Reviewer's report

Title: Management and Outcomes of Patients Presenting with Sepsis and Septic Shock to the Emergency Department during Nursing Handover: A Retrospective Cohort Study

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Reviewer: Filippo Sanfilippo

Reviewer's report:

I thank the Editor for the opportunity to review this interesting paper.

The authors compare the outcomes (SSC bundles and hospital mortality) of patients with Sepsis and Septic Shock admitted to their Emergency Department according to the time of admission and nursing handover. This is a retrospective cohort study, and the hypothesis is that clinical handover between nurses may divert the attention from patients' care, delaying some treatments and sepsis bundles.

My comments below for major revisions.

Two general comments:

1) The comparison between groups is unbalanced because the authors compare 4 hours vs 20 hours timeframe. In this scenario it is probably better to perform another type of analysis, a propensity matched cohort study, pairing patients for age, sex and severity scores. However, I leave the final decision to the Editor and/or to a statistician. Certainly, in the presence of a retrospective design, without a pair match strategy and without accounting for several post-ED admission factors (ICU and ward management, etc) affecting patient's mortality, it is difficult to assess hospital mortality and it would be more appropriate to use the SSC bundles as primary outcomes and just reporting mortality as a secondary one. This is not clear from the abstract while it is better reported in the main document.

2) The discussion of the study findings is far too short, readers would like to see more efforts from the authors in looking the medline about nursing handover. Indeed, although there is scares literature on nursing handover in patients with sepsis, using the words "nursing handover" AND "ICU" or "nursing handover" AND "Emergency department" in Pubmed produces 143 and 178 finings respectively.
ABSTRACT

- In the methods, the primary outcomes (SSC bundles) and secondary outcome (hospital mortality) are not clearly identified.

BACKGROUND

- line 4th: healthcare rather than health care

METHODS

- why the authors used a 14 yo cut-off? It would be more appropriate to go for adult patients in my opinion

- Handover approach should be explained in details. Is this a bed-space handover only? or is it preceded by a handover from a charge nurse to the whole group of people starting their shift? Also, one hour for handover may be considered too long in other Institutions where handover time may be 30 minutes, again making differences with places using a different handover structure. Basically, handover approach should be clear for readers since results may not apply in Institutions where the handover structure is different.

RESULTS

- It is very important to show APACHE and/or SAPS and/or SOFA scores on admission, for both groups and analysis may be adjusted for the scores, although I still believe that a propensity match analysis could be more appropriate.

- in baseline characteristics, when presenting results, p values should be shown

- in process of care and outcomes, although there is only a 5-minute difference in time to antibiotic administration, a p value of 0.07 should be commented as a trend, rather than a non-significant.

- I have some doubt on the IQR of results with regards to obtaining blood cultures. Where blood culture considered 0 minutes when someone started preparing for it after the medical order? How
many patients had blood cultures within 3 minutes? It usually take time to retrieve the bottles for blood cultures and all the necessary (needle, syringe, gauzes, etc).

- Also, all the times outcome in the nursing handover group are longer suggesting that the study may be underpowered and that results should be looked carefully. On the other side, the mean difference is small and this may suggest a non-relevant clinical effect.

DISCUSSION

- As already pointed out, the discussion is far too short and does not discuss the relevance of the study in the context of what we already know about nursing handover and what this study adds to the existing literature.

- "The reasons for the lack of association…..", I would change this statement in a more positive. Rather than saying that the absence of difference between groups is a limitation of the study, I would say that "When nurse handover is recognized as an integral part of the continuity of care among ED nurses, the handover time is unlikely to impact on patient's care and on the sepsis bundles. Our results may not apply to Institutions were such handover time is not structured and integrated".

- The p=0.07 on time to antibiotic should be discussed all together with the possible effect of sample size and that time where longer always in the handover group. It is possible a tendency towards longer time to antibiotics as result of the time needed for getting the drug and preparing it, while for instance easier tasks like sending arterial blood gas is more easily accomplished. I am just doing an assumption, I am not sure of this interpretation, but certainly authors are encouraged to discuss their findings according to their hospital setting.

TABLE 1

- It is easier for readers if you explain in the table each criteria with its cut-off rather than reporting criteria for hyperthermia, hypothermia, tachycardia, tachypnea, etc in the table legend.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
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