Reviewer's report

Title: Prognostic robustness of serum creatinine based AKI definitions in patients with sepsis: a prospective cohort study.

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Reviewer: Zhongqing Chen

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First I'd like to compliment Dr Biesen and his colleagues about their work on exploring the conventional sCr on the diagnosis of AKI in patients of sepsis. The authors performed a very interesting study aiming to evaluate the influences of three sCr increase algorithms including #HIS, #EST, #ADM, on the prognostic value of AKI for prediction of mortality in patients with sepsis. This is a nice study and would appear to add to the existing literature on sepsis-AKI.

A few comments/queries for the authors to address:

1. #HIS and #EST used the highest value in the first 24 hours after ICU admission; however, the frequency of blood samples obtained was not mentioned in the paper. How often was sCr measured?

2. In the methods section, the authors mention that “All sepsis patients admitted to ICU between 6 AM and 18 PM…as that used to calculate #HIS and #EST (page 8)”, however, the Figure 1 was hard to understand: the first samples of “the sCr value ICU adm” were both obtained at 18:00. I am interested that how obtained the samples from the patients of part A (admitted just after 18 pm) at 18:00 p.m. and why obtained the samples from the patients of part B (admitted just before 18 pm) postponed to 18:00 p.m...

3. Still in the methods section, I understand why the authors adjusted for the “24 hours” fluid balance. However, in the study, the authors mention that: “The mean time interval between D1 and ICU admission in our cohort was 26 hours (page 8)”. I believe that the time of duration of clinical intervention can affect the sCr values. Why not adjusted for the time interval between D1 and ICU adm?

4. I think it will be more clear if some parameters are present as (n, %) (e.g. Ventilation, CKD, RRT need…) in Table 1.

5. Abstract is somewhat too long. Please consider deleting some redundant sentences. E.g.:

   Methods: Twenty-four hours fluid balance was…;

   Results: After adjusting for severity of illness...

6. If abbreviations are used in the text they should be defined in the text at first use.

Abstract/Background section: ICU;

Background section: AKIN, KDIGO, ERBP;
Methods section: APACHE II;

…

7. Some labels of reference were incorrect.
[25] [26] [27] [28,29]: Should be revised as [25-29]? (Page 16)
[1-4,30,31][32]: Should be revised as [1-4,30-32]? (Page 16)

8. I have a major concern regarding clinical registration. This is a clinical study being performed in 2010-2011, but I cannot find any registration information in the manuscript.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
'I declare that I have no competing interests