Reviewer's report

Title: Predicting mortality in sick African children: a clinical bedside risk score from the FEAST trial.

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Reviewer: Padmanabhan Ramnarayan

Reviewer's report:

The authors report the development of a clinical bedside risk score in sick African children based on data collected in the FEAST trial, and the results of its validation performed on an independent dataset from a single centre in Africa.

Overall, the paper is well written, the methodology/data quality/data analysis is of high quality, and the results are clearly expressed. I would like to see a few minor revisions made to enhance the manuscript.

Minor essential revisions

1. The Discussion section could be shortened, without losing the main messages. As it is, it is quite long and the main clinical message gets diluted.

2. The clinical utility of the score needs to be clarified further in the Discussion. What would the clinicians do in practice if the FEAST score is high - how will it change their management? How much more information does the score provide in addition to what the clinician's opinion might have been? (i.e. do clinicians currently identify high risk patients anyway, and what will the score add to this?) Some indication of whether the cause of high 48-hr mortality is a problem with recognising the high risk patient, or inability to offer effective management even if the child is recognised to be at high risk, might be useful here.

3. The relationship between severe anaemia + lactate and mortality is interesting. The explanation might be that the cause of the high lactate in severely anaemic patients is primarily the reduced oxygen carrying capacity (rather than anaerobic metabolism from shock), but the cause of high lactate in less-anaemic patients is shock rather than decreased oxygen carrying capacity. Perhaps this could be included in the discussion.

4. Before being adopted widely, the need for external validation of the score in a multi-centre African population unrelated to the FEAST centres probably needs mention in the Discussion. (It is also worth considering whether the score could be validated in a non-African population)

Discretionary revisions

1. Although I understand the need to compare the performance of the FEAST score with other scores, the choice of PRISM (very old, validated against data from the 1990s, now updated with the PRISM III score) can be questioned, since
it is not used by most centres currently. It is a shame that PIM score could not be used as a comparison since it is a widely used score (UK, Ireland, Europe, ANZ).

2. Could the FEAST score be compared to established early warning scores such as the Bedside PEWS from Toronto? The function of the FEAST score would be similar to an early warning score based primarily on clinical parameters in terms of triage and risk stratification.

3. In additional file, Table 1: there is a (ref) mentioned - is that a typo?

4. I am not a statistician, but I wonder if the mortality rate somehow has an effect on the discriminatory power of the score (FEAST control 7%: 0.82; Kilifi HDU 9%: 0.77; and Kilifi paeds 2%: 0.86).

Summary

The authors have utilised a large, high quality and unique dataset from the FEAST trial to develop (and validate) a bedside score for early triage in sick African children. Overall it is of excellent quality and has significant clinical utility.

P Ramnarayan (Paediatric Intensivist, CATS and St Mary’s, London)

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I am currently a co-applicant on a research grant with one of the authors (M Levin)