ICD-10 Transition in the NIH Collaboratory

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Phenotypes, Data Standards, and Data Quality Core

May 9, 2016
Source: http://blog.ivman.com/y2k-bug-in-retrospect/
<table>
<thead>
<tr>
<th></th>
<th>Screening/ Cohort ID / Recruitment</th>
<th>Randomization; Intervention (e.g., cues)</th>
<th>Adverse Event Reporting</th>
<th>Independent Variables or co-variates</th>
<th>Dependent Variables (Outcomes)</th>
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</thead>
<tbody>
<tr>
<td>TiME</td>
<td></td>
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<tr>
<td>SPOT</td>
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<td></td>
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<tr>
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<tr>
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<tr>
<td>PPACT</td>
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<tr>
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<tr>
<td>TSOS</td>
<td>x</td>
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</table>
Low impact of ICD-10 transition: PROVEN, TSOS
Potentially modest impact of ICD-10 transition: ABATE
Potentially large impact of ICD-10 transition:
6 out of 9 demonstration projects
<table>
<thead>
<tr>
<th>Project</th>
<th>First patient enrolled</th>
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<tr>
<td>LIRE</td>
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<tr>
<td>TiME</td>
<td>12/1/2013</td>
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<tr>
<td>PPACT</td>
<td>4/1/2014</td>
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<td>ABATE</td>
<td>6/1/2014</td>
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<tr>
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<tr>
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<td>1/11/16</td>
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<td>PROVEN</td>
<td>2/20/2016</td>
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<tr>
<td>ICD-Pieces</td>
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</table>
Impact Depends Upon Study Design

- Patient-level randomization $\rightarrow$ lesser impact
- Stepped-wedge $\rightarrow$ potentially large impact

![Diagram showing ICD-10 transition and time periods]

- Sampling
- Intervention
- Outcome

Shaded cells represent intervention periods
Blank cells represent control periods
Each cell represents a data collection point
Example: PROVEN Trial

- Study implementation after ICD-10 implementation
- Selection of sample relies on "checkbox" in the MDS if patient has Alzheimers or dementia, or CHF and/or COPD
- Relative to these gross classes of diagnoses there is little difference in coding from ICD-9 and ICD-10
- Eligibility more about level of functional impairment than the exact diagnoses of patients
- **Conclusion:** no impact
Example: STOP CRC

- Uses ICD to identify/exclude pts with prior or new colorectal cancer, renal failure, inflammatory bowel disease
- Compared to EPIC® “groupers” that cluster codes in a picklist on EHR interface.
  - Most (not all) needed codes were in the groupers. (STOP found more)
- Performed a code validation by running inclusion/exclusion program pre and post ICD-10 implementation for any noticeable differences in our numbers when using ICD9 vs. ICD10. (Found no major changes.)

**Conclusion:** The impact was minimal due to groupers linking diagnoses to ICD-10 code.
Example: PPACT

- ICD important to one study outcome (chronic pain)
- Explicitly looking for points of discontinuity in the data during:
  - EHR pick list transition
  - official switch over to ICD-10-CM

- Not yet seeing a difference in diagnoses rates since Oct 1.
- Early reports are simple counts but the overall counts are stable.
- Seeing variability BETWEEN sites (who have different approaches to mappings) that warrants further investigation.
  - Some project defined ICD coding mappings that look to be off for certain sub-sets of codes.

- **Conclusion:** The impact appears negligible, but statistical and clinical validation still needed and ongoing.
Example: LIRE

• ICD important for utilization data (outcome)
  – Used in algorithms determining spine-relatedness of visits and procedures
  – Co-morbidity covariates in analyses

• All utilization data captured via the EHR
• Have data both pre- and post- transition

• **Conclusion:** Certain impact on the trial. Details pending.
  – Discussing ICD-10 transition approach & experience with each site
  – Analyses and quality assessment planned for future
Example: SPOT

• ICD-10 codes used to define outcome (suicide attempt)
• It is critical that the groups of codes use to classify “suicide attempt”) before and after October 1, 2015 represent the “same” populations and events
• Extensive local validation by comparing #’s of patients with likely attempts before and after

• Conclusion: No major impact but validation was necessary. Found increased specificity of coding with ICD-10 but no variation/change in providers coding (injuries suggestive of) suicide attempt.
It is Really About Equivalence

Phenotype definition (ICD-9-CM)

Phenotype definition (ICD-10-CM)

“true” population with condition

“true” population with condition
CMS Approach

• Examine “DRG shift”
  – When the MS-DRG from a record coded in ICD-9 is different from the MS-DRG from the same record coded in ICD-10

• 10 million FY 2013 MedPAR records

• 1.07% with a DRG shift
  – 0.41% had DRG shift to higher paying DRG
  – 0.66% had DRG shift to lower paying DRG

• Statistically zero

Estimating the Impact of the Transition to ICD-10 on Medicare Inpatient Hospital Payments

ICD-10 Coordination and Maintenance Committee
March 18, 2015

Triangulation of Code Sets to Define Conditions

- UMLS Screenshot with ICD-9 and ICD-10

- Could list other sources that “triangulate” code subsets
  - CMS
  - AHRQ
matched value sets:

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Code System</th>
<th>Steward</th>
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<tr>
<td>Diabetes</td>
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<td>Diabetes Medical Supplies</td>
<td>Extension</td>
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<td>Extension</td>
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</tbody>
</table>
Provider Coding Behavior

• Influenced by:
  – Interface
  – Business rules
  – Organizational culture

• Important questions:
  – Can we measure it?
  – Does it vary across sites?
  – Does it matter?
Recommendations (from previous Grand Rounds)

• Consider the phenotype definition as a “unit” or value set, and compare semantic equivalence of the set
• Consider different mapping approaches for automatic translation
• Be prepared to report methods for mapping
• Be prepared to validate locally
• Implement data quality assessment recommendations
Assessing Data Quality for Healthcare Systems Data Used in Clinical Research (Version 1.0)

An NIH Health Care Systems Research Collaboratory Phenotypes, Data Standards, and Data Quality Core White Paper

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Conclusion

• Some Collaboratory Trials will be severely impacted by ICD-10 transition, but most are not

• Impact varies by:
  – Study design
  – Reliance on ICD dx codes for sampling or outcome
  – Whether data collection includes the ICD-10 implementation date (October 1, 2015)
  – Existence of EHR-based “grouper” terms before study start

• Trials with potentially moderate – high impact need to formally assess this (Data Quality recs are helpful)
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Jon Puro, OCHIN

Alee Rowley, Kaiser Permanente Center For Health Research

Jerry Sheehan, National Library of Medicine

Greg Simon, Group Health

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