Reviewer's report

Title: Systematic review of prognostic models in traumatic brain injury

Version: 2 Date: 10 October 2006

Reviewer: Alan Tennant

Reviewer's report:

General
This paper examines the extent and quality of prognostic models in TBI, making a useful contribution to the current knowledge of, and utility of such models, particularly for routine clinical practice. Nevertheless, the paper is frustrating to those with an interest on the outcome of TBI, as opposed to those interested in the process of prognostic modelling. For example, we are told that 89 variables were identified in the models under study, with a mean of five; but we are not told which were the most common across the studies. We are told of different approaches, for example logistic regression and regression tree analysis, but we obtain no sense of whether the quality of the models vary by the type of approach, or whether they are all of like quality.

One presumes that, because the externally validated models are described in more detail, they are the best available. However, this need not necessarily be the case, and a simple table showing the best quality derivation models, as well as the best quality validation models would give readers a sense of comparison, and the relative strengths and weakness of the various models. Although it is important to know how many models reported their overall accuracy, again readers get little sense of how accurate they were.

While the paper continually emphasises that the models were essentially undertaken in developed high income countries, it gives no reason as to why prognostic factors might be different in low income countries. Neither does it support such statements as ‘10 events per variable’. Does this apply to all models? How does this equate with the known sample size requirements (which are quite severe) for logistic regression?

Although this paper is essential a review of the process of doing prognostic modelling in TBI, it fails to give those interested in applying those models in clinical practice or research any real guidance as to best practice.

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

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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)