

Meeting abstract

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## Refined French DRG with four severity levels

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### Introduction

In France, GHM (French DRGs) have been used to fund the acute hospital sector since 2005, with extra per day for outliers or intensive care units, and specific payments for educational tasks, research and general interest. However, at present fees differ between for-profit and non-profit hospitals. But the law requires that fees must converge by 2012, with a 50% reduction in the differences by the end of 2009. France has one of the highest percentages of for-profit hospital beds in Europe. These hospitals are often very specialized. Homogenization of GHM becomes, therefore, a crucial issue. For-profit and non-profit hospitals do not have the same rates and the same kinds of CC. The current version of the French DRG uses only two levels of GHM (with/without CC), and specific GHMs for major CC, as do AP-DRGs. Hence, ATIH decided to improve the way to take CC into account.

### Methods

Four severity levels were created for almost every GHM. An original method was developed, called 'isolated effect', in order to assign each diagnosis to a certain severity level. To measure the effect of a secondary diagnosis, we stratified by GHM, eliminating, however, the greater part of the effects of the accumulation of diagnoses during the same stay. For this, we started by ordering the diagnoses effects. For each stay, the diagnosis with maximum effect is retained and is used in order to calculate the next step. Calculations are repeated until the process converges.

From 13,300,000 hospital stays, those with more than 2 night stays were analysed (2005–2006 national databases,

MDC = 1–13, 16–21). The method was applied on the effects of the diagnoses on the average length of stay, and on the percentage of stays longer than the median. This allows ordering of diagnoses by decreasing order of effects. Only diagnoses with an effect on the duration of at least 1.5 day, at least 25% in percentage, and a percentage beyond the median higher than 55% are allowed to be CC. The other diagnoses are in the first level (without CC). The 3 other levels of CC are obtained by maximisation of the  $R^2$  coefficient. At each step, results are validated and corrected by medical experts.

Exclusion lists (principal diagnosis/secondary diagnosis) have been set up on all ICD-10 diagnoses. Diagnoses were grouped together into 2300 classes, and diagnoses which cannot be CC for medical reasons or coding problems were dropped.

### Results

The method produces great changes in the CC: 950 are dropped, 3000 are added. Using only the stays with more than 2 nights,  $R^2$  coefficient increases from 23.5% to 29.3% in the non-profit sector, and from 32.1% to 36.7% in the for-profit sector (for all stays, the figures are, respectively, 42.0% to 46.7% and from 55.8% to 58.8%). The increase concerns both medical and surgical parts. Methods are tested in order to robustly estimate the cost of the 4 level groups with few stays. If we pay in day (i.e., if the price by GHM was proportional to the ALOS), 50% of the hospitals would have an at least 1.8% change, and the change would be higher than 5.7% for 5% of them. The

non-profit hospitals would have an 0.6% increase, and the for-profit sector an 1.5% decrease.

### Conclusion

This is the first French modification of the CC list. The method can be maintained. It allows a clear putting of the results which can then be discussed with hospital representatives. The method results in very significant changes in  $R^2$ . The changes in terms of budget per hospital are, however, moderate.

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