TITLE: Testing the French casemix system on a Belgian hospital discharge dataset: feasibility and challenges

Introduction

Activity based funding (ABF) was introduced in Belgium more than 20 years ago, using the APR-DRG–system based on ICD-10-CM and ICD-10-PCS (earlier ICD-9-CM). ABF represents only 20% of the total hospital budget for inpatient and one day activity. Other funding sources are calculated in a very different, complicated way. Moreover, the physicians act as independents and are remunerated by means of fee-for-service, ceding a substantial percentage of their income for the hospital's functioning.

As hospital financing in Belgium has become a labyrinth, political will exists to reform the system into an « all-in » payment system based on casemix. Different workgroups started to examine this transition.

Methods

The purpose of our workgroup was to test an existing hospital financing system of a neighbouring country on a Belgian dataset. In this paper, we focus on the feasibility and challenges of code mapping.

We obtained the standardized hospital discharge dataset of 8 Belgian hospitals from 2019, representing 250,000 hospital stays and one day contacts, without any possibility to review the original patient record.

As France is assumed to have a similar demography and morbidity as Belgium and a very similar coding logic, we focussed on their system. However, the coding language in France is CIM-10-FR for diagnosis and CCAM, a propriate French system, for procedures.

The most accurate way to test CIM-10-FR and CCAM would be to re-code the Belgian patient records by a French coding team applying all their rules and conventions. Re-coding 250,000 stays however wasn't realistic.

Therefore, we decided to establish a translation dictionary between CIM-10-FR and ICD-10-CM on the one hand, and between CCAM and ICD-10-PCS on the other. Once this mapping was developed, we could group the stays into the French grouper and analyse different aspects related to French DRG's (called « GHM »).

Results

15,800 diagnosis codes and 5,200 procedure codes were mapped into the French coding language.

Although CIM-10-FR and ICD-10-CM are both derived from WHO's ICD-10, differences are huge:

- the precision of a coding concept varies mostly between both systems;
- the same alphanumeric code can have a different content;
- coding instructions differ.

Differences between CCAM and ICD-10-PCS are even bigger as both systems use a totally different semantic logic.

Our method has some limitations that potentially introduce a bias that only could be addressed via chart review, such as:

- some medical concepts require more precision in the target system;
- different conventions in e.g. assigning the principal diagnosis;
- much more unspecified codes are rejected as principal diagnosis by the French grouper (which could explain less of unspecified DRG's in France).

Conclusions

A mapping exercise between two similar coding systems reveals some unexpected observations:

- greater differences between ICD-10-CM and CIM-10-FR than expected;
- different code granularity per chapter in both systems;
- differences in principal diagnose code assignment;
- a huge difference in procedure coding logic and assignment method.

Several aspects need more exploration. But looking forward to ICD-11, a first lesson learned is to avoid country specific coding systems with different granularity to enhance international comparisons and supranational interoperability.