Reviewer's report

Title: Epidemiology of Respiratory Viral Infections in Two Long-Term Refugee Camps in Kenya, 2007 - 2010

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Reviewer: Brad Gessner

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This is a nicely written and informative paper. I have a few suggestions and questions, mostly related to the case definitions and the Discussion (especially the final paragraph).

Abstract

Results: I don’t really understand the point of the data on <1 year olds, since the median age was 1 year. I would delete this sentence, which I find difficult to interpret, and replace with other more interesting data.

Conclusion: I agree with the sentence until “and make up…” The authors have not presented data that these viruses were part of the causal chain leading to respiratory illness. The finding of virus in the nasal or oral pharynx does not ensure this, as a substantial proportion of persons in the community also may have some of these viruses. This is acknowledged by the authors in the limitation section of Discussion. I think the conclusion should end with “high rates of illness.”

Background

Paragraph 1. I would delete the clause “now vaccine-preventable”. I assume this means influenza, which makes up a tiny proportion of the viruses identified. I would also recommend deleting “treatable” and just stating “viral causes”. This is particularly true given that the phrase follows a sentence on developing countries, most of which have neither influenza vaccine nor anti-virals. Also, the discussion on vaccines is much clearer at the end of paragraph 2.

Methods

Case definition. Could the authors indicate the degree to which the clinical signs required for these case definitions were followed and how they were obtained? For example, if a CRF indicated “fever” but didn’t have a temperature was the patient excluded and if this happened to how many? Over how many seconds was respiratory rate counted; 10, 15, 30, or the recommended full 60 seconds?

Case definition. For ILI, was this restricted to children that could talk, since sore throat depends on this? For SARI in children >1 week and <2 months old it appears that SARI included all patients with any fever regardless of the presence of respiratory symptoms. Is this really true?
Case definition. Please indicate how these case definitions differ from those described by the WHO and why.

Data collection. Why were incidence rates calculated only for those <5 years? Please include this information.

Overall. Was any health utilization survey conducted? I'm particularly interested in hospital utilization for persons with SARI. Do the data presented represent 90% of all SARI or 5%?

Overall. Could the authors provide some idea of population movements into and out of each of the refugee camps? This could be an important reason for some of the epidemiology. A static population over the study period should have a stable epidemiology similar to the resident population, while a dynamic camp will likely have a changing epidemiology.

Results

Rates of hospitalization. A lot of emphasis is placed on the difference in incidence between <1 and 1-<5 year old. But this is misleading since children are only <1 for a year while they are 1-<5 for 4 years. Consequently, I think from the data, more cases occur from 1-4 years of age than among those <1 year (except for maybe RSV and hMPV). I recommend making this point in the article.

Discussion

Paragraph 2, the entire part beginning with “Yet our…” This strikes me as a strange group of sentences and arguments. There are dozens and maybe hundreds of studies from Asia and Africa, so to find similar rates in 6 is not surprising, even if just by chance. When looking at several meta-analyses/reviews (meta-analyses published by Nair on RSV and influenza, review by Gessner on influenza in Africa, and the Rudan studies on ARI) show clearly that incidence rates for ARI vary wildly by time and place. The authors’ argument also is concerning scientifically, as there is no biologic reason to expect incidences to be similar across time or place, given dynamics in human immunity, environmental conditions, viral evolution, etc.. Please delete or revise this section. For example, if the authors want to compare their data to other studies, please use the meta-analyses and discuss similarities and differences between the refugee camps and other sites.

Paragraph 3, last sentence. Please move the term “among Alaska Natives” to directly follow “5 times higher”. Additionally, the correct term is “Alaska Native people” and not “Alaska Natives”. Lastly, the sentence should make clear that the quoted study refers specifically to RSV, which has a peculiar epidemiology among Alaska Native children.

Paragraph 5. Differences in the camps may simply reflect differences in population immunity, which may result from different in and out migration in the camps.
Paragraph 6, sentence 3. The rates are not particularly elevated in the study populations, as the authors note in paragraph 2. Please delete this clause.

Last paragraph, first sentence. The word “cause” is problematic. I would write “viruses are associated with many cases of respiratory disease…”

Last paragraph. I’m confused by the statement on nosocomial infection. Are any of the cases in the study nosocomial? If not, please delete this part of the sentence. I’m also skeptical of all of the recommendations except vaccine at the end. For example, how will refugees reasonably wash their hands the multiple times a day necessary to reduce infection risk? For crowding, small reductions will not reduce transmission for many virus. Additionally, it is not a practical solution for refugee camps, given the premium on land. If the authors really want to recommend this, I think they are obliged to state what measures could reasonably be implemented (for example, would the international community purchase land on which to build houses?). Lastly, I don’t know what public health education would decrease viral transmission. In short, I find this paragraph’s recommendations unhelpful. Instead, I would think the appropriate interventions should be prioritizing vaccines if and when these become available and ensuring that persons with SARI have hospital access so that they can receive oxygen and antibiotics to treat secondary bacterial infections.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I work for AMP which receives unrestricted support from Sanofi-Pasteur and study support from Merck, GSK, and Pfizer.