Author’s response to reviews

Title: Effectiveness of Trauma Team on Medical Resource Utilization and Quality of Care for Patients with Major Trauma

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Dear Editor:

Thanks for the reviewers’ opinions on the manuscript (BHSR-D-16-00176): Effectiveness of Trauma Team on Medical Resource Utilization and Quality of Care for Patients with Major Trauma. After detailed reading these opinions, we rewriting the manuscript completely (in red) and answer to the critiques point by point as following. We hope our revised manuscript can be accepted to publish on the journal of BMC Health Services Research.

Reviewer #1: Congratulations on a wonderful paper describing the utility of the establishment of a trauma team at your institution. I do suspect that you would have seen more significant differences in your outcomes such as length of stay, ICU LOS, etc if you had a larger sample size. I was very pleased to see that your patients are getting to the OR faster! Your resource utilization and costs are very important outcomes. One question I have - prior to development of the team, did you transfer many patients to a different institution because your institution could not manage a particular trauma? If so, did you see a reduction in the number of transfers? I do think you have some interesting trends and I hope you continue to collect your outcomes data. It does take time for a team to gain efficiency over time and you may find further differences even in a few more years. I also wonder if you
In terms of your abstract, I would encourage you to clarify the two time frames so explicitly say that the first time period is after the establishment of your dedicated trauma team and your second time period is prior to establishment of the team.

I look forward to seeing your revised manuscript.

Ans: 1. Thanks for your encouragement. Before established the Division of Trauma, those trauma patient were treated by each subspecialty after first in aid in emergency room by consultation. Who performed major operation will take over this patient. Because our hospital is the final transfer hospital, we seldom transfer out patient to other institution. So, we can’t find the reduction in the number of transfers.

2. We did continue to see the difference in care quality of patients between early period and late period after established Division of Trauma. The paper is preparing now.

3. We have revised the abstract and add the two time frames Please see page 2 abstract section line 4 and line 8-9.

Reviewer #2: This paper discusses the possible effects of having or introducing a multidisciplinary trauma team, which is a highly relevant research subject. Interesting studies (e.g., Hyer, Wemmerlöv, Morris, 2009) show the potential of focused approaches in trauma care. I appreciate that the authors used secondary data (archives, trauma data bank, NHI reimbursement data) of the participating hospital as these databases contain interesting data and are often unused.

However, I have major concerns about this paper as discussed below.

The background section contains a long introduction of the impact of trauma on society. This part is a bit lengthy, contains an unnecessarily detailed discussion of AIS and ISS and contains figures which are difficult to compare (WHO, NTDB and NHIA-figures on page 4 and 5).
Additionally, I miss in the background the relevance of studying the effects of the implementation of a trauma team. What has been published before and what is the gap in literature, which motivated the authors to conduct the study and to have a contribution to literature.

Ans: We have made great revision of the background, and added the purposes we try to see effects of trauma team on the medical resource utilization, please see page 3-4.

The research questions are discussed in the Methods section. Personnaly, I would introduce research questions in the background section. I can imagine why indicators such as LOS, ICU stay and operation waiting times are key performance indicators in an acute care context, but this should be substantiated.

And: we have shifted the research questions from Method section to background section, please see page 4-5.

My main concern is that confounding factors (e.g. implementing CQI, introducing new technology and skills, identifying unnecessary care) may have contributed to improvements in LOS, ICU stay, operation waiting times and costs. Moreover, the authors have not provided explanations of the significant between group differences. This would probably have required additional qualitative research (e.g., interviews with members of the trauma team). Why the study shows only significant between group differences in costs (between 15-50% for some of the costs elements) needs also further explanation.

And, why didn't they include more patients as they had secondary databases at their disposal; they had to report now that there was insufficient statistical power, which caused that no significant improvements in LOS and urgent operation time (except for ISS> 24) could be reported.

Ans: we did find the significant cost reduction in the aspect of examination, radiology, operation fee among those patients survival to discharge. Please see page 6 and new table 2 and table 3.

Another major concern is the depth of the Discussion. In the Discussion the authors should elaborate on the explanations of what was found in the data analysis. The authors refer to previous studies to embed the results, but do not elaborate on explanations of why the cost reduction was achieved.

Ans: We have rewritten the discussion section and explained the reasons. Please check it in page 7 and page 8.
I am aware of the fact that language issues (the quality of the written English) can be improved quite easily, but I suggest the authors to have the English checked by a native speaker before submitting.

Ans: This page has been checked widely by a professor come back from USA. Please check the manuscript again.

Minor issues:
- p. 1, strange starting sentence, which is not related to the aim of the study: 'Trauma cases mainly occurred among young males in Taiwan'.

Ans: we have deleted it and rewritten. Please check the new abstract.

- p. 1, difficult to understand closing sentence: ... is effective in containing (???) medical resource utilization.

Ans: we have rewritten the conclusion part of abstract. Please see the new abstract.

- p. 4, line 26, life threatening instead of life threatened.

Ans: corrected, please see page 3 line 6

- p. 5, line 48, move the dot behind the brackets (throughout the manuscript).

Ans: corrected, please see page 3 line 15.

- p. 6, I do not understand the word 'visiting' in trauma visiting and sub-specialty visiting. I assume that 'visiting' has to be replaced by 'physician'.

Ans: we have changed to trauma surgeon in the discussion section.
- p. 6, line 39, 'Therefore,....' should refer to the preceding sentence.
  Ans: we have rewritten the background section and didn’t use it, please recheck it.

- p. 7, line 26, many readers will not know what 'time from OP schedule key-in to OR' means.
  Ans: we have changed the operation waiting time. Please see in background section,

- p. 7, line 58, this sentence (Therefore, variation were exists if the treatments/operations were not under trauma team SOP) is difficult to understand.
  Ans: we have deleted it.

- p. 8, line 16, the authors did not need written informed consent instead of did not get it.
  Ans: Thanks! Because this is a retrospective data collection study, we didn’t need written informed consent.

- p. 9, line 23, the examples (line 15-20) are not related to efficiency but to responsiveness.
  Ans: Thanks we have rewritten the sentence in the page 6 line 16-17.

Sincerely

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