Author's response to reviews

Title: Prehospital score for acute disease: a community-based observational study in Japan

Authors:

Yasuhiro Toyoda (ytoyoda@pbhel.med.osaka-u.ac.jp)
Yoshio Matsuo (kch-25_q9q9@kch.city.kishiwada.osaka.jp)
Hiroyuki Tanaka (ertanaka@tokyo-med.ac.jp)
Hidekazu Fujiwara (kishiwada-kyukyu@tvk.zaq.ne.jp)
Toshio Takatorige (takatorige@pnhel.med.osaka-u.ac.jp)
Hiroyasu Iso (iso@pbhel.med.osaka-u.ac.jp)

Version: 4 Date: 25 August 2007

Author's response to reviews:

27 Aug 2007

Iratxe Puebla
Senior Assistant Editor
BMC-series journals

Dear Editor

We would like to thank the reviewers for the thoughtful comments.

We revised the manuscript based on the reviewer’s comments. In the following pages, we provide a point-by-points response. We apologize for the up-loading of a wrong file a little while ago.

Sincerely,

Professor Hiroyasu Iso, MD

Public Health, Department of Social and Environmental Medicine, Graduate School of Medicine, Osaka University, Yamadaoka Suita-shi, Osaka 565-0871, Japan.

Phone: +81 (6) 6879-3911 Fax: +81 (6) 6879-3919
E-mail: iso@pbhel.med.osaka-u.ac.jp

Reviewer: Homer Tien

Major Compulsory Revisions (that the author must respond to before a decision
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?

¿ In Japan, the refusal of ambulance transfer at the scene is nationally under debate because of recent large increase of inappropriate ambulance usage. Our study was focused to pick up the patients that do not need ambulance transfer. We clarified this point at `Background` (page 3).

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.

 ¿¿ This scoring system is used for the refusal for ambulance transfer. When the cut-off point is determined as total score >=2, sensitivity and specificity was 97% and 16%, respectively (page 6).

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.

 ¿¿ We discussed implication of sensitivity and specificity and the complication from incorrect triage (page 7).

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.

 ¿¿ This scoring system is used for the refusal for ambulance transfer.

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"?

 ¿¿ In Japan, the proportion of emergency personnel with the license of emergency life-saving technician is only 30%. Some ambulances were not staffed with emergency life-saving technicians (page 3). So the simple tool is preferred.

"Prehospital severity and urgency criteria" by the Japan Foundation for Ambulance Service Development has not been used widely because of its complexness.
Our scoring system is for the usage of acute disease but not trauma. The description on trauma triage tools in the background and discussion were deleter to avoid misunderstanding.

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.

We discussed this as limitation (page 7).

Reviewer: Daniel P Davis

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.

In Japan, the refusal of ambulance transfer at the scene is nationally under debate because of recent large increase of inappropriate ambulance usage. Our study was focused to pick up the patients that do not need ambulance transfer. We clarified this point at “Background” (page 3).

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.

When the cut-off point is determined as total score >=2, sensitivity and specificity was 97% and 16%, respectively. We described the implication and limitation for that cut point. We also described the limitation for external validity (Page 6).

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 as
recursive partitioning, that may actually lead to better performance of the model.

The selection of variables was due to eligible data.

Sensitivity and specificity for hospitalization, when we used the cut-off point as total score \( \geq 2 \), was 95\% and 16\%, respectively. Although the assessment for chief complaint avoided 17 cases out of 102 under-triage cases, the sensitivity and specificity did not change substantially (97\% and 16\%, respectively).

We described this limitation and the points to notice for practical use of the scoring system (Page 7).

The use of categorization by quintiles to deciles would make the triage tool usage difficult because of non-clinical cut points of parameters. We decided the reference of each continuous variable according to clinically normal range.

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.

Unfortunately, our dataset don’t include detailed symptoms, so we could not compare our tool with the other prehospital tools using the same dataset.