Reviewer's report

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

Version: 1 Date: 2 August 2007

Reviewer: Homer Tien

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General

This study is confusing to read, because I don't understand the potential application of this prehospital score. As the study reads, the prehospital score will be used to dispatch emergency life saving medics to appropriate cases. That doesn't make sense to me; who will determine vital signs to request emergency life saving medics in the first place?

If on the other hand, the authors are suggesting that patients with a prehospital score $\leq 3$ should be refused transport to hospital via the national ambulance service, then the study design makes sense to me. However, some comment should be made about the potential for errors and bad outcomes, if patients are refused transport to hospitals based on this triage tool.

However, if all patients (regardless of their prehospital score) are to be transported to hospital, and if the purpose of this triage tool is to only determine the order and speed by which ambulances transport patients, then the study outcome of hospital admission (yes/no) does not make sense to me. There must be some additional gradations to the severity of disease other than admission vs no admission to justify this prehospital score as an effective triage score. If a binary outcome is desired, then alive vs dead makes more sense as the primary outcome. Therefore, the logistic regression should be repeated for death as the outcome.

In addition, the authors argue in the Background that a more simple triage tool is required, as the current "prehospital severity and urgency criteria" have to distinguish "trauma" from "chest pain" and other acute diseases. I'm not sure why highly trained ambulance crews can't do this? Otherwise, I think many potential disasters can occur. A 20 year old male suffering a single gunshot wound to the abdomen, with a blood pressure of 100, a pulse of 140, able to walk and having a normal level of consciousness would have a prehospital score of 2 and therefore, would not rate admission. Most would agree, however, that this patient should be transported as rapidly as possible to hospital.

Another major limitation of the study is the failure to obtain outcome data on the large number of patients who were not admitted. I realize this may be impractical, but this represents a major limitation in the study.
Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Please clearly state the intended application of this triage tool: will it be used to send the appropriate level paramedic to each call, to refuse ambulance transport to hospitals of those patients who do not have a sufficient prehospital score or will it only be used to determine the order and speed of patient transport?

2. If this tool is to be used to dispatch the appropriate medic to the scene, please explain why this tool will be useful in the Japanese prehospital context? What cut-off for the prehospital score is appropriate before emergency lifesaving medics are dispatched? Clearly, the cutoff can't be 3.

3. If this tool will be used to refused ambulance transfer of patients with low prehospital score, please discuss the implications of sensitivity and specificity for complications from incorrect triage decisions.

4. If this tool is to be used to decide the order and speed for patient transfer, please consider another outcome measure with multiple levels, or repeat the logistic regression using alive/dead as the outcome.

5. Please explain why a simple tool is desired, based on the training of the Japanese EMS personnel? Why is a simpler tool better than a tool which accounts for whether the case is trauma vs chest pain? Were there many missed diagnoses or delays with using the "prehospital severity and urgency criteria"?

6. Please obtain follow-up data on patients not admitted to hospital, or discuss the limitations to the study of not being able to access this information.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

None

Discretionary Revisions (which the author can choose to ignore)

None

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: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

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