Author's response to reviews

Title: Quality Improvement Practices used by Teaching versus Non-Teaching Trauma Centres: Analysis of a Multinational Survey of Adult Trauma Centres in the United States, Canada, Australia, and New Zealand.

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Version: 2
Date: 17 October 2014

Author's response to reviews: see over
Dr. Tom Rowles  
Executive Editor, *BMC Surgery*  

October 16, 2014  

Dear Dr. Rowles;  

**Re: Quality Improvement Practices used by Teaching versus Non-Teaching Trauma Centres: Analysis of a Multinational Survey of Adult Trauma Centres in the United States, Canada, Australia, and New Zealand**  

Thank you for your thoughtful reviews of our manuscript and the opportunity to resubmit a revised version for consideration of publication in *BMC Surgery*. We feel that the revised manuscript is an improved report, which addresses the Reviewers comments. Please find below an itemized list of detailed responses to each of the Reviewers comments, including a description of the changes made to the manuscript. Within this itemized list, we cite each comment verbatim in bold type followed by our response and corresponding changes to the manuscript (which are highlighted in yellow within the manuscript text) for ease of review.  

We hope that you will find this version suitable for publication in *BMC Surgery*, and look forward to your response.  

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REVIEWER #1: Dr. Sandy Widder

“MAJOR COMPULSORY REVISIONS

1) Would have been interesting to examine the practices amongst the teaching and non-teaching centres to see if there was consistency and / or differences? Or even amongst the level 1, 2 and 3 centres? Find it hard to compare the teaching versus non-teaching centres directly as there are clear differences in the numbers, types of patients treated, resources, as well as likely cultural differences.”

Thank you. We agree with the Reviewer that there may be important differences between teaching and non-teaching centres beyond the simple presence or absence of trainees. We have revised the manuscript in three ways to address the Reviewer’s comment.

One, we have revised the manuscript to clarify that we conducted analyses stratified by trauma centre accreditation/verification, ACS level of care designation, geographic location, median household income of the surrounding neighborhoods, and the number of patients assessed yearly to assess for possible effect measure modification and differences between subgroups (lines 108-113).

Comparisons of dichotomous responses and derivation of confidence intervals for teaching versus non-teaching trauma centres were performed using the Chi-squared test. In order to assess for effect measure modification/subgroup differences, we stratified these dichotomous outcomes by trauma centre accreditation/verification, ACS level of care designation, geographic location, volume, median household income of the surrounding neighborhoods, and the number of patients assessed yearly.

Two, we have added a sentence to the results section to clarify that we did not find any evidence of effect modification or important subgroup differences (lines 149-151).

Subgroup Analyses: The results were similar when stratified by trauma centre accreditation/verification, ACS level of care designation, geographic location, volume, median household income of the surrounding neighborhoods, and the number of patients assessed yearly.

Three, we have revised the manuscript to indicate that regardless of the differences in patients (numbers and types), resources, and cultures of teaching and non-teaching centres that the key observation from our study is that teaching and non-teaching centres reported being engaged in largely similar quality improvement activities (lines 166-169).

Interestingly, there were few large differences documented between teaching and non-teaching centres in our study despite potentially important differences in their characteristics (e.g., level of designation, geographical location, surrounding neighborhoods, number and nature of patients).
“MINOR ESSENTIAL REVISIONS

1) There was mention that the trauma centres are engaged in QI by utilizing a wide variety of performance measures and improvement strategies. What are the strategies specifically? Was this commented on by any of the participants when contacted later?”

We agree that a description of the strategies utilized for quality improvement is important, but this is beyond the scope of the manuscript and was separately reported in a published qualitative analysis. In order to refer interested readers to this manuscript, we have added a reference to the findings of this study to our manuscript’s Discussion section (lines 169-175). This now reads:

*It is conceivable that because the ACS mandates accredited trauma centres to partake in quality improvement activities, this leads to some homogeneity across institutions in the overall strategies. Previously published work describes in greater detail both the quality indicators (QIs) that trauma centers use for quality measurement and the strategies they employ for performance improvement. [1, 2]*

2) What is the definition of a “teaching hospital”?

We have revised the manuscript to describe the definition of teaching status (lines 100-103).

*Analyses were performed with trauma centres classified into two self-reported groups: teaching (university based teaching setting or university affiliated teaching setting) and non-teaching (non-teaching setting).*

3) What is the definition of a “designated trauma team”? Is there a TTL? Is the TTL in house?

The methods section of the manuscript has been revised to include the link to the survey tool and reference the citation that contains the original survey instrument to direct interested readers (lines 91-92 and lines 97-99).

*A copy of the survey is available online and can be found at: [http://links.lww.com/TA/A93](http://links.lww.com/TA/A93).*

*The survey collected information on trauma centre level of care designation, geographic location, teaching status, number and type of injured patients managed, nature of their quality improvement program, and quality indicators utilized.[1]*

Our survey instrument asked, “Does your trauma program have a designated trauma team responsible for immediate assessment and management of trauma patients?” We did not solicit additional information regarding the composition or operating procedures of the trauma team.

4) Are the number of individuals qualified in trauma training and/ or care equivalent between the teaching and non-teaching centres?
We did not collect data regarding the number of individuals qualified in trauma training.

5) What is qualified as “timeliness of care” by the teaching centres? How does this differ from “triage” and “patient flow”? In my mind the latter would also contribute to timeliness of care as well.

Thank you for identifying this confusing presentation of data. We have revised the abstract (lines 42-46) and results (lines 128-133, Table 2) sections of the manuscript to clarify that we classified the indicators according to both content and the Institute of Medicine’s six dimensions for care. We acknowledge that there may be overlap between the two classification schemes.

Teaching centres were more likely than non-teaching centres to use indicators whose content evaluated treatment (18% vs. 14%, p<0.001) as well as the Institute of Medicine aim of timeliness of care (23% vs. 20%, p<0.001). Non-teaching centres were more likely to use indicators whose content evaluated triage and patient flow (15% vs. 18%, p<0.001) as well as the Institute of Medicine aim of efficiency of care (25% vs. 30%, p<0.001).

With respect to the content of the quality indicators, teaching centres were more likely to use indicators for evaluating treatment (18% vs. 14%, p<0.001) and non-teaching centres more likely to use indicators evaluating triage and patient flow (15% vs. 18%, p<0.001). With respect to the Institutes of Medicine dimensions of care, teaching centres were more likely to use indicators evaluating timeliness of care (23% vs. 20%, p<0.001) and non-teaching centres were more likely to use indicators evaluating efficiency of care (25% vs. 30%, p<0.001).

6) Although there was data on the reporting of quality indicators, there was little data reviewing the true improvement process, i.e. how does one achieve optimal or standards of care if they are below?

We agree with the Reviewer. Evaluation of improvement processes is beyond the scope of our manuscript, but an excellent idea for a follow-up project.

7) Do any of these centres have government supported or hospital support for quality initiatives?

We do not have data on government or hospital support for quality initiatives. Understanding the relationship between resource availability and the nature of quality improvement programs is important, but beyond the scope of the current manuscript.

8) Were there any comments around whether or not there is a quality improvement office in each of the associated hospitals, and whether or not they are involved with improving some of the performance indicator and outcome measurements?

The Reviewer raises an interesting question that is beyond the scope of the current manuscript. Unfortunately we do not have any data on the relationships between the hospital and trauma program quality improvement initiatives, but this could represent an opportunity for future work.
9) Is there standardization of some of the quality reporting, ie. M+M rounds? What is the process involved after an adverse event is reported or suboptimal quality indicators are demonstrated?

We have revised the manuscript to highlight that our survey data provides a high level description of trauma centre quality improvement activities, but is limited in its ability to provide details of the nature of the specific activities (lines 205-208).

*This study has several limitations, including its reliance on volunteer survey participants whose quality improvement activities may differ from centres that did not participate in the survey, the simplicity of the survey (high level description of quality improvement activities), and the lack of patient outcome data relating to morbidity and mortality.*

**REVIEWER #2: Dr. Andres Mariano Rubiano Escobar**

“The article has a very well structured information and report of results. There are not revisions required.”

Thank you for your kind review of our manuscript.

**References**
