Health Condition Categories for a Canadian Population Grouping Methodology

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Introduction
In April 2015 the Canadian Institute for Health Information (CIHI) released the alpha (initial) version of its population grouping methodology and software. It is the first grouping methodology developed in Canada that has every person registered for public medicare as its target population, and looks at the population over an extended period of time and over multiple healthcare settings. The methodology consists of a case mix classification accompanied by predictive indicators of morbidity burden.

The case mix classification in the alpha release consists of 214 health condition categories, age categories, and sex. The 214 health conditions are considered an "additive classification" since a person can be assigned to multiple categories.

Methods
Development of the 214 health condition categories was the result of an iterative process. This process included project team clinical experience, a literature review to identify relevant health conditions, and querying of historical data to understand the health conditions that are frequently treated in different health sectors and/or are costly. The resulting health condition categories were vetted by advisory groups composed of physicians, health system administrators and researchers. Examples of the 214 health conditions include cirrhosis, diabetes mellitus, osteoarthritis, serious burns, and fracture femur.

Data used in the development of the health condition categories consisted of hospital episode datasets and physician billing datasets. In these datasets, diagnosis information was recorded using the International Classification of Diseases (ICD). The development of the 214 health condition categories included the construction of a mapping of ICD codes to the health condition categories. To facilitate the use of residential care data in the grouping methodology, clinical data elements from the Residential Assessment Instrument - Minimum Dataset were also mapped to the health condition categories.

For each person to whom the grouping methodology is applied, 214 yes/no (presence/absence) tags are assigned, one tag for each of the 214 health conditions. The methodology looks retrospectively over a two year period to identify and tag the health conditions a person had in that period. Tagging rules are also applied when looking at the physician billing data; for 139 conditions considered chronic or having long-lasting effects, and needing ongoing monitoring by a physician, the methodology requires two or more physician visits in order for it to be confirmed. If the health condition is observed in hospital data, then it is considered present even if observed only once.

For the upcoming beta release, clinical overrides are being developed. Some pairs of health condition categories are related and commonly occur together. Such pairs include disease progression (e.g. chronic liver disease and cirrhosis), symptoms common in the presence of a disease (e.g. seizures and epilepsy), and diagnoses associated with the process of diagnosing a disease (migraine later determined to be a transient ischemic attack). When both conditions are present for a person, a clinical override would result in one of the health conditions being untagged for that person. The goal of these clinical overrides is for the health conditions categories to provide greater clinical and resource homogeneity within the group of persons that have been tagged with a health condition.

Results
The 214 health condition categories contained in the alpha release of the population grouping methodology provide a solid clinical classification of the population. They are useful to in population profiling, risk
adjustment, and funding. They also provide a foundation for the development of the population grouping methodology's predictive indicators and mutually exclusive classification.

Conclusions
Feedback on the 214 health condition categories in the alpha release has been quite positive. There is more work planned to refine the categories, the tagging rules, and the clinical overrides. These refinements will be reflected in the beta release of the methodology, planned for October 2015.

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