

Title : Optimising severity determination in the french DRGs with the exclusions mechanism

Introduction: French acute and non-acute care hospitals are primarily financed through activity-based funding and a dedicated classification of inpatient stays within homogeneous diagnosis-related groups (DRG). Case-complexity is further determined by an algorithm assessing, for each DRG, which associated diagnoses (AD) are linked to a significant deviation from the mean length of stay (LoS) of the group. In light of the recent redesign of the algorithm and in order to optimise its performance, our goal was to identify which code-pairs (MD+AD) should always be excluded from the calculations.

Methods: Code-pairs were constructed from the ICD-10-FR, excluding letters V to Y. The foundational set of code-pairs was made by pairing each code with itself, as well as with all codes sharing the same first three characters. Beyond the foundation, a taxonomy for identifying and validating pairs was elaborated by a multidisciplinary group made of statisticians and clinicians. It revolves around redundancy. Redundancy was split into two dimensions : literal and medical. Literal redundancy designates pairs with identical definition but residing in different categories, e.g. for use in pediatric and adult populations, and codes included in other codes. Medical redundancy designates pairs expected to yield no additional expenses in ressources, meaning either a common benign symptom or manifestation and their cause or conditions requiring the same treatment. An algorithm parsing instructions and code-pairs allowed us to generate a lot of pairings with few instructions, and a web-application built with RShiny allowed for quality control. Impact analysis and quality control were conducted by using the complete 2019 database of national hospital stays across both settings.

Results: The final list holds 4.9 million code-pairs, generated through 1100 hand-made instructions. In the benchmark data, 2.36 million stays (12.5% of total stays for the year) were impacted by exclusion pairs in acute care and 0.37 million (25% of total stays) in non-acute care. The performance gains from using this list were assessed by analysing which ADs have their estimated complexity score changed prior and after the use of the list. The R^2 for LoS distribution in the acute-care setting moved from 41% to 42% before/after introducing the reworked set of exclusions. In non-acute-care, the R^2 moved from 20% to 22%. An upcoming quality control will help us target instructions for further refinement to better handle fringe cases.

Conclusions: A reproducible pipeline for building a set of code-pairs exclusions into the french algorithm for estimating case-complexity within the DRGs has successfully been elaborated and tested. Further revisions and quality control are planned to follow along the larger body of work on revising the agency's approach to evaluating complexity across hospital settings.