

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Short term outcomes and mortality after inter-hospital intensive care transportation. An observational prospective cohort study of 368 consecutive transports with a Mobile Intensive Care Unit
AUTHORS	strauch, ulrich; Bergmans, Dennis; Winkens, Bjorn; Roekaerts, Paul

VERSION 1 - REVIEW

REVIEWER	Beckers, Stefan Department of Anaesthesiology, University Hospital, RWTH Aachen University, Aachen, Germany
REVIEW RETURNED	20-Nov-2014

GENERAL COMMENTS	<p>The authors are presenting an interesting work done in a field clinically relevant especially in respect of patient outcome in the transportation of critical ill patients.</p> <ul style="list-style-type: none">- Please screen for redundancy in the presentation of results in tables and the text- expand the limitations section of the discussion (e.g. selection bias of data)
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REVIEWER	Dr Helen Barratt University College London, UK
REVIEW RETURNED	12-Dec-2014

GENERAL COMMENTS	<p>Introduction</p> <p>1. To set the paper in context, it would be helpful to include more information about the MICU service and the setting in which it operates. For example: 1) what constitutes a 'scheduled transfer' under the 2009 legislation? 2) what training do the retrieval team receive? 3) does the service operate 24 hours a day? 4) what patients are eligible for the service, e.g. in terms of age?</p> <p>2. I found the introduction generally confusing. The text at the start of the second paragraph (lines 20-24) suggested the paper was going to be about defining which patients would benefit from transfer and how to assess the quality of transfers. The paper does not address either of these topics. It would be useful to instead include a brief background summary of what is known about outcomes after inter-hospital transfer.</p> <p>3. The introduction cites 25 other papers. However, each sentence cites multiple references. It is thus very difficult for the reader to get</p>
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a sense of what literature already exists, and the wider context in which this article sits.

Objectives

4. It would be useful to define at the start of the paper exactly what short-term outcome measures are being used as proxy parameters, and what is meant by critical events (ie is this events during transport, afterwards, or both? what type of events?). Additionally, more information is needed about mortality as an outcome measure (ie at what point in time is it measured?)

5. The authors state that their hypothesis is that the MICU can be considered safe. What is meant by 'safe'?

Methods

6. Please define acronyms on first use (e.g. SOFA, ICU, SD) and provide basic details for non-specialists about scoring systems, such as SOFA

7. I'm not completely clear how data was obtained for the study. Was this from patient records or a special proforma? If so, who extracted it?

Results

8. The results section mainly consists of large tables, with relatively little text. Consequently it is difficult to follow. As a general suggestion, the text should be expanded, to provide more explanation of the table content, rather than simply repeating these data.

9. In addition, the results section seems rather disjointed, and it is difficult to identify a narrative thread. It may be better to use sub-headings. Sections might include: patient characteristics (including the sub-group transferred on ECMO; details of the transfer process, including critical events; patient outcomes e.g. mortality

10. Table 1: this summarises patient characteristics, information about the transfer and patient outcomes. For clarity, it would be good to group these together in broader categories in the table, and identify each category/ group of characteristics in a new column

11. Given critical events during transfer are a particular concern, more information should be provided about the types of critical event that occurred in this patient group.

12. Table 4: this includes detailed information about a relatively small number of patients, in a known region. This may be identifiable. I would therefore suggest removing the table, or reducing the amount of personal information e.g. age.

13. The comparison between those patients alive at 24h and those who died is interesting, but with only 14 patients in the latter category it is difficult to draw meaningful conclusions. Any calculation is likely to be underpowered. Notwithstanding this, the

first paragraph should be expanded to explore these differences in more detail. At the moment, it simply restates the data set out in Table 3.

Discussion

14. I am unsure what the key message of this paper is. The objectives are vague and contain limited information beyond 'evaluating short term outcomes and critical events.' (In whom? At what points? Which events? Which outcomes?). I think the paper describes short-term outcomes (24h mortality and change clinical severity score) plus critical events (?which ones included) in a cohort of critical care patients who had undergone transfer between hospitals by a specialist transport service in a single region of Holland. Essentially, the study evaluates the impact of that one service, and the study findings need to be set in this context and nuanced accordingly. It's a bold assertion to claim that on the basis of these results alone, transfer can be performed safely, with minimal adverse events.

15. The authors make several comparisons between different patient groups, for example those on different types of ECMO, those who died vs those who didn't etc. However, they pay relatively little attention to the finding that there was minimal change in SOFA scores before and after transfer, across the cohort. This could be drawn out in the results and conclusions section, with greater reference to the wider literature on this topic.

16. The value of this paper lies in the fact that it adds to a growing body of literature on this topic. It would be useful to add a paragraph summarising what exactly it adds to the literature, recognising that most existing studies in this area are also single centre service evaluations.

17. On the basis of the information included in the study, I'm not sure we can confidently conclude that the patients' 'pre-existing clinical status and not the transportation per se was responsible' for their death. Clearly, a number of things could have contributed, and we don't fully understand the physiological impact of transfer, especially on the sickest patients.

18. The limitations section is currently very brief. The points should be expanded to say why these represent limitations. Another limitation is that the results come from a specialist, dedicated service, with highly trained staff. Such a service does not exist in many parts of the world and consequently this further limits the generalisability of the findings.

19. Finally, the research recommendations seem tenuously related to this study. I agree that all the points set out represent gaps in the literature. However, could the authors expand on where future work is needed in specific relation to their work?

Conclusion

20. Again, it might be better to nuance the wording here: I don't think we can confidently say that, on the basis of this study, inter-hospital transport 'has no negative effects on short term outcomes.' At best, we can observe that there was little difference in clinical severity scores, before and after transfer. Equally, we cannot be certain that

	short-term mortality 'is mainly influenced by the natural course of critical illness etc.' At best, we can observe that mortality was higher in patients with higher clinical severity scores prior to transfer, suggesting that mortality rates are likely to be influenced by this.
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1

- 1) The result part has been screened for redundancy
- 2) The section concerning limitations of the study has been extended

Reviewer 2

- 1) The organisational structure of the MICU system is described more extended
- 2) The introduction section has been written new
- 3) See comment on number 2)
- 4) Defintion of short term outcome is added to the introduction, examples for critical events are given in the materials and methods section
- 5) The hypothesis that out transport system can be considered as safe has been taken out
- 6) Acronyms have been defined at first use
- 7) Process of dat obtaining has been added
- 8) Result section is written new
- 9) See comment on 8
- 10) See comment on 8
- 11) Examples of critical events have been added
- 12) Age and sex of patients have been deleted
- 13) Concern about low number of patients has been discussed in discussion and conclusion sections
- 14) Conlusion section
- 15) has been written new
- 16) minimal chang in SOFA score is highlighted in result and discussiopn section
- 17) conclusion concerning 24 hours port transport mortality have been written new
- 18) limitaion sestion has been extended
- 19) research recommendations have been linked with teh study results
- 20) conclusion section has been written new

VERSION 2 – REVIEW

REVIEWER	Dr Helen Barratt University College London, UK
REVIEW RETURNED	20-Feb-2015

GENERAL COMMENTS	<p>This paper has been substantially rewritten, taking on board reviewer comments. I have only a couple of minor suggestions, relating to the presentation of the results:</p> <ol style="list-style-type: none"> 1. To demonstrate the range of illness severity in the study population, it would be helpful to present the range of SOFA scores, not just the mean 2. It would be useful to the reader to know the p-value (or at least confidence intervals) for the non-significant decrease in mean SOFA score in patients before and after transport (8.8 versus 8.4) 3. Again, it would be good to know the range of transport times, not just the mean time. This is likely to be non-normally distributed. This
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	is particularly relevant because the authors report that 15 patients had a transfer time of 4h longer than the mean time.
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VERSION 2 – AUTHOR RESPONSE

The actions we took can be found below.

- 1) We added the range of SOFA scores.
- 2) We figured out more detailed that the mean SOFA score before transport was 8,8 for the whole population (n=344) and 8,6 for those patients being alive 24 hours after transport (n=330). The calculation of the p-value was performed comparing the pre and post transport SOFA scores of the patients being alive after 24 hours (n=330)
- 3) We added the range of total transport time.