Reviewer's report

Title: Stratification of the severity of critically ill patients with classification trees

Version: 1 Date: 31 March 2009

Reviewer: Rainer Röhrig

Reviewer's report:

1. Is the question posed by the authors well defined?
Yes.

2. Are the methods appropriate and well described? (Major Compulsory Revisions)
The statistic approach is well described.
I missed a subsection for the Methods for data acquisition and measurement. Particularly the quality of APACHE II, SAPS II and MPM II-24 are dependent from the method of measurement (manual or automated recording by patientdatamanagementsystem, sampling rate of vital signs, etc.)

3. Are the data sound? (Major Compulsory Revisions)
The observation time span is about ten years. Over ten years strategies of therapy changed, so we expect a shifting outcome. To avoid the Simpson’s Paradox I would suggest:
• Present an outcome trend over the observation period
• Show, in table 2, the distribution between the development and validation sets over the observation period.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? (Minor Essential Revisions)
In Table 5 I missed the Hosmer-Lemesho H-Statistic. Apart from that the data analysis was done accurately, figure 4 clarify the calibration very well.

5. Are the discussion and conclusions well balanced and adequately supported by the data? (Minor Essential Revisions)
The Discussion should compare the results of the decision tree with APACHE II, SAPS II and MPM II-24 and compare the discrimination and calibration with other studies.

6. Are limitations of the work clearly stated?
Yes, the limitations (Single Centre study, Observation timespan over ten years) are clearly stated.

7. Do the authors clearly acknowledge any work upon which they are building,
both published and unpublished?
Yes.

8. Do the title and abstract accurately convey what has been found?
Yes.

9. Is the writing acceptable?
Yes.

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

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'