Author’s response to reviews

Title: Lung ultrasonography to diagnose community-acquired pneumonia in children

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Version: 1 Date: 05 Nov 2017

Author’s response to reviews:

Editor
BMC Pulmonary Medicine

Perugia, 4 November 2017

Thank you for reviewing our manuscript # PULM-D-17-00302 entitled “Lung ultrasonography to diagnose community-acquired pneumonia in children”, which we would like to publish as Debate in BMC Pulmonary Medicine.

Please find attached the revised manuscript and our replies to your reviewers’ and Editor’s comments and recommendations.

We declare that the text has been reviewed by a native English speaker with appropriate knowledge of the subject matter. We hope that you will now find the paper suitable for publication in BMC Pulmonary Medicine.

Yours faithfully,

Susanna Esposito
Reviewer 1 - Milliner Brendan

Thank you for the opportunity to review this manuscript. Overall your submission provides a thoughtful review of research into the use of lung ultrasound for the diagnosis of pneumonia in children. Please see specific comments below, in the order they appear in the text.

Re: Thank you very much for the appreciation of our manuscript. We revised the text according to your suggestions.

1. On line 113, "largely facilitated the use" should read "largely facilitated by the use"

Re: The sentence has been revised as suggested.

2. I found the section explaining lung artifacts from ~line 115-130 to be confusing. I would suggest reworking this section to better explain that interpretation of lung ultrasound involves both directly observing lung structures (e.g. consolidations) and differentiating between normal artifacts (A lines) and abnormal artifacts that represent pathology (B lines)

Re: The section has been clarified as recommended (p. 6).

3. I agree with your statement that the variable gold standard in LUS research makes interpretation of results difficult. While CT is widely considered optimal, I believe you somewhat mischaracterized the results of Ambroggio et al. Of their cohort, only 27% (36 patients) had a CT; the rest were placed into groups with 'likely' similar CT findings based on statistical analysis. You report sensitivity/specificity values based on the entire cohort;
however, when only those patients who had a CT are analyzed (Table II in the original paper) many of those statistical differences were not seen. In that analysis, CR is more sensitive only in the detection of "other" lung pathologies, and more specific regarding only pleural effusion and interstitial disease. I would suggest either updating this section and the following conclusions to reflect the true test characteristics of LUS vs CR when analyzed using CT only or rewriting the earlier portion of the paragraph to make it clear they were using a model rather than using CT as a true gold standard.

Re: Results from Ambroggio et al. have been clarified as suggested (pp. 11-12).

4. As a point of note, you mention the 'very low' IRR of LUS for interstitial disease on line 260; the IRR found in the Ambroggio trial of 0.32 was practically identical to their IRR of CR to detect consolidation (0.36), an application for which CR is widely used. This further highlights the difficulty of reliably diagnosing pneumonia regardless of whether CR or LUS is used.

Re: The text has been revised as mentioned above and consequently this sentence has been deleted (p. 11).

5. You mention the possibility of LUS as an initial screening test in your conclusions on line 307-308. Perhaps you could discuss how the recent research you reviewed informs the discussion of LUS as a screening test rather than a substitute for CR.

Re: Conclusions have been re-written as suggested (p. 13)

Overall this manuscript provides a good overview of research in this area, however it would be strengthened by a more nuanced analysis of how recent research could inform the integration of LUS into practice (point 5 above as an example that I found particularly interesting).

Reviewer 2 - Sorin Claudiu Man

Please see annotated manuscript attached.

Re: Thank you very much for your suggestions. We have modified the text as recommended.

Editor

Declarations were written as suggested.