

Definitions

Value set:

- A list of specific values, which may – or may not – contain subsets of one or more standard vocabularies, that define or identify:
 - A population that is the denominator for a quality measure
 - The subset of that population that is the numerator for a quality measure
- A list of valid values for a specific segment of a standard message, which may – or may not – contain subsets of one or more standard vocabularies

Convenience subset:

- A terminology set that is a subset of a standard vocabulary and has been defined for convenience – to ease implementation of the standard vocabulary
 - Multiple subsets of the same vocabulary are likely; this does *not* preclude the need to use the rest of the vocabulary

Recommendation 1 of 2010 vs. Current HHS Value Set Plans

A single federal office or agency should be responsible for ensuring the creation, maintenance, dissemination and accessibility of all vocabulary value sets and subsets related to Meaningful Use. This entity should coordinate with other federal agencies, SDOs, and relevant stakeholders to:

NLM Value Set Authority Center

Task

- Identify what sets are needed, who will produce and maintain each set, [& how duplication will be eliminated/avoided] CMS,ONC ✓
- Determine the appropriate dissemination schedule and update frequency for each set CMS,ONC ✓
- Establish standard formats for production and dissemination of sets ✓
- Manage processes for review, testing, approval and publication of sets ✓
- Ensure the existence of robust, authoritative infrastructure for sets (see Recommendation 2) ✓
- Recommend related education, communications and outreach ✓
- This entity should ensure federal funding as needed to establish these activities, to support them over time, and to make vocabularies, value sets, and any subsets required for meaningful use available for US-wide use at no cost CMS,ONC ✓

Recommendation 2 of 2010 vs. Current HHS Value Set Plans

Establish authoritative infrastructure for development, maintenance and dissemination of standard value sets and subsets related to Meaningful Use with one-stop shopping for Meaningful Use vocabularies:

NLM Value Set Authority Center

Task

- Establish a central repository, central download capability, and central feedback loop mechanism in the federal government for dissemination of Meaningful Use vocabularies ✓
- Enable decentralized private or public sector alternative repositories for dissemination that may include alternative distribution mechanisms and schedules, using federally standardized exchange formats APIS will exist
- Differentiate tight control over specific value sets required for Meaningful Use, versus loose control to enable sharing other subsets that may be made available for the convenience of EHR implementers and users ✓
- Establish open, public, consensus-based processes to standardize parameters for public and private sector tooling that can make vocabularies searchable and discoverable by EHR end users APIS will exist

New Recommendation

Recommended HITSC Guidance To Measure Developers For The Use Of Vocabulary Standards:

- **Developers of eMeasures should rely on existing medical record documentation and coding in the standards instead of requiring new or different documentation and coding, except where a policy process determines a need to use measures as a deliberate forcing function to induce new behaviors.**
- **Developers of eMeasures should first use existing standard vocabulary concepts the use of which has been demonstrated in certified electronic health record systems.**
- **NLM as part of the Value Set Authority Center should provide to eMeasure developers data from cooperating EHR systems on the frequency of use of vocabulary concepts, in convenience subsets of standard vocabularies, or reference sets, for specific purposes such as primary care.**
- **NLM should support and promote consulting assistance from terminology experts so that eMeasure developers may better use resources provided by the Value Set Authority Center.**

Convergent Medical Terminology in SNOMED CT

What it is:

- **Open source donation from Kaiser Permanente, scheduled by clinical domain from February 2011.**
- **Content is reviewed by IHTSDO and NLM for applicability and for adherence to editorial guidelines – some is accepted by IHTSDO into SNOMED CT international release; some is accepted by NLM into US Extension of SNOMED CT; some stays in KP namespace.**
- **Excel spreadsheets and IHTSDO Release Format 1 problem list subsets include concepts used by over 20,000 clinicians with: concept fully specified names; descriptions that are used as clinician preferred display names; patient preferred display names; cross-maps to ICD-9, ICD-10, Laboratory LOINC and medication terminologies as applicable; multiple identifiers and parent concepts as applicable.**

Availability of Convergent Medical Terminology Files

Clinical domain coverage and schedule for content review

- CMT files downloadable now: Over 20,000 concepts including Top 2500 problems; also Cardiovascular; Mental Health; Neurology; Musculoskeletal; Ophthalmology; Oncology; Hematology; Endocrinology; Urology; Nephrology; Common lab procedures; Common lab results
- September 2012: Ear, Nose, Throat, Infectious Diseases, and GI
- October 2012 – May 2013: Skin; Respiratory; Orthopedics; Non-fracture Injuries
- Now in process, date not finalized: Primary Care including Internal Medicine, Family Practice, Pediatrics, OB and Gyn

Example: Cardiology Problem List Subset (excerpt 1 of 2)

concept_sctid	fsn	kp_clinician_display_name	icd9-CM	icd10-CM	kp_patient_display_name
57054005	Acute myocardial infarction (disorder)	MI, acute	410.90	I21.3	HEART ATTACK, ACUTE
54329005	Acute myocardial infarction of anterior wall (disorder)	MI, acute, anterior wall	410.10	I21.09	HEART ATTACK, ACUTE, ANTERIOR WALL
70211005	Acute myocardial infarction of anterolateral wall (disorder)	MI, acute, anterolateral wall	410.00	I21.09	HEART ATTACK, ACUTE, ANTEROLATERAL WALL
62695002	Acute anteroseptal myocardial infarction (disorder)	MI, acute, anteroseptal	410.10	I21.09	MYOCARDIAL INFARCTION (HEART ATTACK), ANTEROSEPTAL
194809007	Acute atrial infarction (disorder)	MI, acute, atrium	410.80	I21.29	MYOCARDIAL INFARCTION (HEART ATTACK)
73795002	Acute myocardial infarction of inferior wall (disorder)	MI, acute, inferior wall	410.40	I21.19	HEART ATTACK, ACUTE, INFERIOR WALL
76593002	Acute myocardial infarction of inferoposterior wall (disorder)	MI, acute, inferoposterior wall	410.30	I21.19	HEART ATTACK, ACUTE, INFEROPOSTERIOR WALL
58612006	Acute myocardial infarction of lateral wall (disorder)	MI, acute, lateral wall	410.50	I21.29	HEART ATTACK, ACUTE, LATERAL WALL
17531000119105	Acute myocardial infarction due to occlusion of left coronary artery (disorder)	MI, acute, left coronary artery	410.90	I21.3	MYOCARDIAL INFARCTION (HEART ATTACK)
401314000	Acute non-ST segment elevation myocardial infarction (disorder)	MI, acute, non ST segment elevation	410.70	I21.4	HEART ATTACK
194802003	True posterior myocardial infarction (disorder)	MI, acute, posterior wall	410.60	I21.29	MYOCARDIAL INFARCTION (HEART ATTACK)
70998009	Acute myocardial infarction of posterobasal wall (disorder)	MI, acute, posterobasal wall	410.60	I21.29	MYOCARDIAL INFARCTION (HEART ATTACK)
15990001	Acute myocardial infarction of posterolateral wall (disorder)	MI, acute, posterolateral wall	410.50	I21.29	MYOCARDIAL INFARCTION (HEART ATTACK)
23311000119105	Acute myocardial infarction due to occlusion of right coronary artery (disorder)	MI, acute, right coronary artery	410.90	I21.11	MYOCARDIAL INFARCTION (HEART ATTACK)
79009004	Acute myocardial infarction of septum (disorder)	MI, acute, septum	410.80	I21.29	MYOCARDIAL INFARCTION (HEART ATTACK)

Example: Cardiology Problem List Subset (excerpt 2 of 2)

concept_sctid	fsn	kp_clinician_display_name	icd9-CM	icd10-CM	kp_patient_display_name
53741008	Coronary arteriosclerosis (disorder)	CAD	414.01	I25.10	CORONARY ARTERY DISEASE
444855007	Arteriosclerosis of coronary artery bypass graft of transplanted heart (disorder)	CAD of artery or vein bypass graft of transplanted heart	414.07	I25.812	CORONARY ARTERY DISEASE BYPASS GRAFT TRANSPLANTED HEART
28514100011910	Arteriosclerosis of autologous arterial coronary artery bypass graft (disorder)	CAD of autologous arterial graft	414.04	I25.729	CORONARY ARTERY DISEASE OF AUTOLOGOUS ARTERIAL GRAFT
28515100011910	Arteriosclerosis of autologous coronary artery bypass graft (disorder)	CAD of autologous bypass graft	414.05	I25.709	CORONARY ARTERY DISEASE OF AUTOLOGOUS BYPASS GRAFT
442224005	Arteriosclerosis of autologous vein coronary artery bypass graft (disorder)	CAD of autologous vein graft	414.02	I25.810	CORONARY ARTERY DISEASE OF AUTOLOGOUS VEIN GRAFT
429673002	Arteriosclerosis of coronary artery bypass graft (disorder)	CAD of coronary bypass graft	414.05	I25.810	CORONARY ARTERY DISEASE IN BYPASS GRAFT
1641000119107	Coronary arteriosclerosis in native artery (disorder)	CAD of native artery	414.01	I25.10	CORONARY ARTERY DISEASE
6661000119101	Coronary arteriosclerosis in native artery of transplanted heart (disorder)	CAD of native artery of transplanted heart	414.06	I25.811	CORONARY ARTERY DIS NATIVE ARTERY TRANSPLANTED HEART
442240008	Arteriosclerosis of nonautologous coronary artery bypass graft (disorder)	CAD of non autologous graft	414.03	I25.810	CORONARY ARTERY DISEASE OF NON AUTOLOGOUS GRAFT
429245005	Recurrent coronary arteriosclerosis after percutaneous transluminal coronary angioplasty	CAD of percutaneous coronary angioplasty	414.01	I25.10/Z98.61	CORONARY ARTERY DISEASE, HAS HAD CORONARY ANGIOPLASTY
10946100011910	Coronary arteriosclerosis in patient with history of previous myocardial infarction	CAD w HX of old MI wo HX of CABG	414.01/412	I25.10/I25.2	CORONARY ARTERY DISEASE WITH HISTORY OF HEART ATTACK
194843003	Double coronary vessel disease (disorder)	CAD, double vessel	414.01	I25.10	CORONARY ARTERY DISEASE, DOUBLE VESSEL
371803003	Multi vessel coronary artery disease (disorder)	CAD, multiple vessel	414.01	I25.10	CORONARY ARTERY DISEASE, MULTIPLE VESSEL
21660100011910	Presence of coronary artery stent in patient with coronary artery disease (disorder)	CAD, presence of stent	414.01	I25.10/Z95.5	CORONARY ARTERY DISEASE, HAS HAD STENT PLACEMENT
427919004	Coronary arteriosclerosis due to radiation (disorder)	CAD, radiation induced	414.00	I25.10	CORONARY ARTERY DISEASE, RADIATION INDUCED
194842008	Single coronary vessel disease (disorder)	CAD, single vessel	414.01	I25.10	CORONARY ARTERY DISEASE, SINGLE VESSEL
233817007	Triple vessel disease of the heart (disorder)	CAD, triple vessel	414.01	I25.10	CORONARY ARTERY DISEASE, TRIPLE VESSEL

Utility of CMT Subsets

- **Starter terminology set for vendors of EMRs**
- **End user terminology (KP Clinician display name) more EMR-user-friendly than SNOMED Fully Specified Name**
- **Already mapped to ICD-9-CM and ICD-10-CM**
- **Already linked to standard terminology (SNOMED CT ID) so no local lingua franca needed**
- **Patient facing names can be used for Patient portals**
- **Addresses three problems of semantic interoperability:**
 1. **Coherence and coordination of provider-based terminologies**
 2. **Coherence and coordination of consumer-based terminologies**
 3. **Coherence and coordination of provider-based terminologies with consumer based terminologies**

Utility of CMT Subsets for Quality Measures

- **Clinical data in use by over 65,000 physicians and nurses for almost 20 years – not claims data**
- **Standard terminology subsets that integrate clinician end user terminology and patient facing terminology provides consistent computable language that can be bound to data models for quality measures – improves adoption while maintaining semantic coherence.**
- **Powerful ontological attributes of SNOMED CT upon which the subsets are based also allow for inferencing and various ways to aggregate and compute, e.g.: Subsumption queries; Can use reasoners to compute disjunction and negation.**