Written Statement of
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On Behalf of the American College of Radiology
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HHS/ONC HIT Policy Committee
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Dr. Tang and Members of the Meaningful Use Workgroup:

Thank you for the opportunity to participate in today's public meeting on meaningful use (MU) and specialists. I am Vice Chairman of Radiology at Massachusetts General Hospital / Harvard Medical School, but I am here today in my role as Co-Chair of the American College of Radiology's (ACR) IT and Informatics Committee. The ACR is a professional organization representing more than 34,000 radiologists, radiation oncologists, interventional radiologists, nuclear medicine physicians, and medical physicists.

When exploring the topic of "EHR Support of Specialists in Patient Care, including Clinical Decision Support," it is important to discuss efforts and breakthroughs in the radiology community to harness health information technology (HIT) to facilitate appropriate, high quality, and safe specialized care for patients. Today, I will focus on just a couple of many ways in which EHR technology can provide support related to radiology: 1) appropriateness clinical decision support (CDS) during order entry; and, 2) the exchange of diagnostic images and other imaging data. I will also provide you with some ideas for how MU requirements can better address specialized medicine.

I. Appropriateness Clinical Decision Support

Appropriateness Criteria
Since the early 1990s, the ACR has developed and maintained transparent, evidence-based Appropriateness Criteria (AC) guidelines designed to assist referring physicians and other providers in making the most appropriate imaging or treatment decision for a specific clinical condition. There are more than 175 topics divided by numerous clinical conditions addressing over 850 clinical scenarios in the March 2011 version of the ACR Appropriateness Criteria. All topics are reviewed biennially and updated as needed.

The diagnostic and therapeutic imaging procedures and their appropriateness ratings included in the AC topics are determined by expert panels with representation from over 22 national primary care and specialty societies using a modified Delphi methodology following a literature review and evidence table. The ratings are a scale between 1 and 9, which is further divided into three categories: 1, 2, or 3 is defined as "usually not appropriate"; 4, 5, or 6 is defined as "may be appropriate"; and 7, 8, or 9 is defined as "usually appropriate." In addition to the numeric appropriateness ratings, the latest iterations of the AC also provide simple graphic representations of the relative radiation level of each imaging procedure so that ordering physicians without specialized radiation safety training can factor dose into the decision-making process.

The ACR freely provides the AC guidelines for individual download and reference at www.acr.org/ac. The ACR also collaborates with Skyscape to make the AC available via the Anytime, Anywhere Application for the major consumer mobile device platforms.

ACR AC in CDS Solutions
Currently, the ACR AC guidelines are licensed for use in vendored CDS solutions, including in EHR-integrated radiology CPOE systems and standalone CPOE software. These products are widely available and are in clinical use in several institutions throughout the country.

At the request of EHR manufactures, healthcare providers and healthcare plans, the ACR recently created a groundbreaking mechanism for electronic access to the regularly updated AC guidelines via web services. This solution will provide ordering physicians direct access to vast decision support knowledge, seamlessly updated, directly from their EHRs and other HIT systems.

Benefits
- Improving Quality, Safety, Efficiency & Reducing Health Disparities
- Engaging Patients and Families in Their Care
- Improving Care Coordination

There are numerous benefits to the use of appropriateness CDS during order entry that touch on multiple priorities for ONC and CMS. Referring physicians—and, by extension, the patients themselves—are empowered with the knowledge of which diagnostic modalities (CT, MRI, Nuclear Medicine, Ultrasound, etc.) are likely to best contribute to the desired clinical outcomes. Avoiding potentially inappropriate or inefficient imaging examinations for the given clinical conditions directly contributes to a patient's health and safety, particularly if the modality involves radiation or other potential risks. Furthermore, this results in significant cost savings for the health care system as a whole and for individual patients who are increasingly burdened with out-of-pocket costs for diagnostic tests by their health plans.

There was a controversial story in the national news in recent weeks—and, incidentally, a related U.S. Senate hearing—about how some patients are denied appropriate studies by third party benefits management companies contracted by insurance companies to seek savings. Appropriateness CDS during order entry solves everyone's concerns—policymakers, payers, physicians, and patients—without a costly "middle man," and in a transparent fashion that engages referring physicians and patients to select appropriate examinations with evidence as the primary determinant of the decisions. Although cutting financial costs is not a clinical consideration during the exam ordering process, appropriateness CDS has been demonstrated to lead to significant savings as a secondary outcome.

MGH Example
At Massachusetts General Hospital (MGH) a comprehensive computerized radiology order entry and decision support system has been in use for outpatient imaging since 2004. This effort was undertaken largely in response to and in cooperation with three of the major payers in the Boston area to address rapid increases in the volume (and cost to payers) of advanced diagnostic imaging (CT, MRI, Nuclear Medicine, PET). The MGH Physician's Organization (MGH-PO), Partners Healthcare, and major commercial payers agreed that employing radiology benefits management entities would not be in the best interests of any of these stakeholders, let alone the individual patients and doctors taking care of them. At the same time, payers wanted some reassurance that their per beneficiary costs for outpatient imaging would not continue to rise exponentially, and asked the providers to take on some risk in the form of pay for performance based on meeting imaging utilization growth targets. Accordingly, MGH-PO and the MGH Radiology Department undertook the task of creating a web based computer order entry system to be used by all outpatient practices affiliated with MGH-PO. This system was designed to elicit complete and standardized information about why specific imaging tests were being ordered and give immediate feedback in the form of appropriateness scores and categories (Green=Appropriate, Yellow=Uncertain, Red=Inappropriate, based on the ACR Appropriateness Criteria), to the ordering provider for virtually all CT, MR, and Nuclear Medicine studies. Unlike, the benefits management approach, a 'Red' score returned to an ordering provider (doctor or his/her proxy) did not entail an outright 'denial' of the service although many such cases were spontaneously cancelled or changed to another modality by the ordering doctor. In the case of 'proceed on red', the ordering provider was asked to assert a reason for proceeding and these justifications were recorded.

After initial implementation and ramp up during 2004-2005, about 75% of outpatient imaging tests performed at MGH were requested through the CPOE/CDS system and this fraction has steadily increased to well over 90% today, including rural primary care practice settings throughout Eastern Massachusetts. During subsequent practice meetings and focus groups, most primary care and many specialist physicians state that they would never want to go back to old style exam ordering via phone call and/or fax transmittal. Far from being seen as a burden, many of these doctors express gratitude for the CDS feedback and state that they show the screens to patients themselves so as to practice shared decision making about imaging tests. For example, several primary care physicians related that they go through the CPOE/CDS process about imaging for low back pain in front of the patient. They find that when the 'red' score for MRI of lumbar spine for uncomplicated low back pain comes up, patients are much more amenable to trying physical therapy without imaging.

Numerous refinements and improvements have been made to the CPOE/CDS system both in terms of the functionality as well as clinical content. One feature that was added to the system in 2007 presents referring doctors with results of all prior imaging studies relevant to the one being currently ordered (i.e., same body region even if different modalities). In such cases, the ordering process is often terminated by an ordering doctor because the prior study had already answered the clinical question.

Over the past several years MGH-PO has supplemented the immediate imaging appropriateness decision support at order entry time with periodic feedback about imaging utilization quantity and quality. Unlike many provider 'efficiency profiles' and 'tiering' schemes employed by payers and benefits management organizations, these reports use transparent methods of calculation and employ sound health services research principals. Careful and complete patient level risk adjustment modeling of imaging intensity ensures that imaging cost variation due to burden of illness and other patient factors is properly accounted for and not falsely attributed to doctors. Lately, adjusted imaging utilization rates (compared to peer averages) along with 'quality' based on the appropriateness scores of completed exams are shown in 'dashboard' format to ordering doctors right in the order entry application.

Empirical evaluations of MGH imaging utilization growth rates, average appropriateness, and several other outcomes have proven quite encouraging. For example the growth of outpatient CT scan volume (corrected for general practice activity) went from ~12% per year to nearly zero, thus essentially halting imaging cost growth. Smaller decreases in utilization growth rates were observed for MRI and other advanced imaging tests. When the DS score feedback was first added to the ROE system in 2006, the rate of 'red' (inappropriate) scores assigned to high cost imaging tests (CT, MR, Nuclear medicine) was ~25% and this rapidly decreased to ~5%. An administrative change that required attending physicians to personally verify (with electronic signature) exams with 'red' scores prior to scheduling resulted in a further drop in these inappropriate imaging tests to ~1.5%. The provider feedback of imaging utilization intensity and quality (both immediate and periodic) was positively received by MGH primary and specialty care physicians and continues to this day. Most recently, variation analysis of outpatient imaging utilization with sophisticated hierarchical modeling techniques has shown surprisingly little variation among MGH doctors within specialties (primary care, neurology, oncology). In other studies, up to 75% of explained variation accrues to doctors while at MGH this is more like 25-30%. This might very well represent a new benchmark for standardized, high quality, and consistent practice with respect to imaging utilization.

Minnesota Example and CMS Demonstration

There are also other examples of the successful use of imaging CDS elsewhere in the U.S., including by the Minnesota system of payors and providers (Institute for Clinical Systems Improvement), which continues to be highly successful in reaching out to rural sites to use their ACR AC based CDS application. Minnesota is currently in the process of rolling out web portal and EHR-based options for appropriateness CPOE/CDS statewide.

CMS is in the process of conducting a two-year Medicare Imaging Demonstration (MID) project to collect data regarding physician compliance with nationally-developed Appropriateness Criteria in order to determine the appropriateness of advanced diagnostic imaging services furnished to Medicare beneficiaries. The MID project was authorized by the Medicare Improvements for Patients and Providers Act of 2008 and is indirectly referenced in the Center for Medicare and Medicaid Innovation section of the Patient Protection and Affordable Care Act. The ACR Appropriateness Criteria comprise the vast majority of the guidelines identified by CMS for use by conveners and participants in the MID project.

II. Image Sharing and Access via EHR Technology

Imaging Information Exchange: Low Hanging Fruit

In the U.S. today, the large majority of medical facilities have radiology departments with complete digital infrastructures for image capture, display and archiving. Nearly all of these facilities utilize simple web protocols for the integration of these medical images into their EHRs for use by physicians only within those facilities. Through its rapid adoption over the past decade, the value of this digital medical imaging technology and its integration to the EHR has become essential to the clinical care of patients. The challenge today is incentivizing those same facilities to share their image data with other neighboring medical facilities as well as the patients themselves.

In terms of diagnostic imaging, EHR technology can support the specialized care of individual patients by facilitating imaging data sharing between providers and patient-controlled exchange of diagnostic images between enterprises. Due to the already high level of standardization and HIT capabilities of the diagnostic imaging community, this is "low-hanging fruit" compared to some of the data MU focuses on in Stage 1 and the draft recommendations for Stage 2. Imaging data is already captured and shared on CDs and DVDs by most radiologists and other imaging specialists today—a preferred and fully realizable approach, if incentivized through a mechanism like MU, would be true electronic exchange.

According to researchers at Brigham and Women's Hospital in Boston, having prior imaging data (even via complex CD import mechanisms) reduces the need for subsequent imaging by 17 percent. However, healthcare providers each year generate millions of CD containing imaging data for patients with no mechanisms for them or their physicians to store this critical data to their EHR or PHR systems.

Former National Coordinator for HIT, Dr. David Blumenthal, observed in January 2011 that "we can't have an effective electronic health information system that can't move images." That month, the Office of the Coordinator for HIT cosponsored a meeting with the National Institutes of Health (NIH) that explored capabilities and opportunities related to diagnostic imaging, particularly image access and exchange via EHR technology as it relates to MU. The resounding take-home messages from that ONC-NIH meeting were that the capabilities and standards exist now, image and imaging data exchange is a critical component of EHR technology, and that imaging-related information should be implicitly included in MU because of its importance to the diagnosis and treatment of patients.

Benefits

- Improving Quality, Safety, Efficiency & Reducing Health Disparities
- Engaging Patients and Families in Their Care
- Improving Care Coordination

Suffice to say, a patient's electronic record is incomplete without imaging data. Imaging data-sharing falls directly in line with everyone's shared goals of improved care coordination and engaging patients. Patients can have control over access to their imaging data through PHR technology and be free from worrying about lost films/CDs/DVDs/USBs as they move between providers. Furthermore, the problem of duplicative imaging is significantly reduced when referring physicians have access to a patient's data and imaging history. Limiting unneccessary duplication significantly enhances patient safety (by limiting cumulative radiation exposure) and reduces costs.

NIH Example

With funding from the American Reinvestment and Recovery Act of 2009, NIH supported a two-year project awarded to the Radiological Society of North America which has demonstrated the successful use of standard medical protocols for the patient-controlled exchange of image data between major medical systems, including University of California, San Francisco, Mayo Clinic, Mount Sinai, University of Chicago, and the University of Maryland as well as to the patients' PHRs.

III. Radiology and MU

MU for Ordering Physicians

For ordering physicians, the ACR supports the electronic capture and transmission of relevant patient clinical information at the time of exam ordering. This is critical for CDS as well as appropriate protocoling of examinations which can help to reduce radiation exposure and inappropriate examinations. While the Stage 1 CPOE certification criterion requires systems to have the functionality to order radiology, the corresponding CMS CPOE objective/measure does not require physicians to use it, or to electronically transmit imaging orders to rendering physicians.

Furthermore, Stage 1 does not require that CPOE for radiology include appropriateness CDS based on national Appropriateness Criteria guidelines. Merely requiring CPOE of imaging is not the same as requiring CPOE using appropriateness CDS; and CMS and ONC will not achieve the desired outcomes unless the policy specifically involves the use of transparent guidelines from nationally recognized medical societies. As stated before, the solutions already exist and are in clinical use—these tools have years of supporting evidence behind them and are ready for prime time in Stage 2 MU.

MU for Rendering Physicians (Imaging Specialists)

Almost all radiologists are eligible professionals (EPs) for the Medicare version of the EHR Incentive Program. This holds true regardless of practice setting, as few physicians provide 90 percent or more of their covered professional services in exclusively inpatient and/or emergency room settings as determined by the Place of Service (POS) code on claims. Yet, when looking at the Stage 1 MU requirements and the draft advice for Stage 2, the imaging community is concerned that there is a missed opportunity to improve care coordination and quality of patient care in the area of specialized medicine.

The ACR believes that care coordination, efficiency, and quality improvement would be best achieved through specialty-relevant MU requirements for eligible imaging professionals. Specifically, CMS and ONC should provide MU functionality objectives/measures that will improve medical imaging care, including functionality measures (not only clinical quality measures) for structured reporting, communication of critical findings, access to key image data via EHRs and PHRs, and recording and monitoring of radiation dose. These types of specialty-centric functionality measures should be used in place of other MU measures that have no bearing on radiology practices today and will distract radiologist EPs from implementing technology that will improve specialty care of patients.

Today, the radiology specialty enjoys an adoption rate of over 85 percent of highly specialized EHR technology (Radiology Information Systems [RIS] and Picture Archiving and Communication Systems [PACS]) to capture patients' health information and facilitate clinical and administrative tasks. Similarly, over 50% of radiology reporting is performed via Speech Recognition systems with applications providing for the ability to create structured results with actionable outcomes. While these systems could be certified via the EHR Module pathway and facilitate many of CMS' MU requirements, they do not generally comprehensively cover all requisite functionalities needed to meet the regulatory definition of "certified EHR technology" without the addition of other modular products providing the functionality for MU measures that would be clinically unused in nearly all radiology practices. As CMS needs to add alternative specialty-relevant MU functionality objectives/measures, ONC must also reexamine the HIT certification regulations and consider whether all requirements are pertinent for highly specialized EHR technology, like RIS/PACS.

Thank you for the opportunity to present today. I look forward to your questions. As always, the American College of Radiology stands ready and able to assist you in your efforts.

ATTACHMENT
Answers-in-Brief to MU Workgroup Questions for Panel 2
May 13, 2011

How can EHRs facilitate specialty care of individual patients, including CDS?

- Exchange of and access to diagnostic images and related imaging data via EHR/PHR technology.
- Referring physicians' use of appropriateness CDS, based on American College of Radiology (ACR) Appropriateness Criteria (AC) guidelines, at the point of order.
- Electronic transmission of patient data from the ordering physician to the rendering physician.
- Creation of alternative MU requirements that are pertinent to imaging specialist EPs, including: structured reporting elements, communication of critical findings, access to key image data, recording and monitoring of radiation dose.
- Benefits: improved care coordination; improved quality, safety, and efficiency; and engagement/empowerment of patients and families.

How do you currently support decision-making in your practice?

- CPOE of diagnostic imaging with CDS based on ACR AC.
- Used by most outpatient facilities, including rural providers, to order radiology services from MGH.
- Strongly supported by primary care partners and other ordering physicians.
- Evidence shows improved quality and cost reduction.

How does your specialty generate new knowledge (e.g., clinical guidelines)?

- ACR develops transparent, evidence-based ACR AC guidelines for ordering physicians.
- Provides appropriateness ratings for imaging procedures by clinical condition/scenario.
- New iterations also include radiation dose estimations in the form of easy to comprehend graphical indicators.
- Maintained regularly by expert panels with representation from stakeholder specialty societies.

How do you disseminate this new knowledge amongst your specialty?

- ACR AC are freely accessible by referring physicians at www.acr.org/ac.
- Also available at AHRQ's National Guideline Clearinghouse.
- Available via an application for most consumer mobile device platforms.

How do you incorporate new knowledge into EHRs (e.g., partnerships with EHR manufacturers)?

- ACR AC provide the foundation of CDS in CPOE solutions.
- New web services solution provides ordering physicians direct access to vast decision support knowledge, seamlessly updated, directly from EHRs and other HIT systems.