

The Blood of the Soul

Strategies and Challenges in Clinical Interface Terminology

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Intelligent Medical Objects*

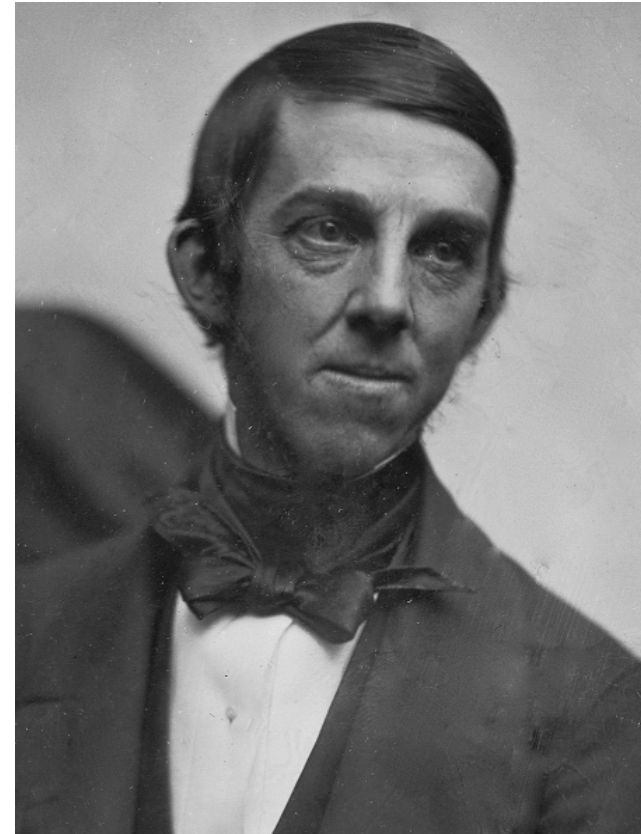
MEBI 590

May, 2013

- Why clinical terminology matters
- Clinical interface terminology-Why & what
- Challenges and ways we approach them

“Language!—the blood of the soul, Sir! Into which our thoughts run and out of which they grow!”

Oliver Wendell Holmes, The Professor at the Breakfast Table



right middle lobe
bronchial washings

kappa/lambda free light chains ratio
by immunofixation electrophoresis

at high risk for
decubitus ulcer

ability to self-administer medications

heart attack

**family history of
ulcerative colitis**

24 hour urine pyridinium
crosslinks measurement

blastic plasmacytoid dendritic
cell neoplasm lymphoma

*demonstrate absence of signs and
symptoms of altered glucose metabolism*

48h Holter

s/p TAH-BSO

Kowa fundus photography

subtotal
thyroidectomy

products of conception

**schizotypal personality
disorder**

Public Health Surveillance

Resource Planning/P4P

Reporting/data mining

Clinical Decision support

Terminology



- Problem/Diagnosis
 - Chief complaint/reason for visit
 - Problem List
 - Visit diagnoses
 - Indications (Rx, procedures, etc.)
- Procedures
 - Order entry
 - Documenting history
 - Recording performance of a procedure
 - Entering/viewing results
- ...and many more

- Unstructured capture, subsequent coding by non-clinician
- Structured capture using administrative terminologies (CPT-4, HCPCS, etc.)
- Structured capture using UMLS/SNOMED subsets
- Intra-organizational creation (and management) of home-grown terminologies

Hyperspace - NORTHGATE FAMILY MED - Production

Epic Home Schedule In Basket Review Patient Lists Encounter Telephone Call Staff Up To Date

Zz,Aida V

78 y.o. female (4/11/1935) Allergies - Mark as Reviewed
N2059920 **Wine; Codeine; Lipitor; Pine; Sulfa...**

History

- Medical
 - Surgical
 - Family
 - Medical History
 - Status
 - Social
 - Substance and Se...
 - Activities of Daily ...
 - Social Documenta...
 - Socioeconomic
 - Specialty
 - Birth History
 - Obstetrics

Chart Review
Demographics
Flowsheets
Synopsis
History
Letters
MINDscape
Care Teams

Past Medical History Pertinent Negatives

	Past Medical History	Date (Free Text)	Comments
1	Unspecified disease of pericardium [423.9]	2000	hosopat
2	Benign neoplasm of colon [211.3]		
3	Secondary malignant neoplasm of large intestine and rectum [19		
4	Atrial fibrillation [427.31]		
5	Congestive heart failure, unspecified [428.0]		Congestive Heart Failure
6	Appendicitis, unqualified [541]		
7	Dissection of aorta, unspecified site [441.00]		Aortic Dissection
8	Acute appendicitis without mention of peritonitis [540.9]		Appendicitis
9	Calculus of gallbladder without mention of cholecystitis or obstru		Cholelithiasis
10	Unspecified disorder of esophagus [530.9]		Esophageal Disorder
11	every friday after work [307.81]	2/1/2011	
12	Acute cystitis [595.0]	2/1/2011	
13	Effects of hunger [994.2]		Starvation Ketosis
14	Acute bronchitis [466.0]	2/10/2011	
15	Generalized and unspecified atherosclerosis [440.9]		Atherosclerosis
16	Anemia, unspecified [285.9]		
17	Intrinsic asthma, unspecified [493.10]		
18	Unspecified asthma [493.90]		
19	Type II or unspecified type diabetes mellitus without mention of c	9/6/2002	Last seee
20	Unspecified essential hypertension [401.9]		
21	<input type="text"/>		


Add To Problem List CodeSearch View Audit Trail Restore

Procedure Code Select

Office Code
 Word
 Short Description
 Long Description

Office Code	Standard Code	Short Description	Long Description
11740	11740	DRAIN BLOOD FROM U	DRAIN BLOOD FROM UNDER NAIL
19001	19001	DRAIN BREAST LESIO	DRAIN BREAST LESION ADD-ON
20600	20600	DRAIN/INJECT - JOIN	DRAIN/INJECT JOINT/BURSA
20605	20605	DRAIN/INJECT - JOIN	DRAIN/INJECT JOINT/BURSA
20610	20610	DRAIN/INJECT - JOIN	DRAIN/INJECT JOINT/BURSA
21501	21501	DRAIN NECK/CHEST L	DRAIN NECK/CHEST LESION
21502	21502	DRAIN CHEST LESION	DRAIN CHEST LESION
23030	23030	DRAIN SHOULDER LES	DRAIN SHOULDER LESION
23031	23031	DRAIN SHOULDER BUR	DRAIN SHOULDER BURSA
23035	23035	DRAIN SHOULDER BON	DRAIN SHOULDER BONE LESION
23935	23935	DRAIN ARM/ELBOW BO	DRAIN ARM/ELBOW BONE LESION
26020	26020	DRAIN HAND TENDON	DRAIN HAND TENDON SHEATH
27301	27301	DRAIN THIGH/KNEE L	DRAIN THIGH/KNEE LESION
27603	27603	DRAIN LOWER LEG LE	DRAIN LOWER LEG LESION
27604	27604	DRAIN LOWER LEG BU	DRAIN LOWER LEG BURSA
32200	32200	DRAIN - OPEN - LUNG	DRAIN OPEN LUNG LESION
32201	32201	DRAIN - PERCUT - LUN	DRAIN PERCUT LUNG LESION
42325	42325	CREATE SALIVARY CY	CREATE SALIVARY CYST DRAIN
42326	42326	CREATE SALIVARY CY	CREATE SALIVARY CYST DRAIN

Add Patient Immunization

Patient:
 Femalepatient ZZZ 32 yrs DOB: 07/20/1980

Immunization:
 Don't see your Vaccine here? [Click to Add Vaccine Inventory](#)

Vaccine Type:

Vaccine Lot:


Date Administered:

Administered A:

Administered U:

Provider Comm:

Add Patient Allergy









Patient:
 Femalepatient ZZZ 32 yrs DOB: 07/20/1980

Allergy: [learn](#)

Search for drug allergies or select a common allergy from the list

Food allergies:

Environmental allergies:

-  allergy: Dust (Inhaled) dust
-  allergy: Pollen (Inhaled) pollen
-  allergy: Animal Dander (Contact) dander
-  allergy: Dust Mites (Contact) dust mites
-  allergy: Insect Stings (Contact) insect stings
-  allergy: Latex (Contact) latex, vinyl
-  allergy: Nickel (Contact) nickel
-  allergy: Mold (Inhaled) mold

Drug search results:

“Procedure terms are not clinically meaningful, especially in areas like surgical history.”

“It’s impossible to express ourselves in clinically meaningful ways using CPT.”

“It’s too frustrating to use [billing terms] to document medical histories and patient problem lists....”

- Terms are hard to find
- Even when found, they are often poorly suited to clinical use
e.g. “strtctc impltj nstim eltrd w/record 1st array”

All this leads to...

- Incomplete and/or incorrect documentation
- Potential clinical risk
- Lost time and money due to under-coding or rejected claims
- Lost potential for secondary use of data (CDS, reporting, research)

Clinical interface terminology

- Capture clinical concepts **in language familiar to clinicians**
- Provide **accurate reference and administrative codes** for decision support, reporting, billing, compliance, etc.



Using clinical language for clinical concepts

Intelligent Medical Objects, Inc.

Let the clinician say...	Instead of...
left knee pain	pain in joint, lower leg
tinea pedis	dermatophytosis of foot
head CT without contrast	Computed tomography, head or brain; without contrast material Multisection^WO contrast:Find:Pt:Head:Nar:CT
I & D of abscess	Other incision with drainage of skin and subcutaneous tissue
Stereotactic implantation of neurostimulator electrode array	strctc impltj nstim eltrd w/record 1st array

These are all legitimate ways of describing *the same disease*:

- Type III glycogen storage disease
- Type 3 glycogen storage disease
- amylo-1,6-glucosidase deficiency
- Cori disease
- debrancher enzyme deficiency
- limit dextrinosis

Staying ahead of standardized nomenclatures

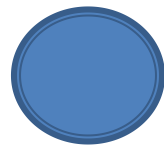
Concept: “Dyslipidemia with high LDL and low HDL”


SNOMED CT 370992007: Dyslipidemia

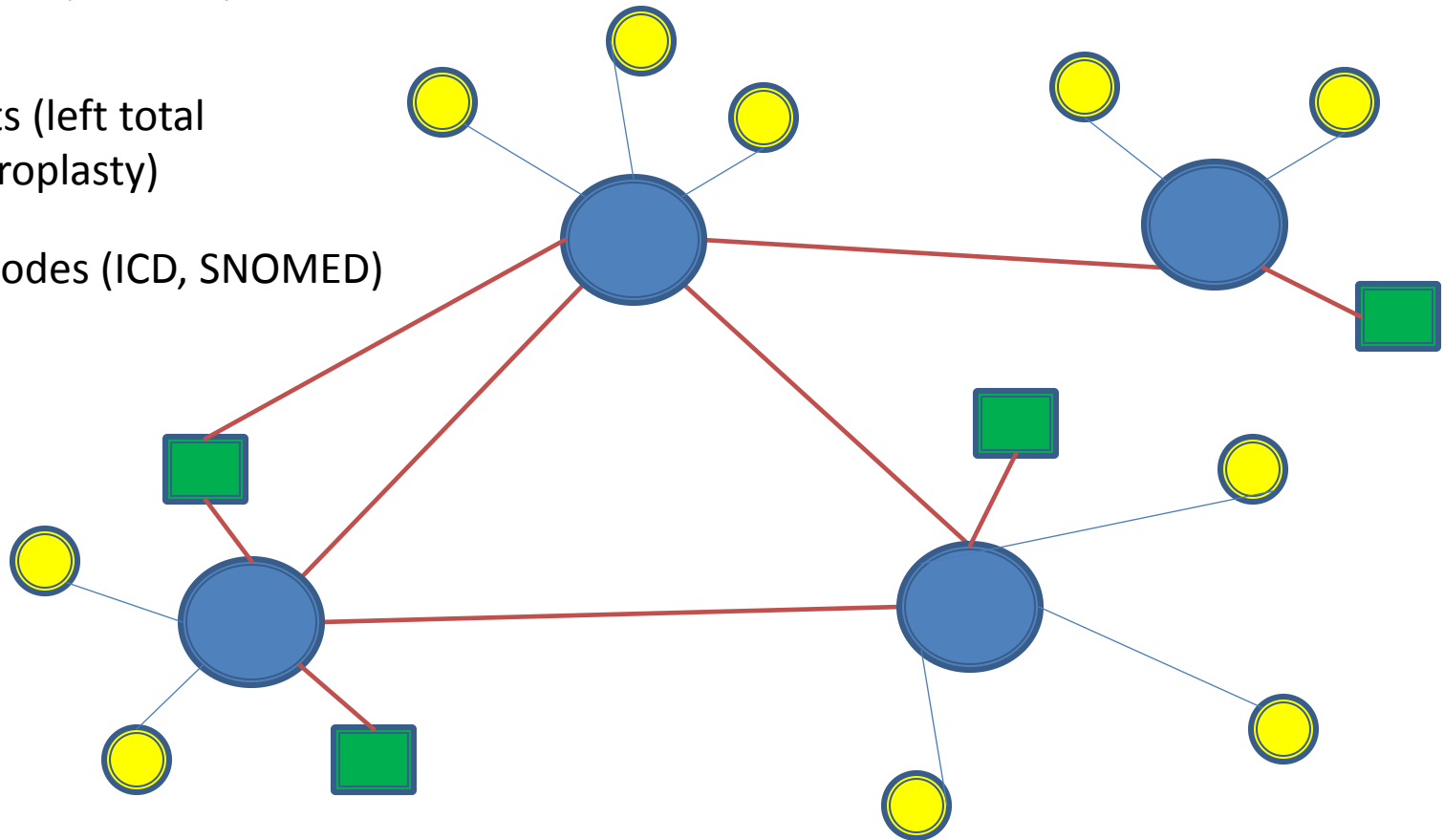
ICD-9-CM 272.4: Other and unspecified hyperlipidemia


ICD-10-CM E78.4: Other hyperlipidemia


 Descriptions (left THR)

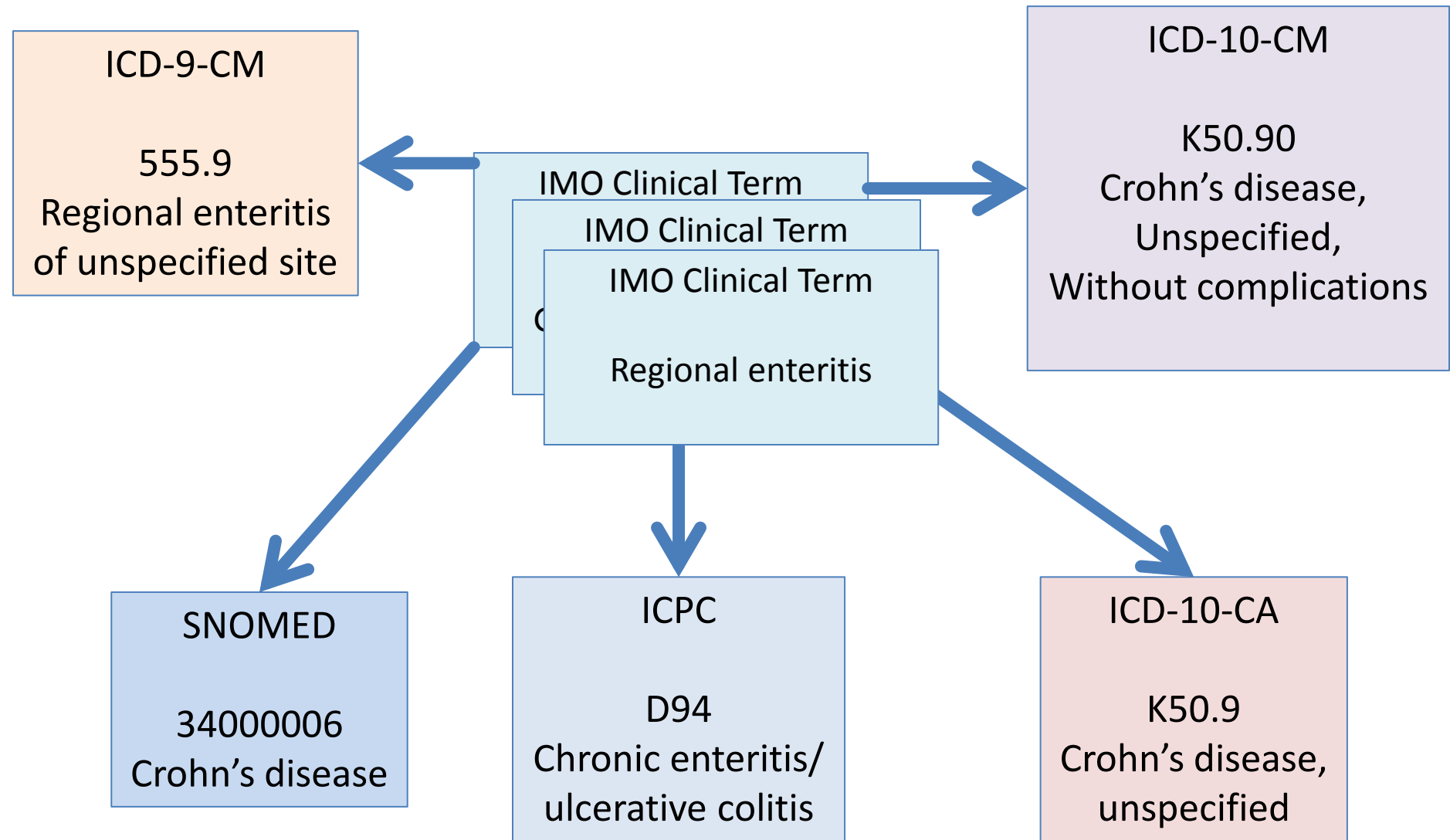
 Concepts (left total hip arthroplasty)

 external codes (ICD, SNOMED)



 Named relationships (preferred, narrower, same-as)

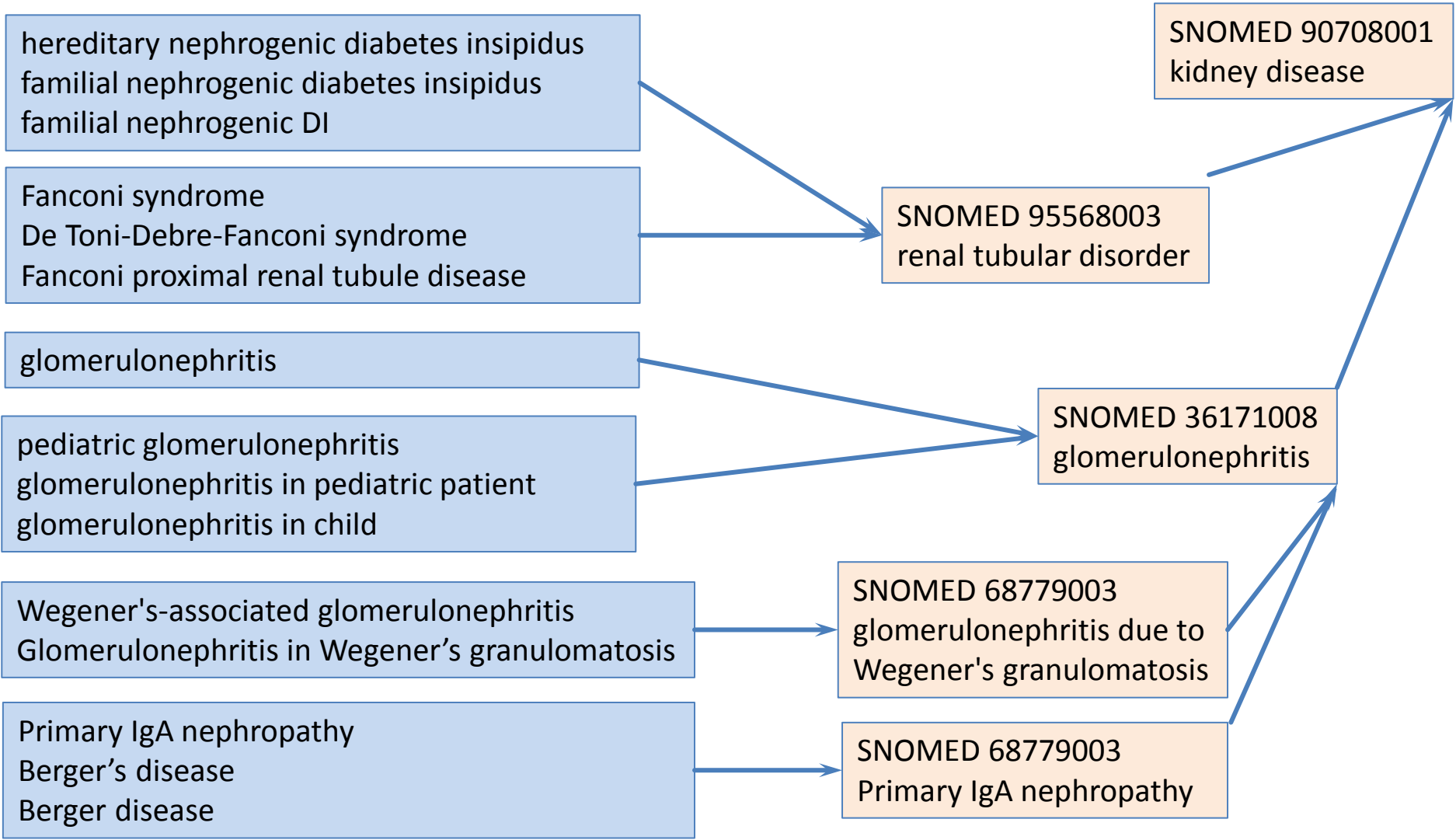
 Description attributes (patient friendly, preferred display)



Leveraging Hierarchical Relationships

IMO

SNOMED CT



- Clinical interface terminology is necessary
- DIY won't work for most organizations
- Embrace legitimate lexical variation
- Search experience is critically important
- Shared terminology model
- Highly focused on use cases

- Each concept placed in one and only one domain
- Domains aligned with semantic types
- Descriptions can only be mapped to one concept per domain

IMO concept domains

- Procedures
- Problems
- Care outcomes
- Specialty
- Non-drug allergens
- Specimen types
- Blood products
- Etc.

IMO[®] Migrating to a Clinical Interface Terminology

Intelligent Medical Objects, Inc.

Customer's legacy dictionaries are reviewed and each term categorized based on whether the concept it represents is:

- A. Already in our terminology
- B. Isn't in our terminology but should be
- C. Isn't in our terminology and shouldn't be
- D. Is indeterminate due to lack of term clarity

For "A" and "B":

- Customer gains new nomenclature mappings and future maintenance of same.
- Customer's raw term is linked to our concept and not released but used for automatic recognition in subsequent migrations

For "B", entire IMO customer base gets new terms.

For "C" and "D", this presents an opportunity (after some dialogue) to clean out invalid terms



Examples:



Customer Term	IMO disposition	IMO term
depressive disorder-mod	Matched to existing IMO concept	moderate depressive disorder
fibula fracture ORIF, left	New IMO concept created	open reduction and internal fixation of fracture of left fibula
foam tubing 3"	Not appropriate for domain (procedure)	n/a
fragility interpretation	Uninterpretable	n/a

- Customer terms
- The pragmatics of clinical language
- Obsolete ≠ dispensable
- Standardized nomenclatures

- XR guidance abscess drain
- Pertussis culture [0060117](#)
- ultrasound LE venous insufficiency
- wc diaphragm fitting
- comminuted fracture of navicular
- unstable occlusion

“YAG anterior capsulotomy”

Capsulotomy means “cutting into a capsule” and can refer to an operation on:

- The lens of the eye
- The kidney
- A joint
- The internal capsule of the brain
- Etc.

We already have “YAG laser capsulotomy of lens”...Is this the same?

“YAG anterior capsulotomy”

Paging Dr. Google...

← → ↻ 🏠 <https://www.google.com/search?q=anterior+capsulotomy+yag&aq=f&oq=anterior+capsulotomy+>

+You Search Images Maps Play YouTube News Gmail Drive Calendar More -

Google anterior capsulotomy yag 🔍

Web Images Maps Shopping Videos More Search tools

About 67,100 results (0.25 seconds)


[Scholarly articles for anterior capsulotomy yag](#) ✓

[Anterior capsule contraction with foldable silicone ...](#) - Dahlhauser - Cited by 53
[...lenses after Nd: YAG laser anterior capsulotomy](#) - Tuft - Cited by 31
[Effect of preoperative YAG laser anterior capsulotomy ...](#) - Aron-Rosa - Cited by 20


[YAG laser anterior capsulotomy](#) ✓

www.ncbi.nlm.nih.gov > ... > Trans Am Ophthalmol Soc > v.82; 1984
 by T Manchester - 1984 - Cited by 3 - [Related articles](#)
 Use of a pulsed neodymium-Yag laser for **anterior capsulotomy** before extracapsular ... Neodymium YAG laser **anterior capsulotomy** in congenital cataract.

[Yag Capsulotomy- for "after cataract" lens capsule clouding - YouTube](#) ✓

 www.youtube.com/watch?v=lr9OYWgmWwQ ▶
 Nov 25, 2007 - Uploaded by Ahad Mahootchi, MD
 what happens to the IOL after the posterior capsulotomy by **yag** laser? IOL is help by **yag anterior** ...

[Eyetube.net - YAG Laser Anterior Capsulotomy](#) ✓

 eyetube.net/series/.../yag-laser-anterior-capsulotomy/
 Jul 26, 2010
 Robert Drews, MD, briefly discusses his technique for performing a **YAG laser anterior capsulotomy** safely ...

[More videos for anterior capsulotomy yag >](#)

[Nd-YAG Laser Capsulotomy - Medscape Reference](#) ✓

emedicine.medscape.com/article/1844140-overview ▶
 Nov 10, 2011 - Laser capsulotomy uses a quick-pulsed Nd:YAG laser to apply a series

“YAG anterior capsulotomy”

posterior capsulotomy - Google Search - Google Chrome

https://www.google.com/search?hl=en&q=YAG/anterior%20capsulotomy#hl=en&gs_rn=11&gs_ri=psy-ab&tok=b7uadz8nix6bmsho5b8IGw&ppq=c

+You Search Images Maps Play YouTube News Gmail Drive Calendar More -

Google posterior capsulotomy


Web Images Maps Shopping Videos More Search tools

About 158,000 results (0.17 seconds)

[Nd:YAG laser posterior capsulotomy for cataracts - WebMD](#)
www.webmd.com/eye.../ndyag-laser-posterior-capsulotomy-for-ataracts ▾
 Information on laser surgery called Nd:YAG posterior capsulotomy, an outpatient procedure for cataracts.

[Laser Posterior Capsulotomy - Encyclopedia of Surgery](#)
www.surgeryencyclopedia.com > La-Pa ▾
 Laser posterior capsulotomy, or YAG laser capsulotomy, is a noninvasive procedure performed on the eye to remove the opacification (cloudiness) that develops ...

[Posterior Capsulotomy - YouTube](#)
www.youtube.com/watch?v=1c_zt75iuVo
 Dec 3, 2010 - Uploaded by geteyesmart
 With posterior capsulotomy, converging laser beams are aimed directly at the hazy lens capsule, and as they ...

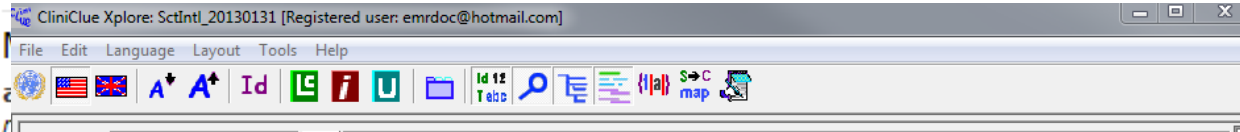
 0:18

More videos for posterior capsulotomy »

[Conditions : Posterior Capsulotomy Laser After Cataract Surgery ...](#)
eugeneeyecare.com/.../posterior_capsulotomy_laser_after_cataract_surge... ▾
 Posterior capsulotomy is a laser surgical procedure which is sometimes necessary to clear vision after cataract surgery. During cataract surgery, the cloudy lens ...

[\[PDF\] Posterior Capsulotomy - Eye Depot](#)
www.theeyedepot.com/EyeFacts/PosteriorCapsulotomy.pdf ▾
 eye facts about ... Posterior. Capsulotomy. What is a posterior capsulotomy? Posterior capsulotomy is a surgical procedure which is often necessary after cata- ...

Angiotripsy



OED Oxford English Dictionary
The definitive record of the English language

Quick

Help on Dictionary Entry |

lithotriptic, *adj.* and *n.*

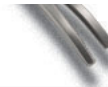
View as: [Outline](#) | [Full entry](#)


Quo

Pronunciation: /lɪθəʊˈtrɪptɪk/

Etymology: Refashioned form of [LITHOTRIPTIC](#) *adj.* and *n.*, as if < Greek λίθος stone + -τριπτικός, < **τριβειν** to rub, wear away. (Show Less)

- Laboratory Equipment & Supplies >
- Equipment & Furnishings >
- X-ray Products & Equipment >
- Orthopedic Products >
- Miscellaneous & Reference >
- Pet, Grooming & Restraints >
- Cotton & Gauze Products >
- Dental Products >



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[Write your own review](#)

Product Description:

- “upper respiratory infection”
- “pelvic inflammatory disease”
- “Accucheck”
- “adenocarcinoma of cervix”
- Trigeminal neuralgia-
“symptomatic” = known cause
(per the IHS)

Occasional Survey

U.S. NATIONAL CANCER INSTITUTE WORKING FORMULATION OF NON-HODGKIN'S LYMPHOMAS FOR CLINICAL USE

A. H. T. ROBB-SMITH

Woodstock, Oxon

*The Lancet*¹ has deplored the inadequate primary lymphadenopathies other than H. The schema devised by the U.S. National may, perhaps, meet some of these criticism

BACKGROUND

The term "non-Hodgkin's lymphoma" Aisenberg in 1967 at the Ann Arbor conf Hayhoe suggested the possibility of a classification of lymph-node disorders. H major symposium devoted to these disorder

because it was simple and appeared to give good clinical correlation in therapeutic trials; it had also found favour with many histopathologists. However, by the late 1960s it was going out of favour, and during the second half of 1974 a rash of new lymphoma classifications appeared.⁶⁻¹⁰ The majority were based on the Rappaport system; but the Kiel classification,¹¹ prepared by a group of European lymphoma pathologists, introduced a new framework in which low or

Working Formulation of Non-Hodgkin's Lymphomas

Low Grade

- A. Malignant lymphoma
Small lymphocytic
Consistent with chronic lymphocytic leukaemia
Plasmacytoid
- B. Malignant lymphoma, follicular
Predominantly small cleaved cell
Diffuse areas
Sclerosis
- C. Malignant lymphoma, follicular
Mixed, small cleaved and large cell
Diffuse areas
Sclerosis

Intermediate Grade

- D. Malignant lymphoma, follicular
Predominantly large cell
Diffuse areas
Sclerosis
- E. Malignant lymphoma, diffuse
Small cleaved cell
Sclerosis

ary axis, with sub-
concept of
sals and counter-
l atmosphere at the
Cancer Conference in
nostalgic thoughts of
ould resolve their
d, "not only do we
; pathologists, but at
ne another".¹³ In an
S. National Cancer
ce of clinicians and
ut they were unable
lassification. British
sions, and a British
monograph on the

Which acronyms and abbreviations are

Word Order for Default Descriptions for Surgical Procedures

The following sequence should be applied to the ordering of words/phrases in default descriptions for surgical procedures. Not every component will be specified for every surgical procedure concept:

- | | |
|---|---|
| 1. Eponym, if one applies, e.g. "Sarcoid" | excision of basal cell carcinoma of nose |
| 2. Mode of access. Examples follow: <ul style="list-style-type: none"> • closed • open • arthroscopic • endoscopic • colonoscopic • percutaneous | excision of basal cell carcinoma of right hand |
| | excision of basal cell carcinoma of right side of nose |
| | excision of basal cell carcinoma with frozen section |
| 3. Modifying term. Examples follow: <ul style="list-style-type: none"> • simple • complex • complete • partial • diagnostic • local • classical • radical • delayed • direct • indirect • subtotal (synonym for partial) • total (synonym for complete) • extensive | excision of basal ganglion |
| | excision of base of skull |
| | excision of benign cyst of mandible by curettage |
| | excision of benign cyst of mandible by enucleation |
| | excision of benign cyst of mandible by enucleation and curettage |
| | excision of benign cyst of mandible requiring extra-oral osteotomy and partial mandibulectomy |
| | excision of benign cyst of mandible requiring intra-oral osteotomy |
| | excision of benign cyst of maxilla |
| | excision of benign cyst of maxilla by enucleation and curettage |
| | excision of benign cyst of maxilla requiring extra-oral osteotomy and partial maxillectomy |
| 4. Name of core action of the procedure | excision of benign cyst of maxilla requiring intra-oral osteotomy |
| 5. Laterality (if applicable) | |
| 6. Anatomical site on which the procedure is performed | |
| 7. Size (if applicable) e.g. "greater than 1 cm" | |
| 8. Surgical approach, e.g. "by anterior approach" (note-preferred verbiage is "by", not "via" or "using"). | |
| 9. Surgical technique, e.g. "using snare technique" (note-preferred verbiage is "using" followed by the technique). | |
| 10. Indication, e.g. "for midtarsal fusion", "for permanent sterilization", "for repair of enterocoele" | |

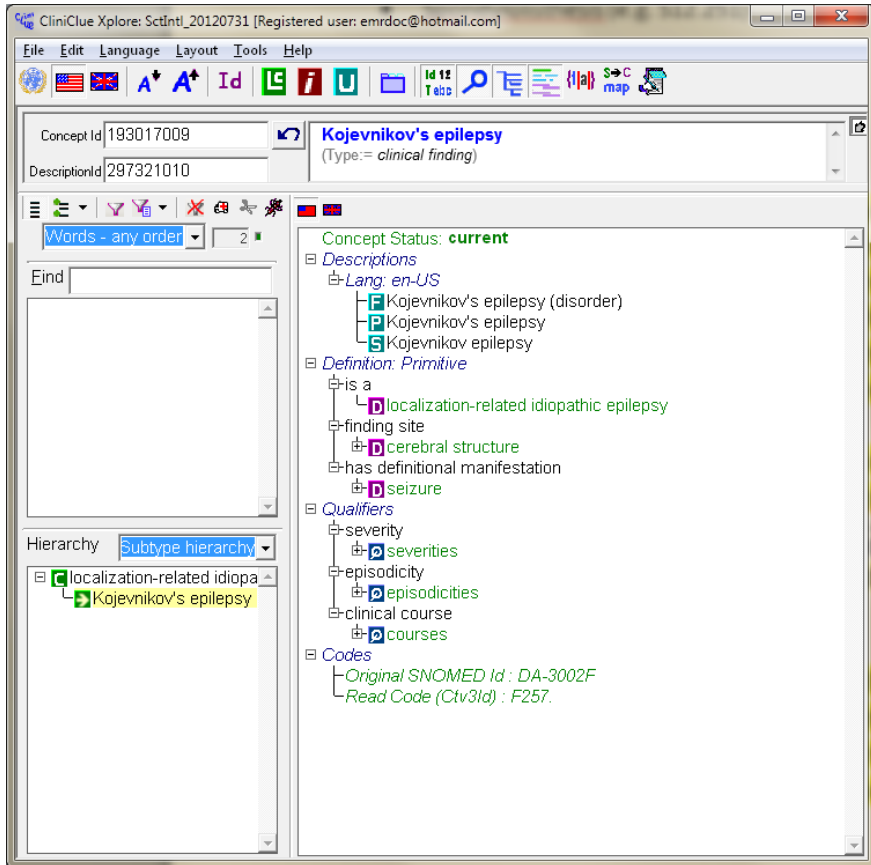
of the calcaneus, a bone).
equal to, and spell out the appropriate unit.)

- Word order for complex concepts

- Varying use of language
 - “Upper arm”
 - ICD-9-CM: elbow joint + humerus
 - SNOMED: elbow joint + humerus + shoulder joint
 - “And” = “and/or” in ICD-9-CM and ICD-10-CM
- Inclusion of concepts that don’t exist in nature
 - ICD-10-CM S12.251B:
“Other traumatic nondisplaced spondylolisthesis of third cervical vertebra, initial encounter for open fracture”

- Inappropriate precoordination
 - ICD-9-CM coding of “pelvic hematoma” depends on patient’s gender.
 - Male: 608.83, “Specified vascular disorder of male genital organs”
 - Female: 629.89, “Other specified disorders of female genital organs”
 - Thus, IMO concept “pelvic hematoma” is not codeable in ICD-9-CM.

Duplication of concepts



ClniClue Xplore: SctIntl_20120731 [Registered user: emrdoc@hotmail.com]

File Edit Language Layout Tools Help

Concept Id: 193017009 **Kojevnikov's epilepsy**
(Type:= clinical finding)

Description Id: 297321010

Words - any order

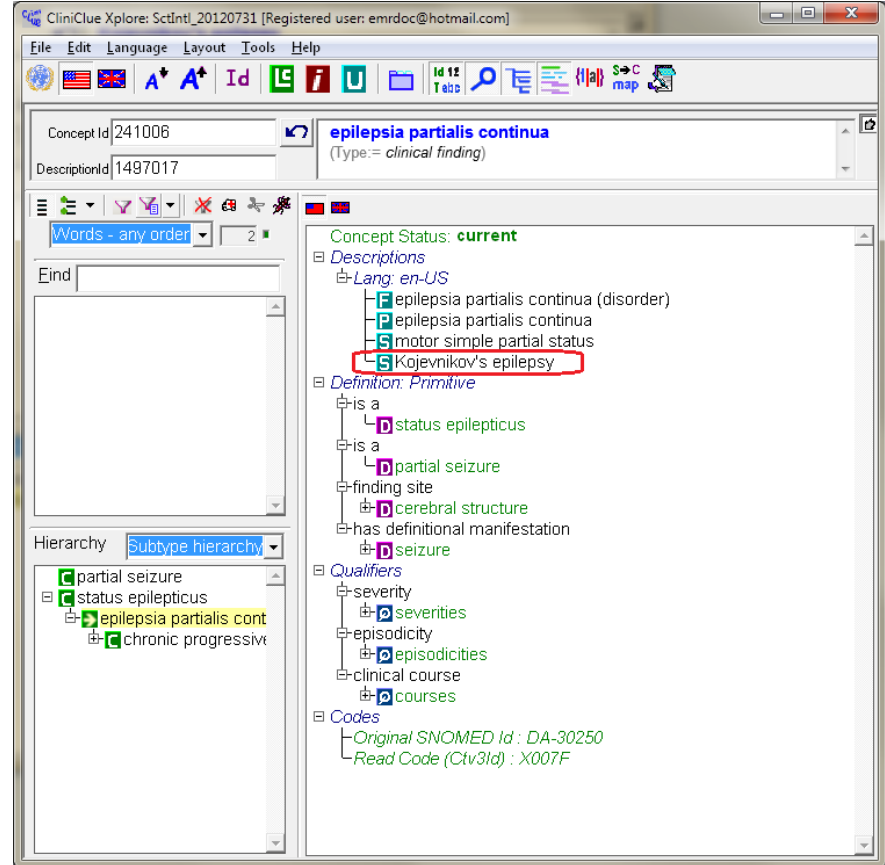
Find

Hierarchy: Subtype hierarchy

- localization-related idiopa
 - Kojevnikov's epilepsy

Concept Status: current

- Descriptions
 - Lang: en-US
 - Kojevnikov's epilepsy (disorder)
 - Kojevnikov's epilepsy
 - Kojevnikov epilepsy
- Definition: Primitive
 - is a
 - localization-related idiopathic epilepsy
 - finding site
 - cerebral structure
 - has definitional manifestation
 - seizure
- Qualifiers
 - severity
 - severities
 - episodicity
 - episodicities
 - clinical course
 - courses
- Codes
 - Original SNOMED Id : DA-3002F
 - Read Code (Ctv3Id) : F257.



ClniClue Xplore: SctIntl_20120731 [Registered user: emrdoc@hotmail.com]

File Edit Language Layout Tools Help

Concept Id: 241006 **epilepsia partialis continua**
(Type:= clinical finding)

Description Id: 1497017

Words - any order

Find

Hierarchy: Subtype hierarchy

- partial seizure
 - status epilepticus
 - epilepsia partialis cont
 - chronic progressiv

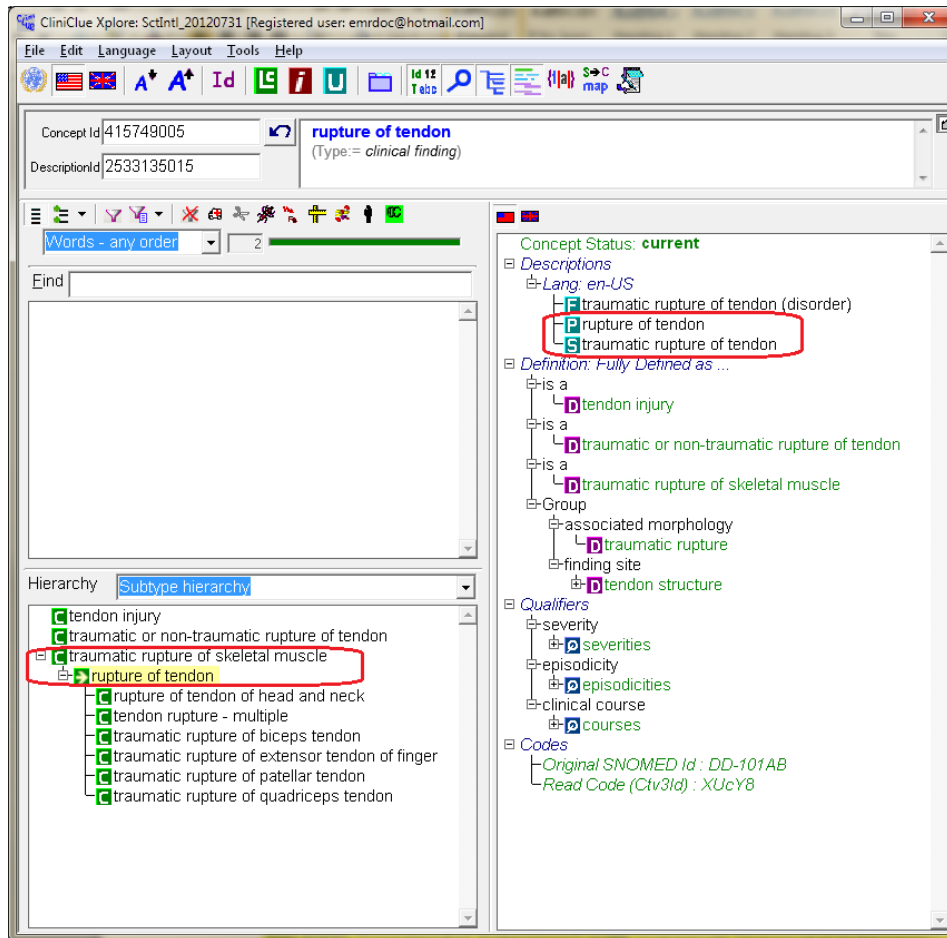
Concept Status: current

- Descriptions
 - Lang: en-US
 - epilepsia partialis continua (disorder)
 - epilepsia partialis continua
 - motor simple partial status
 - Kojevnikov's epilepsy
- Definition: Primitive
 - is a
 - status epilepticus
 - is a
 - partial seizure
 - finding site
 - cerebral structure
 - has definitional manifestation
 - seizure
- Qualifiers
 - severity
 - severities
 - episodicity
 - episodicities
 - clinical course
 - courses
- Codes
 - Original SNOMED Id : DA-30250
 - Read Code (Ctv3Id) : X007F

Duplication of concepts

- ☐ Hodgkin's disease (clinical)
 - ☐ lymphocyte-rich classical Hodgkin lymphoma
 - ☐ Hodgkin's disease, lymphocytic-histiocytic predominance of spleen
 - ☐ Hodgkin's, lymphocytic-histiocytic predominance of spleen

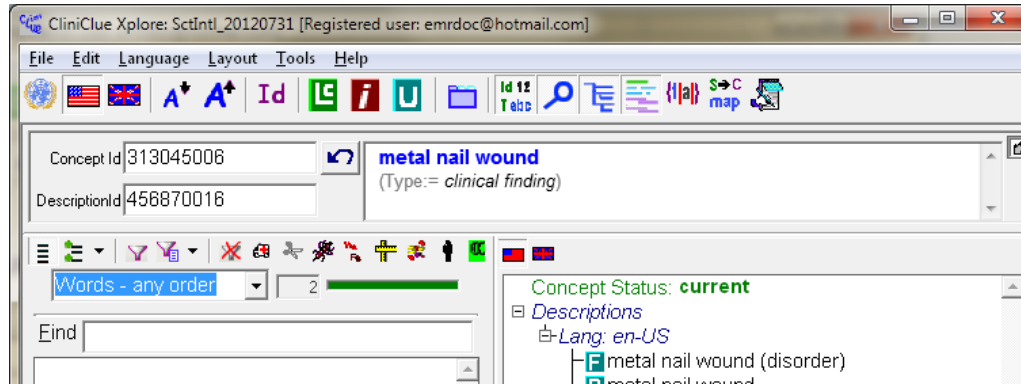
Concepts with non-synonymous synonyms



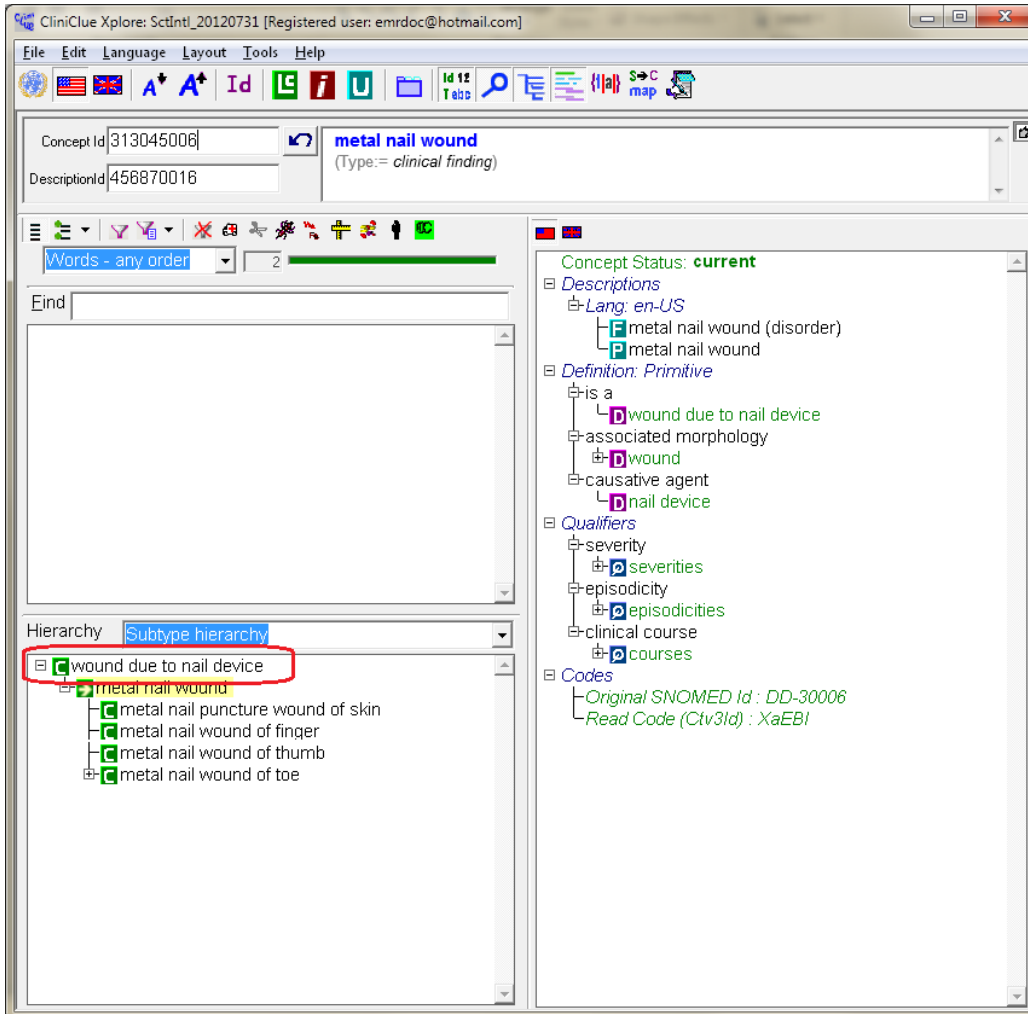
The screenshot shows the CliniClue Xplore interface for the concept 'rupture of tendon' (Concept Id: 415749005, Description Id: 2533135015). The interface is divided into several panes:

- Top Panel:** Displays the concept name 'rupture of tendon' and its type '(Type.= clinical finding)'. It includes a search bar with 'Words - any order' and a dropdown menu.
- Left Panel (Hierarchy):** Shows a 'Subtype hierarchy' tree. The root is 'tendon injury', which branches into 'traumatic or non-traumatic rupture of tendon' and 'rupture of tendon'. The 'rupture of tendon' node is highlighted with a red box. Below it, several specific tendon rupture types are listed, such as 'rupture of tendon of head and neck' and 'traumatic rupture of quadriceps tendon'.
- Right Panel (Concept Details):** Shows the 'Concept Status: current' and a list of 'Descriptions' for 'en-US'. Three descriptions are listed: 'traumatic rupture of tendon (disorder)', 'rupture of tendon', and 'traumatic rupture of tendon'. The last two are circled in red. Below the descriptions, the 'Definition: Fully Defined as ...' section shows a hierarchical tree of relationships (e.g., 'is a', 'Group', 'finding site'). Other sections include 'Qualifiers' (severity, episodicity, clinical course) and 'Codes' (Original SNOMED Id: DD-101AB, Read Code (Ctv3Id): XUcY8).

Ambiguous descriptions



Ambiguous descriptions



The screenshot shows the CliniClue Xplore interface with the following details:

- Concept Id:** 313045006
- Description Id:** 458870016
- Concept Name:** metal nail wound (Type:= clinical finding)
- Concept Status:** current
- Descriptions:**
 - Lang: en-US
 - metal nail wound (disorder)
 - metal nail wound
- Definition:** Primitive
 - is a
 - wound due to nail device
 - associated morphology
 - wound
 - causative agent
 - nail device
- Qualifiers:**
 - severity
 - severities
 - episodicity
 - episodicities
 - clinical course
 - courses
- Codes:**
 - Original SNOMED Id : DD-30006
 - Read Code (Civ3Id) : XaEBI

Hierarchy (Subtype hierarchy):

- wound due to nail device (highlighted with a red box)
 - metal nail wound
 - metal nail puncture wound of skin
 - metal nail wound of finger
 - metal nail wound of thumb
 - metal nail wound of toe

Ambiguous descriptions



72100-1

LOINC	LongName	Component	Property	Timing	System	Scale	Method	exUCUMunits	exUnits
<u>72100-1</u>	Activities of daily living score KOOS	Activities of daily living score	Num	Pt	^Patient	Qn	KOOS	{#}	#

Ambiguous descriptions

NCBI Resources How To



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Journal List > Health Qual Life Outcomes > v.1; 2003 > PMC280702



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Health Qual Life Outcomes. 2003; 1: 64. PMCID: PMC280702
 Published online 2003 November 3. doi: [10.1186/1477-7525-1-64](https://doi.org/10.1186/1477-7525-1-64)

The Knee injury and Osteoarthritis Outcome Score (KOOS): from joint injury to osteoarthritis

[Ewa M Roos](#)^{1,2} and [L Stefan Lohmander](#)¹

[Author information](#) ▶ [Article notes](#) ▶ [Copyright and License information](#) ▶

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Abstract

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The Knee injury and Osteoarthritis Outcome Score (KOOS) was developed as an extension of the WOMAC Osteoarthritis Index with the purpose of evaluating short-term and long-term symptoms and function in subjects with knee injury and osteoarthritis. The KOOS holds five separately scored

Health Qual Life Outcomes



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Summary

APPENDIX SLIDES

Current IMO term population



IMO Domain	Number of active terms
PROBLEM	452,209
PROCEDURE	195,717
BLOOD PRODUCT	1,576
CARE OUTCOME	1,422
DOCUMENT TYPE	806
CARE ENVIRONMENT	2,230
NON-DRUG ALLERGEN	974
ORGANISM	3,976
SPECIMEN SOURCE	1,152

Mapping to External Code Sets



IMO Domain	Code sets mapped to
Problem	SNOMED CT, SNOMED CT-US, ICD-9-CM, ICD-10-CM
Procedure	SNOMED CT, SNOMED CT-US, LOINC, CPT-4, HCPCS, ICD-9 v3, CVX (immunizations)
Care Outcomes	SNOMED CT
Specimen Type	SNOMED CT, HL7 Specimen Type
Organism	SNOMED CT
Observation	SNOMED CT, LOINC
Document Type	SNOMED CT, HL7 Document, LOINC
Environment	SNOMED CT, HL7 Service Location

- **Order Entry**
- Recording **performance** of a procedure
- Documenting a **result** of a diagnostic procedure
- Documenting a patient's **history** of undergoing a procedure

- Order Entry
- Recording
- Documenting procedure
- Documenting history of

ORDERABLE
PERFORMABLE
RESULTABLE
HISTORICAL

procedure
diagnostic
y of

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram				

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT				



Procedure-Oriented Use Cases-Examples

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Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X



Procedure-Oriented Use Cases-Examples

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Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X
Knee surgery				

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X
Knee surgery				X

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X
Knee surgery				X
Monocyte percentage				

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X
Knee surgery				X
Monocyte percentage			X	X

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X
Knee surgery				X
Monocyte percentage			X	X
Subcutaneous injection of filling material, over 10cc				

Procedure	Orderable	Performable	Resultable	Historical
12-lead electrocardiogram	X	X	X	X
Abdominal CT	X		X	X
Knee surgery				X
Monocyte percentage			X	X
Subcutaneous injection of filling material, over 10cc		X		

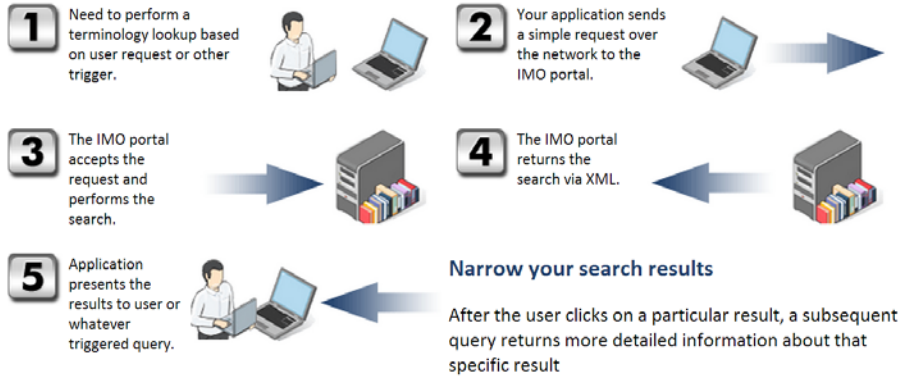
- Anesthesia
- Education/Training
- Endoscopy
- Imaging
- Lab
- Surgical
- Immunization
- Referral

Plus... **“Nursing-only”**

- Reference terminologies
 - SNOMED-CT (International, US Extension, AM, etc.)
 - LOINC
 - CVX
- Administrative terminologies
 - CPT-4
 - ICD-9 v3 aka “ICD-P”
 - HCPCS
 - ICD-10-PCS in progress

Three delivery methods

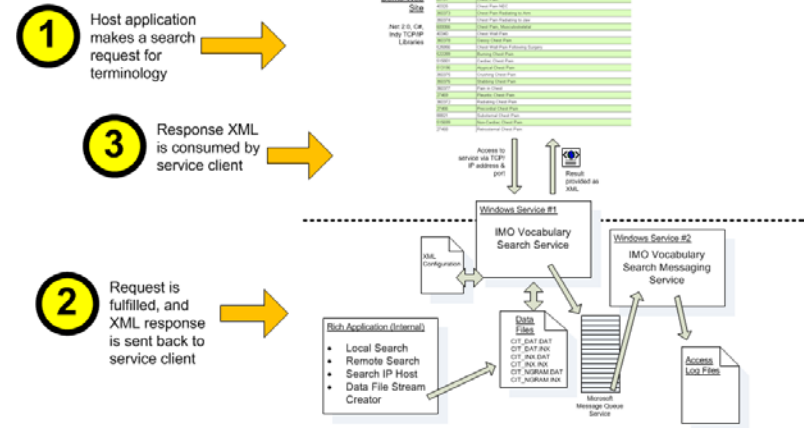
- Web service (IMO[®] portal technology)
- Relationship database format (flat files)
- “Appliance” (self-updating server within customer’s firewall)



- It is a 'Service Oriented Architecture' (SOA): The EMR accesses the terminology as an external service.
- Software engineering implementation cycle is in order of days, not months...
- A very light implementation, as a stateless, in-memory, database.

The service solves common EMR terminology conundrums:

- Searchability
- Terminology updates
- Speed and Scalability
- Local vs. remote implementation
- Term detail 'universe'



MU2 Objectives

- Use CPOE (EP, EH)
- Use eRx (EP, EHm)
- Record demographics (EP, EH)
- Record vital signs (EP, EH)
- Record smoking status (EP, EH)
- Use clinical decision support (EP, EH)
- Incorporate lab results (EP, EH)
- Generate patient lists (EP, EH)
- Send patient reminders (EP)
- Allow patients access to their health info (EP, EH)
- Provide clinical summaries (EP)
- Provide education resources (EP, EH)
- Perform med reconciliation (EP, EH)
- Send summary-of-care records (EP, EH)
- Submit data to immunization registries (EP, EH)
- Protect PHI (EP, EH)
- E-message with patients (EP)
- Submit reportable lab results to public health (EH)
- Use eMAR (EH)
- Make imaging results available (EPm, EHm)
- Record family health history (EPm, EHm)
- Submit syndromic surveillance data (EPm, EH)
- Submit case data to cancer registry (EPm)
- Submit case data to specialty registry (EPm)
- Record notes (EPm, EHm)
- Record advance directives (EHm)
- Send electronic lab results to ambulatory providers (EHm)

MU2 Objectives-The terminology angle



- Use CPOE (EP, EH)
- Use eRx (EP, EHm)
- Record demographics (EP, EH)
- Record vital signs (EP, EH)
- Record smoking status (EP, EH)
- Use clinical decision support (EP, EH)
- Incorporate lab results (EP, EH)
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- Make imaging results available (EPm, EHm)
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- Submit syndromic surveillance data (EPm, EH)
- Submit case data to cancer registry (EPm)
- Submit case data to specialty registry (EPm)
- Record notes (EPm, EHm)
- Record advance directives (EHm)
- Send electronic lab results to ambulatory providers (EHm)

MU2 Objectives-The terminology angle

- Use CPOE (EP, EH)
 - Use eRx (EP, EHm)
 - Record demographics (EP, EH)
 - Record vital signs (EP, EH)
 - Record smoking status (EP, EH)
 - Use clinical decision support (EP, EH)
 - Incorporate lab results (EP, EH)
 - Generate patient education materials (EP, EH)
 - Send patient reminders (EP, EH)
 - Allow patients to view their medical records (EPm)
 - Provide clinical decision support (EPm)
 - Provide education (EPm)
 - Perform medication reconciliation (EPm)
 - Send summary of care records (EPm)
 - Submit data to public health (EPm)
- Protect PHI (EP, EH)
 - E-message with patients (EP)
 - Submit reportable lab results to public health (EH)
 - Use eMAR (EH)
 - Make imaging results available (EPm, EHm)

45 CFR §170.207(h):

Smoking status must be coded in one of the following

SNOMED CT® codes:

- (1) Current every day smoker. 449868002
- (2) Current some day smoker. 428041000124106
- (3) Former smoker. 8517006
- (4) Never smoker. 266919005
- (5) Smoker, current status unknown. 77176002
- (6) Unknown if ever smoked. 266927001
- (7) Heavy tobacco smoker. 428071000124103
- (8) Light tobacco smoker. 428061000124105

MU2 Objectives-The terminology angle

- Use CPOE (EP, EH)
- Use eRx (EP, EHm)
- Record demographics (EP, EH)
- Record vital signs (EP, EH)
- Record smoking status (EP, EH)
- Use clinical decision support (EP, EH)
- Incorporate lab results (EP, EH)
- Generate patient lists (EP, EH)
- Send patient information to public health (EP, EH)
- Allow patients to view their health information (EP, EH)
- Provide clinical decision support (EP, EH)
- Provide education (EP, EH)
- Perform medication reconciliation (EP, EH)
- Send summary of care records (EP, EH)
- Submit data to immunization registries (EP, EH)
- Protect PHI (EP, EH)
- E-message with patients (EP)
- Submit reportable lab results to public health (EH)
- Use eMAR (EH)
- Make imaging results available (EPm, EHm)
- Record family health history (EPm, EHm)
- Submit syndromic surveillance data (EPm, EH)
- Submit data to immunization registries (EP, EH)

45 CFR §170.314(a)(13):

Enable a user to electronically record, change, and access a patient's family health history according to, at a minimum...IHTSDO SNOMED CT® International Release July 2012 and US Extension to SNOMED CT® March 2012 Release.

MU2 Objectives-The terminology angle

- Use CPOE (EP, EH)
- Use eRx (EP, EHm)
- Record demographics (EP, EH)
- Record vital signs (EP, EH)
- Record smoking status (EP, EH)
- Use clinical decision support (EP, EH)
- Incorporate lab results (EP, EH)
- Generate patient lists (EP, EH)
- Send patient reminders (EP)
- Allow patients access to their health info (EP, EH)
- Provide clinical summaries (EP)
- Provide education resources (EP, EH)
- Perform med reconciliation (EP, EH)
- Send summary-of-care records (EP, EH)
- Submit data to immunization registries (EP, EH)

- 45 CFR §170.314(e)(1):
- Provide patients with an online means to view, download, and transmit to a 3rd party...the Common MU data set.
- 45 CFR §170.102
- *Common MU Data Set* means the following data expressed, where indicated, according to the specified standard(s):
- ...
- (8) Problems—SNOMED CT International + US Extension
- ...
- (11) Laboratory test(s)—LOINC
- ...
- (15) Procedures—SNOMED CT International + US Extension **or** CPT-4 + HCPCS

MU2 Objectives-The terminology angle

- Use CPOE (EP, EH)
- Use eRx (EP, EHm)
- Record demographics (EP, EH)
- Record vital signs (EP, EH)
- Record smoking status (EP, EH)
- Use clinical decision support (EP, EH)
- Incorporate lab results (EP, EH)
- Generate patient lists (EP, EH)
- Send patient reminders (EP)
- Allow patients access to their health info (EP, EH)
- Provide clinical summaries (EP)
- Provide education resources (EP, EH)
- Perform med reconciliation (EP, EH)
- Send summary-of-care records (EP, EH)
- Submit data to immunization registries (EP, EH)

45 CFR §170.314(b)(2):

- Enable a user to create a care summary...that includes...the Common MU Data Set and:
 - (A) Encounter diagnoses expressed in SNOMED CT International/US Extension or ICD-10-CM.
 - (B) Immunizations expressed in HL7 Standard Code Set CVX—Vaccines Administered, updates through July 11, 2012.
- Send electronic lab results to ambulatory providers (EHm)

MU2 Objectives-The terminology angle

HL7 2.5.1 Electronic Laboratory Reporting to Public Health

- Lab procedures coded in LOINC
- Organisms coded in SNOMED CT
- Specimen Source coded in HL7 (value set #487) and/or SNOMED CT
- Specimen collection method coded in HL7 (value set #488) and/or SNOMED CT
- Service location coded in HL7
- Diagnosis coded to SNOMED CT/SNOMED CT-US Extension

Principal Author:

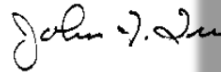
Questions or comments

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A future revised and published version of this document may be available. The Health Level Seven Group felt that the activity in the area of electronic laboratory reporting to public health among providers and public health agencies should have the most current information available.

Please be sure to also review the other chapters and sections of referenced chapter and section.

Sincerely,



ELR_IG_R1_Errata_and_Guidance

Date: July 16, 2012

Co-Authored By:

Centers for Disease Control and Prevention



And

Association of Public Health Laboratories



2014 (“MU2”) CQMs

- EPs must report on 9 (from a menu of 64)
- EHs must report on 16 (from a menu of 29)
- CQMs provided as machine-readable (XML) files
- Each CQM references “value sets” of codes that define each data element

Example: CQM #125-Breast Cancer Screening



eSpec Navigator x
 www.lantanagroup.com/especnavigator/#home
 eSpec Navigator 1.1 Home Account Help Search

Download Links
 All eCQMs
 Eligible Hospital eCQMs
 Eligible Professional eCQMs

NQF	CMS ID	Measure Type	Measure ↓	Description	Steward	Version	Version Specific ID	Version Neutral ID	Package
XXXX	179	EP	ADE Prevention and Monitoring: Warfarin Time in Therapeutic Range	Average percentage of time in which patients aged 18 and older with atrial fibrillation who are on chronic warfarin therapy have International Normalized Ratio (INR) test results within the therapeutic range (i.e., TTR) during the measurement period.	National Committee for Quality Assurance	1	8a4d92b2-3a00-2a25-013a-23015ad43373	a5e96a45-8132-4e72-bf4f-e8c81db9e641	EP_CMS179v1_NQFXXXX_ADE_TTR.zip
0110	169	EP	Bipolar Disorder and Major Depression: Appraisal for alcohol or chemical substance use	Percentage of patients with depression or bipolar disorder with evidence of an initial assessment that includes an appraisal for alcohol or chemical substance use.	Center for Quality Assessment & Improvement in Mental Health (CQAIMH)	1	8a4d92b2-3a58-b777-013a-652851981835	b99aaef6-7889-4aba-85fc-5a2b739dd098	EP_CMS169v1_NQF0110_Bipolar_Dep_Substance_Use.zip
0031	125	EP	Breast Cancer Screening	Percentage of women 40-69 years of age who had a mammogram to screen for breast cancer.	National Committee for Quality Assurance	1	8a4d92b2-397a-48d2-0139-b0cadcb63221	19783c1b-4fd1-46c1-8a96-a2f192b97ee0	EP_CMS125v1_NQF0031_Breast_Cancer_Screen.zip
0387	140	EP	Breast Cancer: Hormonal Therapy for Stage IC-IIIc Estrogen Receptor/Progesterone Receptor (ER/PR) Positive Breast Cancer	Percentage of female patients aged 18 years and older with Stage IC through IIIc, ER or PR positive breast cancer who were prescribed tamoxifen or aromatase	American Medical Association-convened Physician Consortium for Performance	1	8a4d92b2-397a-48d2-0139-b0a6a11f2da5	ac639794-cb3f-44ff-8fa6-680300d5ed4e	EP_CMS140v1_NQF0387_BrCA_HormonalTherapy.zip

Example: CQM #125-Breast Cancer Screening

eSpec Navigator x

www.lantanagroup.com/especnavigator/#measure/8a4d92b2-397a-48d2-0139-b0cadcb63221

Data Elements Measure QRDA Category | Sample

Quality Data Element ↓	Value Set	Value Set OID	Pattern OID	CDA Template Name	CDA Template OID
Diagnostic Study, Result: Mammogram	Mammogram Grouping Value Set	2.16.840.1.113883.3.464.1003.108.12.1018	2.16.840.1.113883.3.560.1.11	Diagnostic Study Result	2.16.840.1.113883.10.20.24.3.20
Encounter, Performed: Annual Wellness Visit	Annual Wellness Visit Grouping Value Set	2.16.840.1.113883.3.526.3.1240	2.16.840.1.113883.3.560.1.79	Encounter Performed	2.16.840.1.113883.10.20.24.3.23
Encounter, Performed: Face-to-Face Interaction	Face-to-Face Interaction Grouping Value Set	2.16.840.1.113883.3.464.1003.101.12.1048	2.16.840.1.113883.3.560.1.79	Encounter Performed	2.16.840.1.113883.10.20.24.3.23
Encounter, Performed: Home Healthcare Services	Home Healthcare Services Grouping Value Set	2.16.840.1.113883.3.464.1003.101.12.1016	2.16.840.1.113883.3.560.1.79	Encounter Performed	2.16.840.1.113883.10.20.24.3.23
Encounter, Performed: Office Visit	Office Visit Grouping Value Set	2.16.840.1.113883.3.464.1003.101.12.1001	2.16.840.1.113883.3.560.1.79	Encounter Performed	2.16.840.1.113883.10.20.24.3.23
Encounter, Performed: Preventive Care Services - Established Office Visit, 18 and Up	Preventive Care Services - Established Office Visit, 18 and Up Grouping Value Set	2.16.840.1.113883.3.464.1003.101.12.1025	2.16.840.1.113883.3.560.1.79	Encounter Performed	2.16.840.1.113883.10.20.24.3.23
Encounter, Performed: Preventive Care Services-Initial Office Visit, 18 and Up	Preventive Care Services-Initial Office Visit, 18 and Up Grouping Value Set	2.16.840.1.113883.3.464.1003.101.12.1023	2.16.840.1.113883.3.560.1.79	Encounter Performed	2.16.840.1.113883.10.20.24.3.23
Patient Characteristic Birthdate: birth date	birth date LOINC Value Set	2.16.840.1.113883.3.560.100.4	2.16.840.1.113883.3.560.1.400		
Patient Characteristic Ethnicity: Ethnicity	Ethnicity CDC Value Set	2.16.840.1.114222.4.11.837	2.16.840.1.113883.3.560.1.403		
Patient Characteristic Payer: Payer	Payer Source of Payment Typology Value Set	2.16.840.1.114222.4.11.3591	2.16.840.1.113883.3.560.1.405	Patient Characteristic Payer	2.16.840.1.113883.10.20.24.3.55
Patient Characteristic Race: Race	Race CDC Value Set	2.16.840.1.114222.4.11.836	2.16.840.1.113883.3.560.1.406		
Patient Characteristic Sex: Female	Female Administrative Sex Value Set	2.16.840.1.113883.3.560.100.2	2.16.840.1.113883.3.560.1.402		
Patient Characteristic Sex: ONC Administrative Sex	ONC Administrative Sex Administrative Sex Value Set	2.16.840.1.113762.1.4.1	2.16.840.1.113883.3.560.1.402		
Procedure, Performed: Bilateral Mastectomy	Bilateral Mastectomy Grouping Value Set	2.16.840.1.113883.3.464.1003.198.12.1005	2.16.840.1.113883.3.560.1.6	Procedure Performed	2.16.840.1.113883.10.20.24.3.64
Procedure, Performed: Unilateral Mastectomy	Unilateral Mastectomy Grouping Value Set	2.16.840.1.113883.3.464.1003.198.12.1020	2.16.840.1.113883.3.560.1.6	Procedure Performed	2.16.840.1.113883.10.20.24.3.64

Example: CQM #125-Breast Cancer Screening

ep_eh_cms_20130131.xlsx - Microsoft Excel

Value Set Authority Center
U.S. National Library of Medicine

CMS ID	Value Set Name	Description	Code	Code System
297	CMS125v1	Unilateral Mastectomy	19180	CPT
298	CMS125v1	Unilateral Mastectomy	19200	CPT
299	CMS125v1	Unilateral Mastectomy	19220	CPT
300	CMS125v1	Unilateral Mastectomy	19240	CPT
301	CMS125v1	Unilateral Mastectomy	19303	CPT
302	CMS125v1	Unilateral Mastectomy	19304	CPT
303	CMS125v1	Unilateral Mastectomy	19305	CPT
304	CMS125v1	Unilateral Mastectomy	19306	CPT
305	CMS125v1	Unilateral Mastectomy	19307	CPT
306	CMS125v1	Unilateral Mastectomy	172043006	SNOMEDCT
307	CMS125v1	Unilateral Mastectomy	172044000	SNOMEDCT
308	CMS125v1	Unilateral Mastectomy	22964006	SNOMEDCT
309	CMS125v1	Unilateral Mastectomy	237367009	SNOMEDCT
310	CMS125v1	Unilateral Mastectomy	237368004	SNOMEDCT
311	CMS125v1	Unilateral Mastectomy	274957008	SNOMEDCT
312	CMS125v1	Unilateral Mastectomy	287653007	SNOMEDCT
313	CMS125v1	Unilateral Mastectomy	287654001	SNOMEDCT
314	CMS125v1	Unilateral Mastectomy	317230007	SNOMEDCT
315	CMS125v1	Unilateral Mastectomy	318190001	SNOMEDCT
316	CMS125v1	Unilateral Mastectomy	359728003	SNOMEDCT
317	CMS125v1	Unilateral Mastectomy	359731002	SNOMEDCT
318	CMS125v1	Unilateral Mastectomy	359734005	SNOMEDCT
319	CMS125v1	Unilateral Mastectomy	359740003	SNOMEDCT
320	CMS125v1	Unilateral Mastectomy	384723003	SNOMEDCT
321	CMS125v1	Unilateral Mastectomy	395702000	SNOMEDCT
322	CMS125v1	Unilateral Mastectomy	406505007	SNOMEDCT
323	CMS125v1	Unilateral Mastectomy	428564008	SNOMEDCT
324	CMS125v1	Unilateral Mastectomy	428571003	SNOMEDCT
325	CMS125v1	Unilateral Mastectomy	429400009	SNOMEDCT
326	CMS125v1	Unilateral Mastectomy	446109005	SNOMEDCT
327	CMS125v1	Unilateral Mastectomy	446420001	SNOMEDCT
328	CMS125v1	Unilateral Mastectomy	447135002	SNOMEDCT
329	CMS125v1	Unilateral Mastectomy	447421006	SNOMEDCT
330	CMS125v1	Unilateral Mastectomy	59620004	SNOMEDCT
331	CMS125v1	Unilateral Mastectomy	66398006	SNOMEDCT
332	CMS125v1	Unilateral Mastectomy	70183006	SNOMEDCT
333	CMS125v1	Unilateral Mastectomy	7236000	SNOMEDCT



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