Reviewer's report

Title: Payer leverage and hospital compliance with a benchmark: A population-based observational study

Version: 1 Date: 28 March 2007

Reviewer: Reijo Sund

Reviewer's report:

General

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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1) In the conclusions it is claimed that the data suggest that at least 30% of patients need to be at risk for motivation. However, only 20%-limit is used in the analyses, so it can be stated that 20%-limit seemed not to be enough for motivation, but the analyses do not tell if 30% is enough. As it should be quite straightforward to test different limits, it would be interesting to see how the effect varies by the cut-off; see e.g. figure 1 in Christian CK, Gustafson ML, Betensky RA, Daley J, Zinner MJ: The Leapfrog volume criteria may fall short in identifying high-quality surgical centers. Ann Surg 2003, 238(4):447-455.

2) Testing in the tables 1 and 2 is not adequately reported. Please report n for each population. There should be a column for P-values and/or significance-stars. Why std of age is about three-folded in non-compliant hospitals? Is that fact in concordance with the assumptions of a T-test? For categorical variables with several classes summing up to 100% the equivalence of distributions should be tested instead of class-wise testing. Why race-other class in liver transplantation has no stars even though the difference seems to be rather large? Confidence intervals would be nice.

3) It is difficult to follow the description of the model for Medicare market leverage. What is your dependent variable? What are your independent variables? How many observations do you have in the actual model? What are the mentioned potential cluster effects in this case? Is the count of donor organ supply hospital specific? Is it reasonable to use counts if hospitals are of different size? OR of magnitude 143 is pretty high; what does it tell? A table for the results (including estimates also for the variables used in adjusting) would be nice. Have you considered alternatives for the use of categorized variables (see the cut-off comment above)?

4) Was the GEE-approach used to accommodate the panel structure or the hierarchical patient-volume structure in the NIS data? Correct the text to be more precise and change the reference, if the longitudinal analysis was not used. Report also the odds ratios for the variables used in the adjusting in the table 3 (for example, use a new table for each transplant type or (transposed) tables for unadjusted and adjusted odds ratios). Even though these variables are not of your primary interest, they offer interesting information about the operative mortality and make it easier to evaluate the adequacy of the model.

- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

5) Add a comment (and references) on the quality of NIS-data.

6) What is the coverage of the UNOS data (sample or total data)? How was the UNOS data "standardized" to be compatible with the NIS-sample? Discuss about the possible shortcomings.

7) Explain more carefully how many hospitals were included in multiple years in NIS. Has there been any structural changes between 1993 and 2003 which may have had some impact on the association between volume compliance and market share?

8) The sentence "Based on the hospital-year volume for a given discharge record, a binary volume compliance variable was assigned at the hospital level and served as the unit of exposure" is unclear. Isn't the discharge record patient specific? Unit of exposure of what?
9) Are the volume requirements evidence-based or consensus statements? Move/copy the references justifying volume requirements in discussion also to the methods-section. Discuss the use of other outcomes than operative mortality.

10) Give a newer reference for the robust variance estimates (for instance, some tutorial paper pointing out the importance of the technique in a similar context would be nice).

11) Please state to which hypotheses the P-values in the first and third sentence of results-section refer to.

12) Smooth your interpretations and wordings to be in concordance with the data and the statistical evidence (e.g. the "overgeneralizing" text referring to tables 1 and 2 in the results section, lower likelihood interpretation in discussion sentence 2, and the statement about the ultimate determinants of compliance in discussion page 12 beginning).

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

13) The introduction is very USA-specific. Some motivation and discussion about the implications beyond the referred debate would be of interest to an international reader.

14) Give a short introduction to Medicare system (or references to such information). Are there some sanctions for hospitals, if the Medicare's minimum standards are not fulfilled? Are the "small" hospitals really ready for dropping out their potentially profitable transplantation operations (and the expertise of their surgeons on this respect) because of some more or less arbitrary volume cut-off?

15) Report which Elixhauser comorbidities were considered to be related to each type of transplantation.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)