Clinical Nomenclature Review: RxNorm, LOINC & SNOMED
A focus on SNOMED-CT in ICD 10 Transition

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HIM Consultant – Health Information Alliance, INC

Lou Testa
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Agenda

• Clinical Terminologies and vocabularies
• NLM
  ▫ UMLS
• RxNorm
• Loinc
• SNOMED
  ▫ Imagic
Clinical Terminologies and Vocabularies

- Clinical **Terminologies** represent terms related to the medical field while **Vocabularies** are the collections of terms.
- Both clinical terminologies and vocabularies provide a way to capture detailed data in an electronic health record (EHR). They support the transformation of paper-based to electronic records by providing a **machine-readable data structure**.
- Clinical terminologies are considered the **input** format while classification systems are the **output** format. (AHIMA)
Classification VS. Terminology

- Classification systems (output)
  - i.e.: ICD-9-CM, ICD-10-CM, and ICD-10-PCS

- Clinical terminology (input)
  - i.e.: SNOMED-CT
NLM

• National Library of Medicine
  ▫ World’s largest biomedical library

• Databases (i.e: PubMed/MEDLINE, MeSH, **UMLS**, ClinicalTrials.gov, MedlinePlus, TOXNET, Images from the History of Medicine, LocatorPlus....)
UMLS -  
*Unified Medical Language System*

- Integrates and distributes:
  - key terminology
  - classification and coding standards
  - associated resources to promote creation of more effective and interoperable biomedical information systems and services, including electronic health records.
UMLS, cont.

• Three tools called the Knowledge Sources:
  • **Metathesaurus**: Terms and codes from many vocabularies, including CPT®, ICD-10-CM, LOINC®, MeSH®, RxNorm, and SNOMED CT®
  • Semantic Network: Broad categories (semantic types) and their relationships (semantic relations)
  • SPECIALIST Lexicon and Lexical Tools: Natural language processing tools
RxNORM
RxNORM

• RxNorm
  ▫ Normalized naming system for generic and branded drugs
  ▫ A tool for supporting semantic interoperation between drug terminologies and pharmacy knowledge base systems

• NLM produces RxNorm
  1. Receives drug names from many data sources
  2. Analyzes and processes the data
  3. Outputs the data into RxNorm files in a standard format
What is the Purpose of RxNORM?

- Hospitals, pharmacies, and other organizations use computer systems to record and process drug information.
- The purpose of RxNorm is to provide a normalized names and unique identifiers for medicines and drugs. The goal of RxNorm is to allow computer systems to communicate drug-related information efficiently and unambiguously (NLM).
Scope

- RxNorm contains the names of prescription and many over-the-counter drugs available in the United States. RxNorm includes generic and branded clinical drugs - pharmaceutical products given to (or taken by) a patient with therapeutic or diagnostic intent
- Drug packs - packs that contain multiple drugs, or drugs designed to be administered in a specified sequence
- Radiopharmaceuticals, contrast media, food, dietary supplements, and medical devices, such as bandages and crutches, are all out of scope for RxNorm.
How is RxNorm Produced?

- NLM receives drug names from many data sources, analyzes and processes the data, and outputs the data into RxNorm files in a standard format. There are many steps involved in RxNorm production, but these five basic steps give a general idea of how RxNorm is produced....
Step 1

1. Group source data into collections of synonyms (called concepts).

Sample source data:
- Naproxen Tab 250 MG
- Naproxen 250mg tablet (product)
- NAPROXEN@250 mg@ORAL@TABLET
- Naproxen 250 MILLIGRAM In 1 TABLET ORAL TABLET
- NAPROXEN 250MG TAB,UD [VA Product]

Sources format their drug names in many different ways. Although the drug names in this Naproxen example appear different, they all have the same meaning at a certain level of abstraction. RxNorm groups these as synonyms into one concept.
Step 2

• **Create an RxNorm normalized name for each concept (if the concept is in scope and unambiguous).**
• About 60% of the drug names from source vocabularies receive RxNorm normalized names in addition to the names provided by the source vocabularies. The other 40% do not receive RxNorm normalized names, because they are either out of scope or their names are too ambiguous. The most common types of names that are not assigned RxNorm normalized names are medical devices, foods, and enzymes.

• The Naproxen concept above is in scope for RxNorm, so it is assigned an RxNorm normalized name. The normalized name consists of the ingredient, strength, and dose form (in that order) for fully-specified generic drugs. In our example, the RxNorm normalized name is 'Naproxen 250 MG Oral Tablet'. The branded version of this drug uses the same format but includes the brand name in brackets at the end (e.g., 'Naproxen 250 MG Oral Tablet [Prosaid]').
Step 3

- Assign an RxNorm concept unique identifier (RXCUI) to each concept and an RxNorm atom unique identifier (RXAUI) to each atom.
- Each concept receives an RXCUI, which is unique to that concept. An RXCUI is essentially the "name" of a concept that computers read and understand. RXCUIs are never deleted or reused; RXCUIs and the meanings of concepts persist from one RxNorm release to the next.
- Concepts are collections of synonyms at a given level of abstraction. Each drug name carries additional characteristics, including its source, its code (the unique identifier assigned by its source), and its term type (described below). An atom is a drug name plus these additional characteristics. Each atom within a concept receives an atom unique identifier, an RXAUI.
- NLM assigns the RXCUI '198013' to the Naproxen concept above. Each of the atoms associated with the drug names listed above receives a separate RXAUI.
Step 4

- Include relationships and attributes from the source data.
- Source data include more than drug names in some cases. Data can also include relationships that link drug names to other drug names and ingredients, as well as other information, such as National Drug Codes (NDCs), marketing categories, and pill imprint information.
- Using the same example as before, you'll find relationships to synonyms and ingredients, as well as NDC, manufacturer, and pill size attributes.
Step 5

- Create related RxNorm names and relationships.
  - In addition to the fully complete clinical drug names (ingredient, strength, and dose form), RxNorm also creates names at other levels of specificity:
    - ingredient / precise ingredient / multiple ingredients
    - ingredient + strength
    - ingredient + dose form / ingredient + dose form group
  - Whenever NLM creates a fully-specified drug name, these more general names (and the concepts that contain these names) are also created if they don't already exist. RxNorm then creates relationships to link these concepts together. This set of concepts and relationships is a "graph."
  - So for both generic and branded drugs, RxNorm "fills out the graph" by creating the related drug names (and their concepts) that don't already exist. In the case of branded drugs, NLM creates their generic counterparts when they don't already exist in the data.
  - Along with the RxNorm fully-specified name 'Naproxen 250 MG Oral Tablet', NLM creates:
    - 'Naproxen'
    - 'Naproxen 250 MG'
    - 'Naproxen Oral Tablet' / 'Naproxen Oral Products' / 'Naproxen Pills'
  - RxNorm links these names using relationships. Here are a few examples:
    - 'Naproxen 250 MG Oral Tablet' has_dose_form 'Oral Tablet'
    - 'Naproxen' ingredient_of 'Naproxen 250 MG'
    - 'Naproxen 250 MG Oral Tablet' isa 'Naproxen Oral Tablet'
    - 'Naproxen Pills' has_ingredient 'Naproxen'
How Often is RxNorm Released?

- **Full Monthly Releases**
- The full RxNorm data set is released on the first Monday of each month. During months when the first Monday is a Federal holiday, RxNorm is released on the following Tuesday. The monthly release schedule for 2012 is as follows....
### How often is RxNorm Released?

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 3</td>
<td>Tuesday</td>
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<tr>
<td>February 6</td>
<td>Monday</td>
</tr>
<tr>
<td>March 5</td>
<td>Monday</td>
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<td>April 2</td>
<td>Monday</td>
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<td>Monday</td>
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<td>June 4</td>
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<td>July 2</td>
<td>Monday</td>
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<tr>
<td>August 6</td>
<td>Monday</td>
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<td>Tuesday</td>
</tr>
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<td>October 1</td>
<td>Monday</td>
</tr>
<tr>
<td>November 5</td>
<td>Monday</td>
</tr>
<tr>
<td>December 3</td>
<td>Monday</td>
</tr>
</tbody>
</table>
More Release Info:

- **Weekly Updates**
  - RxNorm is updated every Wednesday with newly-approved drug information from the MTHSPL source vocabulary. Weekly updates are meant to be used in conjunction with the most recent full monthly release and any previous weekly updates for that same month.

- **UMLS Semiannual Releases**
  - RxNorm is available through the UMLS, which is updated in May and November each year. The RxNorm data in the UMLS is always a few months behind the current RxNorm monthly release. For example, the November release of the UMLS would contain the September RxNorm data. At each UMLS release, the monthly RxNorm data is synchronized with the data contained in that UMLS release.
Where Can I Get More Info On RxNorm?

- **Technical documentation**
  For more-detailed, technical information about RxNorm, including scripts for loading RxNorm data into Oracle and MySQL databases, read the [RxNorm technical documentation](#).

- **Release notes**
  For each monthly release, the release notes provide information about source vocabulary updates, data changes, and data counts. The [RxNorm Files page](#) contains a link to the current release notes.

- **Listserv**
  RXNORM-ANNOUNCES-L is an announcement-only listserv for information related to the RxNorm release files, technical issues related to accessing the files, and other important announcements. Visit the [RXNORM-ANNOUNCES-L page](#) to subscribe and access the list archives.

- **E-mail**
  Questions and comments can be directed at: [rxnorminfo@nlm.nih.gov](mailto:rxnorminfo@nlm.nih.gov)
LOINC
LOINC

- Logical Observation Identifiers Names and Codes

- Database and universal standard for identifying medical laboratory observations

- It was developed and is maintained by the Regenstrief Institute, a US non-profit medical research organization, in 1994 (Wiki)
LOINC Facts

• Suite of designated standards for use in U.S. Federal Government systems for the electronic exchange of clinical health information

• likely to become a HIPAA standard for some segments of the Claims Attachment transaction

• In 1999, it was identified by the HL7 Standards Development Organization as a preferred code set for laboratory test names in transactions between health care facilities, laboratories, laboratory testing devices, and public health authorities.
LOINC

• NLM supports the ongoing development of LOINC through a contract arrangement.

• LOINC, along with the Systematized Nomenclature of Medicine -- Clinical Terms (SNOMED CT) and HL7’s Reference Information Model, helps define medical concepts in the Clinical Document Architecture markup standard.
SNOMED-CT

- Systematized Nomenclature of Medicine - Clinical Terms
- The most comprehensive, multilingual clinical healthcare terminology in the world
- Introduced in 1965 by SNOP: the Systematized Nomenclature of Pathology
  - Topography
  - Morphology
  - Procedure
Some Background

Created

CAP | January 2002

Owned, Maintained & Distributed

As of April 2007 | IHTSDO

U.S. Member of the IHTSDO

NLM | SNOMED CT FREE
HOW?

- SNOMED CT is the merger of:
  - SNOMED RT
  - the United Kingdom's CTV 3 terminology, formerly known as the Read codes.

- SNOMED CT's 19 hierarchies provide coverage in diseases, findings, procedures, body structures, pharmacy products and other health care concepts.
Structure

Over 300,000 concepts
- 96,000 concepts -- 59,244 disorders and 36,616 findings -- have been mapped to ICD-9-CM. (2003)

Over 900,000 descriptions
- comprehensive coverage of diseases, clinical findings, etiologies, procedures and living organisms
SNOMED-CT vs. ICD

SNOMED
- 100,000 clinical findings
- +300,000 concepts
- Clinically-based:
  - document whatever is needed for patient care

ICD-10-CM
- 68,000
- Statistical
- “catch-all”
  - loss of information

ICD-9-CM
- 14,000
- Statistical
- “catch-all”
  - loss of information
<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD-9-CM</th>
<th>ICD-10-CM</th>
<th>SNOMED CT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asperger’s disorder</td>
<td>299.8 Other specified pervasive developmental disorders</td>
<td>F84.5 Asperger’s disorder</td>
<td>235600001 Asperger’s disorder</td>
</tr>
<tr>
<td>Apert syndrome</td>
<td>755.55 Acrocephalosyndactyly</td>
<td>Q87.0 Congenital malformation syndromes predominantly affecting facial appearance</td>
<td>205258009 Apert syndrome</td>
</tr>
<tr>
<td>Metabolic acidosis</td>
<td>276.2 Acidosis</td>
<td>E87.2 Acidosis</td>
<td>594550009 Metabolic acidosis</td>
</tr>
<tr>
<td>Respiratory acidosis</td>
<td>276.2 Acidosis</td>
<td>E87.2 Acidosis</td>
<td>123260000 Respiratory acidosis</td>
</tr>
<tr>
<td>Lactic acidosis</td>
<td>276.2 Acidosis</td>
<td>E87.2 Acidosis</td>
<td>91273001 Lactic acidosis</td>
</tr>
</tbody>
</table>
SNOMED CT & ICD-10-CM

- Clinical data coded in SNOMED CT can be used to generate ICD-10-CM codes ("code once, use multiple times")

- Implementation of SNOMED CT in the EHR will not only improve the quality of data, but can also help the transition to ICD-10-CM(AHIMA)
Purpose of the map

• Embedded in the EHR to find ICD-10-CM codes in real-time – (See the I-MAGIC use case Demo)

• The map was designed to assist coding professionals by suggesting ICD codes based on SNOMED CT-encoded problems (i.e.: like CAC)
Scope of the map

- Only mapping those SNOMED CT concepts suitable for the problem list: clinical findings, events and situation

- Commonly occurring concepts are mapped first
  - CORE Problem List Subset
  - Donated content from Kaiser Permanente’s Convergent Medical Terminology (CMT)
Interactive Map-Assisted Generation of ICD Codes (I-MAGIC) Algorithm

Enter SNOMED-coded problem

A. Is there a default ICD10CM code in Map? No

Yes

3 display candidate ICD-10-CM code(s)

B. Sufficient information to generate ICD10CM code? No

1 add context information from EHR (e.g., gender, age)

Yes

2 obtain additional user input

C. Optional refinements? No

Yes

4 get user input to refine ICD-10-CM Code

Pick from list of candidate ICD10CM code(s)
iMagic

• Interactive Map-Assisted Generation of ICD Codes
SNOMED CT to ICD-10-CM Map

Download the Map

<table>
<thead>
<tr>
<th>SNOMED CT to ICD-10-CM Map Version</th>
<th>Derived from SNOMED CT version</th>
<th>Derived from ICD-10-CM version</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNOMEDCT_ICD10CM_map.201202</td>
<td>July 2011 International Release</td>
<td>2011</td>
<td>Release Notes (PDF)</td>
</tr>
</tbody>
</table>

Supporting Materials

- **I-MAGIC Demo Page** - to see the Map in action. The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems using SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.
- **Technical Documentation** (PDF) for the SNOMED CT to ICD-10-CM Map. See the [Example file](https://example.com) (Excel).
- **Frequently Asked Questions**
- **Mapping from SNOMED CT to ICD-10 and ICD-10-CM** - See the article in the Healthcare Information and Management Systems Society (HIMSS) (Healthcare Information and Management Systems Society) 2012 Conference

Introduction

SNOMED CT (Systematized Nomenclature of Medicine-Clinical Terms) is considered to be the most comprehensive, multilingual clinical healthcare terminology in the world. It is designed for use in clinical documentation in the Electronic Health Record (EHR). The purpose of the SNOMED CT to ICD-10-CM map (herein referred to as “the Map”) is to support semi-automated generation of ICD-10-CM codes from clinical data encoded in SNOMED CT for reimbursement and statistical purposes.

Use cases supported

The Map can be used in the following scenarios:

- **Real-time use by the healthcare provider** - In this scenario, the Map is embedded in the problem list application of the EHR used by the physician or other healthcare provider. At the end of a clinic encounter, the clinician updates the problem list, which is encoded in SNOMED CT.
The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.

**Problem List (SNOMED-CT terms)**

What's wrong with the patient? Please add problem(s) here. (Hint: type 'dizzy')

<table>
<thead>
<tr>
<th>Action</th>
<th>SNOMED-CT Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Problem:</td>
</tr>
</tbody>
</table>

(Only SNOMED CT terms included in the published SNOMED CT to ICD-10-CM Map are shown.)

- Update List
- Get ICD Codes
- Add Complex Examples:
The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.

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<tr>
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<th>SNOMED-CT Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add</td>
<td>Otitis</td>
</tr>
<tr>
<td></td>
<td>Labyrinthitis (23919004)</td>
</tr>
<tr>
<td></td>
<td>Otitis externa (3135009)</td>
</tr>
<tr>
<td></td>
<td>Otitis media (65363002)</td>
</tr>
<tr>
<td></td>
<td>Epidemic vertigo (186738001)</td>
</tr>
<tr>
<td></td>
<td>Acute exudative otitis media (19399000)</td>
</tr>
<tr>
<td></td>
<td>Chronic otitis media (21186005)</td>
</tr>
<tr>
<td></td>
<td>Chronic non-suppurative otitis media (232254004)</td>
</tr>
<tr>
<td></td>
<td>Acute otitis media (3110003)</td>
</tr>
<tr>
<td></td>
<td>Acute eczematoid otitis externa (54272002)</td>
</tr>
<tr>
<td></td>
<td>Acute suppurative otitis media with spontaneous rupture of ear drum (86279000)</td>
</tr>
</tbody>
</table>

SNOMED CT terms included in the published map.
The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.

Name: My Patient (modified)  Gender: Male  Date of Birth: 8 Jun 1980

Problem List (SNOMED-CT terms)

What's wrong with the patient? Please add or remove problem(s) here.

<table>
<thead>
<tr>
<th>Action</th>
<th>SNOMED-CT Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove</td>
<td>Otitis media</td>
</tr>
<tr>
<td>Remove</td>
<td>Failure to gain weight</td>
</tr>
<tr>
<td>Remove</td>
<td>Herniated urinary bladder</td>
</tr>
</tbody>
</table>

Add

Problem:

(Only SNOMED CT terms included in the published map are shown.)

Update List  Get ICD Codes

Add Complex Examples:
The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.

### Mapping Problems to ICD-10-CM

<table>
<thead>
<tr>
<th>SNOMED-CT Code</th>
<th>ICD-10-CM Code</th>
<th>ICD-10-CM Name</th>
<th>Optional refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>6363002</td>
<td>H66.90</td>
<td>Otitis media, unspecified, unspecified ear</td>
<td></td>
</tr>
<tr>
<td>36440009</td>
<td>R62.7</td>
<td>Adult failure to thrive</td>
<td></td>
</tr>
<tr>
<td>410070006</td>
<td>N32.89</td>
<td>Other specified disorders of bladder</td>
<td></td>
</tr>
</tbody>
</table>

Options to refine ICD-10-CM codes
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<tr>
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<tr>
<td>Otitis media (65363002)</td>
<td>H66.90</td>
<td>Otitis media, unspecified, unspecified ear</td>
<td></td>
</tr>
</tbody>
</table>

**ICD notes for "Suppurative and unspecified otitis media"**

- **Use additional** code for any associated perforated tympanic membrane (H72.)
- **Use additional** code to identify:
  - exposure to environmental tobacco smoke (Z77.22)
  - exposure to tobacco smoke in the perinatal period (P96.81)
  - history of tobacco use (Z87.891)
  - occupational exposure to environmental tobacco smoke (Z57.31)
  - tobacco dependence (F17.)
  - tobacco use (Z72.0)

<table>
<thead>
<tr>
<th>Failure to gain weight (36440009)</th>
<th>R62.7</th>
<th>Adult failure to thrive</th>
</tr>
</thead>
</table>

| Herniated urinary bladder (410070006) | N32.89          | Other specified disorders of bladder                 |

[Submit Refinement] [Back to Problem List]
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</table>

**ICD-10-CM code for adult**

Name: My Patient (modified)  
Gender: Male  
Date of Birth: 8 Jun 1980
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<tbody>
<tr>
<td>65363002</td>
<td>H66.90</td>
<td>Otitis media, unspecified, unspecified ear</td>
<td>Laterality</td>
</tr>
<tr>
<td>3640009</td>
<td>R62.51</td>
<td>Failure to thrive (child)</td>
<td>ICD notes</td>
</tr>
<tr>
<td>410070006</td>
<td>N32.89</td>
<td>Other specified disorders of bladder</td>
<td></td>
</tr>
</tbody>
</table>

ICD-10-CM code for child
The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.

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<th>ICD-10-CM Code</th>
<th>ICD-10-CM Name</th>
<th>Optional refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>(65333002)</td>
<td>H66.90</td>
<td>Otitis media, unspecified, unspecified ear</td>
<td></td>
</tr>
<tr>
<td>(36440009)</td>
<td>P92.6</td>
<td>Failure to thrive in newborn</td>
<td></td>
</tr>
<tr>
<td>(410070006)</td>
<td>N32.89</td>
<td>Other specified disorders of bladder</td>
<td></td>
</tr>
</tbody>
</table>

ICD-10-CM code for newborn
The I-MAGIC (Interactive Map-Assisted Generation of ICD Codes) Algorithm utilizes the SNOMED CT to ICD-10-CM Map in a real-time, interactive manner to generate ICD-10-CM codes. This demo simulates a problem list interface in which the user enters problems with SNOMED CT terms, which are then used to derive ICD-10-CM codes using the Map.

Mapping Problems to ICD-10-CM

<table>
<thead>
<tr>
<th>SNOMED-CT Code</th>
<th>ICD-10-CM Code</th>
<th>ICD-10-CM Name</th>
<th>Optional refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>65363002</td>
<td>H66.90</td>
<td>Otitis media, unspecified, unspecified ear</td>
<td>Laterality, ICD notes</td>
</tr>
<tr>
<td>36440009</td>
<td>R62.7</td>
<td>Adult failure to thrive</td>
<td></td>
</tr>
<tr>
<td>410070006</td>
<td>N32.89</td>
<td>Other specified disorders of bladder</td>
<td></td>
</tr>
</tbody>
</table>

ICD-10-CM code for male
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<thead>
<tr>
<th>SNOMED-CT Code</th>
<th>ICD-10-CM Code</th>
<th>ICD-10-CM Name</th>
<th>Optional refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>65363002</td>
<td>H66.90</td>
<td>Otitis media, unspecified, unspecified ear</td>
<td></td>
</tr>
<tr>
<td>36440009</td>
<td>R62.7</td>
<td>Adult failure to thrive</td>
<td></td>
</tr>
<tr>
<td>410070006</td>
<td>N81.10</td>
<td>Cystocele, unspecified</td>
<td></td>
</tr>
</tbody>
</table>

ICD-10-CM code for female
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Mapping Problems to ICD-10-CM

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<tr>
<th>SNOED-CT Code</th>
<th>ICD-10-CM Code</th>
<th>ICD-10-CM Name</th>
<th>Optional refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chorioamnionitis (11612004)</td>
<td>041.1290</td>
<td>Chorioamnionitis, unspecified trimester (not applicable or unspecified)</td>
<td>Trimester, Multiple fetuses</td>
</tr>
</tbody>
</table>

**Trimester refinement**
- Refine Trimester:
  - **unspecified** trimester
  - **first** trimester
  - **second** trimester
  - **third** trimester

**Fetus specification**
- **not applicable or unspecified**
- **fetus 1**
- **fetus 2**
- **fetus 3**
- **fetus 4**
- **fetus 5**
- **other fetus**
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### Mapping Problems to ICD-10-CM

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<th>ICD-10-CM Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>267369002</td>
<td>E04.0</td>
<td>Nontoxic diffuse goiter</td>
</tr>
</tbody>
</table>

**Problem refinement**

Would one of the following diagnoses apply? Choose the most specific one:

- Non-toxic multinodular goiter
- Non-toxic uniodular goiter
- Non-toxic nodular goiter

The above choices are not applicable

Different ICD-10-CM codes if these more specific conditions apply
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Mapping Problems to ICD-10-CM

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<th>Optional refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>125607007</td>
<td>s22.009-</td>
<td>Unspecified fracture of unspecified thoracic vertebra</td>
<td></td>
</tr>
</tbody>
</table>

Fracture of thoracic spine

Required Episode refinement

- initial encounter for **closed** fracture
- initial encounter for **open** fracture
- **subsequent** encounter for fracture with **routine healing**
- subsequent encounter for fracture with **delayed** healing
- subsequent encounter for fracture with **nonunion**

Mandatory refinement choices

No valid default ICD-10-CM code
Why is this Important ??
Meaningful Use & SNOMED

MU Stage 1 - 2010

| Problem list | ICD-9-CM or SNOMED-CT for 80% of patients |

By 2013

| ICD-10-CM | SNOMED |

In 2015

SNOMED
The HIT Standards Committee endorsed recommendations to call for SNOMED CT for physician's clinical observations by 2015. In 2010, providers must use ICD-9 or SNOMED CT to qualify, and in 2013 they must use ICD-10 or SNOMED CT.

According to Janet Corrigan, co-chairwoman of the Clinical Quality workgroup, the measures will start in 2011 and gradually become more complex by 2015 as CMS pays out bonuses during that period.
NLM SNOMED CT resources

- Subsets

- Mappings
  - SNOMED CT to ICD-10-CM Map  http://www.nlm.nih.gov/research/umls/mapping_projects/snomedct_to_icd10cm.html
  - ICD-9-CM Map to SNOMED CT map (under development)

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