How to Improve Quality in Data Standards

Using the Cloud to Identify Issues of Clarity and Consistency
Speakers

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- Convenor – ISO TC 215 Health Informatics WG3 Semantic Content
- HL7 International – Vice Chair Terminology Authority.
Agenda

- Overview of the International Classification of Disease (ICD)
- Quality issues resulting from diverse communities & priorities
- Cloud-based tactics for bringing these communities together
- Review of a candidate process for identifying ambiguities and vagueness
International Classification of Disease 10
- a standard for concept representation

- Mortality classification proposed by Nightingale, 1860
- Bertillon classification (179), 1893; adopted 1900
- World Health Organization assumes responsibility, 1948
- ICD-6 first to address morbidity (4683), 1949
- ICD-10 (14,199) first adopted 1994
- ICD-11 (55,000) available 2018
- Representation of diseases, injuries and health status for
  - Statistical analysis of morbidity for public health, clinical research, institutional quality management
  - Billing
The problem

- Difficult to maintain (regular changes)
- Difficult to obtain (personal health records)
- Difficult to be sure of skills - inconsistencies due to:
  - Use Case (money vs public health)
  - Organization
  - Training
  - Personal Interpretation
  - National rules and guidelines
Our Objective – Standardize Training and Use

- To improve the consistency of clinical coding of health data
  - Within countries
  - Around the world (ICD morbidity data is aggregated for the world)
- To identify issues where standards could be improved
- Influence improved data standards
Standards Creation Process – cloud based

Community of healthcare
Documents De-Identified

EHR content
Local coding answers

Episodic details added (re-identification)

Coding Experts independently code answers (one episode coded by many)

Governance

Query
Code System Owner

Standardised Answer

Used by teachers, students, professionals
The Cloud = Sunshine on Hidden Problems

- Each of these issues is obscure within the institutions doing the coding.
- Only when multiple institutions give their divergent answers to a common episode in a common forum do the differences in interpretation become evident.
- In a coding training application, we create the correct answer set, and then we confirm it across diverse populations.
  - Subsequent use of the training application may uncover additional communities of interpretation.
**Identify disagreements in correct code/s**

- Episodes which pass review move to active use for education
- Active episodes may generate discrepancies (few) – they move to the Quality Feedback process.

**Quality Feedback Process**
- Identify the reason for the disagreement
- Identify related standards and issues e.g. standard 123 is on this topic but doesn’t solve or clarify the discrepancy.
- Communicate the issue to the governance organisation / community
- Include in class and community discussion rather than assessment – to raise awareness
Standards applicable to Morbidity Coding

- **ICD Coding Conventions**
  - Standards published in the WHO Code System
  - e.g. the index of the standard is the governing overarching rule for coding - follow the index.

- **ICD is also published with coding standards for the country of use**
  - Variations:
    - USA coding of smoking status:
      - It’s not clear whether the coding of this information is optional or not.
    - In Australia, UK, Canada the coding of smoking status is mandatory for public health monitoring purposes.
Quality issue examples – lack of clarity

- Casual Relationships
  - If Type 2 myocardial infarction is caused by anemia, code both the MI and the cause.
    - "Due to” and “secondary” have been declared in the standard to indicate a casual relationship
    - BUT
    - "Background of,” “history of”? Is this causal?
  - Many instructions in standards say to code if “significant.”
    - What is “significant”? There is no definition.
Quality issue examples: multiple potential answers

- Accidental burn of colon during surgery
  - Option A: S36… injury of colon + cause of injury - burn during surgery
  - Option B: T28.. Burn of other part of alimentary tract + cause of injury – burn during surgery

  60% for Option A
  40% for Option B
Quality issue examples: multiple potential answers

- Two options for cause of injury
  - Example: crushed between plates of iron press
  - Is this:
    - Crushed between objects, or
    - Contact with machinery

- One Standard Overriding Another
  - Standard A – only code what is treated
  - Standard B – if condition X code all conditions whether treated or not.
  - 50/50 community practice
Quality issue examples: to code or not to code

- Apply coder’s medical knowledge
  - Coded anaesthesia because anaesthetic drugs are given during procedure.
  - Don’t code as anaesthesia not specifically documented.
Examples of feedback to AM committee

**ICD-10-AM/ACHI/ACS Public Submission**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ref No</td>
<td>P413</td>
</tr>
<tr>
<td>Date</td>
<td>31-Jan-2019</td>
</tr>
<tr>
<td>Subject</td>
<td>ICD-10-AM 10th edition, K80.01 Calculus of gallbladder with acute cholecystitis, with obstruction, or K80.00 without mention of obstruction</td>
</tr>
<tr>
<td>Relevant Codes</td>
<td>K80.0_, TO K80.8_</td>
</tr>
<tr>
<td></td>
<td>This question relates to the whole group and could also be relevant to another coding of calculi in the body.</td>
</tr>
<tr>
<td>Volume Affected</td>
<td>National - Low</td>
</tr>
<tr>
<td>Volume Affected Reason</td>
<td>Our reviewers come from different states and we are seeking a consistent SINGLE answer to the episode.</td>
</tr>
<tr>
<td>Comments</td>
<td>Criteria to be met to code calculi impaction as obstruction.</td>
</tr>
<tr>
<td></td>
<td>Impaction documented - however, there are no symptoms or documentation of obstruction.</td>
</tr>
<tr>
<td></td>
<td>Note: GEHCO is happy to provide online access to a representative of ACCD to the record involved. (more than 50 pages).</td>
</tr>
<tr>
<td></td>
<td>We have had 4 different reviewers (senior coders) from different organizations and different states check this record and even after discussion there is no consensus - guidance for consistency is sought, please. This is an example of inconsistent practice around Australia.</td>
</tr>
</tbody>
</table>
The issues we reviewed were within a single national extension. But there are many national extensions.
### Interpretive communities, national level

<table>
<thead>
<tr>
<th>Topic</th>
<th>Australia</th>
<th>UK</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphology coding</td>
<td>Mandatory</td>
<td>Not coded</td>
<td>Not coded</td>
</tr>
<tr>
<td>Smoking Status</td>
<td>Mandatory Z72.0</td>
<td>Mandatory F17.1</td>
<td>Optional</td>
</tr>
<tr>
<td>Definition of inpatient</td>
<td>In an inpatient bed</td>
<td>In an inpatient bed, or</td>
<td>In hospital overnight</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In assessment bed for more</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>than 24 hours</td>
<td></td>
</tr>
<tr>
<td>Collection of cause of injury</td>
<td>Mandatory</td>
<td>Mandatory</td>
<td>Optional</td>
</tr>
<tr>
<td>Laterality</td>
<td>No</td>
<td>Mandatory for procedures</td>
<td>In some cases (inconsistent)</td>
</tr>
<tr>
<td>Scope of coding</td>
<td>Only conditions treated, plus major public</td>
<td>Every condition current,</td>
<td>Code all conditions listed</td>
</tr>
<tr>
<td></td>
<td>health issues (e.g. diabetes)</td>
<td>whether treated or not (not</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>unrelated background conditions)</td>
<td></td>
</tr>
</tbody>
</table>

**Comparing international public health data: What are we comparing?**
General Findings –

- Ambiguity in the coding standards (rules and guidelines)
  - Method of writing – text often provided without clear pathways for decision making.
  - Rare use of Shall, Should, May

- Issues hidden within organizations
  - Issues are not discovered - decisions are made locally and not communicated
  - Sporadically identified issues can be attributed to education inconsistencies.

- Cloud based tooling brings divergent perceptions to light:
  - Ability to find divergence (shared repository and active research)
  - Using cloud to build knowledge about divergence
  - Feed information about divergence to clarify and improve education and standards writing.
Cloud – an opportunity for standards evolution

- Identify appropriate populations for cross-pollination
- Identify appropriate tool or process for engaging populations
  - Leverage the internet
  - Leverage shared interest in quality data: breadth of input, shared load
  - Training & assessment are ideal processes for this purpose
- Actively seek issues – don’t wait for them to come to you
  - Identify issues during answer governance
  - Identify issues from patterns in student answers
  - Escalate issues to
    1. Subject Matter Expert
    2. Governance Board
    3. Asset Steward
Similar initiatives – Data Mapping

- Initiative through ISO
- ISO/TS 21564 Health Informatics – Terminology resource map quality measures (MapQual)

**Objective**

- Define determinants of map quality and suitability for use (safety, efficiency, data quality)
- Use determinants to certify conformance independently (using expert community)
- Provide safety assessments and identify what needs to be improved - pathways to improvement.

**GeHCo involvement**

- Sponsored leadership of project
- Source of international community of experts to undertake independent expert conformance assessment
- Seeking maps to test the process.
Questions

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