Reviewer's report

Title: The Value of Radiographic Findings for the Progression of Pandemic 2009 Influenza A/H1N1 Virus Infection

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Reviewer: Seema Jain

Reviewer's report:

Thank you for your submission. This paper is a retrospective review that describes factors associated with radiographic findings in children hospitalized with 2009 influenza A(A/H1N1) virus infection. The study emphasizes that consolidation on initial chest radiographs was a significant factor predicting more severe clinical course in these children. The authors do a nice job of writing but I do have some concerns about how they did their analysis, in particular, why they choose to include patients with normal radiographs in their analysis as this would over-estimate the differences amongst their groups. In addition and importantly, the case definitions need to be much more clearly delineated in the methods section especially on whether lab confirmation was required and if only rapid testing was used for this study. I also think the references could be improved and updated and don’t always seem to be used appropriately. More specifically, here are my detailed comments and suggestions:

1. Abstract:
* More info is needed in the methods about how you grouped patients (including the fact that normal are included in the no consolidation group) and in order to do so, would cut the background down which is a bit long anyway and not completely related to the analysis at hand.

2. Introduction:
* While it is true that novel swine-origin influenza A infection first circulated in Mexico, it was first reported from the US, where it was first detected by PCR. See reference: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm58d0421a1.htm (MMWR 2009; 58:400-2).

2. Methods:
* In general, might want to consider labeling the virus with the WHO nomenclature: pandemic influenza A(H1N1)pdm09 virus. A/H1N1 is likely ok as an abbreviation but up to editors.
* I am confused about the case definition- please clarify- are all cases lab confirmed or not? When you describe your subjects, it is not clear as you say that they had to have a close contact who was laboratory confirmed OR was diagnosed at your laboratory. Being a close contact alone does not seem enough to be warranted as a case as they could have had other infections or illnesses, unrelated to influenza. Please explain the rationale. In addition, it would be
important to understand how many of your cases were actually laboratory confirmed or not. This is a bit of a serious issue that needs to be clarified as it is the basis for the rest of the analysis.

* In relation to this, it is not entirely clear but for the laboratory diagnosis, was only a rapid test used? I am not familiar with this assay but rapids are known to have many false negatives so again unclear as to whether you missed many cases because of this. It would be best to understand the sensitivity of the assay you used. Most other studies used PCR to determine H1N1 status so this is a serious methods issue that needs to be clarified in order to put the findings in perspective and if only used rapids, this needs to be included in the limitations.

* In the last line under subjects, you state that 7 patients were excluded because they had a diagnosis other than influenza. Were these lab confirmed patients? If so, it is not clear to me why you would exclude them. Please clarify.

* Under data collection, how was flu-like symptoms defined? You mention fever but a full definition should be included.

3. Results:

* What is plastic bronchitis? Please explain.

* How was pneumonia defined? Was this based on clinical judgment?

* My main concern is in 3rd paragraph (and also mentioned above)- why did you keep the normal group in your analyses? If your hypothesis (as stated in your introduction) is to determine if infiltrates are correlated with severity, than including patients with normal findings, will bias you towards that. Most of your results are also intuitive if you use normal as your referent, so makes it a bit less interesting. It also informs your multivariate analysis. It may be that not including the normal would not change your results but this analysis should be done and may be the better one to present. If they are the same, you could also say that you did it both ways. But this does need to be addressed.

* In addition, there is no mention of infiltrates in any of your radiograph grouping definitions. Where are these patients included?

* What is aerodermaectasia? Please clarify.

4. Discussion:

* First paragraph mentions “the presence of pulmonary infiltrates on chest radiographs representing alveolar damage is directly correlation with disease severity...” However, you never include infiltrates in your groupings of radiographs in the results. Are infiltrates meant to be synonymous with consolidation? If so, that should be stated but also that is not really the correct way as radiologists (and also in epidemiological studies that involve radiographs) infiltrates are considered a distinct entity from consolidation.

* At the end of the 2nd paragraph, you state “these were distinct characteristics of the 2009 A/H1N1 influenza infection compared to other seasonal influenza infections.” However, your analysis does not include seasonal infections and in addition, your discussion does not explain this statement either. Would delete or
describe the differences using the literature more thoroughly.

* You discuss oxygen demand in your discussion but you never define this in your methods or results. This does need definition as different clinicians and in different countries could view this differently.

* The discussion is a bit long and reviews a lot of the overall H1N1 pandemic data but could use more focus towards the radiographic findings and approach that the analysis is supposed to be geared to.

5. Tables:

* In Table 1, would remind people of the groupings of 1, 2, 3, and 4. Is the SpO2 adjusted for the FiO2? How is O2 demand on admission or during admission defined? This should be included in the methods. What does time to onset mean – in relation to the chest x-ray or admit or what? You include antibiotic use and while antiviral use was very high, it would be good to include it in this table. These comments apply to table 2 as well and are very important.

* It seems like Table 3 and 4 could be combined somehow.

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

**Quality of written English:** Needs some language corrections before being published

**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.