OHDSI Vocabulary Development and Release Process

OHDSI Vocabulary Management

Demand

New Vocab. Request → Prioritization & Funding → Estimate Effort → Plan & Schedule

Development

Obtain Data → Integrate Vocabulary / Create New Vocabulary → Perform Testing → Publish into ATHENA

Support & Maintenance

Obtain New Data Feed → Update Mappings → Perform Testing → Publish into ATHENA

Raise Issue in GitHub → Fix Mappings → Perform Testing → Publish into ATHENA

☐ **User / Requestor**   ☐ **OHDSI Vocabulary Team**

Raising Requests

Standardizing procedures (call for non-US based collaborators)
◼ Researchers

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Absence of concept relations between ICD10 PCS and SNOMED in Athena
◼ Vocabulary Users   vocabularies

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ICD10 PCS Maps to Relationship includes ICD10PCS Hierarchy
◼ Vocabulary Users

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Missing ICD10PCS Codes #165

🚫 Closed   cukarthik opened this issue on Mar 5, 2018 · 4 comments

cukarthik commented on Mar 5, 2018

When is the next update of ICD10 procedure codes? Our data has many missing code. H
a few that seem to be new:

3E0P3VZ
099680Z
09BQ8ZX
09BQ8ZZ
09BW8ZZ
0BD88ZZ
0BDC8ZX

Discussing details

ICD10PCS standardization - LOINC usage

■ Vocabulary Users   cdm, vocabularies

Eduard_Korchmar   2 ✎ Apr 8

During ongoing procedure consolidation process, 7th level ICD10PCS concepts are going to be integrated in SNOMED procedure subhierarchy, essentially becoming extension of existing SNOMED model. These relations in early version are already written in standardized vocabularies and we plan on releasing a much cleaner version very soon – most likely this week.

However, ICD10PCS includes a chapter for "Measurement and Monitoring" – all codes that start with character '4'. Given that SNOMED has poor hierarchy for measurement procedures and SNOMED's attribute model doesn't accommodate aspects of measurements well, we consider standardizing them to LOINC vocabulary instead. LOINC has own hierarchy built from LOINC part codes (LP) and could serve as a great target.

My question is: would it be still convenient for vocabulary users if part of the ICD10PCS vocabulary becomes mapped to (or becomes descendants of) LOINC concepts? This will also mean that these concepts' domain_id will be "Measurement" instead of "Procedure" – this could also possibly break things?

For context:
4A033R1 Measurement of Arterial Saturation, Peripheral, Percutaneous Approach (ICD10PCS)
currently 'Is a' 104847001 Oxygen saturation measurement (SNOMED). We could manually extend definitions to 113080007 Oxygen saturation measurement, arterial (SNOMED), since it will be not automatically picked up (any reference to arteries/arterial blood is absent from attributes).

At the same time, 2708-6 Oxygen saturation in Arterial blood (LOINC) has corresponding relation to LOINC classification/atom concepts – which are not currently present in CDM, but could be added.

All in all, relations to LOINC concepts would be easier to implement since it is better defined by attributes.

1 Reply ˅   ♡   %   …   ↩ Reply

created	last reply	4 replies	78 views	3 users			
Ⓔ Apr 8	Apr 10						˅

Christian_Reich   Apr 9

Release announcement

ICD10PCS standardization: first stable version

■ Vocabulary Users

Eduard_Korchmar   29d

Last Friday we have updated ICD10PCS Vocabulary to include new relations built from ICD10PCS leaf-level concepts to SNOMED.

Changes since November release:

1. Relations to SNOMED parents are now much cleaner
2. Eliminated redundancy in relations to SNOMED attributes
3. Fixed ICD10PCS redundant internal hierarchy links – now relations are built only to the next immediate hierarchical level.

Changes include hierarchical relations from ICD10PCS procedure concepts to SNOMED parents, e.g.:

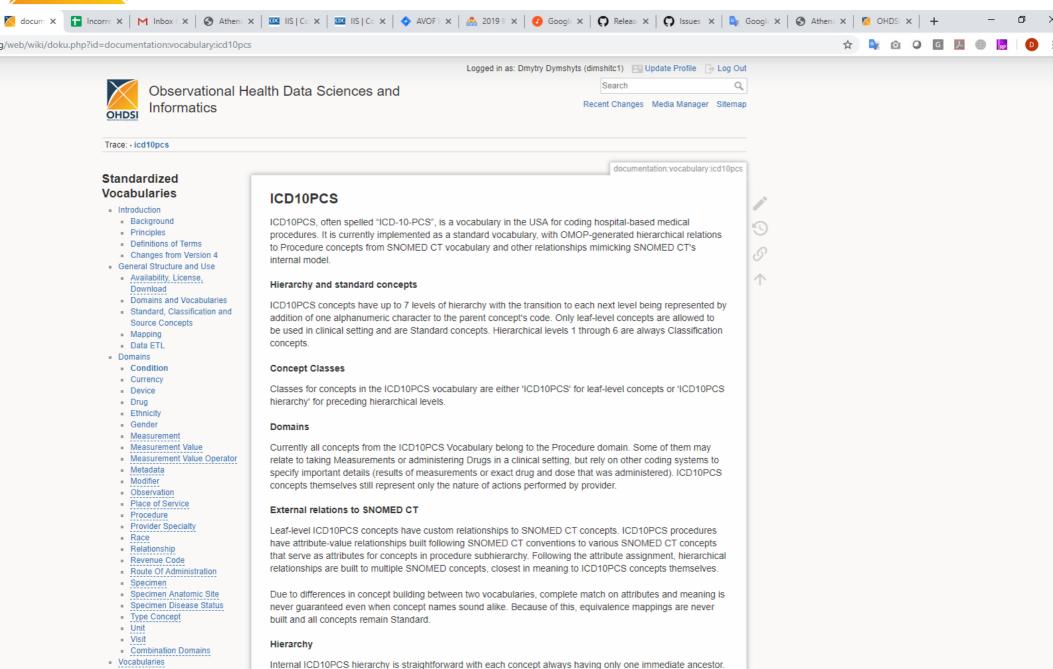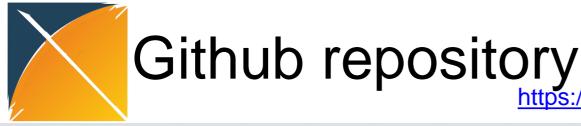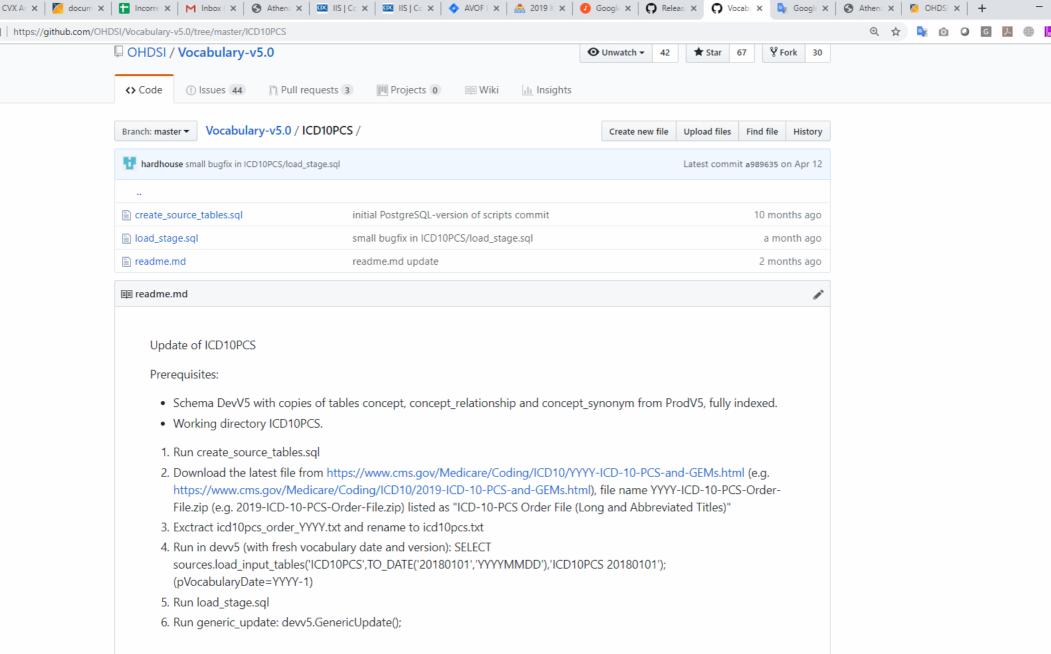| concept_id_1	concept_name_1	vocabulary_id_1	relationship_id	concept_id_2	concept_name_2
2748967	Bypass Stomach to Duodenum with Autologous Tissue Substitute, Open Approach	ICD10PCS	Is a	4229321	Gastroduodenosto
2748972	Bypass Stomach to Duodenum with Synthetic Substitute, Open Approach	ICD10PCS	Is a	4229321	Gastroduodenosto
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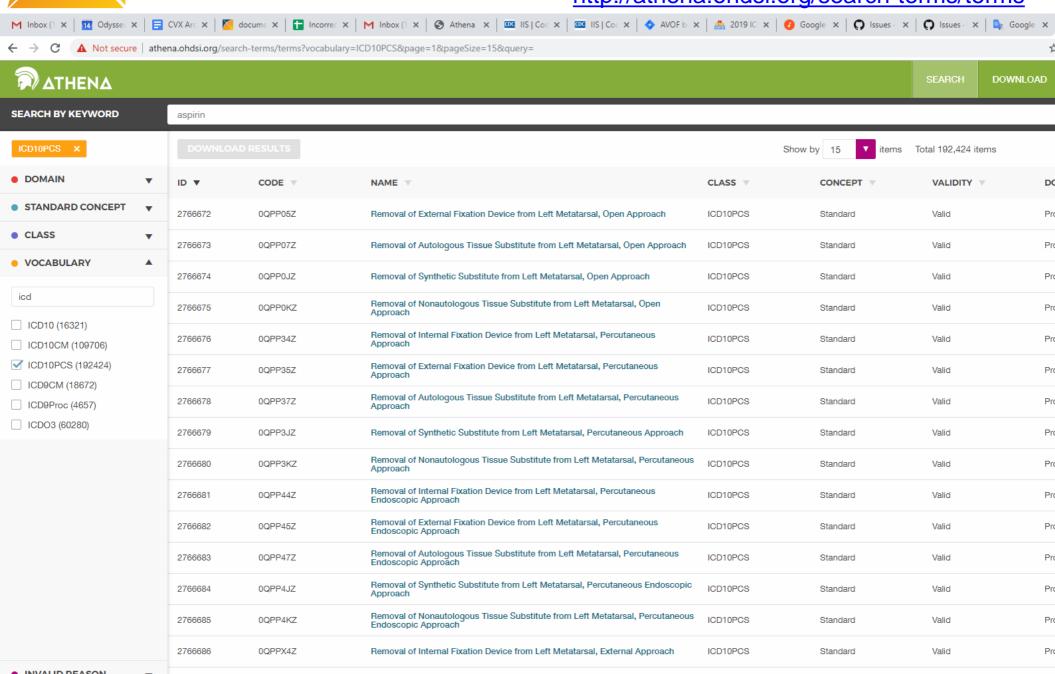# Documentation

/web/wiki/doku.php?id=documentation:vocabulary:icd10pcs

Search

Observational Health Data Sciences and Informatics

Recent Changes   Media Manager   Sitemap

Trace: · **icd10pcs**

documentation:vocabulary:icd10pcs

Standardized Vocabularies

- Introduction
  - Background
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  - Definitions of Terms
  - Changes from Version 4
- General Structure and Use
  - Availability, License, Download
  - Domains and Vocabularies
  - Standard, Classification and Source Concepts
  - Mapping
  - Data ETL
- Domains
  - Condition
  - Currency
  - Device
  - Drug
  - Ethnicity
  - Gender
  - Measurement
  - Measurement Value
  - Measurement Value Operator
  - Metadata
  - Modifier
  - Observation
  - Place of Service
  - Procedure
  - Provider Specialty
  - Race
  - Relationship
  - Revenue Code
  - Route Of Administration
  - Specimen
  - Specimen Anatomic Site
  - Specimen Disease Status
  - Type Concept
  - Unit
  - Visit
  - Combination Domains
- Vocabularies

ICD10PCS

ICD10PCS, often spelled "ICD-10-PCS", is a vocabulary in the USA for coding hospital-based medical procedures. It is currently implemented as a standard vocabulary, with OMOP-generated hierarchical relations to Procedure concepts from SNOMED CT vocabulary and other relationships mimicking SNOMED CT's internal model.

Hierarchy and standard concepts

ICD10PCS concepts have up to 7 levels of hierarchy with the transition to each next level being represented by addition of one alphanumeric character to the parent concept's code. Only leaf-level concepts are allowed to be used in clinical setting and are Standard concepts. Hierarchical levels 1 through 6 are always Classification concepts.

Concept Classes

Classes for concepts in the ICD10PCS vocabulary are either 'ICD10PCS' for leaf-level concepts or 'ICD10PCS hierarchy' for preceding hierarchical levels.

Domains

Currently all concepts from the ICD10PCS Vocabulary belong to the Procedure domain. Some of them may relate to taking Measurements or administering Drugs in a clinical setting, but rely on other coding systems to specify important details (results of measurements or exact drug and dose that was administered). ICD10PCS concepts themselves still represent only the nature of actions performed by provider.

External relations to SNOMED CT

Leaf-level ICD10PCS concepts have custom relationships to SNOMED CT concepts. ICD10PCS procedures have attribute-value relationships built following SNOMED CT conventions to various SNOMED CT concepts that serve as attributes for concepts in procedure subhierarchy. Following the attribute assignment, hierarchical relationships are built to multiple SNOMED concepts, closest in meaning to ICD10PCS concepts themselves.

Due to differences in concept building between two vocabularies, complete match on attributes and meaning is never guaranteed even when concept names sound alike. Because of this, equivalence mappings are never built and all concepts remain Standard.

Hierarchy

Internal ICD10PCS hierarchy is straightforward with each concept always having only one immediate ancestor.

Github repository

CVX A ✕ | document ✕ | Incorre ✕ | M Inbox ✕ | Athena ✕ | IIS | Cc ✕ | IIS | Cc ✕ | AVOF ✕ | 2019 ✕ | Google ✕ | Releas ✕ | Vocab ✕ | Google ✕ | Athena ✕ | OHDSI ✕ | +

https://github.com/OHDSI/Vocabulary-v5.0/tree/master/ICD10PCS

🖥 OHDSI / **Vocabulary-v5.0**

👁 Unwatch ▾ | 42 | ⭐ Star | 67 | 🍴 Fork | 30

`<> Code` | ⓘ Issues **44** | Pull requests **3** | Projects **0** | Wiki | Insights

Branch: master ▾ | **Vocabulary-v5.0** / **ICD10PCS** /

Create new file | Upload files | Find file | History

🐱 **hardhouse** small bugfix in ICD10PCS/load_stage.sql

Latest commit a989635 on Apr 12

..

📄 create_source_tables.sql	initial PostgreSQL-version of scripts commit	10 months ago
📄 load_stage.sql	small bugfix in ICD10PCS/load_stage.sql	a month ago
📄 readme.md	readme.md update	2 months ago

📖 **readme.md**

✏

Update of ICD10PCS

Prerequisites:

- Schema DevV5 with copies of tables concept, concept_relationship and concept_synonym from ProdV5, fully indexed.
- Working directory ICD10PCS.

1. Run create_source_tables.sql
2. Download the latest file from https://www.cms.gov/Medicare/Coding/ICD10/YYYY-ICD-10-PCS-and-GEMs.html (e.g. https://www.cms.gov/Medicare/Coding/ICD10/2019-ICD-10-PCS-and-GEMs.html), file name YYYY-ICD-10-PCS-Order-File.zip (e.g. 2019-ICD-10-PCS-Order-File.zip) listed as "ICD-10-PCS Order File (Long and Abbreviated Titles)"
3. Exctract icd10pcs_order_YYYY.txt and rename to icd10pcs.txt
4. Run in devv5 (with fresh vocabulary date and version): SELECT sources.load_input_tables('ICD10PCS',TO_DATE('20180101','YYYYMMDD'),'ICD10PCS 20180101'); (pVocabularyDate=YYYY-1)
5. Run load_stage.sql
6. Run generic_update: devv5.GenericUpdate();

Athena search page

Athena download page

ID (CDM V4.5)	CODE (CDM V5)	NAME	REQUIRED
1	SNOMED	Systematic Nomenclature of Medicine - Clinical Terms (IHTSDO)	
2	ICD9CM	International Classification of Diseases, Ninth Revision, Clinical Modification, Volume 1 and 2 (NCHS)	
3	ICD9Proc	International Classification of Diseases, Ninth Revision, Clinical Modification, Volume 3 (NCHS)	
4	CPT4	Current Procedural Terminology version 4 (AMA)	EULA required
5	HCPCS	Healthcare Common Procedure Coding System (CMS)	
6	LOINC	Logical Observation Identifiers Names and Codes (Regenstrief Institute)	
8	RxNorm	RxNorm (NLM)	
9	NDC	National Drug Code (FDA and manufacturers)	
12	Gender	OMOP Gender	
13	Race	Race and Ethnicity Code Set (USBC)	
14	CMS Place of Service	Place of Service Codes for Professional Claims (CMS)	
21	ATC	WHO Anatomic Therapeutic Chemical Classification	
35	ICD10PCS	ICD-10 Procedure Coding System (CMS)	
50	SPL	Structured Product Labeling (FDA)	
65	Currency	International Currency Symbol (ISO 4217)	

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Release notes

Release notes 20190422

OHDSIVocabularyReleaseRobot edited this page 22 days ago · 1 revision

Domain changes

vocabulary_id	old_domain_id	new_domain_id	count
PPI	Condition	Observation	617
PPI	Measurement	Observation	29
PPI	Meas Value	Observation	1525
PPI	Procedure	Observation	13
PPI	Relationship	Observation	2

Newly added concepts grouped by Vocabulary_id and Domain

vocabulary_id	domain_id	count
NDC	Drug	802
PPI	Observation	1253
SNOMED Veterinary	Condition	12
SNOMED Veterinary	Procedure	2
SNOMED Veterinary	Spec Anatomic Site	2
SPL	Drug	1130

Standard concept changes

What was done lately and what we are going to do

Procedure domain

done:

- ICD9Proc, OPCS4, ICD10PCS, HCPCS

upcoming

- OPS – we are working on them using ICD10PCS approach
- CPT4 – no attributes defined, needs investigation

The same principles as for ICD10PCS are used

Drug domain

<u>Done:</u>

<u>Added</u>:

- JMDC - Japan Medical Data Center Drug Code (JMDC)
- KDC - Korean Drug Code (HIRA)

<u>Improved</u>:

- dm+d, Gemscript, GGR, BDPM, DPD, AMT, HCPCS drugs,
- added missing NDC concepts and missing mappings

Drug domain

Upcoming

additions

- European drug vocabularies - article 57 database
- HemOnc as a Oncology Drug Regimen vocabulary

improvements

- CVX - it needs better hierarchy
- ATC - it still gaps and some ambiguity
- NDC - still has gaps
- make drug vocabularies updates as much as possibly automated

Condition domain

Added:

- SNOMED Veterinary

Improved:

ICD9CM, ICD10CM, ICD10, ICDO

Multiple domains

Done

- More accurate domain assignment for LOINC, MedDRA, SNOMED

Upcoming

- NAACCR as a Cancer Registry source vocabulary

https://github.com/OHDSI/OncologyWG/issues

- Genomic vocabularies

http://forums.ohdsi.org/t/genomic-data-in-the-cdm/3483

https://github.com/OHDSI/Genomic-CDM

- SNOMED Extension allowing to map conditions flawlessly

Structural changes

<u>done:</u>

- Outdated HCPCS and CPT4 remain standard if they don't have replacement, as these concepts existed in the patient data and still need to be represented in CDM

<u>to do:</u>

- make ATC concepts standard

- support concepts changing their meaning over time (HCPCS, NDC, DRG)

We'll discuss this on the next CDM workgroup;
see forum threads:
http://forums.ohdsi.org/t/hcpcs-codes-change-their-meaning-over-time/6182
http://forums.ohdsi.org/t/ndcs-changing-over-time/903
http://forums.ohdsi.org/t/drg-codes-change-their-meaning-over-time/6529

Other gaps and improvements

- Improvement - more automation is needs to be added for refreshes

- Opportunity - Better collaboration and curation capabilities with web-based interfaces that do not require deep SQL and database structure knowledge (for example, the mapping tool from France?)

- Improvement - how to better enable accepting external contributions (see new OHDSI process proposed by Patrick R. on http://forums.ohdsi.org/t/a-proposal-for-maturing-our-open-community-development-activities/6728/1)

- Improvement - more streamlined and consistent release process

- Opportunity - enabling the diff between new and previous vocab releases with Tantalus https://github.com/OHDSI/Tantalus