Correspondence

Improving early warning scores – more data, better validation, the same response

We thank Oglesby et al. for their interesting editorial [1] accompanying our recent paper [2]. We value their interpretation that a single standardised early warning score (EWS) may not be applicable to all types of patients and are grateful for their qualified support of the concept of future population-specific EWS. We are also in agreement that evidence-based models are preferable to consensus-based scores and that external validation is imperative for all EWS.

We have a major issue with their criticism that we failed to externally validate our score in a dataset separate from that used to develop the score. Multiple external validation techniques were undertaken and have been available in electronic format in the online supplement since 3 July 2019 [2]. Each centre independently collected four separate datasets. Although these datasets were ultimately merged into one combined database, we retained the ability to use separate databases for external validation purposes. Multiple predictive performance and validation techniques were utilised and these are summarised in the supporting information which accompanies the online version of our paper (Appendix 3: Table A3.4.) [3].

Debray et al. [4] define external validation as using new participant-level data, external to those used for model development, to examine whether the model’s predictions are reliable in individuals from potential population(s) for clinical use. Following that definition, we purposely held back from using some centres to fit/develop the model so that we could then use them to externally validate a model fit for other centres. We even reported all possible combinations of doing this, which were a sensible cut of the dataset to avoid accusations of potential bias.

Given the revised evidence-based physiological weightings, novel sub-division of oxygen therapy and potential clinical utility of our app [5] in discriminating between ‘hard’ and ‘soft’ escalation threshold NEWS scores (≥ 5 or ≥ 7), we believe ‘Improving EWS – more data, better validation, a step in the right direction’ may have been a more accurate choice of editorial title.

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