

On the Near Horizon: ICD-10

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One-Minute Summary

On October 1, 2013, health care and insurance organizations across the United States will switch from the ICD-9 coding scheme to ICD-10.

The ICD-10 has two parts, ICD-10-CM which covers diagnoses (equivalent to Volumes 1 & 2 of the ICD-9), and ICD-10-PCS which covers hospital procedures (equivalent to Volume 3 of ICD-9).

Compare & Contrast!

| Number of valid codes | ICD-9 | ICD-10 |
|-----------------------|---------------|--------|
| Diagnostic codes | 14,025 | 68,069 |
| Procedure codes | 3,824 | 72,589 |
| | Yikes! | |

A New Format

- Consists of three to seven characters
- First digit is alpha
- All letters used except U
- Second and third digits are numeric
- Fourth, fifth, sixth, and seventh digits can be alpha or numeric
- Decimal placed after the first three characters

Background

Why the change? A huge driver is that the ICD-9 system has run out of diagnosis codes and so is unable to keep up with changes in medical care. For example, ICD-9 does not handle newly defined diseases, like SARS or HIV, very well.

Further, 140 countries are using ICD-10, many for several years already. The US is not able to share data well internationally, which is especially concerning for managing global public health issues.



GEMs: General Equivalency Mappings

To help with the transition between coding systems, the Centers for Medicare & Medicaid Services (CMS) and the Centers for Disease Control (CDC) have developed General Equivalency Mappings, or GEMs. There are four GEMs:

- ICD-9 diagnoses → ICD-10 diagnoses
- ICD-10 diagnoses → ICD-9 diagnoses
- ICD-9 procedures → ICD-10 procedures
- ICD-10 procedures → ICD-9 procedures



An Analytic Challenge

Not a One-to-One Correspondence

| Situation | ICD-9-CM | ICD-10-CM |
|---------------------------------------|---|--|
| One ICD-9 code, Multiple ICD-10 codes | 820.02 Fracture of mid-cervical section of femur, closed | S72.031A Displaced mid-cervical fracture of right femur, initial encounter for closed fracture S72.031G Displaced mid-cervical fracture of right femur, subsequent encounter for closed fracture with delayed healing S72.032A Displaced mid-cervical fracture of left femur, initial encounter for closed fracture S72.032G Displaced mid-cervical fracture of left femur, subsequent encounter for closed fracture with delayed healing |
| Multiple ICD-9 codes, One ICD-10 code | 250.50 Diabetes with ophthalmic manifestations, type II or unspecified type, not stated as uncontrolled 362.06 Severe non-proliferative diabetic retinopathy 362.07 Diabetic macular edema | E11.341 Type 2 diabetes mellitus with severe non-proliferative diabetic retinopathy with macular edema |
| No ICD-9 code, An ICD-10 code | <no equivalent> | Y71.3 Surgical instruments, materials and cardiovascular devices (including sutures) associated with adverse incidents |
| An ICD-9 code, No ICD-10 code | 89.8 Autopsy | <no equivalent> |
| Perfect match | 786.02 Orthopnea | R06.02 Shortness of breath |

Death Certificate Experience

The United States began using ICD-10's to code mortality data in January, 1999. To help analysts manage the data transition, the National Center for Health Statistics double-coded a large sample of the 1996 national mortality file, once by ICD-9, and once by ICD-10. They then created a *comparability ratio*: the number of deaths for a cause per ICD-10 divided by the number of deaths for the same cause per ICD-9. The ratio can then be used to adjust mortality statistics. This guidance is kept on our GHRI Data Wiki, and will be promoting this more widely as we get closer to 2013.

Example: Pneumonia and Influenza (ICD-9 480-487; ICD-10 J10-J18) Age-adjusted Mortality Rates (adjusted to U.S. 2000 population) for Washington State Residents, 1990-1999

| | Comparability Un-modified | | | | | | | | Comparability Modified | ICD-10 | |
|-----------------------|---------------------------|------|------|------|------|------|------|------|------------------------|--------|------|
| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | | | 1998 |
| Pneumonia & Influenza | 35.8 | 33.3 | 31.6 | 36.7 | 33.1 | 33.5 | 34.4 | 33.2 | 33.7 | 23.6 | 23.9 |

Note: Modified by comparability ratio of 0.70.

From Guide to Presenting and Using ICD-10 Mortality Data by the Center for Health Statistics, Washington State Department of Health, May 1, 2009

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A GEM is comprised of a Source Code, a Target Code and a set of five flags. The flags describe the nature of the match:

- Flag 1: Identical match vs. approximate match
- Flag 2: Plausible match found? Yes/no
- Flag 3: Maps to one code vs. multiple codes
- Flag 4: Scenario codes for one-to-many mappings
- Flag 5: Choice codes for one-to-many mappings



Advantages

- **Extension codes** describe encounters
 - A = Initial encounter
 - D = subsequent encounter
 - S = sequelae
- **Laterality** can be specified
- **Fewer codes per event** – ICD-10 combines diagnoses and associated symptoms, and commonly co-occurring diagnoses into single codes

What does this mean for us now?

- When planning projects, **include additional time for programming and biostatistics** for projects that will use ICD-10 data. Expect that projects using both ICD-9 and ICD-10 data (that is, projects with data points both before and after October 2013) may need as much as 25% more programmer and biostat time.
- When planning projects, **include additional time for investigators and project teams** to plan how to work with data from two coding systems, to interpret codes and to guide decisions.
- Expect that we will need to spend extra time to **upgrade the Virtual Data Warehouse (VDW) and the GHRI Data Warehouse** to include the new coding scheme and to develop macros and other helps.
- Expect that programmers and biostatisticians will need to **spend time learning how to use the new system.**