Author's response to reviews

Title: A predictive score to identify hospitalized patients' risk of discharge to a post-acute care facility

Authors:

Martine Louis Simonet (martine.louissimonet@hcuge.ch)
Michel P Kossovsky (Michel.Picard-Kossovsky@hcuge.ch)
Pierre Chopard (Pierre.Chopard@hcuge.ch)
Philippe Sigaud (Philippe.Sigaud@hcuge.ch)
Thomas V Perneger (Thomas.Perneger@hcuge.ch)
Jean Michel Gaspoz (Jean-Michel.Gaspoz@hcuge.ch)

Version: 3 Date: 6 May 2008

Author's response to reviews: see over
Dear Editors,

Thank you very much for your mail of April 17th, 2008. We revised the manuscript along the lines that you and the reviewers suggested, and added the power calculation as requested. Please find enclosed detailed answers addressing the concerns and the questions raised by the reviewers.

Answers to referee Alan Tennant

...the paper is still without a power calculation

1) Information extracted from internal databases let us expect a transfer rate of 30% to a PAC facility. The sample size needed to estimate this proportion with a 95 percent confidence interval of 0.05 is, thus, 323. We therefore aimed at this sample size, increasing our recruitment in order to take into account ineligible patients and drop-outs. Since the observed proportion of transfer to a post-acute care facility reached 29.8%, we think that our sample size of 349 patients provided enough power for our modelization. We have now added this calculation in the Methods section of the manuscript.

What remains confusing is the reporting of the logistic models (Tables 2& 3). In Table 3 the confidence intervals appear to overlap 1, yet the p values are significant. Such CI’s would be consistent with a non-significant p value (except for acute medical problems which do not). Have the authors reported the unexponentiated coefficients and their associated CI’s in Tables 2&3? If so, this will need to be made explicit in the methods, as most readers will be more familiar with the exponentiated (odds) and their confidence intervals which one would expect not to overlap one when significant. This would explain the low coefficient for the number of acute medical problems in Table 3, which if exponentiated, would imply the less likelihood of a PAC placement.

If this is the case, it may be advisable to report the findings as exponentiated odds and their respective CI’s in both tables, in order to avoid confusing readers or make it very explicit what has been done, and therefore what a significant confidence interval would look like for an unexponentiated value.

Table 2 and Table 3 present the association between significant predictors and discharge to a post-acute care facility. However, the information that these tables carry is different. Table 2 compares Day 1 and Day 3 models in their predictions of discharge to a PAC facility.
Therefore, the relationships of the variables with the outcome are expressed in odds-ratios and their corresponding 95% CI’s, none of them overlapping one. Table 3 illustrates how points were attributed to each component of the score. As we attributed points in proportion to the values of the unexponentiated logistic regression coefficients of the variables, we chose to report the unexponentiated coefficients in Table 3, so that readers could verify the logic around the attribution of the points. In table 3, confidence intervals not overlapping zero are therefore equivalent to confidence intervals not overlapping one if odds-ratios had been used. As requested, this is now made explicit in the Results section and an explanatory footnote has been added at the bottom of Table 3.
Answer to referee Robert L Kane

1. ….eliminates most patients...

We excluded patients transferred to the nursing homes were they lived because patients living in such institutions represent a group with different characteristics from patients living at home, notably in terms of living conditions and help provided, which significantly modify and lower their need of post-acute care facility. We also excluded patients who died during hospital stay or who were transferred to other acute care settings, since death or transfer to other acute care hospital settings are not predictable on day 3. However, we checked whether including the 22 patients who experienced such outcomes in the validation cohort significantly modified our results. Mean 3-day score among them reached 11.2 ± 5.8 points vs. 10.7 ± 6.0 for patients discharged home or transferred to a PAC facility (p=0.68). In addition, the score’s capacity to predict discharge to a PAC facility was not significantly different in the validation cohort when these patients were included in the analysis (AUC=0.74 vs. 0.77; p=0.69).

2. The major medical diagnoses…
The diagnoses listed by the referee turn out to be the most common ones in our sample. We did check if these diagnoses predicted transfer to a PAC facility. As already mentioned in the results section: “no significant differences were observed in the proportions of patients discharged home versus to a PAC facility for principal diagnoses such as cardio-vascular, pulmonary, rheumatic or neurological diseases, while patients with oncology disease were less likely to be discharged to a PAC facility (17 % ; p<0.005).”

3. A specificity of 63%…
We mostly wanted to be conservative and to avoid false negatives, i.e. patients transferred to a PAC but not being identified as such. Thus, sensitivity was our main concern, and it was 87%. This led to a negative predictive value of 91%, which is acceptable.

4. The title and the text talk about…
We agree with the reviewer that our model does not really identify patients requiring PAC but, pointed by the reviewer, predicts transfer to a PAC facility, regardless of the appropriateness of such a transfer. We therefore modified our language throughout the manuscript in order to be consistent with our findings. We have also added a paragraph in the discussion section pointing out that our model is descriptive.

Answer to referee Kathryn Bowles

We have corrected the grammatical error on page 9 : built has been changed for build