

Exploratory Reverse Mapping ICD-10-CA to SNOMED CT



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Overview

- Purpose and Scope
- Methods – Terms, Algorithms, Normalization, Process and Comparison
- Results – Outputs, UK Map Comparison
- Discussion – Findings, Issues, Implications
- Next Steps – Lexical + Concept/Meaning?

Purpose and Scope

□ Purpose

- Identify “best-match” SNOMED CT terms for common ICD-10 codes thru reverse mapping to guide encoding of patient data at source

□ Scope

- Top 5,000 ICD-10 codes/descriptions from inpatient discharge abstracts
- Exploratory, educational, part of MSc project

Methods

- ICD-10-CA Mapping Terms
- Mapping Algorithms
- Normalization – UMLS/Porter Stemming
- Reverse Mapping Process
- Comparison with UK SCT-ICD10 Map

Methods: ICD-10-CA Mapping Terms

ICD-10-CA (Canadian Adaptation)

- Enhanced ICD-10 with 23 chapters
- Added Chapters XXII Morphology of neoplasms and Chapter XXIII Provisional codes - research and temporary
- Minor additions/subdivisions/deletions/revisions
- 5000 top ICD codes/descriptions inpatient discharge abstracts in 2005/06 from Canadian Province
- Profile of discharge abstracts
 - Total separations 364,977; ICD codes/separation = 4.1
 - Diagnosis 1,481,285; top 5000 diagnosis 1,460,730; = 98.6%
 - Discrete 10,529; top 5,000 discrete 2,375; = 47.5%

Methods:

ICD-10-CA

I21.4 Acute subendocardial myocardial infarction

Includes: Non-Q-wave myocardial infarction

I21.40 Acute subendocardial myocardial infarction of anterior wall

Subendocardial infarction (non-Q-wave) (acute) (of):

- anterior (wall) NOS
- anteroapical
- anterolateral
- anteroseptal



I21.41 Acute subendocardial myocardial infarction of inferior wall

Subendocardial infarction (non-Q-wave) (acute) (of):

- diaphragmatic wall
- inferior (wall) NOS
- inferolateral
- inferoposterior



Z72.0 Tobacco use **current**



Chapter	Title
I	Certain infections and parasitic disease
II	Neoplasms
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV	Endocrine, nutritional and metabolic diseases
V	Mental and behavioural disorders
VI	Diseases of the nervous system
VII	Diseases of the eye and adnexa
VIII	Diseases of the ear and mastoid process
IX	Diseases of the circulatory system
X	Diseases of the respiratory system
XI	Diseases of the digestive system
XII	Diseases of the skin and subcutaneous tissue
XIII	Diseases of the musculoskeletal system and connective tissue
XIV	Diseases of the genitourinary system
XV	Pregnancy, childbirth and the puerperium
XVI	Certain conditions originating in the perinatal period
XVII	Congenital malformations, deformations, chromosomal abnormalities
XVIII	Symptoms, signs and abnormal clinical and laboratory findings not elsewhere classified
XIX	Injury, poisoning and certain other consequences of external causes
XX	External causes of morbidity and mortality
XXI	Factors influencing health status and contact with health services
XXII	Morphology of neoplasms
XXIII	Provisional codes for research and temporary assignment

Methods: ICD-10-CA Mapping Terms

Code	Description	Frequency	Percentage
I100	Benign hypertension	50,051	3.426%
Z370	Single live birth	40,918	2.801%
Z3800	Singleton, born in hospital, delivered vaginally	30,754	2.105%
E11909	Type 2 diabetes mellitus without (mention of) complications, level of control uns	16,470	1.128%
I480	Atrial fibrillation	16,386	1.122%
I500	Congestive heart failure	16,351	1.119%
I2510	Atherosclerotic heart disease of native coronary artery	15,387	1.053%
J189	Pneumonia unspecified	11,553	0.791%
J449	Chronic obstructive pulmonary disease, unspecified	10,900	0.746%
N390	Urinary tract infection site not specified	10,693	0.732%
E039	Hypothyroidism unspecified	10,465	0.716%
U989	Unspecified place of occurrence	10,342	0.708%
Z3801	Singleton born in hospital by C-Section	10,263	0.703%
O70101	Second degree perineal laceration during delivery, delivered	10,022	0.686%
E785	Hyperlipidaemia unspecified	9,934	0.680%
D649	Anaemia unspecified	9,929	0.680%
F329	Depressive episode unspecified	9,145	0.626%
K219	Gastro-oesophageal reflux disease without oesophagitis	8,691	0.595%
Z720	Tobacco use current	8,583	0.588%
I252	Old myocardial infarction	7,874	0.539%

Methods: Mapping Algorithms

Algorithm	Explanation
Exact Match	Exact string match where all words are same and in same sequence for both source and target terms, including punctuation
Match All Only	String match where all words are same but not necessary in same order; additional words not allowed in target term
Match All	String match where all words are same but not necessary in same order; additional words allowed in target term
Partial Match	String match where one or more words in source term is found in target term
Semantic Match	For inactive concepts found, use historical relationships of WAS-A, SAME-AS, MAY-BE-A, REPLACE-BY to find current concepts
Unmatchable	Assigned when no match is found

Methods: Normalization

Steps 1 to 6	Example
Remove genitive	Hodgkin <i>'s</i> diseases, NOS – Hodgkin diseases, NOS
Remove stop words	Hodgkin diseases, <i>NOS</i> – Hodgkin diseases,
Convert to lowercase	<i>H</i> odgkin diseases, – hodgkin diseases,
Strip punctuation	hodgkin diseases, – hodgkin diseases
Uninflect phrase	hodgkin disease <i>s</i> – hodgkin disease
Sort words	<i>hodgkin disease</i> –disease hodgkin

Methods: Normalization

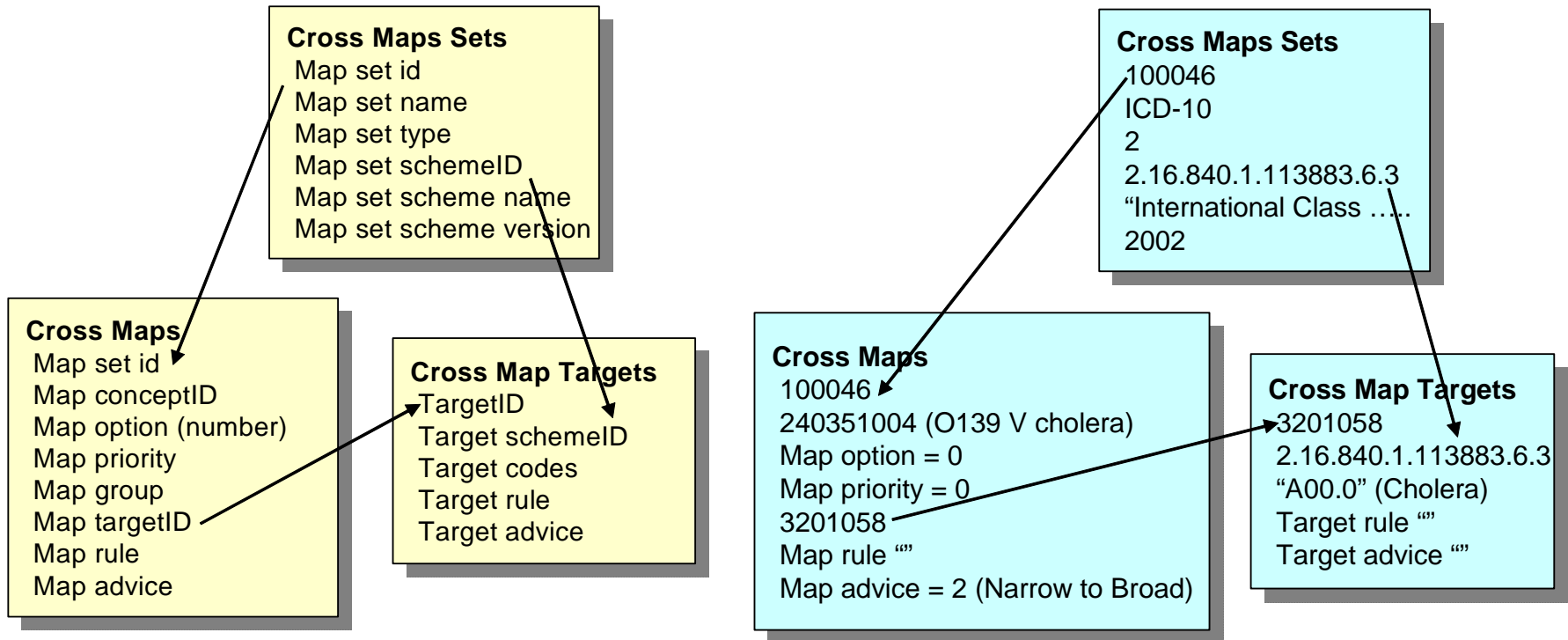
Step 2	Explanation
Stop words	Frequent short words that do not affect the phrase: and, by, for, in, of, on, the, to, with, no, and (nos)
Exclude words	Words that may change meaning of the word but if ignored help to locate a term otherwise missed: about, alongside, an, anything, around, as, at, because, before, being, both, cannot, chronically, consists, covered, does, during, every, find, from, instead, into, more, must, no, not, only, or, properly, side, sided, some, something, specific, than, that, things, this, throughout, up, using, usually, when, while, without
SNOMED Prefixes	[X] – concepts with ICD-10 codes not in ICD-9 [D] – concepts in ICD-9 XVI and ICD-10 SVII [M] – morphology of neoplasm concepts in ICD-O [SO] – concepts in OPCS-4 chapter Z in CTV3 [Q] – temporary qualifying terms from CTV3 [V] – concepts in ICD-9 and ICD-10 on factors influencing health status and contacts with health services (V and Z codes)

Methods: Reverse Mapping Process

- ❑ Cycle thru algorithms to find best candidate SCT terms
 - Exact match, Match-all-only, Match-all, Partial, Semantic
- ❑ For each algorithm, cycle thru ICD matching terms
 - Original term, normalized UMLS terms, stemmed terms
- ❑ In each cycle, review candidate concepts
 - Determine if there is a match and what type of match
 - If inactive concepts found, do semantic match to find current concepts thru historical relationships
- ❑ If no matching concepts found, label as unmatchable
- ❑ Tally frequency statistics on matches, count only first-matches

Methods: Compare UK SCT-ICD10 Map

- ❑ UK SCT-ICD10 cross map July 2007 version
- ❑ 5000 ICD-10-CA codes matched to TargetCodes of SCT_CrossMap Targets table for ICD-10 codes
- ❑ Used only unique SCT concepts in UK map; compared with matched SCT concepts by exact-match, match-all-only and match-all
- ❑ Examples of SCT-ICD10 map records (next 2 slides)



SNOMED CT Cross Maps Table

MapsetID	ConceptID	Option	Priority	TargetID	Rule	Advice
101045	122003	0	0	9408862050		
101045	220000	0	0	9429785058		
101045	237849008	0	0	9427202054		

SNOMED Cross Map Target Table

TargetID	TargetCodes	TargetSchemeID	Rule	Advice
9408862050	H313	2.16.840.1.113883.5.11084		
9429785058	M131	2.16.840.1.113883.5.11084		
9427202054	E875	2.16.840.1.113883.5.11084		

SNOMED CT Concepts Table

ConceptID	Fully Specified Name	Status
122003	Choroidal hemorrhage (disorder)	0
220000	Unspecified monoarthritis (disorder)	0
237849008	Drug-induced hyperkalemia (disorder)	0

ICD-10 Tabular List

Code	Description
E875	Hyperkalemia
H313	Choroidal haemorrhage and rupture
M131	Monoarthritis, not elsewhere classified

SNOMED CT Cross Maps Table

MapsetID	ConceptID	Option	Priority	TargetID	Rule	Advice
101045	205304002	0	0	9430425057		

SNOMED Cross Map Target Table

TargetID	TargetCodes	TargetSchemeID	Rule	Advice
9430425057	Q798 Q701 Q718	2.16.840.1.113883.5.11084		

SNOMED CT Concepts Table

ConceptID	Fully Specified Name	Status
205304002	Constriction ring of upper limb with acrosyndactyly and amputation (disorder)	0

ICD-10 Tabular List

Code	Description
Q701	Webbed fingers
Q718	Other reduction defects of upper limb(s)
Q798	Other congenital malformations of musculoskeletal system

SNOMED CT Cross Maps Table

MapsetID	ConceptID	Option	Priority	TargetID	Rule	Advice
101045	364006	0	0	9406273057		
101045	364006	1	2	9428048052		
101045	364006	2	2	9428050057		
101045	364006	3	2	9428054053		
101045	364006	4	2	9428065056		

SNOMED Cross Map Target Table

TargetID	TargetCodes	TargetSchemeID	Rule	Advice
9406273057	I501	2.16.840.1.113883.5.11084		
9428048052	I018	2.16.840.1.113883.5.11084		
9428050057	I020	2.16.840.1.113883.5.11084		
9428054053	I098	2.16.840.1.113883.5.11084		
9428065056	I110	2.16.840.1.113883.5.11084		

SNOMED CT Concepts Table

ConceptID	Fully Specified Name	Status
364006	Acute left-sided heart failure (disorder)	0

ICD-10 Tabular List

Code	Description
I018	Other acute rheumatic heart disease
I020	Rheumatic Chorea with heart involvement
I098	Other specified rheumatic diseases
I110	Hypertensive heart disease with (congestive) heart failure
I501	Left ventricular failure

Results

- Outputs – Summary, Details, Examples
 - Exact-match, Match-all-only, Match-all-words, Partial-match, Semantic-match
- Comparing with UK SCT-ICD10 Map
 - UK map characteristics
 - Overall comparison
 - Same or similar results, dissimilar results
 - UK results only, reverse-map results only
 - Unmatchable results

Results – Output Summary

Match Type	Source	Target	Percent
Exact-match	1,619	2,625	32.38%
Match-all-only	63	87	1.26%
Match-all	1,478	4,829	29.56%
Partial-match	1,839	24,950,238	36.78%
Unmatchable	1	0	0.02%
Total	5,000	24,957,779	100.00%

Results – Output Details

- ❑ Exact-Matches
- ❑ Match-All-Words Only
- ❑ Match-All-Words
- ❑ Partial-Match
- ❑ Semantic

All-Words-Only	First-match	Target
Original	33	48
UMLS	29	37
Stemmed	1	2
Total	63	87

Exact	First-match	Target
Original	1,237	2,064
UMLS	364	527
Stemmed	18	34
Total	1,619	2,625

All-Words	First-match	Target
Original	1,242	4,558
UMLS	114	217
Stemmed	21	54
Total	1,478	4,829

Results: Output Examples

□ Lexical algorithms

- Algorithms: Exact-match, match-all-only match-all, partial, semantic
- Normalization: UMLS Specialist Lexicon, Porter Stemming
- Summary of exact, all and partial matches with original, UMLS and PS
- Detail of exact, all and semantic matches (next slide)

Code	Description	Exact			All			Partial
		Original	UMLS	PS	Original	UMLS	PS	
D649	Anaemia, unspecified	0	7	0	19	26	0	40
E119	Non-insulin-dependent diabetes mellitus without complication	1	0	0	0	0	0	40
E785	Hyperlipidaemia, unspecified	0	0	0	0	0	0	40
I252	Old myocardial infarction	4	0	0	17	0	0	40
I500	Congestive heart failure	2	0	0	75	0	0	40
J189	Pneumonia, unspecified	0	0	0	10	0	0	40
J449	Chronic obstructive pulmonary disease, unspecified	0	0	0	4	0	0	40
K529	Noninfective gastroenteritis and colitis, unspecified	0	0	0	0	0	0	40
N189	Chronic renal failure, unspecified	0	0	0	0	0	0	40
N390	urinary tract infection, site not specified	1	1	0	3	0	0	40
Z370	Single live birth	3	0	0	4	0	0	40

No	Match	Lex/Sem	ConceptId	FullySpecifiedName	ConceptStatus

D649	Anaemia, unspecified				
1	Exact	Lexical	154812000	Anaemia unspecified	Duplicate (2)
2	Exact	Lexical	154812000	Anaemia unspecified	Duplicate (2)
3	Exact	Lexical	154812000	Anaemia unspecified	Duplicate (2)
4	Exact	Lexical	191277004	Anaemia: [unspecified] or [secondary NOS] or [normocytic or macrocytic c	Ambiguous (4)
5	Exact	Lexical	191277004	Anaemia: [unspecified] or [secondary NOS] or [normocytic or macrocytic c	Ambiguous (4)
6	Exact	Lexical	267531008	Anemia unspecified (disorder)	Limited (6)
7	Exact	Lexical	267531008	Anemia unspecified (disorder)	Limited (6)

E119	Non-insulin-dependent diabetes mellitus without complication				
1	Exact	Lexical	313436004	Type II diabetes mellitus without complication (disorder)	Current (0)

J189	Pneumonia, unspecified				
1	All	Lexical	195918003	Basal pneumonia due to unspecified organism	Duplicate (2)
2	All	Lexical	195918003	Basal pneumonia due to unspecified organism	Duplicate (2)
3	All	Lexical	307763005	Basal pneumonia due to unspecified organism (disorder)	Limited (6)
4	All	Lexical	195915000	Pneumonia due to unspecified organism (disorder)	Limited (6)
5	All	Lexical	196213008	[X]Other pneumonia, organism unspecified (disorder)	Limited (6)
6	All	Lexical	195916004	Lobar pneumonia due to unspecified organism (disorder)	Limited (6)
7	All	Lexical	196213008	[X]Other pneumonia, organism unspecified (disorder)	Limited (6)
8	All	Lexical	195915000	Pneumonia due to unspecified organism (disorder)	Limited (6)
9	All	Lexical	307763005	Basal pneumonia due to unspecified organism (disorder)	Limited (6)
10	All	Lexical	195916004	Lobar pneumonia due to unspecified organism (disorder)	Limited (6)

J449	Chronic obstructive pulmonary disease, unspecified				
1	All	Lexical	196002001	Chronic obstructive pulmonary disease with acute exacerbation, unspecifi	Duplicate (2)
2	All	Lexical	196002001	Chronic obstructive pulmonary disease with acute exacerbation, unspecifi	Duplicate (2)
3	All	Lexical	233671000	Chronic obstructive pulmonary disease with acute exacerbation, unspecifi	Limited (6)
4	All	Lexical	233671000	Chronic obstructive pulmonary disease with acute exacerbation, unspecifi	Limited (6)

N390	urinary tract infection, site not specified				
1	Exact	Lexical	197924008	Urinary tract infection: [site not specified] or [recurrent]	Ambiguous (4)
2	Exact	Semantic	197927001	Recurrent urinary tract infection (disorder)	Current (0)
3	Exact	Semantic	68566005	Urinary tract infectious disease (disorder)	Current (0)
4	Exact	Lexical	197930008	Urinary tract infection, site not specified NOS (disorder)	Limited (6)

Results: UK SCT-ICD10 Map

□ UK SCT-ICD10 Cross Map Characteristics

- Apr2/07: 273,778 records in CrossMaps; 31,987 in CrossMapTargets
- 132,088 SCT concepts; 129,244 unique; 101,674 current
- 51,704 ICD-10 target codes; 13,070 unique; 2,121 suffixes
- 31,718 unique target maps; 9,435 occurs-1x; 6,582-2x; 481 extended SCT

ICD-10 Code / Description	Maps
D649 - Anaemia, unspecified	13
E119 - Non-insulin-dependent diabetes mellitus without complication	20
E785 - Hyperlipidaemia, unspecified	10
I252 - Old myocardial infarction	27
I500 - Congestive heart failure	35
J189 - Pneumonia, unspecified	7
J449 - Chronic obstructive pulmonary disease, unspecified	12
K529 - Noninfective gastroenteritis and colitis, unspecified	47
N189 - Chronic renal failure, unspecified	13
N390 - urinary tract infection, site not specified	22
Z370 - Single live birth	3

No	ConceptId	Fully Specified Name	ConceptStatus
D649 - Anaemia, unspecified			
1	191277004	Anaemia: [unspecified] or [secondary NOS] or [normocytic or macrocyt	Ambiguous (4)
2	271737000	Anemia (disorder)	Current (0)
3	267531008	Anemia unspecified (disorder)	Limited (6)
4	201731007	Arthropathy associated with hematological disorder (disorder)	Current (0)
5	191268006	Chronic anemia (disorder)	Current (0)
6	62574001	Erythropenia (finding)	Current (0)
7	165397008	Hemoglobin low (finding)	Current (0)
8	165396004	Hemoglobin very low (finding)	Current (0)
9	300980002	Normocytic anemia (disorder)	Current (0)
10	234342003	Normocytic anemia due to unspecified cause (disorder)	Limited (6)
11	46737006	Normocytic normochromic anemia (disorder)	Current (0)
12	267561000	Other anemias (disorder)	Limited (6)
13	191279001	Other anemias NOS (disorder)	Limited (6)

E119 - Non-insulin-dependent diabetes mellitus without complication			
1	73211009	Diabetes mellitus (disorder)	Current (0)
2	190324002	Diabetes mellitus NOS with no mention of complication (disorder)	Limited (6)
3	44054006	Diabetes mellitus type 2 (disorder)	Current (0)
4	359642000	Diabetes mellitus type 2 in nonobese (disorder)	Current (0)
5	55626003	Diabetes mellitus type 2 in nonobese (disorder) [Ambiguous]	Ambiguous (4)
6	81531005	Diabetes mellitus type 2 in obese (disorder)	Current (0)
7	190321005	Diabetes mellitus with no mention of complication (disorder)	Limited (6)
8	111552007	Diabetes mellitus without complication (disorder)	Current (0)
9	267380002	Diabetes mellitus, adult onset, with no mention of complication (disord	Limited (6)
10	190323008	Diabetes mellitus: [adult onset, with no mention of complication] or [r	Ambiguous (4)
11	422034002	Diabetic retinopathy associated with type II diabetes mellitus (disorder)	Current (0)
12	395204000	Hyperosmolar non-ketotic state in type 2 diabetes mellitus (disorder)	Current (0)
13	237632004	Hypoglycemic event in diabetes (disorder)	Current (0)
14	237633009	Hypoglycemic state in diabetes (disorder)	Current (0)
15	237599002	Insulin-treated non-insulin-dependent diabetes mellitus (disorder)	Current (0)
16	359638003	Non-insulin dependent diabetes mellitus (NIDDM) in nonobese (disorder)	Current (0)
17	420715001	Persistent microalbuminuria associated with type II diabetes mellitus (d	Current (0)
18	421986006	Persistent proteinuria associated with type II diabetes mellitus (disord	Current (0)
19	190392008	Type II diabetes mellitus - poor control (disorder)	Current (0)
20	313436004	Type II diabetes mellitus without complication (disorder)	Current (0)

Results: Overall Comparison

Comparison	Frequency	Percent
Exactly same results	11	0.22%
Similar results	2,401	48.02%
Dissimilar results	122	2.44%
UK map with results only	896	17.92%
Reverse map with results only	370	7.40%
Unmappable results	1,200	24.00%
Total	5,000	100.00%

Results: UK Map Similar

Description	Total
UK map had more results than mapping outputs	2,125
Mapping outputs had more results than UK map	224
UK and mapping outputs had same no. of results	63
Total	2,401

Example - Q61.2 Polycystic kidney, autosomal dominant

ConceptId	Fully Specified Name	UK	CA
66091009	Congenital disease (disorder)	√	
204955006	Polycystic kidney disease	√	
204962002	Multicystic kidney (disorder)	√	
28728008	Polycystic kidney disease, adult type (disorder)	√	√
253878003	Adult type polycystic kidney disease type I (disorder)	√	√
253879006	Adult type polycystic kidney disease type II (disorder)	√	√
274567009	[EDTA] Polycystic kidneys, adult type (dominant) associated with renal failure (disorder)		√

Results: UK Map Dissimilar

Example: S597 Multiple injuries of forearm

ConceptId	Fully Specified Name	UK	CA
122549002	Injury (disorder)	√	
125596004	Injury of elbow (disorder)	√	
210557006	Severe multi tissue damage lower arm (disorder)	√	
210558001	Massive multi tissue damage lower arm (disorder)	√	
210860005	Injury of multiple blood vessels at forearm level (disorder)		√
211290004	Multiple superficial injuries of forearm (disorder)		√
212308001	Injury of multiple nerves at forearm level (disorder)		√
212464002	Injury of multiple muscles and tendons at forearm level (disorder)		√

Results: UK Map Unmatchable

Chapter	Range	Freq	%
XVII: Congenital malformations, deformations, and chromosomal abnormalities	Q00-Q99	292	24.33%
XIX: Injury, poisoning and certain other consequences of external causes	S00-T98	278	23.17%
XIII: Disease of the musculoskeletal system and connective tissue	M00-M99	207	17.25%
IV: Endocrine, nutritional and metabolic diseases	E00-E90	119	9.92%
XX: External causes of morbidity and mortality	V01-Y98	60	5.00%
		956	79.67%

Discussion

□ Findings

- Most found with Exact-match & Match-all; Semantic helpful
- Match-all-only & Partial not useful; Normalization helpful

□ Issues

- “Successful match?” Only ~63% in study, ~68% UK map
- Comparison: ~50% similar, ~20% dissimilar/UK only
- Independent validation; Remaining ~37% partial?

□ Implications

- Reverse mapping useful in mapping terms to SCT
- Identifying candidate terms for high quality ICD-10 codes

Next Steps

- Refine reverse mapping methodology
 - Refine lexical matching algorithms
 - Incorporate concept-based mapping
- Conduct reverse mapping phase 2
 - Classification experts as mappers x2 agencies
 - Common ICD-10 terms from Canada (AHW, CIHI) and NZ
 - Resource dependent - top 100 terms?
 - Reporting to IHTSDO Mapping-SIG in October
- Challenges with complex ICD-10 codes

File Edit View Search Tools Window Help

None

INTERNATIONAL STATISTICAL CLASSIFICATION OF DISEASES AND RELATED HEALTH PROBLEMS TENTATIVE

Chapter IV - Endocrine, nutritional and metabolic diseases (E00-E90)

Diabetes mellitus (E10-E14)

E11 Type 2 diabetes mellitus

E11.5 Type 2 diabetes mellitus with circulatory complications

E11.52 Type 2 diabetes mellitus with certain circulatory complications

Next Steps: Complex ICD-10 Codes

E11.5	Type 2 diabetes mellitus with circulatory complications	44054006 Diabetes Mellitus type 2
E11.50† 🍁	Type 2 diabetes mellitus with peripheral angiopathy (I79.2*) Type 2 diabetes mellitus with: <ul style="list-style-type: none"> • intermittent claudication • peripheral vascular disease, unspecified (PVD) • spasm of artery <i>Excludes:</i> type 2 diabetes mellitus with ulcer (E11.70)	314902007 Type 2 diabetes mellitus with peripheral angiopathy 190389009 Type II diabetes mellitus with ulcer
E11.51† 🍁	Type 2 diabetes mellitus with peripheral angiopathy with gangrene (I79.2*) <i>Excludes:</i> type 2 diabetes mellitus with: <ul style="list-style-type: none"> • Melaney's gangrene (E11.68) • ulcer with gangrene (E11.71) • Fournier's gangrene (E11.68) 	190390000 Type II diabetes mellitus with gangrene
E11.52 🍁	Type 2 diabetes mellitus with certain circulatory complications Code separately any of the following associated conditions when present: <ul style="list-style-type: none"> • acute ischaemic heart disease (I24.-) • angina (I20.-) • cardiomyopathy (I42.9) • cerebrovascular diseases (I60-169) • coronary artery disease (I25.-) • heart failure (I50.-) • myocardial infarction (I21-I22) • transient cerebral ischaemic attack (TIA) (G45.9) 	



Concept Id: 44054006 **Diabetes mellitus type 2**

Description Id: 197763012
clinical finding

Words - any order

Find: diabetes ulcer gangrene

Hierarchy: Subtype hierarchy

- 44054006 diabetes mellitus type 2
 - 75682002 diabetes mellitus due to insulin receptor antibodies
 - 359642000 diabetes mellitus type 2 in nonobese
 - 81531005 diabetes mellitus type 2 in obese
 - 190331003 diabetes mellitus, adult onset, with hyperosmolar coma
 - 9859006 insulin-resistant diabetes mellitus AND acanthosis nigricans
 - 237599002 insulin-treated non-insulin-dependent diabetes mellitus
 - 359638003 NIDDM in nonobese
 - 199230006 pre-existing diabetes mellitus, non-insulin-dependent
 - 237627000 pregnancy and non-insulin-dependent diabetes mellitus
 - 190392008 Type II diabetes mellitus - poor control
 - 314903002 Type II diabetes mellitus with arthropathy
 - 190390000 Type II diabetes mellitus with gangrene
 - 314772004 Type II diabetes mellitus with hypoglycemic coma
 - 314902007 Type II diabetes mellitus with peripheral angiopathy
 - 190389009 Type II diabetes mellitus with ulcer
 - 313436004 Type II diabetes mellitus without complication

diabetes mellitus type 2 - Definition
Concept Status: Current

Descriptions

- F diabetes mellitus type 2 (disorder)
- P diabetes mellitus type 2
- S diabetes mellitus - adult onset
- S diabetes mellitus type II
- S maturity onset diabetes mellitus
- S NIDDM
- S NIDDM - Non-insulin dependent diabetes mellitus
- S non-insulin dependent diabetes mellitus
- S non-insulin-dependent diabetes mellitus
- S Type 2 diabetes mellitus
- S Type II diabetes mellitus

Definition: Primitive

- is a
 - D diabetes mellitus
- finding site
 - D endocrine pancreatic structure

Qualifiers

- severity
 - P severities
- episodicity
 - P episodicities
- clinical course
 - P courses

Codes

- Original SnomedId : DB-61030
- Read Code (Ctv3Id) : X40J5

Diabetes mellitus (E10-E14)

E11 Type 2 diabetes mellitus

E11.2 Type 2 diabetes mellitus with renal complications

E11.1 Type 2 diabetes mellitus with acidosis

E11.10 Type 2 diabetes mellitus with ketoacidosis

Type 2 diabetes mellitus with:

- (ketotic) hyperglycemia
- ketoacidosis (DKA)
- ketone formation with acidosis

Excludes: that with lactic acidosis ([E11.12](#))

E11.11 Type 2 diabetes mellitus with lactic acidosis

Excludes: that with ketoacidosis ([E11.12](#))

E11.12 Type 2 diabetes mellitus with ketoacidosis with lactic acidosis

E11.2 Type 2 diabetes mellitus with renal complications

E11.20† Type 2 diabetes mellitus with incipient diabetic nephropathy ([N08.3*](#))

Type 2 diabetes mellitus with:

- glomerular basement-membrane thickening
- glomerular mesangial expansion
- incipient nephropathy (early) (reversible)
- microalbuminuria (constant) (persistent)

Use additional code to identify any:

- diabetic nephropathy ([N08.3*](#))
- intracapillary glomerulonephrosis ([N08.3*](#))

E11.21† Type 2 diabetes mellitus with established diabetic nephropathy ([N08.3*](#))

Type 2 diabetes mellitus with:

- glomerulosclerosis (diffuse) (intracapillary) (nodular)
- Kimmelstiel-Wilson (disease) (lesion)