Author’s response to reviews

Title: Bench Experiments Comparing Simulated Inspiratory Effort when Breathing Helium-Oxygen Mixtures to that during Positive Pressure Support with Air

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Version: 3 Date: 14 September 2012

Author’s response to reviews: see over
September 12, 2012

Editorial Team
BMC Pulmonary Medicine

Re: BMC Pulmonary Medicine MS: 6190174606752792
Bench Experiments Comparing Simulated Inspiratory Effort when Breathing Helium-Oxygen Mixtures to that during Positive Pressure Support with Air

To the Editorial Team,

Thank you for considering the above-referenced manuscript for publication in *BMC Pulmonary Medicine*. We have read the comments of the 3rd reviewer, and updated the manuscript to assure the final point brought up is addressed. Please find below a response to the reviewer’s comments, which includes mention of all changes made (these also appear as tracked changes in the accompanying revised manuscript).

My co-authors and I appreciate the time taken by you and by each of the reviewers in evaluating our work, and we look forward to hearing back from you regarding the status of this submission.

Sincerely,

Andrew R. Martin, PhD
Senior Research Scientist, Medical Gases
3rd Reviewer:

Title: Bench Experiments Comparing Simulated Inspiratory Effort when Breathing Helium-Oxygen Mixtures to that during Positive Pressure Support with Air

Version: 2 Date: 23 August 2012

Reviewer: Stefano Nava

Reviewer's report:

I have a mixed feelings about this paper.

Obviously it is a very difficult paper to read and understand by a "classical" clinician, and as a matter of fact the two reviewers are physiologists. Therefore I do not think that the paper will have a "strong" impact on our daily job.

Having said that I mainly support the conclusions by the Authors about the concerns highlighted by rev.1. they are right about the important issue of flow limitation.

We understand that some of the subtleties discussed in the manuscript may be fairly intricate for readers without much background in fluid mechanics; however, we feel that through these same subtleties one can gain insight into varying patient response to helium/oxygen therapy, which is a main focus of our research. In preparing the manuscript, we have certainly attempted to balance the more technical sections with discussion of clinical implications.

There is a considerable amount of ongoing research on helium/oxygen, and we anticipate that these researchers, as well as those clinicians integrating helium/oxygen into their practice, will be attracted to the paper.

I guess the manuscript may be improved discussing that mechanical ventilation is used in circumstances where the mechanisms of airways obstruction is different from what postulated by rev.2, since there is an abrupt change in resistances that is mainly related to what the Authors claimed in their response. For the same reasons these patients respond very well to brochodilators, while in a stable phase they do not.

We have added to the manuscript (first paragraph of the Discussion section) better explain our approach and to mention that increased resistance in obstructive lung diseases may also be marked during expiration, and that the study primarily addressed inspiratory pulmonary resistance. Further, we have noted that mechanical ventilation is very frequently used for the purpose of relieving the patient's inspiratory effort. As noted by Reviewer 3, in these circumstances the comments of reviewer 2 on expiratory flow limitation are less pertinent.

Conclusions: very difficult to read paper. Moderate interest in the daily practice. The response to the reviewers were good. I would NOT reject the manuscript based on rev.2 comments

We appreciate the reviewer's comments. We have commented above on the readability of the paper.