ICD-10-CA/CCI and Data Analysis

It is challenging to analyze Canadian hospitalization data from multiple fiscal years that was coded using different versions of the classifications. Users must take steps to ensure that comparisons/trends across those years are relevant and useful, and they must consider many factors.

Follow these steps, as appropriate:

1. Consult an experienced health information management professional/data analyst/classifications specialist when analyzing data that requires ICD-10-CA and/or CCI codes or the older classifications (ICD-9/ICD-9-CM/CCP).
2. Determine whether the research or reporting question can be answered using data from CIHI's hospitalization databases (DAD/NACRS).
   - This type of data cannot answer questions about the **incidence** of a disease in the population, only about hospitalization episodes of care for patients with the disease in question. However, some serious diseases are typically hospitalized (e.g., myocardial infarction) and the hospitalization rates can provide a window into the health of the population in general.
   - Conditions are mandatory to capture when specified as such in the *Canadian Coding Standards for ICD-10-CA and CCI*. For other conditions to be captured, they must meet the *Canadian Coding Standards*' diagnosis typing definitions for most responsible diagnosis, significant comorbidity or mandatory other problem.
   - Not all interventions are mandatory to capture, and mandatory/optional status can vary between jurisdictions (e.g., diagnostic imaging interventions [MRI and CT scans]). Consult the *Canadian Coding Standards* for information on the mandatory capture of interventions.
3. Determine whether the province/territory submitted data to the DAD/NACRS for the fiscal years in question.
4. Consider the **classifications in use** for that fiscal year, for the province/territory in question.
   - It is optimal to extract the data with codes from the classification in use at the time, rather than relying on conversion codes.
   - Conversions or mappings must be from the current classification (ICD-10-CA/CCI) to the older one (ICD-9/ICD-9-CM/CCP).
   - For codes found in literature in the older classifications (ICD-9/ICD-9-CM/CCP), conversion or code mapping from old to current classifications is a precise skill performed by trained classifications specialists.
5. Consider the **version of the classification** in use for that fiscal year (with additions or deletions of codes from previous years).
   - CIHI supported updates to ICD-9/ICD-9-CM/CCP up to and including 2000–2001. Some international data comparisons provide ICD-9-CM codes after this year, but these will not exist in CIHI's databases. However, the clinical concepts in the updated codes must be considered for the purpose of accurate comparisons.

6. Consider any **disease condition or intervention rules** for the fiscal year of data, as found in the *Canadian Coding Standards* or *Canadian Coding Sourcebook* for that year. Have the rules influencing how the data was entered changed or remained static? See **Appendix C — Table of changes** in the current version of the *Canadian Coding Standards*. See also the *Canadian Coding Standards Evolution Chronicle*, found on CIHI's Classification resources web page. This document provides a listing of the changes over time to the coding standards, from 2001 to the current fiscal year. Have any interim directions influenced the data, such as CIHI bulletins or eQuery responses?
7. Consider the clinical concepts contained in the code, range of codes or chapter level being reported. Ensure the clinical definitions of the conditions and interventions are documented; consult a clinical expert advisor as needed. Do both sides (old and current classifications) contain the same conditions/interventions, and are any issues clearly documented with caveats? Ensure that mapping (versus conversion) has been done to reflect an apples-to-apples comparison. In many cases, a range of ICD-10-CA codes will result in a broken series of ICD-9 or ICD-9-CM codes.
8. Consider your inclusion criteria for case selection:
   - Most responsible diagnosis only (stable definition over time)
   - Pre-admit comorbidities (diagnosis type 1, could be W, X, Y)
   - Post-admit comorbidities (diagnosis type 2, could also be W, X, Y)
   - Principal procedure, any procedure, unique cases only (count 1 per abstract)
9. Consider the cases that must be excluded, which are typically
   - Newborns, obstetrical patients, cadaveric donor abstracts and stillbirths; and
   - Abandoned or out-of-hospital interventions.
10. Consider risk-factor adjustments, if required, such as the Charlson Index.
11. Consider any well-known, published data and technical documentation, such as the following:
    - CIHI's Health Indicators series
    - CIHI's Hospital Reports series
    - cihi.ca

Tip: Physician billing codes for each province are based (for most provinces) on an in-house version of ICD-9/CPP. The in-house enhancements and additions to provincial physician billing codes are under the jurisdiction of the provinces and not CIHI, and definitions of the concepts covered by in-house billing codes may not reflect the original ICD-9/CPP codes.

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