Title :

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

Intro *:*

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.

Method :

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.

Conclusion :

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.