STRUCTURING CARE RECOMMENDATIONS FOR CLINICAL DECISION SUPPORT

PROJECT UPDATE FOR CDS FEDERAL COLLABORATORY

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PROJECT GOAL

To accelerate widespread uptake of well-accepted, evidence-based patient care recommendations into clinical information systems:

- by developing a formal method for translating narrative into *structured, coded logic* statements
- useful for further *local* processing into CDS rules.

PROJECT OVERVIEW

- Initiated and supported by CDS-FC to reduce duplication of guideline translation efforts and enhance care delivery with CDS
- 12 month contract started late September 2009
- Project team
  - Thomson Reuters
  - Subcontractors: American Medical Informatics Association; Arizona State University; Harvard Med School; Intermountain Healthcare; University of California, San Diego; Johns Hopkins University
- Key collaborators: Association of Medical Directors of Information Systems (AMDIS), HIMSS Electronic Health Records Association (EHRA), National Quality Forum (NQF)

KEY RESULT: CONCEPTUAL APPROACH

Leveraging Quality Measurement Standards and EHR Integration to Support Widely Useful Structured Recommendations for CDS Rules

Evidence-Based Care Guidelines, e.g.:

- USPSTF A&B-graded recommendations
- Interventions underlying meaningful use measures

CDS Interventions:
eRecommendations

Clinical Information Systems

Quality Measures:
eMeasures (in HQMF Format)

- eRecommendation operational exclusion criteria
- Other CDS implementation considerations

- eRecommendation eligibility criteria/ eMeasure denominator criteria
- Exclusion criteria
- Action recommended/action measured

Value Sets, Code Sets, Code Lists, Quality Data Types:

- Unfolding work of NQF, HITSC, etc.

KEY PRODUCTS

- **Methods Report:** Background, existing approaches, approach for eRecommendations
- **eRec Template:** Format for developers, vendors, implementers
- **eRecs** of two types:
  - 45 A- and B-graded recommendations from the USPSTF
  - 2 Stage 1 Meaningful Use criteria
- **Standard Operating Procedures (SOPs):** How to apply eRec template to care recommendations

EXAMPLES OF USPSTF RECOMMENDATIONS

- Aspirin to prevent cardiovascular disease
- Abdominal aortic aneurysm
- Cancer screening: cervical, colorectal, breast
- Tobacco use
- Obesity
- High blood pressure
- Lipid disorders in adults
- Depression
- Osteoporosis
- STDs: chlamydia, gonorrhea, syphilis, HIV

MAIN PRODUCT: eRECOMMENDATIONS

- Three main parts to eRecommendation format
  - Header – information describing eRec and underlying clinical care recommendations
  - Data Definition and Logic Specification – identifies data elements, code sets, and values needed to express logic; provides logic statement for identifying patients who satisfy criteria for care recommendation
  - Implementation Considerations – lists other issues that care providers and vendors should consider when implementing for local settings

HEADER SECTION (SIMPLIFIED)

	A B C D E	F
1	eRec template elements from	MU eRec for COLORECTAL CANCER SCREENING (based on eMeasure NQF 0034):
2		
3	***HEADER***	
4	*eRecommendation Name*	COLORECTAL CANCER SCREENING (based on eMeasure NQF 0034)
5	*eRecommendation ID*	COLOCANC-MU
6	*eRecommendation Part*	1 of 1: General Population
7	*eRecommendation Version Date/Number*	6/14/2010
8	*eRecommendation Template Version*	8/19/10 V1.2
9	*Related eMeasure(s)*	
10	*eRecommendation Author*	Thomson Reuters/Margarita Sordo
11	*eRecommendation Verified by*	
12	*eRecommendation Maintained by*	Responsibility for maintenance not yet assigned
13	*Recommendation Set*	Meaningful Use clinical measures
14	*Recommendation Set ID*	STAGE 1 MU eRECS
15	*Recommendation Version Date/Number*	Clinical Quality Measure Set 2011-2012 / June 2010
16	*Recommendation classification*	Preventive Services: Screening
17	*Recommendation Description/Purpose*	To optimize performance when measuring the percentage of adults 50-75 years of age who had appropriate screening for colorectal cancer.
18	*Recommendation Text from Source: Summary Statement*	The United States Preventive Services Task Force : • The USPSTF recommends screening for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 years and continuing until age 75 years (A recommendation). • The USPSTF concludes that the evidence is insufficient to assess the benefits and harms of computed tomographic (CT) colonography and fecal DNA testing as screening modalities for colorectal cancer (I statement). The American Cancer Society, The American College of Radiology, and the U.S. Multi-Society Task Force on Colorectal Cancer: Tests that Detect Adenomatous Polyps and Cancer • Colonoscopy (every 10 yrs) • Flexible sigmoidoscopy (every 5 yrs) • Fecal occult blood tests (FOBT) (A) • Double contrast barium enema (DCBE) (every 5 yrs) • Computed tomographic colonography (CTC) (every 5 years) Tests that Primarily Detect Cancer: • gFOBT with high sensitivity for cancer (annually) • FIT with high sensitivity for cancer (annually) • sDNA with high sensitivity for cancer (interval uncertain) Modalities not approved: • Single digital rectal examination FOBT has a poor sensitivity for CRC and should not be performed as a primary screening method (A) • Studies evaluating virtual colonoscopy and fecal DNA testing for CRC screening have yielded conflicting results and therefore cannot be recommended (A)
19	*Recommendation Text from Source:*	Not available in eMeasure
20	*Setting (if specified by Source)*	Outpatient setting defined by encounter type in denominator
	Rationale	**Rationale** This measure assess the percentage of patients in a specified age demographic who receive appropriate screening for colorectal cancer. Colorectal cancer is the third leading casuse of cancer-related deaths in the United States for both men and women, and was

DATA AND LOGIC SPECIFICATION SECTION (SIMPLIFIED)

	A	B	C	D	E	F
24						
25	***DATA AND LOGIC SPECIFICATION***					
26						
27	***DATA DEFINITIONS***					
28	***Eligibility/Inclusion-related data***					
29		*Inclusion data 1*				target age low limit = 50
30		*Inclusion data 2*				target age high limit = 75
31		*Comments Relating Inclusion Criteria*				target age low ≥ 50 and high ≤ 75 as defined in the Description and Initial Patient Population.
32						
33		***Inclusion criteria-related data***				
34		*Value set name*				Person Date of Birth
35		*Quality data type*				Patient Characteristic
36		*Code set*				Date of Birth
37		*Code list*				
38						
39	***Intervention interval***					
40		*Interveni*				

	A	B	C	D	E	F
71						
72	***LOGIC STATEMENT***					If [eligibility/inclusion criteria] AND NOT [exclusion critera] AND NOT [operational exclusion criteria] then [action]
73	***Eligibility/inclusion criteria***					
74						
75		*Subclause*				
76		*Condition*				(*current date* - Patient Characteristic. Person Date of Birth) > or = target age low limit
77		*Boolean operator*				AND
78		*Condition*				(current date - Patient Characteristic. Person Date of Birth) < or = target age high limit
79		*Boolean operator*				
80		*Condition*				
81		*EndSubclause*				
82						
83	***Exclusion criteria***					
84		***Patients for whom a different intervention***				
85			*Subclause*			
86			*Condition*			"Total colectomy" = non-null --> Exist(Procedure.Type= {Code list: CPT codes= {44150, 44151, 44152, 44153, 44155, 44156, 44157, 44158, 44210, 44211, 44212}; ICD-9_CM codes={45.8, 45.81, 45.82, 45.83}; SNOMED-CT codes={174067002, 235331003, 23968004, 26390003, 265393006, 307666008, 307667004, 307669001, 427816007, 456004, 80294005}} AND Procedure.Tense = NULL)
						OR

IMPLEMENTATION CONSIDERATIONS SECTION (SIMPLIFIED)

	A	B	C	D	E	F
109						
110	***IMPLEMENTATION CONSIDERATIONS***					
111	***Optimizing Rule Specificity***					
112		***Operational Data***				
113			*Notification fired*			
114			*Acknowledgment*			
115			*Screening interval*			• Target interval FOBT: **NOT DEFINED IN DOCUMENT** High-sensitivity fecal occult blood testing (FOBT), although clinical recommendation statement mentions an annual screening • Target interval sigmoidoscopy: Sigmoidoscopy every 5 years • Target interval colonoscopy: Colonoscopy every 10 years • eMeasurementStartDate and EndDate are needed for meaningful use evaluation interval. • The logic focuses on the clinical goals underlying the MU measure topic. It considers target age between 50 and 75 years of age as defined in the Description and Initial Patient Population in the NQF 0034. • Measurement periods for MU purposes can be incorporated into the logic as needed. • Measurement periods are defined in terms of calendar years. This may require implementers to adjust patient age limits for measurement.
116			*Alerting interval*			
117		***Operational Exclusion Criteria Data***				
118			*Tests for diagnosis or problem in*			
119				*By history*		• Patient already screened somewhere else
				By data		• Fecal occult blood tests completed and noted in patient record • Fecal occult blood tests already ordered or scheduled but not yet completed <Value Set: evidence of the screening tests or related tests having been done>: Fecal occult blood tests > **• Quality data type: Laboratory Test Ordered or Performed** • Code set: (CPT, HCPCS, ICD-9-CM, LOINC, SNOMED-CT) • Code list: CPT codes={82270, 82274}; HCPCS codes={G0328, G0394}; ICD-9-CM codes={V76.51}; LOINC codes={12503-9, 12504-7, 14563-1, 14564-9, 14565-6, 2335-8, 27396-1, 27401-9, 27925-7, 27926-5, 29771-3}; SNOMED-CT codes={252156002, 441579003, 441626002, 442067009, 442516004, 442554004, 442563002, 442722005, 61788003} > • Completed sigmoidoscopy encounter: Notation of previous encounter for a sigmoidoscopy billing for sigmoidoscopy procedure/interpretation • Sigmoidoscopy completed: sigmoidoscopy noted in patient record • Sigmoidoscopy already ordered or scheduled but not yet completed <Value Set: evidence of the screening procedure or related procedures having been done>: <Sigmoidoscopy> **• Quality data type: Diagnostic Study Ordered or Performed** • Code set: (CPT, HCPCS, ICD-9-CM, SNOMED-CT) • Code list: CPT codes={45330, 45331, 45332, 45333, 45334, 45335, 45337, 45338, 45339, 45340, 45341, 45342, 45345}; HCPCS codes={G0104}; ICD-9-CM codes={45.24}; SNOMED-CT codes={112870002, 174222002, 21423008, 235153008, 265409002, 32414000, 396225009, 396226005, 425634007, 44441009} > • Completed colonoscopy encounter: Notation of previous encounter for a colonoscopy, billing for colonoscopy procedure/interpretation

Colorectal MU eRec

STANDARD OPERATING PROCEDURE FOR POPULATING eREC

Materials required to populate template:

- *USPSTF Clinical Recommendation* or *Meaningful Use Quality Measure*
- eRecommendation template
- Data model
- Arden Syntax and HQMF eMeasure logic constructs
- Authoritative value sets (e.g., NQF code sets)

Process for populating template:

Populate the header section of the template → Identify key data elements → Construct the logic specification → Identify implementation considerations

Process for quality assurance:

- Clinical review
- Review of logic
- Review of interpretation of source materials
- Editorial review

USING eRECS IN A CARE DELIVERY ORGANIZATION

- Confirm with medical/quality/CDS committees that target is organizational priority
- Engage stakeholders so that planned CDS rule is collaborative means to a shared end
- Consider organizational context for logic statement and data definition
  - Clinical policies, patient population, etc.
- Address other Implementation Considerations
  - Operational exclusions, notifications and responses, etc.
  - 'CDS Five Rights' – who, what, when, how, where
- Encode, launch, monitor, maintain, refine

GUIDELINE DEVELOPERS AND eREC TEMPLATE

- Point of care guidance delivery is a priority
- Topic is implementer priority
  - strong drivers, e.g. MU, P4P
- Recommendation is granular, “IF -> THEN”
- Document metadata (Header)
- Make Inclusions/Exclusions/Action computable
  - Unambiguous definitions
  - Standard codes: QDS/eMeasures
- Suggest Implementation Considerations

HOW WELL DOES eREC MEET CDS-FC EXPECTATIONS/NEEDS?

- Does this format/content make sense for capturing/conveying information about care recommendations?
- Does it add value in any way to work that you/others are doing in this space? How?
- What if any modifications would be needed to enable you to use this output most effectively?
- How can it better support providers in maximizing Meaningful Use objectives?

OTHER PROJECT IMPACT (TO DATE)

- Stimulating broad conversation among key CDS players (guideline suppliers, CDS implementers)
- Cultivating synergies between CDS and performance measurement (from goals to codes)
- Garnering attention of guideline developers
- Illustrating the concept of formal logic structures to support measurable, CDS-enabled healthcare performance improvement

HOW TO SPREAD USE AND VALUE OF PRODUCTS?

- Ways to optimize dissemination
  - Who will use eRec (template or populated)?
  - Project implications for Federal guideline efforts (NHLBI, CDC, VA, etc)?

- Opportunities that will improve eRecommendation development, uptake, and value
  - Other collaborations?
  - Role of becoming standard?

HOW TO MAXIMIZE IMPACT THROUGH SYNERGIES WITH RELATED EFFORTS?

- How to leverage synergies with SHARP?
- How to leverage synergies with ACDS?
- How to leverage interests/activities of Beacon Communities?
- How to leverage results for MU and HCR
  - Synergies with performance measurement and HIT-related activities (e.g., HQMF, MU) in Federal space? Within CDS?

NEXT STEPS (proposed)

- Pilot eRecs in real world settings (EP/EH)
  - Focus on MU clinical topics
  - Flesh out implementation considerations
- Build ‘value chain community’ to follow and help drive to scale
  - Guideline suppliers, CIS suppliers, implementers, federal stakeholders, etc.
- Develop eRecs for additional MU measures, based on implementer need

VISION BEYOND PROJECT

- eRec as standard for expressing guidelines
- Key guideline developers produce guidelines in eRec format for quick uptake into CDS
- CIS vendors use eRecs as part of CDS capabilities deployment
- Care delivery organizations implementing CDS adopt guidelines rapidly
- Gain insights on and improve guidelines-to-alerts-to-better-outcomes chain of events
- eRecs help drive measurable care improvements

OTHER QUESTIONS/COMMENTS?