Reviewer’s report

Title: Reliability of pleth variability index in predicting preload responsiveness of mechanically ventilated patients under various conditions: a systematic review and meta-analysis

Version: 0 Date: 16 Feb 2019

Reviewer: Massimo Meco

Reviewer’s report:

The study is a meta-analysis to determine the reliability of pleth variability index in predicting preload responsiveness of mechanically ventilated patients.

The study is interesting and the effort made by the authors noteworthy.

It is not easy to perform a study of this type that requires time and dedication.

Despite this necessary premise, there are substantial observations that must be made.

The meta-analysis studies are a source of valuable information, but can also be a source of serious confounding.

The first fundamental rule of a meta-analysis study is to compare studies that can be comparable.

As is often heard, you can not compare apples with oranges.

The selection of the studies to be included in the meta-analysis is fundamental to avoid selection bias that invalidate the whole study.

To avoid selection bias, it is necessary to try to insert well-designed studies with adequate sample size in the meta-analysis.

Another precaution to take is to include studies that investigate the same outcomes in similar patients.

Unfortunately, the authors have tried to put together too different studies, often with low sample size and inadequate quality.

The authors then found themselves facing the problem of heterogeneity and tried to handle it correctly.

Being the result of a serious problem of selection bias, the authors have not been able to explain the origin of heterogeneity, because it is substantially unexplainable.

This makes any conclusion of the study impossible.
A good way to solve the selection bias problem could be to limit the meta-analysis to at least clinically similar studies (for example, only studies on cardiac surgery patients), in this way trying to reduce inexplicable heterogeneity.

I am very sorry for my judgment because I know how much effort there is behind this kind of studies. I hope that with appropriate adjustments, the study will be able to provide reliable information.

**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.

I am able to assess the statistics

**Quality of written English**
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