Reviewer’s report

Title: The effectiveness of physiologically based early warning or track and trigger systems after triage in adult patients presenting to emergency departments: A systematic review

Version: 0 Date: 27 Aug 2017

Reviewer: Timothy Cooksley

Reviewer's report:
This paper examines the clinical effectiveness of physiological track and trigger based systems in the ED.

The methods are generally well described. Some of the basic statistical methods, such as AUROC, do not require such detailed explanation. The tables are well formatted. The authors need to explain why they have included some analysis of APACHE II scores which is not a track and trigger score.

The manuscript requires some revisions before publication. Fundamentally, the authors need to outline in more detail in the discussion the potential role for track and trigger systems in the ED:

1. Is it an adjuvant to initial triage?
2. Is it to help determine which patients may require critical care admission directly from the ED?
3. Is it to help determine which patients may be safely discharged directly from the ED? This may be augmented by biochemical tests - see Nickel C et al. Combined use of National Early Warning Score and D-dimer levels to predict 30-day and 365-day mortality in medical patients. Resuscitation 2016; 106: 49-52.
4. Are there other uses?
I think the authors need to outline the key aspect of changes in physiological variables and thus EWS that contribute to its performance and that this effect is limited in the ED environment due to the short period of time (4 hours in UK) that the patients remain in the ED.

As the authors comment, EWS is validated in a range of presentations and unselected acute medical admissions. It is unclear why the authors describe acute renal failure and reference this with Subbe's initial QJM paper which was performed in unselected medical patients on an MAU. I think the authors need to comment that whilst these studies are not performed specifically in the ED the majority of patients in these studies started their patient journey in the ED.

On this basis, I think it is necessary to slightly temper the conclusion that "there is a clear need" and also consider potential other roles for EWS in the ED.

There is variable use of abbreviations - some of which are used after the first appearance, some after subsequent and some not at all. This should be consistent.

Finally, although the authors had clearly planned to do cost-effectiveness analyses for well described reasons they were unable to do so and I think this element should be removed from the title.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**

If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**

If not, please explain in your comments to the authors.

No
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