**Clinical Decision Support for Radiology (CDS-R) - Proposal**

**1. Proposed Workitem: Clinical Decision Support for Radiology (CDS-R)**

* Proposal Editor: Mike Bohl, Alicia Vasquez and Chris Lindop
* Editor: not known
* Date: N/A (Wiki keeps history)
* Version: N/A (Wiki keeps history)
* Domain: Radiology

**2. The Problem**

New U.S. legislation mandates the use of clinical decision support (CDS) when ordering imaging exams. As of January 1, 2017, CMS will withhold payment unless the referring provider documents use of CDS in the claim for the exam.

Today over 370 million ambulatory imaging studies are ordered annually in the U.S., plus another share of the over 400 million hospital imaging studies that are considered outpatient.

The data-flow and record-keeping necessary to comply would be difficult to do correctly and cost-effectively without automation and integration.

If the time, system and integration expenses, real or perceived, exceed the penalty set, the mandate will simply not be followed, and both the valuable clinical information stemming from the use of CDS, as well as the savings associated with more appropriate imaging, will be lost.

Need compliance data to be passed forward indicating the appropriateness of the order and the usage of compliant systems in the work chain.

**3. Key Use Case**

Consider the following image order under the new mandate but without any standards:

* Dr. Mary Smith, an internist, is reviewing a Patient Joe Jones, who is complaining of back pain. She opts to send Joe for an MR of the Lumbar Spine with contrast.
* Dr. Smith knows that she is supposed to use CDS for this imaging exam. Dr. Smith enters the order in her EMR.
* She then opens up a different application and re-enters the order information to get a CDS score. The score comes back low/inappropriate.
* Dr. Smith goes back into the EMR to look at the Joe’s chart to see if there is more information on his condition, and she looks at the CDS application to see if there is documentation of a more appropriate exam.
* Dr. Smith opts to stay with the current exam, but notes that it is with or without contrast. She gets a CDS score or number, then she has to go back into the order in the EMR to revise it, and then manually add the number.
* She then faxes the order over to an imaging provider.
* The imaging provider, after receiving the faxed order and CDS verification code, manually inputs all of the order and CDS data and schedules the exam.
* Dr. Ann Andrews, a radiologist, protocols the exam and has concerns about aspects of it. She calls Dr. Smith to discuss. This information becomes a part of the radiology EMR, but does not populate back to the CDS system.
* The exam is performed, and the report created. At each step (Radiology EMR to transcription application to report), the CDS number has to be manually repeated.
* The report gets to the billing step, where the claim is halted because the CDS application used was not included.
* The biller calls the office of Dr. Smith to get more information to properly file the claim.

This use case is compounded if the exam must be revised, rescheduled, or if multiple exams are ordered for the same visit. In addition, this use case is specific to each referring physician office and each imaging provider, unless there is a standard.

**4. Standards and Systems**

Systems affected may include EMRs, CDS Systems, Ordering Placers, Order Fillers, Modalities, PACS, Billing.

IHE Scheduled Workflow already carries many elements of an imaging order through the radiology workflow. It could be expanded to include new CDS data specific to the mandate. There are additional elements that would be helpful to add as well, such as receiving facility. Other data included in standards could be improved, such as exam priority. The Profiles on PIX and PDQ are very helpful in this as well.

CMS is looking to industry for their suggestions on the content and format of the CDS number/dataset.

Most transactions already exist. Will need to add transactions to/from the CDS System to get the CDS Score based on the order details. The HL7 CDS group is currently defining a FHIR-based interface to address this specific requirement.

See Also:

* [Imaging Appropriateness Criteria - Brief Proposal](http://wiki.ihe.net/index.php?title=Imaging_Appropriateness_Criteria_-_Brief_Proposal)
* [CDS](http://wiki.ihe.net/index.php?title=CDS)

**Summary**

New U.S. legislation mandates the use of clinical decision support (CDS) when ordering imaging exams. As of January 1, 2017, CMS will withhold payment unless the referring provider documents use of CDS in the claim for the exam. We must have standards for the creation of the required CDS data on the order and the movement of the data through to billing to correctly implement this new rule.

HL7 has a messaging format for orders exchange between order placer and order filler. This is currently profiled in IHE Scheduled Workflow. CDS vendors currently use HL7 segments for their current data.

A CDS Profile could present a standard way to capture the required data and send it through the rendering provider and on to the billing system.

There is high market interest in standardizing, as today over 370 million ambulatory imaging studies are ordered annually in the U.S., plus another share of the over 400 million hospital imaging studies that are considered outpatient. The data-flow and record-keeping necessary to comply would be difficult to do correctly and cost-effectively without automation and integration. Referring and rendering providers, as well as the respective vendors, have shown interest in working on this.

IHE Scheduled Workflow already carries many elements of an imaging order through the radiology workflow. It could be expanded to include new CDS data specific to the mandate. There are additional elements that would be helpful to add as well, such as receiving facility. Other data included in standards could be improved, such as exam priority. The Profiles on PIX and PDQ are very helpful in this as well.

**5. Technical Approach**

**Existing actors**

* Order Placer
* Order Filler
* Charge Processor

**New actors**

* CDS evaluator

**Existing transactions**

* Rad2 placer order management
* Rad3 filler order management
* Rad35 charge posting

**New transactions (standards used)**

* RadX-1 CDS evaluation request
* RadX-2 CDS evaluation response

**Impact on existing integration profiles**

* Charge Posting profile
* Charge processor
* Content change for Imaging reports

**New integration profiles needed**

* CDS for radiology

**Breakdown of tasks that need to be accomplished**

1. Create a new integration profile based on scheduled workflow and charge posting.
2. Enhance Rad-2, Rad-3 and Rad-35 to include definition of new attributes.
3. Create the new actor (CDS Evaluator)
4. Create the two new transactions based on orders management.

**6. Support & Resources**

eOrdering Coalition Work Group including all member organizations that participate in IHE CMS – for implementing the legislation on CDS Interested parties include EMR vendors, CDS vendors, imaging provider vendors, referring and rendering providers.

**7. Risks**

The best place for this data to live is on the order, and have the order follow through the system through report and bill. However, the follow through of the order is not currently in use. Also, there is an initiative underway currently to finalize the CDA structure for radiology reports. This data should be included when that is finalized.

**8. Open Issues**

CMS has yet to establish the specifications of the data CDS systems will be required to generate and providers will be required to retain, share, and submit to CMS for payment (e.g., the data elements, format, and layout; is the data segmented with different segments representing different elements within the field; will CMS mandate multiple fields to record various elements, etc.). It is likely CMS will seek advice from industry as it makes these decisions. Other data fields within the order could also be standardized (e.g., exam ordered), but this may be phase two of the project.