Author's response to reviews

Title: Physiological-social score (PMEWS) vs. CURB-65 to triage pandemic influenza: a comparative validation study using community-acquired pneumonia as a proxy

Authors:

Kirsty Challen (kirsty.challen@smtr.nhs.uk)
John Bright (jcbright@hotmail.com)
Andrew Bentley (andrew.bentley@smtr.nhs.uk)
Darren Walter (darren.walter@smtr.nhs.uk)

Version: 3 Date: 6 February 2007

Author's response to reviews: see over
1st February 2007

Iratxe Puebla
Senior Assistant Editor
BMC-series journals

Dear Ms Puebla

Re: MS3035762681191674

In response to the reviewers’ specific comments:

**Stewart – major**

1a. *The AUC being greater for PMEWS than for CURB-65 says that on average that those who are truly cases have a higher probability of being predicted to be cases than do those who are truly non-cases. It says nothing about the absolute level of prediction.*

1b. *In the situation where this tool is being recommended to be used, the cost of sending a true case away is very high. The consequence of sending a true case away is, for the subject, high but also it is also very high for the community as the condition is highly contagious. I would have thought a more important assessment of the value of the tool was the specificity when the sensitivity was very high.*

We do not advocate the use of PMEWS as a diagnostic tool, and have clarified this in the manuscript. We specifically did not aim to specify an absolute level of prediction as we argue that over the course of a pandemic, admission thresholds will change. Hence we used the AUC to demonstrate the predictive power of PMEWS at a number of threshold values. Relative sensitivities and specificities are, however, presented in table 3.

2. **All the results given in this paper are based on a situation far removed from what will happen in a pandemic influenza outbreak. This is acknowledged by the authors. However, there needs to be further discussion on how the tool might work when the proportion that should be triaged will be much greater than reported here. In the example reported, less than one third of the subjects were not admitted but in the situation where the tools is being proposed, the proportion being assessed who do not have the condition will be very much larger (as can be seen in the Dutch data reported in the introduction). In the example, the mean age was nearly 71 but in a pandemic situation the mean age could be substantially different from this, what effect could this have? Most of the physiological measures change with age.*

We have expanded the discussion regarding applicability in a pandemic situation. We have clarified in the manuscript that PMEWS is only intended for use on an adult population, where physiological norms are relatively stable.

**Stewart – minor**

Table 1 has been amended to reflect the reviewer’s comments.
Capelastegui - major

1. The physiological-social score (PMEWS) proposed by the authors did not perform well to predict mortality (AUC 0.66). This outcome (mortality) is basic to the assessment of the predictive power of severity scores for community-acquired pneumonia. We accept and have addressed in the discussion the lesser power of PMEWS to predict mortality. Nowhere in the text do we suggest that PMEWS is or should be used as a pneumonia severity score. In fact it is designed to be a triage tool, and as such we suggest that its ability to predict need for higher level care (AUC 0.83) is of most value.

2. In addition, the new rule does not add practicality or usability. I am skeptical about the practical usability of a score that uses 10 variables, 7 of which are weighted. In contrast, both the CURB-65 and CRB-65 scores are easier to apply (venipuncture to measure serum urea in the emergency department is not problematic), and the CRB-65 score does not mandate hospital-based assessment. Early Warning Scores are widely used for inpatient physiological monitoring and since the collection of this data we have implemented their routine use in our Emergency Department. All the data points are simple to acquire and can be done at point of contact. They are also familiar to a wide variety of medical and nursing staff, which CURB-65 and CRB-65 may not be. We have addressed in the text the problems related to routine urea measurement in the event of pandemic influenza.

3. Since the study was only carried out in one hospital, how generalizable are the data? We agree that indications for admission and higher level care will always be subject to local influences (this has been well demonstrated with APACHE, SAPS and MPM). Validation of the tool on an international level, for CAP and against other patient sets, is ongoing.

Yours sincerely,

Kirsty Challen