Reviewer's report

Title: Natural Prevalence of Antibodies to Spike Proteins of Four Non-SARS Human Coronaviruses Among a General Population in Beijing

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Reviewer: Lia van der Hoek

Reviewer's report:

The manuscript by Zhou et al describes IgG and IgM directed to the 4 non-SARS-HCoVs in children and adults. An IFA assay was used to measure antibodies to the Spike protein of HCoV-HKU1, HCoV-NL63, HCoV-229E, and HCoV-OC43. The message that IgM is only present in children is noteworthy and has not been described before. It shows that for all viruses first infection takes place during childhood (age < 14 years), which is an important message. The levels of IgG and whether they are detected single/or double is of less interest to the reader, and should not be the focus of the manuscript, it is the IgM measurements which are worth while to be published. The manuscript needs some rewriting to make this message clearer.

Major compulsory revisions
1. High (detectable) levels of IgG antibodies are a sign of reinfection by the virus, and should not be regarded as seroconversions (with seroconversions you have an IgM and IgG response).
2. It does not have much value to show the numbers for single/double/etc positive for the various HCoVs. A double positive is regarded by the authors as a double infection (discussion third paragraph), which is not true, it just shows that prior to serum sampling the person had been infected, which might have been one virus 3 months ago, the other 6 months ago.
3. I suggest a tile like: “First infections by all four non-SARS human coronaviruses takes place during childhood” (or something similar)
4. Table 2 and the text about single double or triple can be deleted
5. P-values on frequency differences are not of great value. It is known that there is large variety in HCoV-infection rates from year to year. This may very well explain the different frequencies, and the differences found with the other literature. P-values based on the group <1 year can not be significant since there are only 8 samples.
6. Table 3 and 4 can be deleted. Figure 3 and Figure 4 show all the interesting data nicely.
7. Figure 4, no need to show the dotted line.
8. There are no page numbers and no line numbers; it is not possible to make specific comments or suggestions on the text.
**Level of interest:** An article of importance in its field

**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