**Reviewer's report**

**Title:** Lung virome in mechanically ventilated patients: a pilot study

**Version:** 0  **Date:** 30 Sep 2019

**Reviewer:** Kristine Wylie

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The authors describe a study aimed at characterizing viruses in the lower airway in adult patients who were mechanically ventilated. They compared patients without acute lower respiratory infection and those with acute lower respiratory infection.

Importantly, both of these patient populations consist of subjects who are very ill, so it should be noted that the observations made in this study may not be generalizable to other groups.

In the background, the authors make the case that the characterization of the human virome in healthy individuals may contribute to a better understanding of the associations with the virome with disease. While this is true, I would suggest changing the background to better fit the present study since no healthy individuals were evaluated.

I would suggest clarifying the way that the groups are referred to throughout the text. The goal is to characterize the virome in those with infection and those without, and I found it a little confusing that those with infection were referred to as "controls" because it wasn't clear what specific hypothesis was being tested that made that group the control group. Alternatively, a more clear hypothesis regarding the presence of viruses in asymptomatic subjects on a ventilator could be stated and supported with the data.

Conclusions: The authors say they can infer the presence of a lung viral community. I do not think this can be concluded because this could be contamination from ventilation or sample collection. Furthermore, they say that the viruses seem to replicate in this environment without causing symptomatic infection, but they have no data to support the these viruses were replicating.

A few sentences need to be clarified:

Line 58 in discussion - "This group obtained the best percentage of reads attributable to viral genomes, compared to similar studies." It is not clear what's meant by this or its implications.

Discussion next page line 10 - "common" respiratory viruses. Does this mean common among subjects in this study or common in the population?

Line 5 - "reduced number of samples" should be "small number of samples".
Line 58, Background - the authors should provide a reference for the statement that the lung was previously considered sterile.

Next page, lines 1-10 - the authors describe studies that indicate that the microbiome of the lower respiratory tract may simply be explained by micro aspiration and would then reflect the composition of the upper respiratory tract. The authors should address whether this would be true in their study, and it seems very likely that both ventilation and sample collection would contribute to this type of contamination or seeding (depending on perspective) of the lower respiratory tract with viruses from the upper tract.

There are typos in several words - "length" is written lenght in the text and in table 1. "analised" should be analyzed. BAL should be defined. Citomegalovirus should be cytomegalovirus. "sincyzial" should be syncytial.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
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No

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