Reviewer's report

Title: Respiratory tract virus infections in the elderly with pneumonia

Version: 0 Date: 03 Oct 2018

Reviewer: Reviewer 2

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PEER REVIEWER COMMENTS: To view the full report from the academic peer reviewer, please see the attached file.

REVIEWER COMMENTS FROM REPORT: Overall this is a really interesting study looking at laboratory characteristics of older adults with respiratory symptoms at a hospital. The results are very clinically relevant and should help inform an evidence basis for clinical treatment of older adults presenting with pneumonia or other respiratory illnesses.

The authors have done well putting together a laboratory analytical plan.

There are some issues with the statistical analysis and presentation of the results, but these should be able to remedied.

REQUESTED REVISIONS:
Be careful how you interpret P-values. Set an alpha level (commonly 0.05) - and don't interpret associations above this value with words like "tendency" (for instance you say "abstract line 44: pneumonia tended to be inversely associated with virus detection"). Simply say ("X% of pneumonia episodes had virus detected compared to X% of non-pneumonia episodes, but this association was not significant (P=0.09)") or other ways of situating these data are possible. (similar issues in patient characteristics line 50-52)

one issue with your study statistics: how sure are you that the individuals presenting with respiratory symptoms are representative of the entire population of (Finnish) elderly who have respiratory symptoms? As in - how likely are people to go to a hospital?

I am personally not a fan of forward or backward selection procedures. Your study might be powered enough to just test for everything all at once - if you insert all the explanatory variables in, are you really then limiting which variables end up being "significant" relative to how you selected variables in? Another issue with forward or backward selection procedures is that the variables selected into the final model would depend on the order you put them in model statement of SAS. Another approach which is more data-driven might be preferred. If you really want to develop a more parsimonious model, I would opt for something like a best subset selection procedure (https://support.sas.com/documentation/cdl/en/statug/63347/HTML/default/viewer.htm#statug_1
ADDITIONAL REQUESTS/SUGGESTIONS:

minor issues:

It seems you're using nasopharyngeal samples to detect viruses, although couldn't it theoretically be that the virus is unrelated to an on-going lower respiratory tract infection? You briefly touch on this idea in limitations line 17, but I think the larger issue is that you couldn't precisely determine etiology with your method, although it is probably largely ok.

introduction line 15: does 16.1 billion refer to all pneumonia costs or pneumonia in adults? I would specify here.

line 40: what do you mean that physicians respond to influenza positiveness? explain this a bit - maybe that "physicians consider influenza detection as an important diagnostic tool, but they find detection of other viruses to be less useful"?

language issues:
The manuscript would be well served by edits from a native English speaker, although the actual manuscript text (intro to discussion) reads very well - the abstract needs a bit of tweaking, though. Some language issues listed below but they are not exhaustive:

abstract line 8: "respective" is incorrect here - use something like "such" or even just "these"

clinical outcomes line 34: neither *were* not with

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

No

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

No

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review? If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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