Reviewer's report

Title: Factors influencing hospital high length of stay

Version: 1 Date: 26 March 2012

Reviewer: Ceu Mateus

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Major compulsory revisions
1.

p. 7
it is said:
Within each DRG (HCFA1 version 21.0)
comment:
the version in use since 2006 is AP-DRG version 21.0 which is property of 3M HIS. This information can be verified in Portaria 567/2006 and http://portalcodgdh.min-saude.pt/index.php/Health_Care_Financing_Administration_of_Medicare_Diagnosis_Related_Groups_(HCFA-DRG)

2.

p. 9: where is mentioned HCFA 21 should be corrected to AP-DRG 21.0

3. Table 2
Casemix is like a weighted mean therefore it is highly inaccurate to present the average of period. If it cannot be computed properly, the average line should be deleted.

Discretionary revisions
1.

p. 7
it is said:
discharges between 2000 and 2009, included data from the majority of the public acute care hospitals of the NHS
comment. I believe the database includes all the public acute care hospitals. If some hospitals have been left out they should be identified.

2.

p.8
In what concerns "administrative groups classification" have the authors used the information published in Portaria No 281/2005 de 17/03/2005? This normative classification suffered changes along the period and it would be interesting for the reader to have a reference for the groups used.
3.
In what concerns "economic groups" it seems that the splits considered may overlap the groups used for funding purposes by the Ministry of Health. If so, a reference would be useful for the reader.

4.
In what concerns "teaching groups", looking at the percentage of hospitals in each group (Table 1) it seems that only undergraduate teaching hospitals were considered. This should be more explicit in the text.

5.
p.9.
Comment on A-DRG complexity: were the groups build based on the relative weights of the DRGs? It is not clear for the reader on what the quartiles were based.

6.
p. 11
it is said: For this analysis we only considered DRGs with more than 10.000 stays.
Comment: the 10.000 stays are over the period and that should be made explicit in the text.

7.
p.14
it is likely that in the analysis according to the different types of hospitals the authors are talking about the same hospitals. Central hospitals include large teaching hospitals and some of these belong to group 1 in economic groups. is there a small group of hospitals responsible for the percentage of outliers found (around 4.4%)?
During the period under analysis there were several mergers in Portuguese hospitals (from around 90 hospitals in year 2000, in 2009 the number was close to 60) and therefore it is relevant to know the total N of hospitals considered and which year was taken as reference.

8.
There is no information about the impact of outliers in the costs of the hospitals. Using the Portaria mentioned in the references the authors could have estimated the impact of high outliers in hospitals costs/funding.

9.
In the conclusions factors influencing the existence of high outliers should have been stressed. In page 12, where the binary logistic regression is analysed, other factors, besides the type of hospital, impact on the length of stay: emergency
admissions, patient's age above 45 years old, comorbidities and discharge status as "expired" (what is also visible in the data presented in Table 1). The way it is presented in the conclusions it seems that the characteristics of the hospitals are what influences the most the length of stay of the patients.

10. The situation found in Portugal is better than the one found in Spain and Belgium. It would be interesting for the reader to have an idea which percentage of the costs of hospitals in those two countries could be attributed to high outliers.

11. In Table 1 it seems that the discharges for year 2009 do not correspond to the full year. If that is the case a note should be added. If the value of "n" could be added to the table, it would make it clearer for the reader.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests