Author’s response to reviews

Title: Impact of a semi-structured briefing on the management of adverse events in anesthesiology: A randomized pilot study.

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Author’s response to reviews:

Dear Dr. Tanoubi

We would like to thank you for the opportunity to revise the manuscript, and we have attached both a clean version and one that tracked the changes made for further review purposes. We have addressed the reviewers’ comments on the following pages.

We would like to extend our sincere thanks to all of you involved in the review process. With human factors still being a very young field of inquiry in healthcare, it is invigorating to read the critical and constructive remarks made by both you and the reviewers. You have uncovered important areas of improvement for the manuscript, and we hope to have adequately addressed them in our expanded version.

On a more personal note, this is a “first” for me in terms of an open peer review process, and I wanted to add that I have never experienced a more collegial, constructive exchange. This is greatly appreciated.

Kind regards,

Christopher Neuhaus

Editor Comments:

Dear author,

Thank you for submitting your manuscript « Impact of a semi-structured briefing on the management of adverse events in anesthesiology: A randomized pilot study » to BMC Anesthesiology.
The manuscript has been reviewed by 3 external reviewers and myself, and as you can see, some suggestions, additions or clarifications, mostly minor, are still needed. Note that the manuscript is well written, clear and the key messages are not confusing.

The topic of the study is on the agenda, and the different comments will give the possibility to the development of similar studies taking into account the different limitations and the elaborated methodology, which is of major interest for the reader.

Here are my comments:

The statistics are described in a summary way. I suggest describing, for each endpoint, the statistical test used and the manner in which it will be presented, starting with the primary endpoint and then the secondary ones.

We changed the description to give a more precise overview of the statistical tests used. It now reads:

Data was analyzed descriptively with absolute and relative values and their mean values and standard deviation. For the primary and secondary endpoint, time differences between groups were compared using a log-rank test stratified for experience. Influences of participant experience on timing were assessed using Cox-regression. Hazard ratios were determined together with 95% confidence intervals. For the secondary endpoints in regard to methods used in airway management and adherence to existing guidelines, Mann-Whitney-U test and Chi2-test were used to compare continuous and categorial data, respectively. A p-value <0.05 was considered statistically significant. These have a purely descriptive character, need to be interpreted accordingly and possess no confirmatory value. Missing values were not imputed. As this was an exploratory pilot trial, no power calculation could be conducted in the planning phase. The sample size was instead based on considerations of feasibility.

In the discussion, you should debate if the scenario was suitable to demonstrate your hypothesis. Indeed, it is possible that CICO's situation presents a clear decision algorithm, with relatively few steps, and the diagnosis of CICO's situation is often not very confusing. It is possible that with a more complex scenario with several possible decisions, the results of the study would have been different. We added this aspect to the discussion section. While the scenario lacked ambiguities, it seems that the influence of unfamiliarity with front-of-neck access, and a presumed lack of training in various techniques, by far exceed any benefits gained from improved communication and collaboration.

Another question also arises. Is the primary endpoint chosen the best to demonstrate the research hypothesis? Here too, this kind of scenario often evolves very quickly and the times to treat between groups, even if they are different, will be closer. Which would therefore require a large sample size to demonstrate a clinically and statistically significant difference. This is a very valid point, indeed, and one that we have struggled with. Ultimately, the discussion becomes whether our traditional quantitative metrics are useful in providing answers to some of the challenges faced in our work environments. We have expanded the limitations section to address this aspect.

"11 teams interrupted the briefing to perform other tasks": Details about this interruption should be added (see comments of reviewers).

Thank you for this observation. We have expanded the manuscript, which now reads:

11 teams chose to interrupt the briefing to immediately perform tasks that had just been discussed (e.g. the preparation of vasoactive medication, verifying the availability of a laryngeal mask as alternative
airway, insertion of a gastric tube) before resuming the TEAM briefing. This prolonged the briefing for an average of 36 seconds but had no significant impact on the primary endpoint (p=0.44).

Our reasoning for including this data in the manuscript is two-fold: First, it is supposed to objectify often-raised concerns, usually by management, about “hidden” costs of introducing human factors tools in the OR because of the time that is spent. Our data shows that a briefing can in fact performed in a very short amount of time. The second aspect concerns questions regarding the effectiveness in regard to the amount of proceduralization of a certain tool. It is unclear whether “interrupting” a briefing negatively impacts the briefing message, concentration/focus, and ultimately generation of a shared mental model within the team. This aspect is definitely not addressed in its entirety by our study, since our primary endpoint doesn’t necessarily reflect the shared cognitive workload within a team. Nevertheless, it may offer a small amount of data to inspire further work in the field.

Please pay attention to the interesting comment about the details to add to enrich the discussion around the difference between briefing and checklist. Please add references to argue the differences between the two.

We have expanded the discussion section about checklists and briefing, and added a few references. Unfortunately, however, there is hardly any literature available to highlight the differences; a fact that has led to our 2016 article 1 on the topic in the first place.

I look forward to reading your reviewed manuscript, which will undoubtedly be greatly enhanced and particularly useful for the reader.

Issam

Reviewer reports:
Sujoy Banik, MBBS, MD, DM (Reviewer 1): I thank the editors for tasking me with the review of this manuscript and I congratulate the authors on their fine job of preparing this manuscript. Team briefing before anesthesia induction is an oft repeated but seldom practiced process, and the acronym made up here is quite good without trying to be all encompassing. Since the primary endpoint ultimately could not be studied as none of the groups went on to the emergency cricothyroidotomy as part of emergency airway management, it is worthwhile giving more thought and explanation to that omission.

Departments that are equally invested in critical care and anesthesia are the ones who are generally more savvy about taking the leap to invasive airway maneuvers, as they are most likely dealing with tracheostomies more often than not. When the anesthesiologists are not part of a critical care setup and management, it is implied that they are not comfortable with that role; therefore the hesitancy seen with establishing invasive airway access. However, over and over, there is a concerted effort to have more focused intensivists managing the ICU, and as a result anesthesiologists’ lack of familiarity with such scenarios is escalating. Of course this is an endlessly debatable issue. However the problem is that unless more training is imparted and at least more percutaneous cricothyroidotomies and tracheostomies are actually done by the anesthesiologists themselves as part of their routine, the result seen by the investigators will repeat itself. Even looking at the actual team briefing in the study group, Cricothyroidotomy is not even discussed!

We couldn’t agree more with this assessment and have expanded the discussion section to reinforce this important aspect.
as for the graph of briefing interrupted, I’m not sure how that is relevant to the discussion here. Why was it interrupted? By airway management emergency, or something else?
All interruptions were voluntary, we have clarified the manuscript in that regard. Please also see our comment above.

otherwise manuscript is very well written.

Benjamin Aquino, MD (Reviewer 2):
This is a pertinent and thought-provoking study which I liked very much. I did have a couple of questions about the setup and data.
First, what in your mind was the significance of the briefing being delayed for the study group? It was important enough that you included it among your figures. What were they doing during these delays, and did the delayed group show differences in performance from the group that wasn't delayed? That would have been interesting to know.
Please see our comment above.

Second, I would have liked to know a little more about the control group. You mentioned the percentages of study groups that had discussed primary and secondary airway management strategies, vasoactive meds, and checking the equipment. What percentage of teams in the control group mentioned these items, and in what way were they mentioned? All that was said is that there were "random isolated exchanges of information" and that "no structured or comprehensive briefing was observed". Though I hypothesize that those observations were globally true in general for the control group, comparing one specific set of data across both groups may have been useful here. It seems these data would tell us even more about the efficacy of the semi-structured briefing, and whether or not the pre-procedural discussion played a factor in the performance of the groups. In other words, was it merely mentioning these things that made the briefing helpful, or the organization provided by the briefing?
Thank you for this important remark. We have expanded the result section and included a new table to compare the briefing items in both groups. It seems like the organization provided by the briefing played an important role, as significant differences could only be found for two briefing items. It has to be kept in mind that the organization and presentation of information most likely plays a very important role, compared to the unstructured and discontinuous mention of the same information.

I think this study leads itself to quite a few interesting follow-up studies that I'd be eager to see. This study is good as is, but if you have more data available about the control group, it'd be even better.

Richard Applegate, MD (Reviewer 3): This is an interesting study into the effectiveness of semi-structured briefings prior to a simulated critical event. the authors appropriately note the various limitations of their study and findings. Of interest, the briefing did not result in a difference in the primary outcome measure of time to decision to perform cricothyroidotomy. The Discussion highlights the findings, the implications of the findings and hypotheses for future study.

Concerns:
Table 1: please confirm the entries for numbers of inductions / standard deviations; if data are not normally distributed then median and IQR may be a better way for the reader to understand this data
Thanks for raising an important point; we rechecked the data with a KS-test and have now provided median and IQR values.

The Discussion appropriately notes the difference between this briefing and a checklist; do you think that reference to a more detailed script than the TEAM mnemonic would be of value? This is a very interesting question that had not been addressed in the manuscript. While there is hardly any literature available to support the development process of mnemonics, a rather informative and enjoyable discourse can be found regarding the use of FAST-HUG 2 on intensive care units, and the proposal to expand this to FAST-HUGS-BID 3,4. We expanded the discussion section to provide the reader with more information in that regard.

References