Reviewer’s report

Title: Dynamic preload indicators decrease when the abdomen is opened

Version: 2
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Reviewer: Christopher Choukalas

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Major Essential Revisions:

1) Their question, does SVV and PPV change in concert with altered compliance as the abdomen is opened is clear. Whether or not this is a relevant question is another matter. The authors present findings suggesting PPV and SVV are reduced as the abdomen is opened, and posit that threshold levels of variation expected to predict fluid responsiveness be changed. If opening the abdomen lowers estimates of variation, patients should be less likely to be predicted to be fluid responsive. The authors, however, don’t test this hypothesis (and probably couldn’t with such a small sample size). Moreover, while they cite a small number of studies to support the supposition that goal-directed fluid therapy is helpful in operative patients, in general, a large number, perhaps the majority, of studies of fluid-responsiveness/goal-directed fluid therapy in the operative arena were done with patients having open abdominal surgeries, and these studies generally have a result favoring the PPV, SPV, SVV arm. That is, whether or not the PPV or SPV changes with an open abdomen, and despite the authors calls for different thresholds, a large body of work supports the practice of measuring SPV or PPV in open abdomen cases with existing standards and thresholds.

2) They posit that the lowering of the variability estimate means the traditional thresholds wouldn’t apply, or would be too high to be useful, but they don’t really prove that. They seem to be presuming that the lowering of the estimate means some number of patients who don’t reach the traditional threshold would still be volume responsive, but they don’t demonstrate this, reducing their assertion to speculation.

Minor Essential Revisions:

3) The methods are well described, with the following caveats:

4) assume by “opening the abdomen,” they refer to the opening of the fascia, rather than the skin, but I would make this explicit.

5) Their sample size is quite small and the authors do not describe how they arrived at this number. Did they do a power analysis and arrive at 13? Did they get to 13 and fall tired of recruiting? Or did they analyze the data in real-time and stop when they got to the result they expected?

6) They use a non-traditional blood pressure source for the calculation of CI and
SVI. While this might be a validated device, its novelty does introduce uncertainty for the reader.

7) The mean Vt achieved in these patients (7.3 and 7.6 mL/kg) is below the Vt commonly accepted to create enough intrathoracic pressure to reveal respiratory variability (8 mL/kg). This is a small difference, but it does deviate from accepted norms.

8) In line 173, they state that their results confirm other studies which suggest variability estimates are better predictors in ICU patients compared to OR patients. Their study did not compare OR to ICU, nor did the studies they cited to make this point. In fact, they missed the opportunity to cite a number of studies in OR, open abdomen patients that did show a benefit to using variability estimates to guide fluid therapy.

Benes, et al., Critical Care, 2010
Forget, et al., A/A, 2010
Hood and Wilson, A/A, 2011

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.