



# Radiology Ordering CDS

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# Agenda

1. PAMA Legislation
2. PAMA Regulations
3. RAND Study
4. Workflow Discussion

# PAMA Legislation

- The Protecting Access to Medicare Act (PAMA) was signed into law in 2014, requiring ambulatory providers (including emergency department, with some exceptions TBD) to consult with appropriate use criteria prior to ordering an advanced imaging study (e.g. CT, MRI, nuclear medicine) to determine if the order was appropriate.
  - Ordering professional = the clinician ordering the test
  - Furnishing professional = the radiologist interpreting the test

# PAMA Key Provisions

“(B) REPORTING BY FURNISHING PROFESSIONAL.—Beginning with January 1, 2017, subject to subparagraph (C), with respect to an applicable imaging service furnished in an applicable setting and paid for under an applicable payment system (as defined in subparagraph (D)), payment for such service may only be made if the claim for the service includes the following:

“(i) Information about which qualified clinical decision support mechanism was consulted by the ordering professional for the service.

“(ii) Information regarding—

“(I) whether the service ordered would adhere to the applicable appropriate use criteria specified under paragraph (2);

“(II) whether the service ordered would not adhere to such criteria; or

“(III) whether such criteria was not applicable to the service ordered.

“(iii) The national provider identifier of the ordering professional (if different from the furnishing professional).

# PAMA Key Provisions

“(A) IN GENERAL.—Not later than November 15, 2015, the Secretary shall through rulemaking, and in consultation with physicians, practitioners, and other stakeholders, specify applicable appropriate use criteria for applicable imaging services only from among appropriate use criteria developed or endorsed by national professional medical specialty societies or other provider-led entities.

“(B) CONSIDERATIONS.—In specifying applicable appropriate use criteria under subparagraph (A), the Secretary shall take into account whether the criteria—

“(i) have stakeholder consensus;

“(ii) are scientifically valid and evidence based;

and

“(iii) are based on studies that are published and reviewable by stakeholders.

# PAMA Key Provisions

“(i) IN GENERAL.—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.

“(ii) CONSULTATION.—The Secretary shall consult with physicians, practitioners, health care technology experts, and other stakeholders in specifying mechanisms under this paragraph.

“(iii) INCLUSION OF CERTAIN MECHANISMS.—Mechanisms specified under this paragraph may include any or all of the following that meet the requirements described in subparagraph (B)(ii):

“(I) Use of clinical decision support modules in certified EHR technology (as defined in section 1848(o)(4)).

“(II) Use of private sector clinical decision support mechanisms that are independent from certified EHR technology, which may include use of clinical decision support mechanisms available from medical specialty organizations.

“(III) Use of a clinical decision support mechanism established by the Secretary.



# PAMA Key Provisions

“(C) APPLICABLE IMAGING SERVICE DEFINED.—In this subsection, the term ‘applicable imaging service’ means an advanced diagnostic imaging service (as defined in subsection (e)(1)(B)) for which the Secretary determines—

“(i) one or more applicable appropriate use criteria specified under paragraph (2) apply;

“(ii) there are one or more qualified clinical decision support mechanisms listed under paragraph (3)(C); and

“(iii) one or more of such mechanisms is available free of charge.

# PAMA Key Provisions

“(5) IDENTIFICATION OF OUTLIER ORDERING PROFESSIONALS.—

“(A) IN GENERAL.—With respect to applicable imaging services furnished beginning with 2017, the Secretary shall determine, on an annual basis, no more than five percent

of the total number of ordering professionals who are outlier ordering professionals.

“(6) PRIOR AUTHORIZATION FOR ORDERING PROFESSIONALS WHO ARE OUTLIERS.—

“(A) IN GENERAL.—Beginning January 1, 2020, subject to paragraph (4)(C), with respect to services furnished during a year, the Secretary shall, for a period determined appropriate by the Secretary, apply prior authorization for applicable imaging services that are ordered by an outlier ordering professional identified under paragraph (5).

- Note: There is no requirement for the ordering professional to accept the CDS advice. The requirement is only to consult with the CDS system.



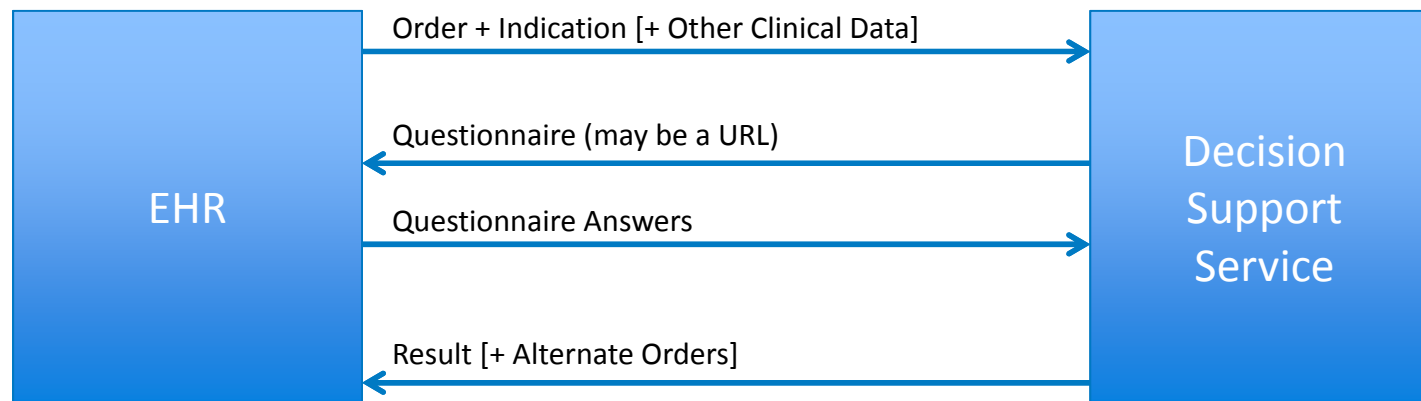
# PAMA Final Rule (AUC)

- Appropriate Use criteria (AUC) to be developed by provider-led entities (PLE)
  - *Provider-led entity (PLE) means a national professional medical specialty society or other organization that is comprised primarily of providers or practitioners who, either within the organization or outside of the organization, predominantly provide direct patient care.*
- PLEs will use a rigorous evidence-based development process to create their AUC, including the use of a seven member multidisciplinary team with expertise in the clinical topic, the imaging service, primary care, clinical trial design and statistical analysis;
- *A qualified PLE may develop AUC, modify AUC developed by another qualified PLE, or endorse AUC developed by other qualified PLEs.*

# PAMA CDS Mechanism

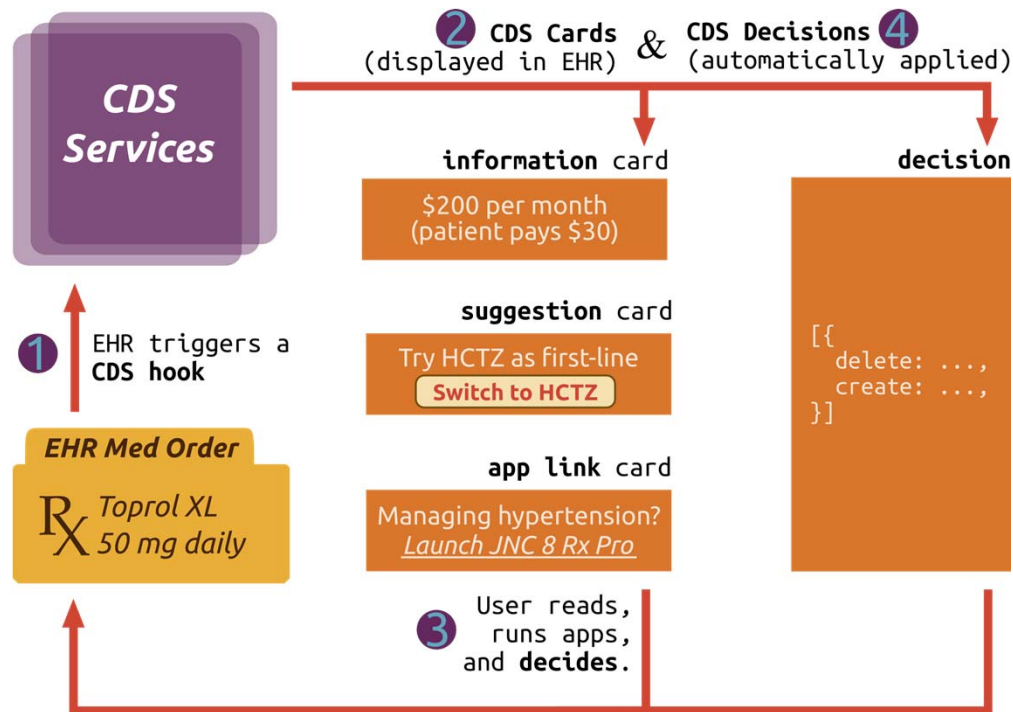
- A proposed rule defining the CDS mechanism is expected by the end of July 2016.
- What are some possible mechanisms that CMS might consider?
  - IHE Guideline Appropriate Ordering profile (now adopted by HL7)
  - CDS Hooks (extension of SMART on FHIR; not currently a standard)
  - Private sector mechanisms
  - Health eDecisions Use Case 2 (Decision Support Service)
  - Clinical Quality Improvement Framework Implementation Guide (FHIR®)

# GAO Profile (Simplified)



- Transitioning to a FHIR® Implementation Guide
- Defines FHIR® profiles for message elements

# CDS Hooks



Source: <https://github.com/cds-hooks/cds-hooks/wiki>

- Uses SMART on FHIR
- Entering an order could trigger a call to a CDS hooks service
- If more information is required, an app link card could be returned
- Within the app, the clinician could make a decision, which the EHR could retrieve (obviates the need to return an Alternate to the EHR)

# Medicare Imaging Demonstration (RAND)

**Table 1. Clinical Decision Support (CDS) Appropriateness Ratings of Advanced Diagnostic Imaging Procedures<sup>a</sup>**

|                           | Appropriateness Ratings by Period |                                   |
|---------------------------|-----------------------------------|-----------------------------------|
|                           | Baseline (6 mo) <sup>b</sup>      | Intervention (18 mo) <sup>c</sup> |
| No. of initial orders     | 20 698                            | 96 650                            |
| Unrated                   | 13 094 (63.3)                     | 64 288 (66.5)                     |
| Rated                     | 7604 (36.7)                       | 32 362 (33.5)                     |
| No. of final rated orders | 7589                              | 32 618                            |
| Appropriate               | 5596 (73.7)                       | 26 435 (81.0)                     |
| Equivocal                 | 1152 (15.2)                       | 4081 (12.5)                       |
| Inappropriate             | 841 (11.1)                        | 2102 (6.4)                        |

<sup>a</sup> The CDS systems tracked whether orders were linked with appropriateness criteria and generated appropriateness ratings when a link was established during both the baseline and intervention periods. The data are expressed as No. (%) unless otherwise indicated.

<sup>b</sup> Clinicians were not made aware of the appropriateness ratings during this period. After placing the initial order, clinicians on occasion canceled or changed the order (even without appropriateness feedback); therefore, the final order might differ from the initial order.

<sup>c</sup> The CDS system provided immediate appropriateness rating feedback to clinicians during this period and provided recommendations for alternative orders. Clinicians also could cancel or change orders during this period, but did so following exposure to appropriateness ratings and alternative order recommendations, if available.

**Table 2. Order Cancellations and Changes Following Feedback of an Inappropriate Rating**

|   | No. (%) of Orders                             |                                    |             |
|---|---|------------------------------------|-------------|
|   | Initially Rated as Inappropriate <sup>a</sup> | Alternative Presented <sup>b</sup> |             |
|   |   | Yes                                | No          |
| No. of orders initially rated as inappropriate <sup>a</sup> | 2242  | 895                                | 1347        |
| Canceled  | 42 (1.9)                                      | 4 (0.4)                            | 38 (2.8)    |
| Changed   | 108 (4.8)                                     | 89 (9.9)                           | 19 (1.4)    |
| To one rated as appropriate <sup>c</sup>                    | 47 (2.1)                                      | 40 (4.5)                           | 7 (0.5)     |
| To one rated as not appropriate <sup>c,d</sup>              | 61 (2.7)                                      | 49 (5.4)                           | 12 (0.9)    |
| Not canceled or changed                                     | 2092 (93.3)                                   | 802 (89.6)                         | 1290 (95.8) |

<sup>a</sup> Refers to the order each clinician enters into a clinical decision support (CDS) system before being presented with feedback on the appropriateness of the order, which occurred during the intervention period only. Some initial orders that were not rated, rated as appropriate, or rated as equivocal were changed to final orders that were rated as inappropriate.

<sup>b</sup> These columns are subsets of all initial orders rated as inappropriate.

<sup>c</sup> The denominators used to calculate the percentages for these rows are in row 1.

<sup>d</sup> Includes final orders rated as equivocal, as inappropriate, and those not rated because the CDS systems did not find matching appropriateness criteria or the final order was not a study procedure.

- No guidelines available in many cases
- Small increase in percent rated appropriate
- Few inappropriate orders changed or cancelled
- Learning effect?
- Secular changes?

Source: JAMA. 2015;313(21):2181-2182. doi:10.1001/jama.2015.5089

# RAND Study – Physician Satisfaction

- RAND surveyed participating physicians on a variety of subjects, including the decision support systems (DSS) used in the demonstration;
- According to participants, entering and changing orders in the DSS added time to workflows;
- Physicians would have preferred to receive guidance on different imaging procedures as they were considering placing an order, rather than consulting with the DSS after deciding on the order;
- Users who wished to consult the guidelines themselves to understand why an order was deemed inappropriate had to search many pages of an electronic document, rather than being presented with a tailored summary explaining the adjudication;
- Guidelines did not account for all clinical aspects of the patient and sometimes conflicted with local standards of care



# Workflow

- CMS (in background to final AUC rule): “(T)he ideal AUC is an evidence-based guide that starts with a patient's specific clinical condition or presentation (symptoms) and assists the provider in the overall patient workup, treatment and follow-up. Imaging would appear as key nodes within the clinical management decision tree.”

# My Workflow

- Student/Resident sees patient
- We review the case in a conference room
- We decide on a management plan
- Together we go see the patient, and unless new information arises, we present our plan to the patient (e.g. we are getting a non-urgent CT – someone will call you to schedule it)
- Patient leaves
- We return to the conference room to document the visit and place any orders
  - If the computer is unhappy, well, we're still getting the CT scan.

# Discussion

- How should image ordering CDS be integrated into the workflow?

# Questions

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