STRUCTURING CARE RECOMMENDATIONS

FOR CLINICAL DECISION SUPPORT

(Initially called: HARDENED RULES FOR CLINICAL DECISION SUPPORT)

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eRecommendations Project Deliverable: Additional Structured Statements

Deliverable #26

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ORIENTATION TO DELIVERABLE

Attached are 10 structured, coded logic statements (eRecommendations) that comprise a key component of the final deliverables from the 2009-2011 AHRQ eRecommendations project. They are based on Stage 1 Meaningful Use eMeasures. This demonstration project validated that the eRecommendation template, content and approach are valuable, but these eRecommendations attached should not be considered an industrial-strength product.

Other related projects are currently working to build on this foundation to produce more user-friendly materials to support the CDS rule development process. The attached eRecommendations should be considered an interim product, which will hopefully provide value to those implementing CDS rules for meaningful use. Users should note that there aren't plans currently to maintain this content or subject it to further vetting. As such, the greatest value of this content may be to spur further progress toward widely useful offerings that support CDS rule development.

Following is additional background on the deliverable and eRecommendation project.

BACKGROUND

Structuring Care Recommendations for Clinical Decision Support (SCRCDS) is a project of the Agency for Healthcare Research and Quality to accelerate the implementation of clinical recommendations into clinical decision support (CDS) systems. The project is aimed at reducing a key barrier to the use of evidence-based clinical care recommendations, namely, that there is currently no formalized process for translating narrative recommendations from prose to an unambiguous, coded format that can then be adopted widely for local conversion into machine-executable CDS rules in various clinical information systems (CIS) and care settings.

During the first year of this contract, Thomson Reuters devised, vetted and documented a consistent method for transforming evidence-based clinical recommendations into a format that can be readily adapted further for widespread implementation in CIS and other health information technology (HIT) products. The team also developed and delivered to AHRQ a collection of structured recommendations in that format, referred to as eRecommendations. These are based on the 45 A and B recommendations of the US Preventive Services Task Force and two rules relevant to Stage 1 Meaningful Use (MU) measures.

Developing up to 20 eRecommendations for additional MU measures, based on implementer need and incorporating improvements identified through other project activities, is a task under a contract modification. This report and its Excel-formatted Appendix provide draft structured logic statements (also known as eRecommendations or eRecs) for 10 additional rules related to requirements for achieving Meaningful Use. The Stage 1 MU clinical measures are used for reporting clinical performance to CMS by eligible professionals and eligible hospitals beginning in 2011, as required in the final regulation released July 13, 2010.

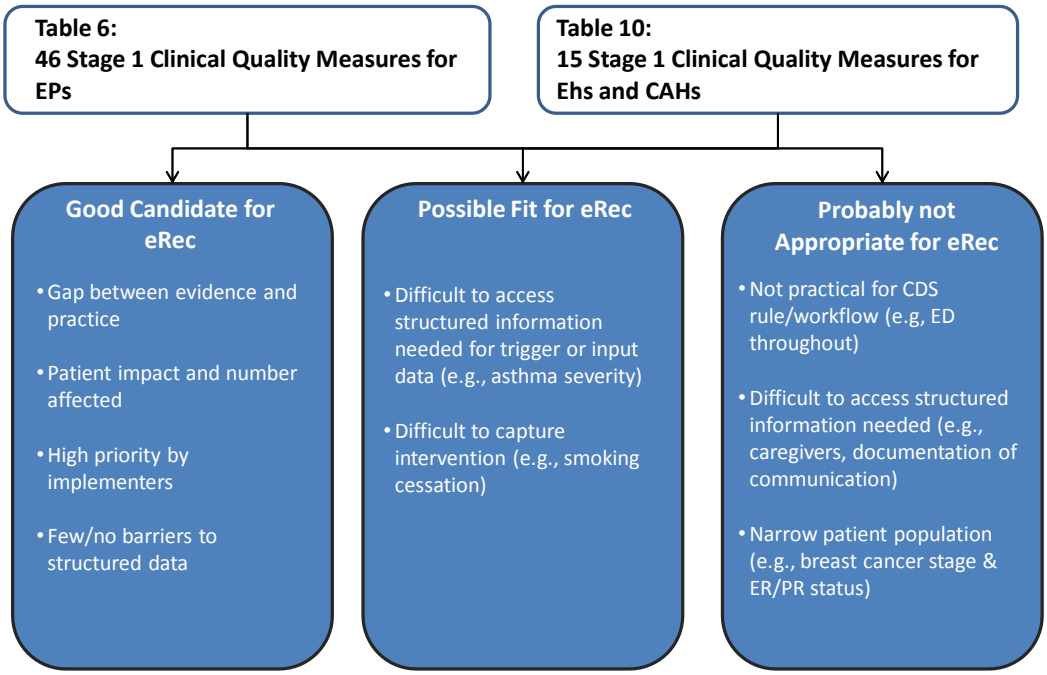
As with the previous eRecs submitted to AHRQ, the draft MU-related statements are in Excel format to facilitate further processing. Both sets of eRecs can be used in this format as input to potential XML-authoring tools capable of producing both human readable and machine readable versions of the eRecommendations. Work is underway toward these capabilities as part of the separate but related ONC project SHARP C-2B project, which shares key staff and has been collaborating with this AHRQ eRecommendations project.

METHODS

Selecting eRecommendations for Development. The final Meaningful Use regulation identified 46 Stage 1 clinical quality measures (eMeasures) for eligible professionals (EPs) and 15 for eligible hospitals (EHs). The first two eRecommendations related to MU developed under the contract modification – HbA1c >9% and antithrombotic therapy by hospital day 2 – were selected based on the priorities of the eRecommendation implementation analysis pilot sites. As outlined below, the remaining 8 MU measures translated were selected based on project team review of eMeasure suitability for eRecommendations as well as the input of pilot site teams and the broader eRec Stakeholder Community, including ONC.

To start, the project team used their clinical and CDS knowledge to separate the 61 eMeasure candidates into three groups: good candidates for eRecommendation, possible fit, and probably not appropriate. This grouping was based on the team's assessment of access to structured information needed, practicality for addressing with a CDS rule, number of patients affected, implementer priorities, and the gap between evidence and practice (see Figure 1 that follows).

Figure 1. CMS EHR Incentive Program (Meaningful Use): Final Notice of Proposed Rule Making, July 28, 2010



The Thomson Reuters team used this grouping of 61 candidate eMeasures to solicit and receive pilot site views on additional eRecs; a shorter list of 10 candidates was developed. These top 10 candidates were shared with the stakeholder community, whose comments included (1) that topics from the EH list were heavy on stroke, (2) a suggestion to align choice with topics being used in other programs, e.g., HRSA, PQRI, CHIPRA, ACOs, etc, (3) interest in smoking cession and weight screening/counseling, and (4) interest in newborn screens and adult immunization (e.g., post-partum women and pertussis). Finally, a slightly revised list of 10 candidates (intentionally divided equally among eRecs for EPs and EHs) was shared with the Office of the National Coordination for Health IT (ONC), who suggested that all three core Stage 1 eMeasures for EPs be included. The final list below was approved by the AHRQ TOO. eMeasures of interest but not covered in this set can be considered in prioritizing any follow-on efforts to create additional MU-focused eRecs.

Top 10 Meaningful Use Measures for which eRecommendations were Developed

Eligible Professionals
• **Diabetes:** Hemoglobin A1c Poor Control (NQF0059 & PQRI1) – Percentage of patients 18 - 75 years of age with diabetes (type 1 or type 2) who had hemoglobin A1c > 9.0%. • **Hypertension:** Blood Pressure Measurement (NQF0013) – Percentage of patient visits for patients aged 18 years and older with a diagnosis of hypertension who have been seen for at least 2 office visits, with blood pressure (BP) recorded. • **Preventive Care and Screening Measure Pair: a. Tobacco Use Assessment, b. Tobacco Cessation Intervention** (NQF 0028) **–** a. Percentage of patients aged 18 years and older who have been seen for at least 2 office visits who were queried about tobacco use one or more times within 24 months; b. Percentage of patients aged 18 years and older identified as tobacco users within the past 24 months and have been seen for at least 2 office visits, who received cessation intervention. • **Adult Weight Screening and Follow-Up** (NQF0421 & PQRI128) – Percentage of patients aged 18 years and older with a calculated BMI in the past six months or during the current visit documented in the medical record AND if the most recent BMI is outside parameters, a follow-up plan is documented. • **Use of Appropriate Medications for Asthma (NQF 0036) –** Percentage of patients 5 - 50 years of age who were identified as having persistent asthma and were appropriately prescribed medication during the measurement year. Report three age stratifications (5-11 years, 12-50 years, and total).
Eligible Hospital
• **Ischemic or hemorrhagic stroke –** Antithrombotic therapy by day 2 (Stroke-5 & NQF0438) – Ischemic stroke patients administered antithrombotic therapy by the end of hospital day 2. • **Ischemic stroke –** Discharge on anti-thrombotics (Stroke-2 & NQF0435) – Ischemic stroke patients prescribed antithrombotic therapy at hospital discharge • **VTE prophylaxis within 24 hours of arrival (VTE-1 & NQF0371) –** This measure assesses the number of patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or the day after hospital admission or surgery end date for surgeries that start the day of or the day after hospital admission. • **Ischemic or hemorrhagic stroke – Stroke education (Stroke-8 & NQF0440**) – Ischemic or hemorrhagic stroke patients or their caregivers who were given educational materials during the hospital stay addressing all of the following: activation of emergency medical system, need for follow-up after discharge, medications prescribed at discharge, risk factors for stroke, and warning signs and symptoms of stroke. • **VTE discharge instructions (VTE-5 & NQF0375) –** This measure assesses the number of patients diagnosed with confirmed VTE that are discharged to home, to home with home health, home hospice or discharged/transferred to court/law enforcement on warfarin with written discharge instructions that address all four criteria: compliance issues, dietary advice, follow-up monitoring, and information about the potential for adverse drug reactions/interactions.

Improving eRecommendation Template and Process. In translating additional MU measures into eRecommendations, the project team continued iteratively refining the process for creating structured logic statements for "if…then" clinical guidance. Of note, the focus of eRec development in the contract modification involved eMeasures which, though based on clinical guidelines, are not in themselves clinical recommendations. This introduced many complications, as noted in the next section.

To inform the refinements, the Thomson Reuters team compiled and considered input received on possible changes to the template or process for populating eRecs. The primary sources of potential refinements consisted of (1) feedback from pilot sites – and, to a lesser extent, the stakeholder community -- in the course of their implementation review of a selected eRecommendation; (2) issues identified by Margarita Sordo when drafting the initial two MU eRecommendations for pilot sites under this contract modification; (3) issues identified by the Thomson Reuters team during discussions of technical tasks since September 2010; (4) revisions to the implementation considerations section and the data model resulting from another task under the contract modification; and (5) comments from Nathan Hulse and other technical team members flowing from technical review of the draft Standard Operating Procedures document prepared at the end of the first year of the contract. Decisions about the resolution of these issues were made by the Technical Team under the leadership of ASU; those changes introduced during this contract modification that affect the eRecommendation template or process are reflected in the 10 eRecommendations and the refined approach will be reflected in the eRecommendations Guide for Developers.

CAVEATS

As described elsewhere, the work under the contract modification included demonstrating whether widely useful artifacts to support CDS rule development could be developed, i.e., it is a concept validation. As part of this demonstration, the eRecommendation template and process for populating it was revised to reflect input about how the eRecommendation could be made more widely useful. However, this does not mean that the eRecommendation template or process cannot be further improved; rather, this deliverable represents where the eRecommendation refinement process necessarily stopped due to the time-limited project. As a result, there remains important further work to be done.

The most important unaddressed issues stem from the fact that the MU-based eRecommendation is a "special case" that deviates from the typical eRecommendation that starts with a clinical recommendation. Instead, the entry point for the MU eRecommendation is a performance measure; as a result, the intended purpose of these initial MU eRecommendations is to contribute to performance improvement and improved outcomes by identifying patients that contribute negatively to measure results, and are thus candidates for decision support interventions that foster appropriate clinical intervention.

For this initial demonstration project, we have taken the approach that the "then" portion of the "if. . .then" eRecommendation logic statement is to "notify appropriate person(s) and/or system that this patient is a candidate for" management of the condition that the eMeasure considers undesirable (e.g., poorly controlled diabetes) or receipt of the care process that the eMeasure considers desirable (e.g., appropriate discharge instructions). Future iterations of MU eRecommendations could go beyond simple notification and consist of "if. . . then" statements for the action to be taken so that the patient doesn't fail the measure, i.e., going beyond notifying that a care gap exists, and actually recommending specific corrective action. This would require identifying the appropriate clinical recommendation underlying the eMeasure, which is not consistently clear in the current eMeasure specifications. In many cases, these interventions (e.g., to improve glycemic control in diabetics) will be quite complicated and likely require a combination of eRecommendations and other CDS interventions.

Another issue related to the fact that the current source document for these eRecommendations is the eMeasure specification is that sometimes there is no explicit guidance for an eRecommendation field necessary for creating a CDS rule. For example, the intervention interval would indicate how far back in time to look for a specific test or the interval during which the most recent test is considered relevant, but these aspects are not specified in most eMeasures. We generally have addressed this in the MU-related eRecommendations by indicating that the field is not specified in the eMeasure and that implementers will need to make decisions about these rule elements. In the future, identification of the appropriate clinical recommendation underlying the eMeasure will likely remedy this lack of explicit guidance, or else a clinical expert could provide the necessary guidance.

Other examples of key issues identified by the project team but that could not be addressed within the scope of this contract are described briefly next:

1. Additional review before public posting. This would go beyond the basic informatics review and proofreading already conducted to include a clinical review and a more extensive editorial review.

2. The potential creation of a "definition variable" for items such as *diabetes present* that can be used in the logic statements to avoid the complex strings of code/value sets.

3. Expansion of the data model to support new data elements required for MU eRecommendations.[1] In the accompanying spreadsheet with eRecommendations, red font is used when the population of a field for a specific eRecommendation is affected by this situation.

4. Identification of codes not found in source document and related references. Again, in the accompanying spreadsheet, red font is used when the population of a field for a specific eRecommendation is affected by this situation.

5. More action-oriented eRecommendation names to accompany such action-oriented eRecommendations described above. For now, we used names for the MU eRecommendations that derive from the eMeasure name.

6. Reconsidering how to integrate the Implementation Considerations into the eRecommendation, i.e., with XML tags for key pieces of information as opposed to presenting this section en bloc as a link to another spreadsheet page.

7. Further optimizing the header information to account for source documents that are performance measures rather than clinical recommendations. The project team made many refinements to this section based on more in-depth work on eMeasure-based eRecommendations during the contract modification. Nonetheless, further header development based on additional eRec developer and user input will help make sure that it optimally reflects key information pertinent to the source document (especially when this is an eMeasure), the clinical recommendations underlying the eMeasure, and the pertinent metadata pertaining to the eRec itself.

Other forthcoming project deliverables will provide more information about the methodological issues identified in the eRecommendation template/process review, the recommended resolution, and the current disposition (see Final Report) as well as the most recent eRecommendation template and procedures for populating content (see Guide for eRecommendation Developers).

[1] Project work during the contract modification was to include synchronization of the eRecommendation data model with the NQF Quality Data Set information model. During this period, the Quality Data Set underwent further evolution and clarification, and has emerg ed as the "Quality Data Model" (QDM). There were interactions with NQF regarding the eRecommendation team's updating of the eRecommendation data model to account for the revised eMeasure-related information model. Due in part to the significant changes and relatively early, plastic state of the QDM (version 3 comment period is currently scheduled to end 5/19/11), this reconciliation was not completed.