**Reviewer’s report**

**Title:** Design of a Novel Multifunction Decision Support Display for Anesthesia Care: AlertWatch OR

**Version:** 0 **Date:** 14 Aug 2017

**Reviewer:** Gordon Tait

**Reviewer’s report:**

This paper is a description of a software system to provide the anesthesiologist with alerts of conditions that can affect patient safety in the OR. It does not have Methods, Controls, Data or Statistics from which conclusions could be drawn.

A careful consideration of human factors should be included in the design of alerts. In particular, two design features can be questioned:

1) The use of red and green to indicate safe and potentially dangerous conditions. This will be problematic for anesthesiologists who have red/green colour blindness. Since the incidence is about 8% in men of northern European ancestry, this not a minor consideration.

2) The animation of the heart, aorta and lungs to provide a visual indication of heart rate and respiration. This movement in the midst of all the numbers on the screen is distracting to the user, and is unnecessary since the information is already provided in numeric form.

The AlertWatch OR system is a useful contribution to the effort to improve safety in anesthetic management. However, the paper is largely an exhaustive description of the features of the AlertWatch OR system, almost the system user manual. The report would benefit from a discussion of the rationale for why different features were included rather than a detailed description of how they work, and more emphasis on the development of the rules for the generation of the alerts. This should include a discussion of the bigger picture about how the AlertWatch OR system compliments the patient monitor, the anesthetic gas machine and the AIMS system, all of which also have alerts of unsafe conditions.

Although this is a descriptive rather than a research paper, it would also be useful to have some information about how often these alerts are triggered. There is a well-known phenomenon of "alert fatigue" which means there is a threshold where alerts are simply ignored when there are too many of them. This means the rules have to be carefully designed to not exceed this threshold, which is challenging when there are many different alert rules for different systems within AlertWatch OR.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.
Unable to assess

**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.

Unable to assess

**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:

Needs some language corrections before being published

**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 am involved with developing the system documentation for the development of an anesthesia information management system at Toronto General Hospital.

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/). 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.