Author’s response to reviews

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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Version: 1 Date: 22 Dec 2017

Author’s response to reviews:

22.12.2017
Guangde Tu
Editor
Biomed Central-Emergency Medicine

Dear Editor,

Thank you for the opportunity to revise our manuscript, “Management and Outcomes of Patients Presenting with Sepsis and Septic Shock to the Emergency Department during Nursing Handover: A Retrospective Cohort Study”. We appreciate the careful review and constructive suggestions. It is our belief that the manuscript is enriched after making the suggested edits. Following this letter are the editor and reviewer comments with our response in italics, including how and where the text was modified.
Thank you for your considerations.

Sincerely,

Corresponding Author

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Reviewer Comments:

Filippo Sanfilippo (Reviewer 1):
Comment 1:

“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.”
1st Reply: Thank you for your comment, it is in the definition of the handover, and thus, the comparison is between 4 and 20 hours. Accordingly, we will have different sample size in each group. As for propensity matching: our database does not have the information to account for it. We can consider this as an ecological study, where aggregates of patients were considered, rather than an observational study.

2nd Reply: Thank you for your comment. In regards to our abstract, we have clarified primary and secondary outcomes. Abstract, methods, 5th line:

“Our primary outcome was time to antibiotics, were other SSC bundle elements and mortality counted as secondary outcomes.”

Comment 2:

“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.”

Reply: Thank you for your comment, we agree more literature is needed. Yet, most of search results were addressing handover itself and are out of our scope. Nonetheless, we did add some relevant studies to our discussion as you can refer to our discussion section bellow.

Comment 3:

“ABSTRACT

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

Reply: Thank you for your comment. We have clarified primary and secondary outcomes. Abstract, methods, 5th Line:

“Our primary outcome was time to antibiotics, were other SSC bundle elements and mortality counted as secondary outcomes.”
Comment 4:

“BACKGROUND

- line 4th: healthcare rather than health care.”

Reply: Thank you for your comment, we have fixed that in the last version of our manuscript.

Background, 3rd line:

“Handover is defined as a transition of care, responsibility, and future management or disposition plans to the next healthcare provider”

Comment 5:

METHODS

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

Reply: Thank you for your comment, in our institution the adults and pediatrics are separated. Two different buildings with their own ED and ICU. The cut-off age that we use for pediatrics is 14, it follows, our adult - ED serves 14 years old and above.

Comment 6:

“- 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.”

1st Reply: Thank you for your comment, by handover we are referring to bed-side nurse endorsement to the second shift bed-side nurse. We clarified this in the manuscript, methods and materials, selection of participants 4th line:

“Nursing handover process is done at the bedside using both verbal and written forms. The form used in our institution is SBAR (Situation, Background, Assessment, Recommendation) 8, which must be filled by the endorsing nurse to the receiving nurse.”
2nd Reply:

As for the time, we asked our ED & ICU nurses. They reported that the handover itself (information exchange) takes 30 – 45 minutes. However, they also reported that the endorsing nurse takes around an hour prepping for it, and the receiving nurse utilized almost the full first hour of her shift processing and addressing the handover information. We clarified this earlier in the manuscript, Methods and materials, selection of participants 13th line:

“We chose the 2-hour duration to study the effect of the handover because nurses typically start to prepare for the handover one hour prior to the handover time, and handover sessions can last almost an hour after their initiation.”

Comment 7:

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.”

Reply: Thank you for your comment, unfortunately we do not have the data to apply this. Yet, we are here seeing handover as a time were patient care is delayed or affected; as we cannot choose our patient. Being severe sepsis, or septic shock is not affecting our primary outcome (Time to antibiotic).

Comment 8:

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

Reply: Thank you for your comment attached bellow is our table with P-values.

“Table 1: The presenting characteristics of patients who arrived during the handover time and those who arrived during the non-handover time
<table>
<thead>
<tr>
<th>Source of sepsis, no. (%)</th>
<th>Handover time</th>
<th>Non-Handover time</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td>103 (45.2)</td>
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<td>32 (14)</td>
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<td>Acute abdominal infection</td>
<td>15 (6.6)</td>
<td>80 (7.3)</td>
<td>0.72</td>
</tr>
<tr>
<td>Soft tissue infection</td>
<td>6 (2.6)</td>
<td>42 (3.8)</td>
<td>0.38</td>
</tr>
<tr>
<td>Other infections</td>
<td>84 (36.8)</td>
<td>376 (34.1)</td>
<td>0.43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signs and Symptoms, no. (%)</th>
<th>Handover time</th>
<th>Non-Handover time</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature &gt;38 °C</td>
<td>57 (25)</td>
<td>281 (25.5)</td>
<td>0.87</td>
</tr>
<tr>
<td>Temperature &lt;36 °C</td>
<td>6 (2.6)</td>
<td>41 (3.7)</td>
<td>0.42</td>
</tr>
<tr>
<td>Acutely altered mental status</td>
<td>47 (20.6)</td>
<td>217 (19.7)</td>
<td>0.75</td>
</tr>
<tr>
<td>Chills and rigors</td>
<td>2 (0.9)</td>
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<td>Heart Rate &gt;90/min</td>
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<td>197 (86.4)</td>
<td>928 (84.2)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Laboratory Findings, no. (%)</th>
<th>Handover time</th>
<th>Non-Handover time</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukocytosis*</td>
<td>99 (43.4)</td>
<td>452 (41)</td>
<td>0.50</td>
</tr>
<tr>
<td>Leukopenia *</td>
<td>14 (6.1)</td>
<td>49 (4.5)</td>
<td>0.27</td>
</tr>
<tr>
<td>Condition</td>
<td>Count (Rate)</td>
<td>Reference Count (Reference Rate)</td>
<td>P-value</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------</td>
<td>-----------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Increased creatinine*</td>
<td>13 (5.7)</td>
<td>99 (9)</td>
<td>0.10</td>
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<td>Thrombocytopenia*</td>
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<td>Coagulopathy*</td>
<td>13 (5.7)</td>
<td>57 (5.2)</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Hyperthermia: hypotension: systolic blood pressure <90, mean arterial pressure <65 or systolic blood pressure decrease >40 mmHg from baseline, hypoxia: oxygen requirement to maintain oxygen saturation >90%, leukocytosis: WBC count >12 Å· 10⁹/L, leucopenia: white blood cell count <4 Å· 10⁹/L, increased creatinine: creatinine increase >176.8 mmol/L, thrombocytopenia: platelet count <100 Å· 10⁹/L, hyperbilirubinemia: bilirubin >34.2 mmol/L, hyperlactatemia: lactate >2 mmol/L, coagulopathy: international normalized ratio (INR) >1 “.

Comment 9:

“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.”

Reply: Thank you for your comment, we have addressed that in our results, process of care and outcomes, 1st line:

“All patients received antibiotics, and median time-to-antibiotic administration showed a tendency of being longer in the handover time group (100 [IQR 57–172] minutes) as compared to the non-handover time group (95 [IQR 50–190] minutes; P=0.07).”
Comment 10:

“- 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).”

Reply: Thank you for your comment, time 0 is from ED bed-assignment. We have reviewed our data and discovered a mistyped result. Thank you for bringing it to our attention. We have fixed it line 6, Results (Process of Care and Outcome):

“The median time-to-obtaining blood cultures in the handover time group (54 [IQR 36–119] minutes) was not significantly different from that in the non-handover time group (52 [IQR 28 - 103] minutes; P=0.52).”

Comment 12:

“- 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.”

Reply: Thank you for your comment, we agree and due to the retrospective nature of our study it is inevitable. We have added this to our limitations.

DISCUSSION

Comment 12:

“- 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.”

Reply: Thank you for your comment, we have remade our discussion.
“Handovers are pivotal junctures and integral process in the continuity of care in every patient’s clinical course. To the best of our knowledge, the idea of handover time as a possible distractor that might delay urgent patient care is not addressed in current literature. We aim to shed light on the duration of handover process as a possible time where patient care is affected. In this study, we evaluated the direct effect of nursing handover process on patient care. We used a sepsis database to compare ED processes and outcomes between patients who arrived at the ED during nursing handover time and those who arrived during non-handover time.

Our results showed a trend of longer time-to-antibiotic administration in handover group, however this was not clinically nor statistically significant. Nonetheless, the clinical value is unconvincing; as 5 minutes’ difference, might be minor when it comes to antibiotic delivery. It follows, additional studies with another time sensitive assessment tools are needed to address the clinical outcome of this delay, and how to prevent it. We found no significant association between ED nursing handover and time-to- lactate results or time-to-obtaining blood culture, or hospital mortality in patients admitted with a diagnosis of sepsis and septic shock. This could be explained by our ED nurses are vigilant with alerts and our institution was conducting SSC with constant reminders of early management and septic alerts11. Consequently, our results may not reflect the situation in institutions with different methods of handover.

A prospective observational study addressing ED handover problems revealed deficiencies in the handover processes4. These deficiencies were mainly noted in communication and disposition of information.4 In another study that assessed the differences in information retention between various handover styles, the authors concluded that purely verbal handover processes are even more prone to serious data loss.6 In light of that, researchers have been developing new tools to ease the process and grant adequate transfer of information 8. These tools have been shown to improve nursing handover 12-19.

The main strengths of our study include the numbers of patients included, detailed data collection, the tertiary academic setting with numerous complex and critically ill patients, and standardized data collection using the SSC tools. As a retrospective cohort study, the present study has some important limitations. Foremost, the study aimed to evaluate the direct impact of handover time on time to time-to-antibiotic administration, time-to-lactate results, and time-to-obtaining blood culture, as surrogate indicators of the quality of sepsis and septic shock management. Nonetheless, other important measures in sepsis management were not investigated such as time to effective fluid resuscitation. Additionally, there is inherent variation and subjectivity in the handover process among ED nursing staff might have underpowered our results. Lastly, because of the retrospective nature of this study and the fact that it was conducted
in a busy ED, others factors, such as ED overcrowding and boarding patients in ED, could easily have affected the study results.

This is one of the first reports of the impact of ED nursing handover on time-sensitive interventions that involve multiple tasks performed by ED nurses. Due to the retrospective nature, patient population with single pathology, and our structured handover process that might have reflected on the results of this study. Future studies are still needed to explore ED functionality during the handover time.”

Comment 13:
- "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".

Reply: Thank you for your comment, we have rewritten the discussion and addressed this point.

Discussion, paragraph 2, line 5:
“We found no significant association between ED nursing handover and time-to-lactate results or time-to-obtaining blood culture, or hospital mortality in patients admitted with a diagnosis of sepsis and septic shock. This could be explained by our ED nurses are vigilant with alerts and our institution was conducting SSC with constant reminders of early management and septic alerts11. Consequently, our results may not reflect the situation in institutions with different methods of handover.”
Comment 14:

“- 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.”

Reply: Thank you for your comment, we are looking for two different measures. Time to diagnostic measurements as in lactic acid and blood cultures and time to therapy as in antibiotic delivery. We agree with your assumption, yet evaluating the full process (Abx order, obtaining from pharmacy, delivering to patient) is complex and extremely challenging especially in a retrospective manner. We have pointed this out as a limitation.

Comment 15:

“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.”

Reply: Thank you for your comment, we have addressed that on easily written elements. Yet some data require further details and kept in table legend.

“Table 1: The presenting characteristics of patients who arrived during the handover time and those who arrived during the non-handover time

<table>
<thead>
<tr>
<th></th>
<th>Handover time</th>
<th>Non-Handover time</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td>N= 228</td>
<td>N= 1102</td>
<td></td>
</tr>
<tr>
<td>Source of sepsis, no. (%)</td>
<td></td>
<td></td>
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<tr>
<td>Diagnosis</td>
<td>Group A</td>
<td>Group B</td>
<td>p-value</td>
</tr>
<tr>
<td>----------------------------</td>
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<td>0.43</td>
</tr>
</tbody>
</table>

**Signs and Symptoms, no. (%)**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Group A</th>
<th>Group B</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature &gt;38 °C</td>
<td>57 (25)</td>
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<td>0.41</td>
</tr>
</tbody>
</table>

**Laboratory Findings, no. (%)**

<table>
<thead>
<tr>
<th>Finding</th>
<th>Group A</th>
<th>Group B</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>Leukocytosis*</td>
<td>99 (43.4)</td>
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<td>0.50</td>
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Hyperthermia:, hypotension: systolic blood pressure <90, mean arterial pressure <65 or systolic blood pressure decrease >40 mmHg from baseline, hypoxia: oxygen requirement to maintain oxygen saturation >90%, leukocytosis: WBC count >12 Å~109/L, leucopenia: white blood cell count <4 Å~109/L, increased creatinine: creatinine increase >176.8 mmol/L, thrombocytopenia: platelet count <100 Å~109/L, hyperbilirubinemia: bilirubin >34.2 mmol/L, hyperlactatemia: lactate >2 mmol/L, coagulopathy: international normalized ratio (INR) >1

Abele Donati (Reviewer 2):

Comment 1:

“The Authors aimed to examine in a retrospective cohort study the management and outcomes of patients presenting with sepsis and septic shock at the ED during nursing handover. The study is of some interest but I have some concerns:

Which is the handover time? Just between 6-8 AM and seems 6-8 PM? Generally during the 24 hours there are 3 handover times, in your hospital just two? Please this needs to be better clarified.”

Reply: Thank you for your comment, yes nurses in our institute have 12 hours’ shift. We have clarified this in our methods, selection and participants, 2nd line:

“In our institution, nursing shifts are 12-hours based in all departments.”

Comment 2:

“The Authors have identified time of antibiotic therapy, measurements of blood lactate, time to obtain blood culture and mortality as indicators. Are these enough? “

Reply: Thank you for your comment, sepsis bundle elements (time to antibiotic, time to blood investigation etc) are time sensitive, with granted records and documentations. It follows, we have chosen them as a process measurements to reflect of the quality of sepsis care. We have clarified this further in our manuscript. Background, last paragraph, line 10:
“We compared different processes measurements to reflect the quality of sepsis care, including the time to intravenous antibiotic administration, time to serum lactate result and time to obtain blood culture among patients who arrived at the ED during the nursing handover time in comparison to those who arrived at other times.”

Katia Donadello (Reviewer 3):

Comment 1:

“Dear Authors,

You have recently submitted a manuscript to BMC Emergency..

The topic is updated and of interest.

Nevertheless, I believe that the way your data are presented and discussed is too superficial and insufficient. “

Reply: Thank you for your comment.

ABSTRACT

Comment 2:

“Please check for the correct number of present beds (comparison with the main manuscript).”

Reply: Thank you for your comment, fixed in manuscript (Methods and materials, study design and setting), 3rd line:

“The ED is staffed with board-certified emergency medicine physicians, and has 115 beds.”
BACKGROUND

Comment 3:

“This part may be shortened: I would rephrase the introduction so as to better identify strengths and weaknesses of the present situation, as a rapid overview; the aim of this part should be of rapidly catching readers' attention and providing them with straightforward tools to better understand the novelty and power of your study. All details and comparisons could be left for the discussion.”

Reply: Thank you for your comment, we did move some parts to the discussion.

Discussion, 3rd paragraph

M&M

Comment 4:

“As you did in the abstract, I would stress on the retrospective character of your study.

I wonder that severe sepsis patients were also included (as the used tools refer to 2008 and 2012 guidelines); if so, please amend, also because the sentences in brackets ("originally severe sepsis") are quite confusing.”

Reply: Thank you for your comment, we have rephrased it in our manuscript. Materials and methods, selection of participants, line 6:

“For operative purposes, sepsis was defined as systemic inflammatory response syndrome with acute organ dysfunction secondary to documented or suspected infection. Septic shock was defined as sepsis with persistent hypotension after fluid resuscitation with at least 20 mL/kg of crystalloid (or equivalent).”

Comment 5:

“Just a detail: the time of enrollement refers to the ED desktop record after triage, right? If so, I might consider this here and thereafter in the limitation part a salso the triage process/patient definition-etiquette could be influenced by the handover period.”

Reply: Thank you for your comment, time of enrollment is ED bed assignment.
RESULTS

Comment 6:

“A consort diagram would be interesting to avoid the idea to be facing a convenient sample. Would it be possible to divide study outcome not only based on the 2 periods but also on the different grades of severity of sepsis.”

Reply: Thank you for your comment, we did divide them into 3 groups. Handover 7am, handover 7pm, and non-handover time, it showed no statistical difference. Additionally, we believe it does not reflect our primary objective as we are studying the handover time effect wither am, or pm.

Comment 7:

“Have you look for other subgroups within the patient characteristics?”

Reply: Thank you for your comment, no; as we are limited with what we have from our database. Additionally, our primary objective is time to antibiotics, we don’t believe that patient characteristic is going to affect that.

Comment 8:

“Data presented in Table 1 are not dealt with: I understand the lack of significant difference between the groups but I would appreciate some comments.”

Reply: Thank you for your comment, we have added some comments

Results, baseline characteristics, 2nd paragraph, line 2: “The predominant sources of infection in both groups were pneumonia and urinary tract infection. Patients presenting with septic shock made up 38.6% of patients in the handover time group and 40.9% of patients in the non-handover time group. The proportion of patients requiring mechanical ventilation was similar in both groups (29%). Lastly, non-handover group did not differ from handover group patients in terms of initial signs and symptoms nor lab results (table-1). “
Comment 9:

“When you deal with mortality, is it possible to divide ED mortality and hospital mortality? That would be more precise and sensitive.”

Reply: Thank you for your comment, we have thought of that earlier. However, using the retrospective data is a huge obstacle. Our older records do not separate mortality between departments, a hospital mortality reported.

DISCUSSION

Comment 10:

“I feel that this discussion should be re-made: it does not represent the study data; it would probably benefit from some of the data and comparison taken out from the introduction as, as it is, discussion is quite lacking (no literature comparison, no hints for raisonning and implementation); this i salso reflected by the poor literature research present in the references.”

Reply: Thank you for your comment, literature comparison is quiet challenging when you fail to find relevant old studies. Nonetheless, we did change a lot with the current discussion, to be added in comment 11.

Comment 11:

“The limitation part is quite superficial and could be implemented. Study sthrenghts should be included in this part and not in the conclusion.”

Reply: Thank you for your comment, we have utilized this in our new discussion.

“Handovers are pivotal junctures and integral process in the continuity of care in every patient’s clinical course. To the best of our knowledge, the idea of handover time as a possible distractor that might delay urgent patient care is not addressed in current literature. We aim to shed light on the duration of handover process as a possible time where patient care is affected. In this study, we evaluated the direct effect of nursing handover process on patient care. We used a sepsis database to compare ED processes and outcomes between patients who arrived at the ED during nursing handover time and those who arrived during non-handover time.”
Our results showed a trend of longer time-to-antibiotic administration in handover group, however this was not clinically nor statistically significant. Nonetheless, the clinical value is unconvincing; as 5 minutes’ difference, might be minor when it comes to antibiotic delivery. It follows, additional studies with another time sensitive assessment tools are needed to address the clinical outcome of this delay, and how to prevent it. We found no significant association between ED nursing handover and time-to- lactate results or time-to-obtaining blood culture, or hospital mortality in patients admitted with a diagnosis of sepsis and septic shock. This could be explained by our ED nurses are vigilant with alerts and our institution was conducting SSC with constant reminders of early management and septic alerts11. Consequently, our results may not reflect the situation in institutions with different methods of handover.

A prospective observational study addressing ED handover problems revealed deficiencies in the handover processes.4 These deficiencies were mainly noted in communication and disposition of information.4 In another study that assessed the differences in information retention between various handover styles, the authors concluded that purely verbal handover processes are even more prone to serious data loss.6 In light of that, researchers have been developing new tools to ease the process and grant adequate transfer of information 8. These tools have been shown to improve nursing handover 12-19.

The main strengths of our study include the numbers of patients included, detailed data collection, the tertiary academic setting with numerous complex and critically ill patients, and standardized data collection using the SSC tools. As a retrospective cohort study, the present study has some important limitations. Foremost, the study aimed to evaluate the direct impact of handover time on time to time-to-antibiotic administration, time-to-lactate results, and time-to-obtaining blood culture, as surrogate indicators of the quality of sepsis and septic shock management. Nonetheless, other important measures in sepsis management were not investigated such as time to effective fluid resuscitation. Additionally, there is inherent variation and subjectivity in the handover process among ED nursing staff might have underpowered our results. Lastly, because of the retrospective nature of this study and the fact that it was conducted in a busy ED, others factors, such as ED overcrowding and boarding patients in ED, could easily have affected the study results.

This is one of the first reports of the impact of ED nursing handover on time-sensitive interventions that involve multiple tasks performed by ED nurses. Due to the retrospective nature, patient population with single pathology, and our structured handover process that might have reflected on the results of this study. Future studies are still needed to explore ED functionality during the handover time.”
Comment 12:

TABLE 1

“More patients characteristics could be added.”

Reply: Thank you for your comment, unfortunately we cannot obtain this from our sepsis database.

Comment 13:

“I would add a table with the differences between the various sepsis groups within the period range.”

Reply: Thank you for your comment, this is would be an interesting information, however; we do not see how it will serve our primary objective. How would various sepsis groups affect time to antibiotics?