Reviewer’s report

Title: Impact of leaks and ventilation parameters on the efficacy of humidifiers during home ventilation for tracheostomized patients: a bench study.

Version: 0  Date: 12 Oct 2018

Reviewer: Masaji Nishimura

Reviewer’s report:

In the study, Haziot et al. compared humidification performance of five heated humidifiers under several respiratory conditions. Bench study is a powerful tool to investigate if medical devices work because we can compare them under same condition. However, the authors should be careful to make the settings as much as same to a real life physiology. There are several important issues in the study.

Even during short period, like during operation, lung protective strategy is considered to be essential. Six-hundreds of tidal volume is fairly high, and I don't understand the reason why the author chose 600 and 1000 mL of tidal volume in volume control ventilation. The measurements were performed at 12/min of breathing frequency only. Humidification performance is more influenced by minute volume than tidal volume.

Response of hygrometer is slow, and it is so tough to measure accurate humidity under dynamic flow, like during mechanical ventilation. Both inspiratory and expiratory gases influence measurements. Without separating inspiratory from expiratory gas, humidification cannot be measured accurately. What is a response time of hygrometer? The authors should present two kind of response time, when humidity increases, and decreases.

Figure 1 is a key figure, while it is poorly drown and figure legend is not appropriate. I am afraid the readers have a difficult time to follow it.

When leak port was open, how much is leak flow (or how much is total minute volume from a ventilator)?

Water consumption is also important information, however it is tough to understand the result. Why didn't the authors present simply water consumption? For example gram/hour is very easy to understand.

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.
No

**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:

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 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/). 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