Strategies to Transitioning from ICD-9 to ICD-10 codes

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December 2013
Strategy 1:

1. Review every ICD-10 code individually
2. Assign each code into a syndrome group
3. Reverse-translate ICD-10 to ICD-9 codes

<table>
<thead>
<tr>
<th>ICD10 Code</th>
<th>Description</th>
<th>ICD-9 Code</th>
<th>Final DNBI Mappings</th>
</tr>
</thead>
<tbody>
<tr>
<td>L571</td>
<td>ACTINIC RETICULOID</td>
<td>69273</td>
<td>Dermatologic</td>
</tr>
<tr>
<td>A060</td>
<td>ACUTE AMEBIC DYSENTERY</td>
<td>0060</td>
<td>Gastrointestinal</td>
</tr>
<tr>
<td>H65113</td>
<td>ACUTE AND SUBACUTE ALLERGIC OTITIS MEDIA (MUCOID) (SANGUINOUS) (SEROUS), BILATERAL</td>
<td>38100</td>
<td>Upper Respiratory</td>
</tr>
</tbody>
</table>
Disadvantage:

Sometimes groups of codes, rather than individual codes, constitute a syndrome classification.

e.g.

fever plus cough = ILI

Need more than just a master index table for the conversion to account for one-to-many and many-to-one relationships.
Strategy 2:

Starting with the syndromes of interest, rather than translating universe of all ICD-9 or -10 codes, may be more manageable

e.g.
Febrile
Upper respiratory
Lower respiratory
ILI
Gastrointestinal
Rash
### Identify all ICD-9 and ICD-10 codes in the syndrome

#### Translate ICD-9 to ICD-10

#### Reverse-translate ICD-10 to ICD-9

<table>
<thead>
<tr>
<th>ICD-9 Description</th>
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<tr>
<td>DIARRHEA</td>
<td>787.9</td>
<td>K522</td>
<td>Allergic and dietetic gastroenteritis and colitis</td>
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<td>Noninf gastroenterit NEC</td>
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<td>Other specified noninfective gastroenteritis and colitis</td>
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<tr>
<td>INFECTIOUS DIARRHEA</td>
<td>9.2</td>
<td>A09</td>
<td>Infectious gastroenteritis and colitis, unspecified</td>
</tr>
<tr>
<td>DIARRHEA OF PRESUMED INFECTIOUS ORIGIN</td>
<td>9.3</td>
<td>AØ9</td>
<td>Infectious gastroenteritis and colitis, unspecified</td>
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<tr>
<td>FUNCTIONAL DIARRHEA</td>
<td>564.5</td>
<td>K59.1</td>
<td>Functional diarrhea</td>
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<td>787.91</td>
<td>R197</td>
<td>Diarrhea, unspecified</td>
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<td>9.0</td>
<td>A09.0</td>
<td>Other and unspecified gastroenteritis and colitis of infectious</td>
</tr>
<tr>
<td>COLITIS ENTERITIS AND GASTROENTERITIS OF PRESUMED</td>
<td></td>
<td></td>
<td>origin</td>
</tr>
<tr>
<td>INFECTIOUS ORIGIN</td>
<td>9.1</td>
<td>AØ9</td>
<td>Infectious gastroenteritis and colitis, unspecified</td>
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</table>
Example of Strategy 2:

“Vomiting” sub-syndrome
First, identify all the ICD-9 codes associated with vomiting

Use the CMS ICD-9 code lookup tool to identify codes:
Decide* which codes you want to keep, and which codes you want to toss out

Probably don’t want codes of this sort:

- Pregnancy-related vomiting
- Bilious newborn vomiting
- Vomiting following surgery
  - Psychogenic vomiting
  - Vomiting of fecal matter

*May need clinical guidance to aid with decision-making
Next, use a conversion tool to map each of the ICD-9 codes to ICD-10 codes

Then, use a tool to identify ICD-10 codes associated with that syndrome.

There may be new descriptors that did not exist in the ICD-9 world, so you want to make sure you capture these codes in your classification schema.

http://apps.who.int/classifications/icd10/browse/2010/en
Again, use clinical judgment to decide which concepts to keep.
Next, use a conversion tool to map each of the ICD-10 codes to ICD-9 codes

Finally:

Annotate your translations with notes or questions to share with colleagues

Swap code sets with colleagues and identify/discuss areas where translations are not the same so that we can improve our syndrome definitions

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<thead>
<tr>
<th>ICD-9 Description</th>
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<th>ICD-10 Code</th>
<th>ICD-10 Description</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>NAUSEA WITH VOMITING</td>
<td>787.01</td>
<td>R11.2</td>
<td>Nausea with vomiting, unspecified</td>
<td>Include the entire R11 group?</td>
</tr>
<tr>
<td>VOMITING ALONE</td>
<td>787.03</td>
<td>R11.10</td>
<td>Vomiting, unspecified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>R11.11</td>
<td>Vomiting without nausea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>R11.12</td>
<td>Projectile vomiting</td>
<td></td>
</tr>
</tbody>
</table>
1. Using Influenza-Like-Illness (ILI) or Heat-Related Illness (HRI) syndromes, translate related ICD-9 codes to ICD-10 codes.


   or

   http://www.icd10data.com/Convert

2. Next, reverse translate related ICD-10 codes to ICD-9 codes.

3. Compare results.
Other ICD-10 Conversion Challenges

1. What if providers don’t send ICD-10 codes beginning 10/1/2014?
   a. What accommodations will have to be made?

2. DB changes
   a. Will there be a need for separate ICD-9/ICD-10 fields in the Diagnosis Code Table?
   b. How can one distinguish between an HL7 DG1 ICD-9 and ICD-10 code?

3. Impact on analysis
   a. Assignment of ICD-10 codes to ICD-9 historical baselines (What code should be chosen or specific condition?)
   b. Assignment of ICD-9 codes to ICD-10 baselines
   c. How do we reconcile with non-conforming provider data?
Baseline Development Challenge

Potential impact on time series analysis

Projected Gastrointestinal Syndrome ICD-9 v. ICD-10 Comparison

October 2014 Transition Deadline

Count
Once you’ve translated your syndrome classifications, how do you analyze your data to address the “changing baseline” problem?
Two potential strategies (among many*):

(1) Reverse-translate ICD-10 $\rightarrow$ ICD-9
(2) “Upcode” ICD-9 $\rightarrow$ ICD-10

* CoP should help identify other strategies
These strategies are difficult to implement because of the many-to-one and one-to-many relationships among code sets.
Another strategy:
Search through both the ICD-9 and ICD-10 universes when creating syndrome classifications

If ICD-9 is __ or __ or __ or __ or __ or __ then syndrome_9=1; else syndrome_9=0

If ICD-10 is __ or __ or __ or __ or __ or __ then syndrome_10=X; else syndrome_10=0

If syndrome_9=1 or syndrome_10=1 then syndrome=1; else syndrome=0
By separating out ICD-9 and ICD-10 codes, you can analyze how implementation of ICD-10 affects changes in baseline and long-term trends.
In some settings, you may be able to ask hospitals to send

ICD-9 codes in one field, and

ICD-10 codes in a separate field
Or you may receive data (e.g., HL7) with:

all diagnostic codes in one field

and

type of code (ICD-9 or ICD-10) in a separate field
You may need to **programmatically** identify and separate the code sets
In some systems, the diagnosis field is a catch-all for all sorts of codes:

presumptive
final
admitting
discharge
billing
There may be delimiters denoting multiple codes per patient. e.g.:

Patient 1: 036.0, 787.03, 780.6, 782.1
Patient 2: 787.9, 787.01
Patient 3: 789, E865, 988.1
One option is to leverage the date of visit and create two separate fields:

ICD-9 field (visits prior to Oct 1, 2014)
ICD-10 field (visits after Oct 1, 2014)
But it’s possible that not all hospitals/providers in your jurisdiction will adopt the changes exactly on that date.
So after October 1, 2014, you may start to receive data that have a mixture of ICD-9 and ICD-10 codes in a single diagnosis field:

Hospital 1, patient 1: 036.0, 787.03, 780.6, 782.1
Hospital 1, patient 2: 787.9, 787.01
Hospital 1, patient 3: 789, E865, 988.1

Hospital 2, patient 1: T61.01XA, R10, R11.10
Hospital 2, patient 2: A37, G44.1
Hospital 2, patient 3: A83.2
Fortunately, the universe of ICD-9 codes and ICD-10 codes looks nothing alike

ICD-9 codes were mostly numeric (E- and V-codes are some exceptions), ICD-10 codes are alphanumerics
So it’s unlikely that by calling out a specific set of ICD-10 codes, you would accidentally confuse these with ICD-9 codes

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If index(diagnosis, “K522”) or index(diagnosis, “K5289”) or index(diagnosis, “A09”), or index(diagnosis, “K59.1”) or index(diagnosis, “R197”) or index(diagnosis, “K5289”) or index(diagnosis, “A09.0”) then diarrhea_10=1; else diarrhea_10=0;
Need to create rules to handle placement of decimals and zeros

No surprise, not all hospitals send codes in the same way – need to programmatically standardize the code formats before ingesting them into a syndrome classifier.