Reviewer's report

Title: Chest pain in the emergency department: a risk-stratified approach

Version: 2 Date: 10 September 2014

Reviewer: Ulf Ekelund

Reviewer's report:

This paper describes a limited chest pain patient population in a Portuguese hospital and analyses the predictive ability of the HEART score. The project described seems to represent honest work and was well performed. It deals with a large patient group and the topic is important. Apart from some minor misspellings and language errors, the paper is well written.

Major Compulsory Revisions

General
1. My main concern is the retrospective study design. The HEART score is meant to be used in real time in the ED. Several HEART score studies so far have been retrospective, but with the current state of knowledge this is not a good design. Unless patient records are extremely detailed, a HEART score calculated based on records is most likely different from one calculated in real time. History is often not extensively described in the records, and risk factors may be missing or wrong. In addition, the perception of the history and the number of risk factors might influence the ECG interpretation. And I don’t think that having two authors make the retrospective assessments overcomes this – they both assess the same potentially incomplete or erroneous record. Hence, as a reader, you would like to see either a prospective design or evidence that retrospective HEART score calculation is as reliable as calculation in real time. No such evidence is described in the paper. Is it exists, please insert it. Without it, the conclusions can only be very vague, and the relevance of the results is limited. In addition, due to missing data in the present study, 25 % of the patients were not included in the HEART score analysis.

Title
2. The HEART score should be mentioned in the title - please insert.

Abstract
3. Line 72: The conclusion should not include a statement that is presented as background further down (line 80). Rephrase.

Methods
4. Line 117: The ED cardiologist seemed to make the diagnoses used to group patients. I think the patients should be divided into ACS and non-ACS groups based on the final diagnosis of the index visit, including in-hospital stay. It is not
always possible to determine the diagnosis in the ED. Who made the diagnoses in patients admitted to in-hospital care? Who made the diagnoses after discharge from the index visit but within 6 weeks? Why were the diagnoses not reviewed for accuracy by the authors? Please clarify in the text.

5. Line 123: Please state what clinical records were used. Only ALERT, or records from the hospital wards as well? Other records?

6. Line 127-8. Who interpreted the ECGs? What were their qualifications? Please insert this.

7. Line 144: The follow up is not clearly described. Which patient records were scrutinized? From the same hospital, or from the whole of Portugal? Primary care? Please describe in the text.

Results

8. Line 195: I would like to see a patient flow chart (tree) to account for all patients in the study. How many patients had ACS during the index visit/hospital stay? How many died or had unplanned revascularization after the index visit but within 6 weeks etc?

Discussion

9. Line 246: I think the word “correctly” should be avoided – there is no consensus as to what a “correct” prioritization is. In this study 23 % of the patients with ACS were prioritized as yellow or green. Would that be correct? See line 289 – here the term “reasonable discriminatory power” is used, which is much better.

10. Line 247: The word “validated” should not be used – I don’t think the study design was good enough. Change to “tested”.

11. Line 320-2: Please give some details regarding how this comparison was made. And move the description to Results.

Conclusions

12. Line 330: The word “valid” should be omitted; the results do not reliably show the (relevant) validity. See above. I recommend a change to “…..the HEART score seems to be a useful tool for risk…..” And please insert that prospective studies are needed before clinical use.

Minor Essential Revisions

Abstract

13. Line 73: Change “is” to “seems to be”. See my general comments regarding study design above.

Introduction

14. Line 94: “…the stratification of the risk of ACS in patients presenting to the ED with chest pain. One is the HEART score….”. In the following sentence, it is said that the HEART score predicts MACE. This seems illogical, and should be
changed.

Methods
15: Line 110: “imagiological” is a strange word – change into “imaging”.

Results
16: Line 184-5: Please clarify who made the diagnoses shown in Figure 1.
17. Line 214: Omit the word “good”.

Discussion
18: Line 248: “excellent” should be changed into “good”, as in line 237.
19. Line 267: It was not a majority, it was 37 %. Please change.
20. Line 284-5: The main problem with a low priority is, in my opinion, not the time to ECG but that the entire workup, pharmaceutical therapy etc, are delayed. It is considered ok to attend to a green patient within 2 h, and in reality it often takes longer.

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, but I do not feel adequately qualified to assess the statistics.

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