Reviewer's report

**Title:** Boosting Accuracy in Assessing Pulmonary Edema on Bedside Chest Radiographs Using a Standardized Scoring Approach

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**Reviewer:** Tommaso Mauri

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Dr. Hammon and colleagues performed an interesting study on the correlation between radiologists evaluation of bedside CXR and EVLW used as diagnostic standard for lung edema. The authors propose a new scoring system that increased radiologists sensitivity and specificity in edema diagnosis. The results of this study are relevant to ICU physicians as accurate diagnosis of lung edema is sometimes challenging and CXR are still routinely performed in most ICUs worldwide. Thus, a free scoring system that increases the performance of a routine diagnostic tool is a welcome addition to ICU everyday practice.

Having said that, I have a number of comments that might improve authors report:

**ABSTRACT**

EVLW is a measured variable normally expressed as mL/kg and not a score, if authors used a different way to express EVLW this should be clearly stated.

I think that the scoring system improved diagnostic accuracy rather than assessment quality.

The sentence from "Simultaneously...." to "...standard" should be rewritten for clarity.

**INTRODUCTION**

I think that the study hypothesis was that the scoring system would increase sensitivity and specificity of radiologists in diagnosing normal vs. elevated EVLW and this should be more clearly stated.

**METHODS**

Why was informed consent waived?

How was the sample size calculated?

Why didn't you collect clinical characteristics of patients? I think this is a major limit of the study as edema clinical presentation is a spectrum rather than a yes or no variable. Moreover, EVLW has relevant prognostic value which was not considered at all by authors.
Again, I think that edema is a spectrum and I would not have discarded patients with EVLW values of 9-14.

Were assessing radiologists blinded to study design? The study is designed as to have 10 patients with edema and 10 without lung edema, if radiologists assessing CXRs knew this design this would have introduced a bias as after selecting 10 CXRs with edema they would have known that the rest should have been normal. Again, this is an argument in favor of not having dropped 9-14 EVLW values.

RESULTS

I think that authors should find an appropriate test to see if the differences in sensitivity, specificity and K value were statistically significant.

Threshold values and negative and positive predictive values should be indicated.

It would be interesting to see if performance of the scoring system perform differently in the presence of cardiogenic vs. non-cardiogenic pulmonary edema.

EVLW mostly is an indicator of edema trend over ICU stay and a powerful diagnostic predictor, but these aspects were not considered at all by authors.

DISCUSSION

How would you integrate this findings in clinical practice? Would you recommend scoring all CXRs or only those at risk for lung edema? What about patients with "intermediate" lung edema? If I don't have a PiCCO in place, how could I know if the patient EVLW is below 8 or over 15 and not between 9 and 14, so that I know that your scoring is validated? In facts, we do not know performance of your proposed scoring system in patients with EVLW 9-14, which actually may be a substantial portion of ventilated ICU patients.

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

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

Declaration of competing interests:

I declare that I have no competing interests