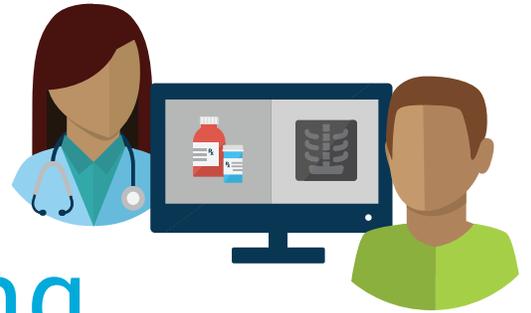


Clinical Decision Support and Diagnostic Imaging



Ensure appropriate imaging by leveraging point-of-care clinical decision support tools

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CME
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How will this module help me use clinical decision support (CDS) to transform my image ordering process?

- 1 Five STEPS to explore evidence-based CDS tools and prepare to use them in your practice
- 2 Answers to questions about adopting CDS tools for appropriate imaging
- 3 Tools and resources to help your team make better imaging decisions

Increasing administrative responsibilities—due to regulatory pressures and evolving payment and care delivery models—reduce the amount of time physicians spend delivering direct patient care. Physicians need tools in the exam room to help patients understand the rationale for ordering, delaying or not performing a test. Clinical decision support (CDS) enables clinicians to quickly and confidently determine appropriate imaging at the point of care. This allows physicians to provide higher quality patient care at a lower cost.

Clinical Decision Support and Diagnostic Imaging

Release Date: August 31, 2016

End Date: August 31, 2019

Objectives

At the end of this activity, participants will be able to:

1. Describe how to implement evidence-based CDS tools within the practice
2. Select an imaging area to improve
3. Identify how to work with EHR implementation teams to integrate CDS technology

Target Audience

This activity is designed to meet the educational needs of practicing physicians.

Statement of Need

Overuse and inappropriate use of many imaging tests may cause harm by unnecessarily exposing patients to excess radiation, can impact patient outcomes when incidental findings are over-diagnosed and increase health care costs. Ordering appropriate imaging – with time constraints and when the evidence to support the decision isn't easily accessed – can be challenging for many physicians. This module provides physicians the clinical decision support tools needed to select the right imaging test for the right reason at the right time.

Statement of Competency

This activity is designed to address the following ABMS/ACGME competencies: practice-based learning and improvement, interpersonal and communications skills, professionalism, systems-based practice and also address interdisciplinary teamwork and quality improvement.

Accreditation Statement

The American Medical Association is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Credit Designation Statement

The American Medical Association designates this enduring material for a maximum of 0.5 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Claiming Your CME Credit

To claim *AMA PRA Category 1 Credit™*, you must 1) view the module content in its entirety, 2) successfully complete the quiz answering 4 out of 5 questions correctly and 3) complete the evaluation.

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About the Professional Satisfaction, Practice Sustainability Group

The AMA Professional Satisfaction and Practice Sustainability group has been tasked with developing and promoting innovative strategies that create sustainable practices. Leveraging findings from the 2013 AMA/RAND Health study, "Factors affecting physician professional satisfaction and their implications for patient care, health systems and health policy," and other research sources, the group developed a series of practice transformation strategies. Each has the potential to reduce or eliminate inefficiency in broader office-based physician practices and improve health outcomes, increase operational productivity and reduce health care costs.

Disclosure Statement

The content of this activity does not relate to any product of a commercial interest as defined by the ACCME; therefore, neither the planners nor the faculty have relevant financial relationships to disclose.

Media Types

This activity is available to learners through Internet and Print.

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Introduction

Overuse and inappropriate use of many imaging tests may cause harm by unnecessarily exposing patients to excess radiation; they can also impact patient outcomes when incidental findings are present and can increase health care costs.¹ Ordering appropriate imaging tests—particularly when facing time pressure constraints and when the evidence to support the decision isn't easily accessed—can be challenging for many physicians.



Physicians need tools in the exam room to help patients understand the rationale for ordering, delaying or not performing a test. **Clinical decision support (CDS)** harnesses technology to promote sound clinical judgment and provides immediate access to radiation dose, cost information and other risks (false positives or **incidentalomas**) that support shared decision-making. CDS tools for imaging empower the ordering clinician—in collaboration with radiologists—to choose the right imaging test at the right time and for the right reasons.

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Clinical decision support (CDS): Clinical decision support includes a variety of technologies, such as computerized alerts, condition-specific order sets, documentation templates and diagnostic support, to help physicians make timely and informed decisions about the care they are providing.² Clinical decision support that is integrated at the point of physician decision-making is defined as “providing clinicians or patients with computer-generated clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care.”³

Incidentalomas: Incidental radiologic findings of unclear significance that can trigger a cascade of costly and unnecessary testing, cause undue patient anxiety, and result in additional radiation exposure.⁴

Five STEPS to improving imaging appropriateness

1. Familiarize yourself with Clinical Decision Support (CDS) and its role in optimizing care delivery
2. Select an imaging area to improve
3. Prepare your practice to adopt CDS tools for image ordering and appropriate use
4. Actively discuss imaging appropriateness with patients and begin making decisions about imaging orders together
5. Work with your electronic health record (EHR) implementation team to integrate CDS technology



Familiarize yourself with Clinical Decision Support (CDS) and its role in optimizing care delivery

CDS tools enable clinicians to quickly and confidently determine the appropriateness of an imaging test at the point of care. This technology can also help you gather data to assist you in providing higher quality care at lower cost, two key metrics of [value-based payment models](#).



What should I look for in a point-of-care imaging CDS solution?

When considering options for adding a point-of-care imaging CDS tool into your practice, be sure the tool includes:

- Comprehensive coverage of clinical indications and exams along with evidence-based content developed using a transparent methodology
- Integration with the order entry system via the user interface of your EHR (start by asking your EHR vendor about available solutions)
- Ability to create and customize clinical logic to match local protocols
- Ability to use analytics to monitor and track the effectiveness of the CDS tool
- Ability to deliver criteria that have been qualified by the Centers for Medicare & Medicaid Services (CMS) to be used as part of the Protecting Access to Medicare Act (PAMA) of 2014⁷

Many of the CDS solutions mentioned in this document can support the delivery of multiple qualified Appropriate Use Criteria (AUC) sets, including those published by the ACR, ACC and the NCCN.*

*CMS will publish a list of qualified AUC sets as part of its 2016 rulemaking cycle.

What are some examples of CDS tools for imaging that I can use in my practice?*

- ACR Select™ is a CDS tool published by the American College of Radiology and licensed by the National Decision Support Company (NDSC). It provides order entry, scoring and appropriateness recommendations based on the evidence-based ACR Appropriateness Criteria®. It can also be integrated into your organization’s EHR or web portal, or accessed as a component of the open-access [Radiology Support, Communication and Alignment Network \(R-SCAN\)](#).^{8,9}
- [MedCurrent](#) offers a clinical decision support tool that incorporates evidence-based guidelines into the clinical environment. It can be integrated into EHR applications, which assists clinicians with the decision-making process at the point of care.
- [Medicalis](#) offers an EHR-integrated solution that provides decision support. Using multiple AUC, this CDS tool provides evidence-based guidelines through collaboration with professional societies.

*[Protecting Access to Medicare Act \(PAMA\) of 2014](#) requires AUC developed by qualified physician-led entities; therefore, all of these examples are acceptable under PAMA.

How will Medicare reimbursement legislation influence my decision to use CDS tools?^{5,7,8}

Legislative requirements and changes in Medicare reimbursement rules mandate that physicians use CDS tools when ordering advanced imaging tests in certain situations, such as diagnostic MRI, CT and nuclear medicine. Appropriate use criteria requirements related to this mandate apply only to outpatient settings. This mandate, which is part of the [Protecting Access to Medicare Act \(PAMA\) of 2014](#), was initially scheduled to take effect on January 1, 2017.⁵⁻⁷ Though this start date has since been delayed, it is advantageous to prepare now for this expected change.

According to PAMA, “The Secretary shall specify qualified clinical decision support mechanisms that could be used by ordering professionals to consult with applicable appropriate use criteria for applicable imaging services.” It will be important to confirm that any CDS tool you are considering meets Medicare requirements when they are finalized.

CDS tools for imaging enable practice sites to reduce variations in clinical practice and identify gaps in care to improve outcomes. An established standard of care using evidence-based best practices will help clinicians routinely evaluate and benchmark performance against those standards using EHR-based and targeted analytics delivered by their CDS tool. As a result, organizations can locate key opportunities for outcome improvements and regularly track improvement efforts.

CDS tools can also support Medicare Access & CHIP Reauthorization Act of 2015 (MACRA) provisions rewarding quality improvement and decision support implementations or risk-based payment models. Many of the clinical topics covered by imaging CDS tools, when aligned with the Clinical Practice Improvement Areas defined by MACRA, also ensure quality metrics are achieved in order to maximize reimbursement.

I already work with a radiology benefit manager (RBM) to drive appropriate utilization. How does this differ from Clinical Decision Support?¹⁰

RBM utilization management is required by many payers as a mechanism to control costs, whereas Clinical Decision Support (CDS) is a more clinician-driven approach to cost-control programming. Unlike an RBM, CDS tools offer:

- No requirement for prior authorization in many states for certain payers
- Standard criteria for decision making
- Transparency for patients and physicians

- Direct access to medical expertise
- Accessible quality improvement data
- Shared savings, shared risk, and mutual incentives for the ordering clinician and the radiologist⁸
- Opportunity to consult with a radiologist to determine appropriate imaging
- Reduced out-of-pocket costs for patients who might have otherwise incurred inappropriate or unnecessary testing

In addition, evidence suggests that expending resources to comply with RBM requirements ultimately shifts a large portion of RBM-related costs to the ordering clinician, including the cost for complying with RBM procedures and the indirect costs that result from decreased productivity.¹⁰

2

Select an imaging area to improve

Identify specific projects that will drive practice changes and improve appropriate imaging in your organization. Target imaging studies that you suspect are overused and could benefit from Clinical Decision Support (CDS). Ordering physicians should choose what anatomic area or procedure group they would like to evaluate first. Establishing a benchmark from which to gauge improvement is paramount. A properly implemented CDS tool will enable benchmarking using analytics.

As with any [quality improvement effort](#), it is important to engage your organization’s administrative team, information technology team, and chief medical officer as appropriate. Consider establishing a partnership with radiologists to access their expertise.

Leadership is the critical factor in an effective implementation of CDS tools. Institutional performance metrics should be established and linked to CDS-produced metrics to ensure provider interaction with the tool.

Q&A

Where should I begin in selecting an area?

There are several starting points to consider:

- Generate a report from your EHR to identify variation in usage among clinicians. Tests with wide utilization variation may help you locate potentially over- or underutilized imaging studies.
- Think about common diagnoses in your patient panel, such as low back pain, and count how many patients are referred for imaging before a thorough physical examination.
- Look through [Choosing Wisely® lists](#) in your clinical area. Choosing Wisely is a national program designed by the American Board of Internal Medicine Foundation to spur dialogue between physicians and patients about unnecessary medical tests, treatments and procedures. Imaging is one area covered by this initiative.

What types of utilization patterns have organizations successfully targeted?

Organizations have [used CDS tools to successfully reduce inappropriate utilization rates](#) across all areas of advanced imaging, including lumbar MRI for low back pain, head MRI for headache and sinus CT for sinusitis.^{11,12}

Many abnormalities detected with imaging are so common in asymptomatic persons that they could be viewed as part of normal aging, which underscores the hazard of overdiagnosis from inappropriate testing. For example, a 2011 study that analyzed asymptomatic persons 60 years of age or older showed the following on magnetic resonance imaging (MRI):¹³ [Chou et al. 2011]

- 36% had a herniated disc
- 21% had spinal stenosis
- 90% had a degenerated or bulging disc

Detection of high rates of spinal abnormalities in asymptomatic elderly patients may lead to potential overtreatment of this population.

How can radiologists be engaged to help select target areas for improvement?

It is invaluable to have radiologists and referring clinicians meet face-to-face, even if briefly, so everyone knows who is on the other end of the phone and goals and insights can be discussed in person. Invite radiologists to participate in multi-disciplinary quality improvement meetings as valued members of the care team. In that way, you can foster a collegial, collaborative environment.

3

Prepare your practice to adopt CDS tools for image ordering and appropriate use

It is important to bring radiologists and referring clinicians together to improve imaging appropriateness and streamline image ordering. This effort can be guided by an action plan found on R-SCAN, created by the American College of Radiology. The R-SCAN platform delivers immediate access to [web-based resources](#) and CDS technology to support your team and accelerate your success in three phases.¹⁴



The Choosing Wisely website (an initiative created by the American Board of Internal Medicine Foundation) also provides a robust series of resources and instructional modules, including recommendations about how to use a variety of tests and procedures appropriately.¹⁵

Q&A

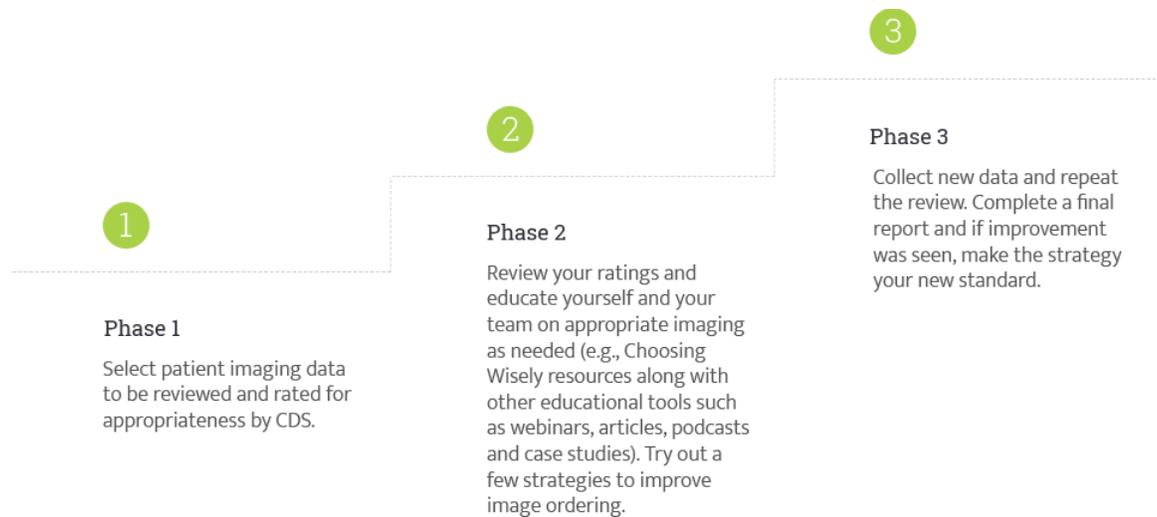
How is Clinical Decision Support (CDS) informed by evidence?

CDS technology provides a platform for acting upon established clinical guidelines. These criteria are developed in line with evidence-based guidelines and supported by multidisciplinary knowledge collected from hundreds of physicians and numerous diverse medical societies.¹⁶

What does a phased CDS implementation approach look like?

A phased approach is illustrated in the figure below.¹⁷ The team of referring clinicians and radiologists starts by selecting one or more [Choosing Wisely topics](#) or clinical areas to improve.

Going through this three-step exercise will help you collect and analyze baseline case data. It will also help you plan your intervention strategy and apply the findings when you move to adopt CDS tools practice-wide.



What kinds of topics can I explore to prepare my practice for adopting CDS tools?

Below are some common conditions for which imaging studies are ordered and that you are likely to encounter in your practice (these may also be found on [Choosing Wisely](#))

- Acute chest pain
- Pulmonary embolism
- Prostate cancer
- Adnexal cysts
- Low back pain
- Trauma
- Head trauma
- Febrile seizure
- Headache
- Sinusitis

How long will it take my practice to prepare for a CDS project?

We recommend budgeting a three- to six-month period with this new approach. In the case where the CDS tool is integrated with the EHR, your institution's IT support team will be critical and may require additional time to allocate resources, so get started early.

Can CDS tools complement my activities to deliver high-value care?

Yes. For example, the American College of Radiology's work on imaging appropriateness (funded by the Centers for Medicare & Medicaid Services' [Transforming Clinical Practice Initiative](#) (TCPI) cooperative agreement) is designed to help clinicians meet their practice transformation goals, such as:¹⁸

- Expand quality improvement capacity
- Learn from one another using peer learning networks
- Achieve common goals of improved care, better health and improved costs for their practices and patients

- Bring together radiologists, referring physicians and patients into a collaboration to reduce unnecessary testing and procedures
- Assist clinicians to meet the TCPI's [five phases of transformation](#)

4

Actively discuss imaging appropriateness with patients and begin making decisions about imaging orders together

Fifty-three percent of clinicians say that even if they know a medical test is unnecessary, they order it if a patient insists, and 70 percent say that after they speak with a patient about why a test or procedure is unnecessary, the patient often avoids it.¹⁹ Once you gain familiarity with Clinical Decision Support (CDS) through your participation in R-SCAN, you should feel more comfortable discussing appropriate imaging with your patients. Informed patients are less likely to demand a test once they understand why it is not recommended.

Q&A

How should I share CDS decisions with patients?

You may encounter a patient who insists upon a certain imaging study that is of questionable utility. CDS scores indicating a test is not likely appropriate should trigger a discussion with the patient. To assist you in your patient discussions, CDS tools include literature reviews with evidence supporting the given score.

Training yourself and your care team members, including nurses, nurse practitioners and medical assistants, on how the CDS tool arrives at a particular appropriateness score will empower everyone to explain to the patient what the decision means and why it was made.

What resources can I use to discuss imaging appropriateness with patients?

For physicians:

The American College of Radiology developed a [video](#) about appropriate imaging for the Choosing Wisely initiative that covers how to convey clear information, elicit patient concerns, [listen with empathy](#) and confirm agreement with the patient.

Another valuable resource for physicians is radiologyinfo.org, which offers videos and presentations by radiologists and medical physicists on nearly 200 imaging procedures, exams and medical conditions. The website covers diagnostic and interventional radiology, nuclear medicine, radiation therapy and radiation safety.

For patients:

Consumer Reports has created numerous [resources](#) for patients on Choosing Wisely imaging topics, such as:

- Back pain tests and treatments
- Brain scans for head injuries
- Cardiac imaging
- CT scans for children with head injuries
- CT scans for lung cancer in smokers
- Imaging tests for back pain

Radiologyinfo.org also includes information for patients on how they should prepare for specific procedures, exams or treatments and what patients can expect. Descriptions of how X-ray, CT, MRI, ultrasound, radiation therapy, and various other procedures are performed are presented in lay language.

5

Work with your EHR implementation team to integrate CDS technology

CDS technology is most useful when it is integrated into your EHR platform. We recommend including your EHR vendor in discussions about decision support; solutions for integrating a CDS tool may be delivered directly by the vendor.

Q&A

How labor intensive is the integration process for CDS systems?

CDS platforms are designed to integrate with a variety of EHR systems, with the decision support work in most cases taking place within your existing computerized physician order entry (CPOE). The resulting decision support data is embedded in the patient record to enable future analysis of the impact of the CDS tool on the individual's care.

We recommend including your EHR vendor in discussions about decision support; solutions for integrating a CDS tool may be delivered directly by the vendor.

How much will integration cost?

CDS tool vendors charge differently. Integration may be priced based on imaging volume, with a variable fee based on your EHR vendor, practice size and other specifics.

What other technology integrates with CDS platforms?

The data that CDS tools produce become a powerful tool for change when integrated with the overall EHR as part of a [population health strategy](#). Some CDS tools can also be used to submit data to registries.

What if I want to override the CDS and place an order that it recommends against?

There are patients and situations where placing an order that contradicts the CDS may be the best course of action based on your clinical judgment. If you are uncertain, you can enable your CPOE workflow to trigger a radiology consult for any imaging study that the CDS deems of questionable utility but that you may determine is medically necessary. The radiologist will review the order and work with you to identify the best approach. This interaction is recorded by the CDS system providing a defensible, documented, evidence-based standard of care.

How can I use the data collected by CDS tools to measure impact on utilization?

There are patients and situations where placing an order that contradicts the CDS tool may be the best course of action based on your clinical judgment. If you are uncertain, you can enable your CPOE workflow to trigger a radiology consult for any imaging study that the CDS tool deems of questionable utility but that you may determine is medically necessary. The radiologist will review the order and work with you to identify the best approach. This interaction is recorded by the CDS system, providing a defensible, documented, evidence-based standard of care.

Can CDS tools complement my activities to deliver high-value care?

Depending on the CDS tool you are using, each imaging order may have a unique decision support number (DSN) that is recorded and embedded in the EHR. You can use this information to determine appropriateness of the imaging orders and evaluate the impact on overall patient care. The DSN can be carried across IT platforms and used by any stakeholder in the patient care process who is impacted by imaging.

You can evaluate trends in image ordering for your practice as a whole, as well as for individual clinicians, as a performance measure.

What team members should I train to enter orders and interpret CDS results?

Anyone who orders imaging tests should be trained to enter orders and interpret results. The decision support system is most valuable when physicians directly interact with the CDS tool.

Leadership should regularly review CDS data trends. Inappropriate imaging reports should also be reviewed at department meetings; this data can be used as a platform for collaborative discussions about appropriateness trending and reasons why variability persists for certain imaging tests, or why specific ordering physicians may be outliers.



AMA Pearls

Take advantage of various web-based tools and resources to become familiar with CDS technology and implement it in your practice.

Conclusion

Clinical Decision Support (CDS) enables clinicians to demonstrate to patients and payers that they are ordering appropriate imaging tests. CDS tools and resources can empower physicians, inspire them to engage patients in dialogue and shared decision-making, enhance patient safety and benefit the health care system [by minimizing waste and costs](#).



Additional Resources

[AMA Wire – Clinical Decision Support](#)



To demonstrate completion of this module and claim *AMA PRA Category 1 Credits™*, please visit:

www.stepsforward.org/CDS

Get implementation support

The AMA is committed to helping you implement the solutions presented in this module. If you would like to learn about available resources for implementing the strategies presented in this module, please call us at (800) 987-1106 or [click here](mailto:StepsForward@ama-assn.org) to send a message to StepsForward@ama-assn.org



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