Reviewer’s report

Title: Repeated bedside echocardiography in children with respiratory failure

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Reviewer: Rosa Sicari

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This is an interesting study addressing the clinical utility of echocardiography in children with respiratory failure. Authors demonstrate that the serial assessment of haemodynamics during ventilation is feasible (which is known) but mostly is useful in the non-invasive monitoring of these patients. There are several issues that authors should address:

1. Abstract: Numbers should be included in the abstract session of the manuscript. Echo parameters with the measured values. Please add the mean age of the population under investigation. It is useless to state that echo is performed in the supine position.

2. Background: it is too long and largely unfocused. Please state clearly the aims of the study (feasibility and clinical usefulness of echo monitoring). The role of echocardiography in emergency medicine is increasing and has a clear added value. Please cite the following manuscript: Echocardiography practice, training and accreditation in the intensive care: document for the World Interactive Network Focused on Critical Ultrasound (WINFOCUS) Susanna Price, Gabriele Via, Erik Sloth, Fabio Guarracino, Raoul Breitkreutz, Emanuele Catena, Daniel Talmor, Cardiovascular Ultrasound 2008, 6:49.

3. It is not true that sub-costal imaging is not recommended. Please delete the statement.

4. Since authors are trying to assess the feasibility in this setting please provide results (how many exams could not be performed and were not included in data analysis).

5. Authors use a control group to demonstrate that the measured parameters are different from those of an healthy group. This may be interesting but not particularly surprising since the patient population under investigation is severely ill and with a high mortality rate.

6. Authors use the Tei index for the assessment of RV function: It is established that it is actually unaffected by heart rate, loading conditions or the presence and the severity of tricuspid regurgitation. An MPI of>0.4 has 100% sensitivity and negative predictive value in identifying abnormal RVEF. However, calculation of the parameter is not always feasible. It can be pseudonormalized in the presence of a decrease in isovolumic contraction time associated with an acute increase in RV diastolic pressure as it may happen in severe RV myocardial infarction and/or severe forms of right ventricle dysfunction. Please address.

7. Please explain why they did not use TAPSE. A significant correlation between
the TAPSE and
RV ejection fraction as assessed by radionuclide angiography and MRI-derived volumes has been shown. The approach appears reproducible and proved to be a strong predictor of prognosis in heart failure. Please address.

8. Authors have collected a large amount of data but what we would like to know is which parameter is the best predictor of recovery. Therefore the study population should be separated on the basis of recovery. It is conceivable that those who unfortunately did not recover had worse haemodynamic conditions.

9. Do authors have data on the potential modulation of these parameters with medical therapy and/or intervention?

10. Do they have data on the different pressures used for ventilations and the haemodynamic changes?


12. The discussion is too long and largely unfocused. On pg. 16 correct MPIs being dependent on loading conditions because it is not. The inaccuracy of a method are not counterbalanced by a low variability. Please give data on the variability of your measurements.

13. The clinical implications are not clearly described. Please do not simplify the training in echocardiography unless you showed us that physicians or sonographers not conversant with ultrasound will be able to perform such studies with a few days training.

14. Please read the instructions for authors before re-submitting

15. Due to the nature of the journal upload clips of sample cases (there I no space limit).

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
'I declare that I have no competing interests'