Reviewer's report

Title: Outcome prediction of acute disease by prehospital score: a community-based observational study

Version: 1 Date: 14 June 2007

Reviewer: Daniel P Davis

Reviewer's report:

General

The authors attempt to create a prehospital scoring system that is predictive of the need for hospital admission based on the following variables: age, systolic blood pressure, pulse rate, consciousness level, SpO2 and ability to walk. They perform a logistic regression model, with hospitalization as the outcome variable, and assign scores to each variable category based on beta coefficient.

They then apply the scoring system to the same group of patients and calculate the test characteristics (sens 87%, spec 43%, PPV 46% and NPV 85%). They conclude that while the scoring system is not as sensitive as others, its simplicity makes it potentially useful.

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

Perhaps the most important point that the authors need to address is the incentive to develop this decision rule. While they cite trauma models as an example of how these scoring systems might be used, EMS providers must decide whether to bypass the closest facility and go to a trauma center. With the general EMS patient, this is not an issue. Since all of these patients will be transported, does knowing their likelihood of admission make a difference? The authors must better establish how this score will be used.

There are several issues with the statistical approach. First, there should be a derivation set and a validation set. To use the same group of patients for both is suboptimal and simply says that the rule derived using these patients performs reasonably well in these patients. Despite this, the rule doesn't actually perform that well. A sensitivity of 87% is not nearly high enough for triaging decisions.

The selection of variables appeared somewhat arbitrary and should be explained. It appears that chief complaint would have improved performance. The use of vital signs alone is extremely limited when predicting admission (take chest pain, for instance). In addition, the selection of stratifications is unclear. While stratification is perfectly reasonable, there should be some explanation for the groupings. There are statistical techniques to accomplish this, such at recursive partitioning, that may actually lead to better performance of the model.

Lastly, if the intent is to compare the performance of this model with other, better established models, then they should be compared using this dataset rather than simply relying on published figures. Again, they should be compared using a validation dataset.

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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)

I would await a revised version before addressing minor changes.

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Discretionary Revisions (which the author can choose to ignore)

See above.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

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

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