Reviewer’s report

Title: A latent class approach for sepsis diagnosis supports use of procalcitonin in the emergency room

Version: 2 Date: 1 April 2013

Reviewer: Pierre Hausfater

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This manuscript reports the results of an ancillary study on a previous published cohort of patients attending an ED with suspicion of sepsis, leading to already 3 published papers (as specified by authors in the cover letter).

The concept of revisiting the worldwide recognized classification of septic states is interesting in that this later is adapted for trial’s comparison, but not necessarily perfectly suitable in real clinical practice.

Major compulsory revisions

1) there is a putative bias in the population studied, as indicated by the very high percentage (70%) of patients having received corticosteroid and/or chemotherapy in the 3 months before inclusion, letting suggest that most of them had cancer, a condition known to be associated with chronic elevated serum levels of both CRP and DD. This may have underestimated the diagnostic value of these biomarkers. May the authors comment this?

2) The LCA allowed the identification of a more severely ill/bacteriologically documented subgroup of septic patients, therefore questioning the usefulness of any biomarker for these patients who have probably a more obvious sepsis presentation. Was the agreement between the experts significantly better for the 187 patients than that for the whole cohort? If yes, this could argue against the need for a biomarker to identify them, as clinical presentation may be sufficiently suggestive of sepsis. How many of these 187 patients had severe sepsis/septic shock criteria?

Minor essential revisions

The main result is that PCT is useful to identify a subgroup of more severely ill septic patients attending the ED. This has already been published and must be more extensively discussed in discussion’s section. (Serum procalcitonin measurement as diagnostic and prognostic marker in febrile adult patients presenting to the emergency department. Hausfater P et al. Crit Care. 2007;11(3):R60).

Level of interest: An article of importance in its field
Quality of written English: Acceptable

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

Declaration of competing interests:

I declare the following competing interests:
- personal research interest field in biomarkers and particularly procalcitonin
- research grants, lectures and consultant fees from ThermoFisherScientific 
BRAHMS Biomarkers and bioMérieux, both manufacturers of PCT assay.