Reviewer’s report

Title: Situation awareness errors in anesthesia and critical care in 200 cases of a Critical Incident Reporting System

Version: 0 Date: 12 Aug 2015

Reviewer: Matthias Hübler

Reviewer’s report:

This manuscript by Schulz et al. aimed to evaluate the impact of Situation Awareness (SA) on critical incidents. They used the database of the German anonymous CIRS for their study. They tried to exclude selection bias by picking consecutive reports which were published between April and November 2013. Using these reports they extracted incidences of SA errors.

General Remarks

It is well-known that non-technical skills promote and prevent a critical incidence and its outcome, respectively. SA is part of the ANTS (Anesthetists' Non-Technical Skills) Framework, which was developed to help recognizing and assessing non-technical behaviors and actions. The other categories are Task Management, Team Working and Decision Making. Schulz et al. state that it is important to systematically analyze critical incidences to gain more knowledge on the mechanisms of errors. Although I agree basically with this goal, I disagree about the used method and the conclusions.

The major drawback is that the authors used a CIRS database to calculate incidences of SA errors. It is well established that the motivation to write a critical incidence report depends on many factors. The most important factors are anonymity, emotional involvement, severity and acuity of the incident, timely feedback and consequences. Also it is assumed that only a minority of incidences is usually reported (probably 1-5%). Briefly, nobody knows if the reports are truly representative. Accordingly, calculating incidences is not scientifically correct.

Another drawback lies in the source itself. As the authors state correctly, the original reports are reviewed by trained persons to warrant anonymity of the reporter and the patient involved in the case. The reviewers delete therefore every information and judgement which appear not related or important. But also important information is deleted if necessary to protect reporters and patients. Additionally, not all hospital or departments agreed to publish the reports. And: Even if participating hospitals or departments generally agreed, it is not a fixed rule but a case to case decision. Generally excluded from publication are usually reports which describe a negative patient outcome. In conclusion, bias happens at several steps and the database is a collection of anecdotes.

Schulz et al. transferred the well-established SA concept in the context of error genesis and promotion from a simulation environment to not-representative real life situations with sparse information. I suggest repeating the study by analyzing e.g. all critical incidents occurring during
a defined time frame at a defined location. This is not an easy task because anonymity will be abandoned. Such a study would become even more powerful if the involved staff gets a SA training thereafter followed by a second observation period evaluating the effects of the training.

Specific Remarks

p. 4, 12

As far as I understand Mahajan does not suggest doing statistics on the reports. Systematic analysis means that every single report must be analyzed systematically. Your quote is misunderstanding.

p. 4, 24

You cannot determine incidences - maybe frequencies in the selected reports.

p. 4, 50

You cannot exclude selection bias - eventually minimize it, but even this goal can probably not be reached.

p. 4, 58

Why did you exclude structural problems? Do they not also have an impact on our SA?

p. 5, 16

The restriction is that not all reports are published.

p. 5, 18

I mentioned the impact of the anonymizer already.

p. 5, 25

The requested additional data is only optional.

p. 6, 55-60

What do you mean by frequency of a certain case? You do not know incidences because you do not know the number of cases (only few are reported)…

p. 7, 40

Usually, most reports are made by nurses.
The whole section illustrates the anecdotic character of CI reports.

Using a CIRS database you never know if the reports are detailed enough.

It is not unsure but sure that CIRS provides not a valid picture of the real quality and quantity of critical incidents.

I would not call it user-centered monitoring systems but locally adapted.

I thank that it is proven that non-technical skills (including SA) are important every day and representative data bases are therefore not required. What we need is that we start training staff and look at the effect of training (and selection of personnel).

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**

Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license ([http://creativecommons.org/licenses/by/4.0/](http://creativecommons.org/licenses/by/4.0/)). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal.