open to the content and benefitting from it."

There are also differences in health plans, Dr. Deible says. UPMC has implemented a CDS that integrates with its health plan and will use the same rule set for patients not in the UPMC health plan. "Making sure it is the same is a challenge because different insurers may want things differently and there has been very little discussion to grapple with that."

Julianna Hart, VP Market Development, medCPU, adds that within an IDN, there is often communication and a working relationship. However, in academic medical centers and regional centers that receive patient referrals from outside the network, there is some concern regarding access to that patient's information and verification that the ordering provider has used a CDSM. "It is not just the collaboration but also the workflow, ensuring the right prompts are occurring and not impeding their workflow productivity… prompts at the right time and the right sequence," Hart says.

Dr. Deible adds, "Anything that can be done to pull from the record the real reason why they placed the order further promotes really using the solution versus just checking the box."

It is the ability to bring in narrative text that can't be gleaned from discrete HL7 data in order to give the radiologist insight into the current clinical situation that is a key challenge, Oden says.

Dr. Berland recommends employing a strategy that identifies and supports champions of the solution and implementation as well as educates each group—radiology and referring physicians—to achieve buy-in and create a collaborative environment. He cautions that hospitals and physician groups should not view the implementation as strictly software based.

"Teams of appropriate people can help define the needs and assist with persuading the entire referring and radiologist groups that these systems can work for them, not just be a new added regulation with which they must comply," Dr. Berland says.

He points out that a limited number of products are available, but "each offers their own flavor of solution to apply AUC as mandated by PAMA." He adds that the AUC are flexible because not every scenario can be covered, local practice differs from that favored by the AUC and clinical scenarios may be too complex or ambiguous for a definitive answer for each patient case.

"Institutions must establish processes to integrate consultation with radiologists to supplement the software," Dr. Berland says. "Radiology groups should be eager to support this process because it assists their ability to provide value to the referring physicians and patients and materially helps optimize the quality of the examination and interpretation."