Reviewer's report

Title: The Procedural Index for Mortality Risk (PIMR): an index calculated using administrative data to quantify the independent influence of procedures on risk of hospital death (a cohort study)

Version: 1 Date: 6 July 2011

Reviewer: Eren Demir

Reviewer's report:

One of the major concerns of developing models to predict outcomes (i.e. hospital mortality and patient readmissions) is the unavailability of detailed clinical data. While it might be true that administrative data have their shortcomings, these can be partly overcome by using variables derived from administrative data (i.e. Elixhauser Index). The zero cost of data collection is also a major advantage of such data. In the absence of clinical data, this paper has developed a logistic regression model, 1) to investigate the independent association of all procedures with the risk of death in hospital, and 2) derived a new measure known as procedural index for mortality that has the capability of predicting risk of death. The paper could be very useful to health and social care providers (i.e. hospitals) and purchasers to better understand the important influence on patient outcomes and ways of improving hospital performance.

The paper is well written, clearly argued and nicely presented.

Discretionary revisions

Section Candidate Procedures paragraph 4, “… with death in hospital had to be less than 0.5.” Why 0.5? Is the model sensitive to the choice of p-values? Also, don’t you think 0.5 is very high to consider a procedure to be significant?

Section Results paragraph 2, “This left a total of 212 procedure-urgency combinations…”. Is this a single variable with 212 categories? Don’t you think that problems could arise (i.e., parameter estimation for each category) as a result of too many categories within a variable?

Which software was used to develop the models?

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.

Declaration of competing interests:
I declare that I have no competing interests