Managing the Transition from ICD-9 to ICD-10

Beth Virnig, PhD, MPH

Principal Investigator, ResDAC

Senior Associate Dean for Academic Affairs & Research, University of Minnesota

Today

- Describe what the ICD-9 to ICD-10 conversion does

- Discuss ways the conversion might be challenging to researchers, warning signs to look for

- Discuss strategies for managing the conversion in your own data analysis

Coding Systems for Diagnoses and Procedures

- **Medicare and Medicaid data rely on different types of coding systems to document diagnoses and procedures:**

- **ICD procedure codes**
  - Used for inpatient hospital billing

- **CPT and HCPCS procedure codes**
  - Used by physicians, other health care providers, some institutional care

- **ICD diagnosis codes**
  - Used on all bill types

ICD-9 to ICD-10

- After several years of rumors about change, CMS officially changed coding from ICD-9 to ICD-10 on October 1, 2015.

- ICD-10 was copyrighted by the WHO replaced ICD-9 for coding of mortality in 1999

- A CM (clinical modification) for morbidity was released in early 2000 and most countries have been using it for years.

ResDAC
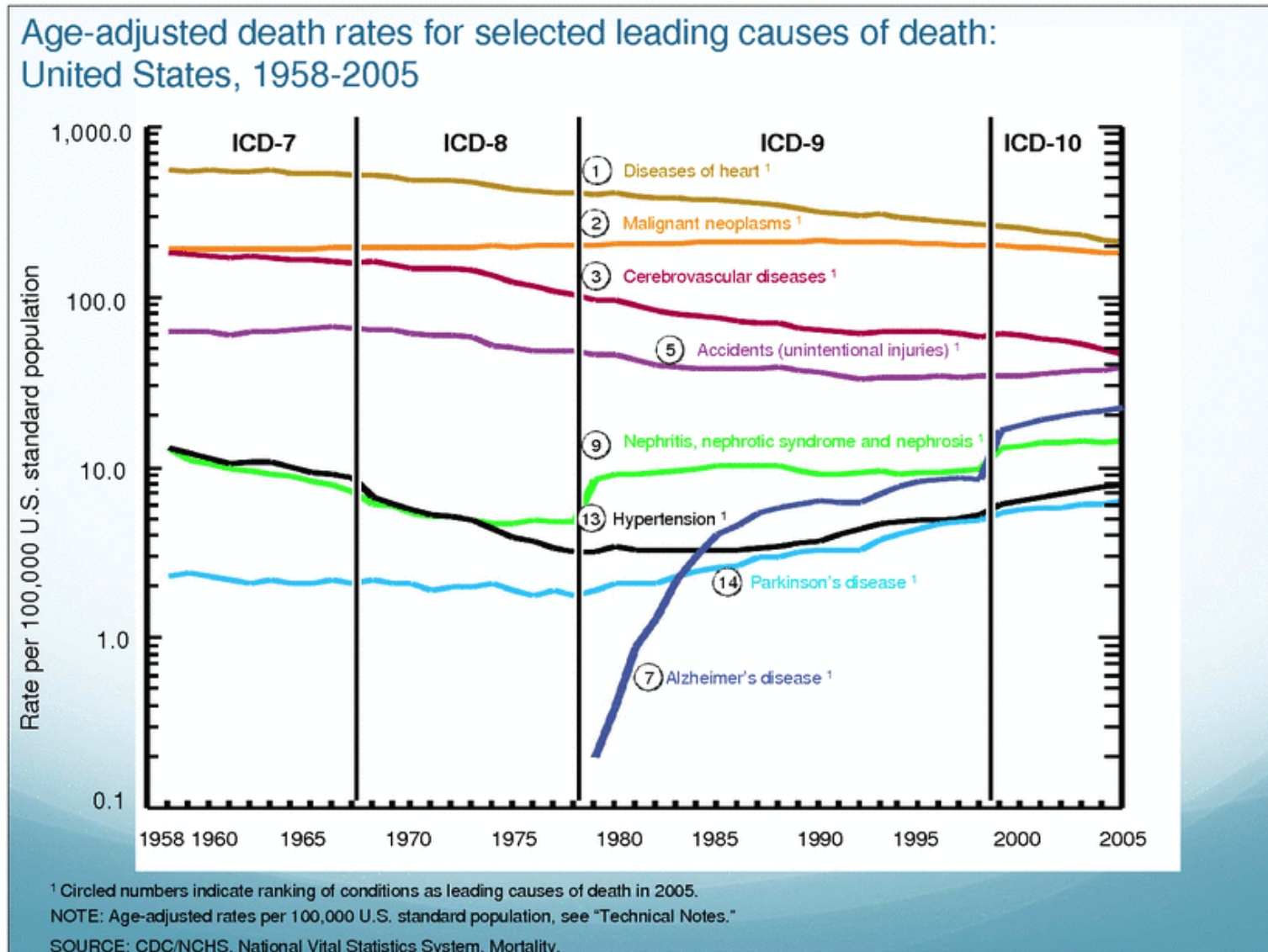RESEARCH DATA ASSISTANCE CENTER

Important Changes Between ICD-9 and ICD-10

- Parts of the code book rearranged. Some things put together, others split apart

- The codes use alphanumeric characters in all positions, not just the first position.

- Significant increase in the specificity of the reporting, allowing more information to be conveyed in a code.

- Terminology modernized and made consistent

- New codes that combine diagnoses and symptoms, fewer codes need to be reported to fully describe a condition.

ResDAC
RESEARCH DATA ASSISTANCE CENTER

Comparison of ICD-9 and ICD-10

	ICD-9	ICD-10
Effective dates in CMS data	Prior to October 1, 2015	October 1, 2015 and later
Structure of diagnosis codes	5 digit, usually starting with a number (xxx.xx)	7 digit, always starting with a letter (xxx.xxx)
E-codes	Injury	Metabolic conditions
V-codes	Other factors	External causes of health problems
Number of diagnosis codes	13,000	68,000
Structure of procedure codes	4 digit, starting with a number xx.xx	5 digit mix of letters and numbers xxxxx

ResDAC
RESEARCH DATA ASSISTANCE CENTER

Every time coding changes, we see some disruption of trends

Age-adjusted death rates for selected leading causes of death: United States, 1958-2005

[1] Circled numbers indicate ranking of conditions as leading causes of death in 2005.
NOTE: Age-adjusted rates per 100,000 U.S. standard population, see "Technical Notes."
SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

Structure of Diagnosis Codes

- **ICD-9**
- **Characters 1-3 category**
  - All numeric

- **ICD-10**
- **Characters 1-3: Category**
  - First character alpha
  - Characters 2-3 numeric
- **Characters 4-6: Etiology, anatomic site, severity, laterality**
  - Alpha or numeric
- **Character 7: initial encounter or subsequent encounter**

Example: Carcinoma In Situ of the Breast

ICD-9:
233 Carcinoma in situ of breast and genitourinary system
            233.0 Carcinoma in situ of breast

ICD-10
D05.0 Lobular carcinoma in situ of breast
        D05.00 Lobular carcinoma in situ of unspecified breast
        D05.01 Lobular carcinoma in situ of right breast
        D05.02 Lobular carcinoma in situ of left breast
D05.1 Intraductal carcinoma in situ of breast
        D05.10 Intraductal carcinoma in situ of unspecified breast
        D05.11 Intraductal carcinoma in situ of right breast
        D05.12 Intraductal carcinoma in situ of left breast
D05.8 Other specified type of carcinoma in situ of breast
        D05.80 Other specified type of carcinoma in situ of unspecified breast
        D05.81 Other specified type of carcinoma in situ of right breast
        D05.82 Other specified type of carcinoma in situ of left breast
D05.9 Unspecified type of carcinoma in situ of breast
        D05.90 Unspecified type of carcinoma in situ of unspecified breast
        D05.91 Unspecified type of carcinoma in situ of right breast
        D05.92 Unspecified type of carcinoma in situ of left breast

ResDAC
RESEARCH DATA ASSISTANCE CENTER

What does this mean for those of us caught in the change?

- **Most adjustments will initially be based on a 'reasonable coding' strategy vs. validation**
    - May lead to changes that do not exactly match intent

There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.

– Donald Rumsfeld, talking about the ICD-9 to 10 conversion

ResDAC
RESEARCH DATA ASSISTANCE CENTER

Example: CCW Coding of Asthma and COPD

- **Asthma:** 493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.20, 493.21, 493.22, 493.81, 493.82, 493.90, 493.91, 493.92

- **COPD:** 490, 491.0, 491.1, 491.8, 491.9, 492.0, 492.8, 491.20, 491.21, 491.22, 494.0, 494.1, 496

- Asthma: J44.0, J44.1, J44.9, J45.20, J45.21, J45.22, J45.30, J45.31, J45.32, J45.40, J45.41, J45.42, J45.50, J45.51, J45.52, J45.901, J45.902, J45.909, J45.990, J45.991, J45.998

- COPD: J40, J41.0, J41.1, J41.8, J42, J43.0, J43.1, J43.2, J43.8, J43.9, J44.0, J44.1, J44.9, J47.0, J47.1, J47.9
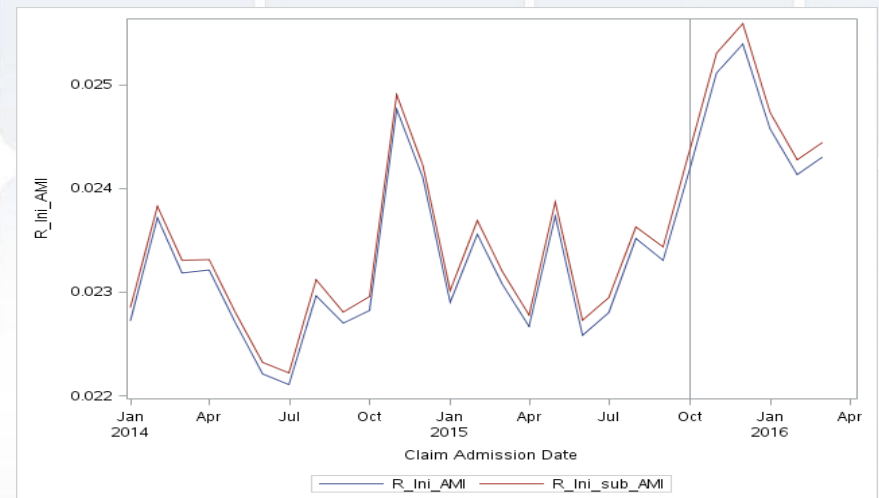
Problems with Translation from ICD-9 to ICD-10

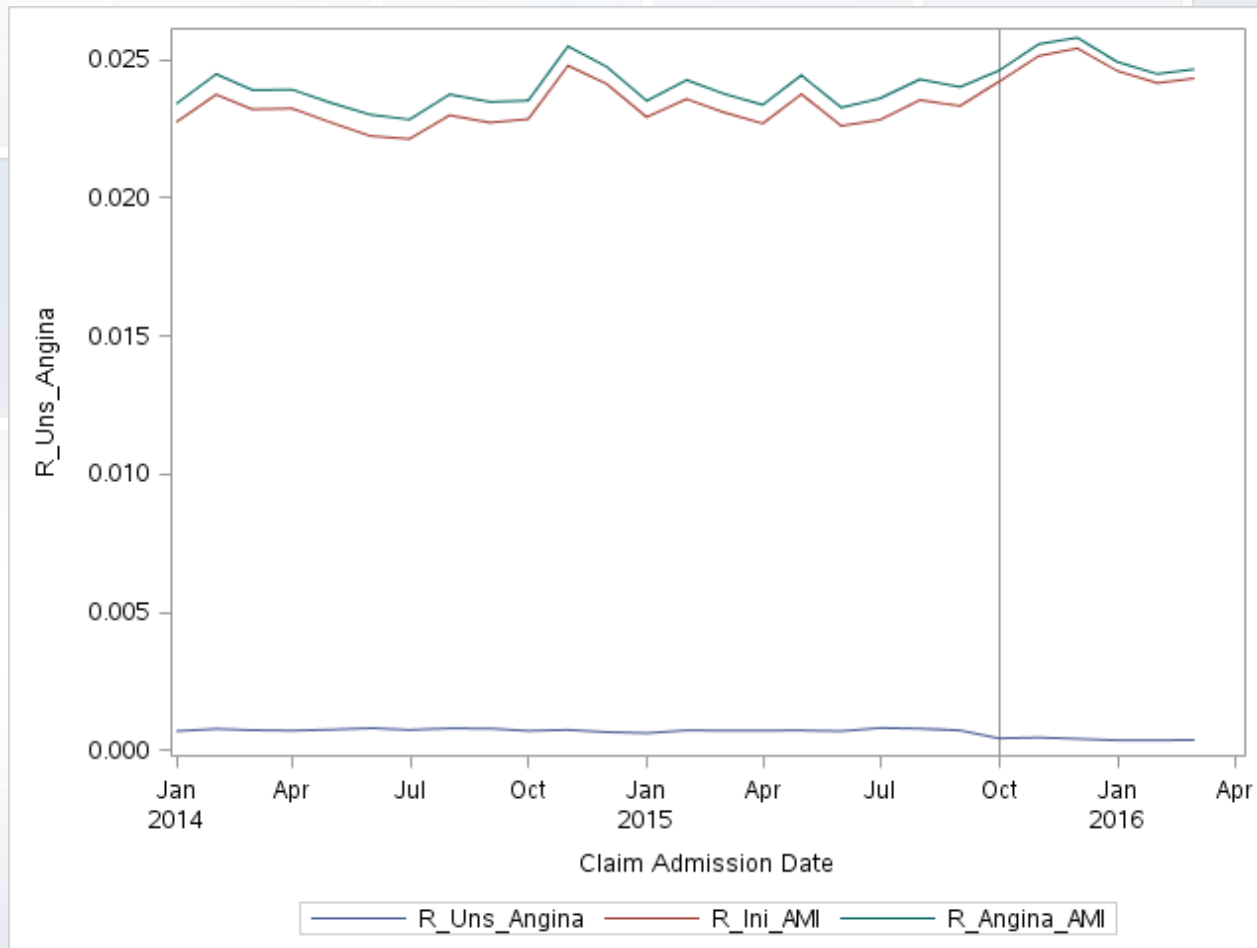**Harder to assess with unstable patterns**

Substitution?

- ## Angina
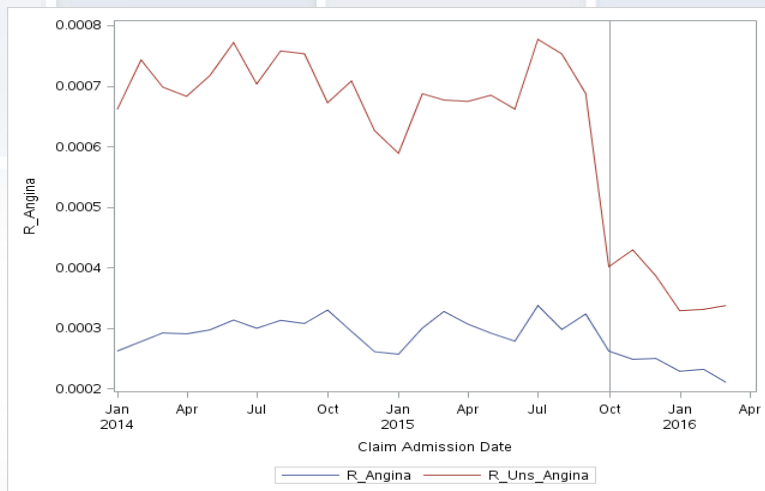
- ## AMI

Answer: not really clear. Some offsetting, some, something else...

Some practices are shifting but maybe not in the direction we want: example, mechanism of injury codes

- **The good news: codes considerably expanded**

- **The not so good news: the codes aren't being used.**

- In ICD-9, 4.3% of hip fractures had a mechanism of injury code

- With ICD-10, only 0.05% of hip fractures had a mechanism of injury code

The new coding system won't fix

- **Under diagnosis in clinical settings**
  - Diabetes
  - Dementia
  - Depression
  - osteoporosis
- **Under coding of behaviors and characteristics that are important for studies of health care but are only rarely related to reimbursement**
  - Obesity
  - Smoking
  - Alcohol abuse

What does it mean?

- **A mid-year change in coding for all diagnoses and some procedures for 2015**
  - Algorithms that require an observation period may need to allow either/both codes to apply
  - Watch for flag that indicates whether code is ICD-9 or ICD-10
- **Unanswered questions such as:**
  - Does our rule of "one inpatient or two outpatient/carrier" still hold?

ResDAC
RESEARCH DATA ASSISTANCE CENTER

What does it mean?

- **Changes in disease incidence, particularly those that seem to be abrupt need to be investigated**

- **All analyses that aim to be ICD-version neutral need to include an analysis to confirm that there is no shift due to the ICD change**

- **When investigating, consider whether there are "adjacent" conditions—COPD and asthma; angina and AMI; in situ and invasive cancer… where there could be shifting among related categories**

ResDAC
RESEARCH DATA ASSISTANCE CENTER

How to sort things out?

- **Patience**
- **Multiple sets of eyes**
- **Heavy reliance on "face validity"**
  - **Do cases of X post-change look like cases of x pre-change?**

ICD-10 Procedure Codes

- **Much more meaning to each code**
- **Each digit has meaning**
  - Contrast to structure of ICD-9 procedure codes
- **The letter Z means "does not apply"**
  - So, there will be lots of Z, particularly in later digits.

ICD-10 Procedure Codes

- **Character 1: section**
  - Medical/Surgical (0)
  - Obstetrics (1)
  - Placement (2)
  - Administration (3)
  - Measurement and monitoring (4)
  - ….
  - Imaging (B)
  - Radiation therapy (D)
  - ….
  - New technology (X)

ICD-10 Procedure Codes

- **Character 2: Body system**
  - **Central nervous system (0)**
  - **Upper veins (5)**
  - **Endocrine system (G)**
  - **Muscles (K)**
  - **Lower bones (Q)**

ICD-10 Procedure Codes

- **Character 3: Root Operations (31 choices)**
  - **Control**
  - **Detachment**
  - **Extraction**
  - **Removal**
  - **Revision**
  - **Transplantation**

ICD-10 Procedure Codes

- **Character 4: Body Part**
- **Character 5: Approach (7 choices)**
  - Open
  - Percutaneous
  - Percutaneous endoscopic
  - Via natural or artificial opening
  - ...
  - External

ICD-10 Procedure Codes

- **Character 6: Device (4 choices)**
- **Character 7: qualifier**

ICD-10 Procedures

- Some characters have different meaning depending on section:
  - Device:
    - » Administration=substance
    - » Imaging=qualifier
    - » Physical rehab=equipment

Problems Created:

- In ICD-9, robotic assisted procedures explicitly coded.
- No way to code robotic assisted procedures in ICD-10
    - Implied through use of "percutaneous"?

ResDAC
RESEARCH DATA ASSISTANCE CENTER

Final Thoughts on ICD-10 Procedures

- **The complexity of the system looks to have advantages related to detail**
    - May point to experiments
- **But may make programming more challenging due to the structure of the codes (they look somewhat random)**
- **Crosswalk between ICD-9 to ICD-10 will be one to one, one to many and perhaps many to one.**
- **Given similar crosswalk between ICD-9 and CPT codes, studying procedures will be time consuming**

Managing ICD-9 to 10 Translation

- **Will evolve over time**
  - Coverage rule changes and requirements for specific coding
  - Entities adapting to new codes and incentives
- **Should be a group effort. Sharing and critiquing codes**
- **Need to be creative when distinguishing between coding and policy change**
- **Need to collectively work with journals to make space for publishing findings so we aren't all redoing the same work**

Final Thought

- **Most of the world will be moving on to ICD-11 in a couple of years.**