Author’s response to reviews

Title: The association of duration of boarding in the emergency room and the outcome of patients admitted to the Intensive Care Unit

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Guangde Tu

Executive Editor

BMC Emergency Medicine
Dear Dr Guangde Tu

We thank you for considering our manuscript, “EMMD-D-17-00006- The association between duration of emergency department boarding and the outcome of patients admitted to the intensive care unit” for publication in BMC Emergency Medicine.

We also thank the reviewers for the positive feedback and valuable comments. We have addressed all the comments in the following reply and made changes to the manuscript, which has significantly improved and enriched the manuscript. We hope that the manuscript will be accepted for publication.

Sincerely

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Reviewer reports

Reviewer 1(Emad Uddin Siddiqui)

Comment 1: Define the time length stay? How did you divide the groups in different length of ED boarding?

Reply: Thank you for your valuable comment. We have defined the ED length of stay and improved on the methods section.
Comment 2: Early goal directed therapy in line number 24 does not change the mortality rate - NEJM 2016

Reply: The concerned article shows a significant improvement in the hospital mortality in addition to other secondary outcomes.

Comment 3: The results suggest a relationship of mortality with ED boarding but there can be other factors that caused the ICU mortality and its outcomes. How can those be justified?

Reply: We agree that there are other factors that could have affected the outcome. However these variables have been adjusted for in the multivariate analyses to examine the independent association of boarding time with the outcome.

Comment 4: What was the criterion for ICU admission? Define respiratory in line 28?

Reply: All patients, medical, surgical and trauma patients have been included in this study. Only patients admitted after ER surgery were excluded. Chronic respiratory was defined as requested.

Comment 5: Inclusion and exclusion criteria need more elaboration

Reply: done

Comment 6: What is your recommendation for this problem (reducing the ED Boarding)?

Reply: As mentioned in the “Discussion” section, expanding the ICU beds is required to meet the growing demand and reduce boarding time.

Reviewer 2(Cintia Magalhães Carvalho Grion)

The association between duration of emergency department boarding and the outcome of patients admitted to the intensive care unit

Authors submit a manuscript presenting a relevant issue that involves the emergency department and intensive care units. There are some interesting data described in this paper but I have some concerns that should be addressed.
General comments

The manuscript has many typing errors, needs English editing and revision services and is not formatted according to submissions guidelines.

Reply: Thank you for your valuable comments. A considerable amount of work has been done to fix the typographical errors and formatting.

Comment 1

Abstract:

Authors should state more clearly the outcomes of the present study. In methods section there should be a brief description of main variables analyzed and plans for statistical analysis. In conclusions authors mention mortality as an outcome, although there is no description of this data in results, the last phrase of conclusions should be excluded, since it is not supported by findings of the present study.

Key words should be chosen from the list of MeSH (Medical Subject Headings).

Reply:

Key words have been changed as suggested.

Comment 2

Background

Abbreviations should be defined in the text at first use, please correct them in the manuscript. What does MVA means?

There are isolated phrases in the text with no continuity with what comes before or after. There is no report of results from other authors about the same subject. As authors propose to study the effect of delayed ICU admission in clinical patients, I suggest you explore the data found in the literature about this event in other study patients and in other hospital settings. Data are really conflicting in the literature, but probably because these aspects vary across studies. You state that emergency teams may jeopardize patient security and increase errors when caring for critically ill patients, but in what way? This issue should be clarified.

Reply:
The abbreviations have been elaborated on. We agree that the data in the literature is conflicting depending on the work culture across different hospitals.

Comment 3:

Methods

How is organized the care of the critically ill patient in the emergency department? The intensivist cares for all patients? How frequently? What is the nurse to patient ratio? Which physician responds for patient care when there is an acute deterioration? How is the triage of these patients done? What is taken into consideration to prioritize ICU admission? It seems to me that Group 1 are younger and with less comorbidities. Are these characteristics part of the prioritization model?

Why emergency surgical patients were excluded?

What about elective surgeries? Were there any cases of it?

The sample was all adult patients or there were patients under 18 years of age?

Data were collect at ICU admission or when ICU bed was requested?

Patients were mechanically ventilated in the ED? Time of MV summed the entire period (ED and ICU)?

Reply:

We thank you for all these comments. All the comments have been answered point by point in the following paragraph;

“We included in the this study all the consecutive patients who were admitted to ICUs from ED between January 2010 and December 2012. Our ICU admits patients >16 years age. We excluded patients who were admitted from ED after emergency surgery because they were transferred immediately to the operation theatre. In addition elective admissions were also excluded because they occurred mainly during weekdays and are typically of lower severity of illness. Patients were stratified according to the duration of boarding in the ED into three groups. Duration of boarding was defined as the length of stay of the patients from ED admission to ICU admission Those admitted less than 6 hours were classified as Group I, between 6-24 hour as Group II and more than 24 hour as Group III”.
Comment 4:

Results

Tables are not in the format required by the journal, they must be edited.

Tables should display legends with information about abbreviations, statistical tests applied, and definitions about study groups' classifications.

Authors describe 920 patients studied but the 3 groups add 940, please explain.

The information on the text of no difference of gender, MV use, diagnostic category or comorbidities is conflicting with the results displayed on Table 1, please clarify.

Total LOS is the sum of ED LOS and ICU LOS, therefore this variable presents collinearity with the classifications of the 3 groups, once those groups were classified according to time in the ED. This variable should be excluded from multivariate analysis.

Table 3 shows five different multivariate analyses? If so, I would suggest replacing the name "variable" in the first column by "outcomes" and exclude the "total LOS" outcome.

I also suggest you describe in the text the median time to ICU admission in the groups, especially in Group 3. It may have a large variation.

Reply: We appreciate your comments. Please see the point by point response for each query.

- All the tables have been formatted as per the journal requirement.

- Table legends with all the required information has been added.

- The total number of patients is 940. It was a typographical error which was corrected.

- I agree the results in the table were conflicting with the text which has been corrected.

- The suggested amendment was discussed with the statistician and it was agreed upon that although the classification of the patients is based on the ER LOS, it does not have a collinear relation with the total LOS and can be retained in the multivariate analysis. However, if need be we are ok with removing it.

Comment 5

Discussion
Authors do not comment on the lack of benefit of immediate ICU admission compared to admission until 24 hours. Since most critically ill patients must be treated within few hours of the event, maybe emergency team is well prepared to deliver the initial care of these patients? Do you have some other explanation to offer?

Discussion is too long, information is presented in a non-organized way and there is many orthographic and translation errors. I suggest authors to re write discussion in a logical sequence, by topics, explaining differences between your results compared to others authors.

Last phrase of conclusion should be moved to discussion section, since it does not find support in your data.

All references, including URLs, must be numbered consecutively, in square brackets, in the order in which they are cited in the text, please correct it for the entire manuscript.

Reply

- We agree with your argument and as such the following paragraph has been added to the discussion;

“Although, early transfer to ICU is beneficial for critically ill patients, we also need to focus on the timely instigation of specific interventions and organ support. These do not always mandate immediate ICU admission and can be instigated on alternate sites, such as the ED or OT, while an ICU bed is made available. Thus alleviating the ER boarding and initiating treatment immediately will require a multidisciplinary system-wide approach.”

- The conclusion section has been relocated to the discussion section.

- All the references have been renumbered and formatted as requested.