PCSI 2025
Québec, Canada
September 9 to 12

Severity determination in French DRGs : towards the experimentation of a new model

Authors: Nicolas Dapzol (a), Vincent Pisetta (a), Nathalie Raimbaud (a), Alexandra Delannoy (a), Raphael Schwob (a), Joelle Dubois (a)

Introduction

In the beginning of 2020, France has started to study potential modifications in the determination of the severity index in both acute and non-acute care DRGs. Several mechanisms had been identified in order to improve the performance and readability of the new model. These improvements had required :

1) The design of new statistical methods specifically adapted to the problem of estimating the severity of diagnoses and their interactions - some of this work has been presented in PCSI 2022

2) The integration of medical knowledge at several key steps of the model,

3) The constant search for a compromise between simplicity, performance and readability

Lots of intensive statistical computations and medical proofreading led to the determination of the new model. Finally, five years after the beginning of the project, a first complete framework is going to be experimented on a national scale. The goal of the talk is to introduce this new framework.

Methods

The new model is based on ICD-10-FR and has two major modifications compared to the current ones (in both acute and non-acute cares).

First it computes a sub-index based on the combination of all pathological codes (a sub-list of ICD-10-FR) taking thus into account the multiplicity (as well as the individual severity) of diseases of the patient - instead of only the most severe. Particular attention was given to determining a subset of diagnoses that are not correlated with each other in a stay.

In a second time, the sub-index may be increased in the presence of specific social and environmental factors (based on another ICD-10-FR sub-list), as well as the age of the patient. In the current model, those socio-environmental factors are not properly distinguished from the "pathological" ones, thus mixing two different concepts.

Results

The new model produces strong improvements in the quality of both acute and non-acute care DRGs as measured by R^2. Besides statistical improvements, all stakeholders agree on the fact that the multiplicity of diseases is particularly important, as well as socio-environmental factors.

In fact, the formalization of medical knowledge and its implementation into models bring interpretable and strong results.

Lastly, the optimal number of severity level was questioned. It's a multifactor problem and has not been decided yet by stakeholders.

Conclusions

A new framework for severity determination has been introduced in acute and non-acute care DRGs producing strong improvements and differences with the current ones. Because 1) the economical redistributions of a such new model may be important and 2) its algorithmic complexity is higher, it has been decided to start in the current year a new experimentation before its future deployment. Several tools will allow each hospital to see in real-time the new grouping results besides the current one. These tools, associated with a lot of pedagogy, should allow all stakeholders to better evaluate the consequences, as well as the potential improvements emerging from this new paradigm.

a: Technical Agency for Information on Hospital Care (ATIH), France, France