Reviewer's report

Title: Hospital accreditation, reimbursement and case mix: links and insights for contractual systems

Version: 2 Date: 2 September 2013

Reviewer: William Reinke

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General
1. The paper gives a clear presentation of an important health care classification problem, describes an appropriate methodology and database for assessing the problem, and subjects the data to analysis that is for the most part careful and thorough. For example, cognizance is taken of the likelihood that variances in subsets of the data are unequal.

Major Revisions
2. The formula for distinguishing hospitals according to their case mix index is appropriate and clear. It is not clear, however, how weights were determined in each of the disease categories. Nor is there a discussion of the ease and feasibility of establishing such weights. The system chosen is a substitute for the use of DRGs. It can be justified if it can be shown that the system is easier to use in a setting like Lebanon and is nearly as valid as the DRG system. It is essential, therefore, that the necessary description and justification be provided.

3. Certain differences are statistically significant and therefore declared to be real. Where differences are found to be non-significant, they are erroneously considered not to exist (effect 0). In fact, real differences may exist but have not been shown beyond a reasonable doubt. The analysis of readmissions by Accreditation in Table 4 is a case in point. A hierarchy of mean values (.027 to .007) clearly exists from A to D, even though some of the paired differences may not reach statistical significance. The discussion of statistical findings should make clear the difference between "an effect does not exist" and "an effect has not been shown to exist."

Discretionary Revisions
4. Undoubtedly, the number of observations differs among hospitals. Therefore, differences between categories (e.g., Accreditation levels) could be due to differences generally in a category, or due to the effect of a few exceptional hospitals that contributed a large number of observations. There is no evidence that precautions were taken to prevent the latter confounding, and there is no discussion of how serious the effect might be. The authors admit that the hospitals are not homogeneous; therefore, the concern for confounding is not trivial.
Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.