Reviewer's report

Title: Exhaled nitric oxide and airway hyperresponsiveness in workers: a preliminary study in lifeguards

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Reviewer: Lidwien A Smit

Reviewer's report:

This paper describes a pilot study showing a correlation between FENO and AHR in 44 swimming pool attendants. The topic is interesting, but the preliminary character and the low number of subjects limit interpretation and adequate investigation of potential confounding factors.

Major compulsory revisions:

1. The study describes a preliminary study, but the rationale of undertaking a pilot study in only few subjects is not explained.

2. The authors use predicted values derived from a population-based study in New Zealand (Travers et al.). There is another, larger study in Sweden that has published other reference equations (Olin et al. Chest 2006). The choice of reference values should be motivated, as there is no standard way to define FeNO reference values. The FENO measurements in the study by Travers, who used a NIOX analyzer, and the submitted manuscript may not be directly comparable.

3. Atopy has not been assessed objectively in the present study, and I’m not convinced that self-reported allergy is a good alternative for this type of study. Self-reported allergy should not be referred to as “atopy” (page 7, line 1). Atopy has been shown to be a confounder or effect modifier in other FENO or AHR studies. Given the unexpectedly high prevalence of AHR among the study subjects, I would not be surprised if atopy played an important role.

4. The reference model by Travers includes atopy. It should be clarified how this model has been adapted, as atopy was not available. More information should be given on the reference values, i.e. which variables were included in the model.

5. Lifeguards with current asthma were included. How many subjects had asthma? How was asthma defined? In the discussion, it is stated that “it is not in asthmatics”, which seems to contradict the earlier statements.

6. The prevalence of AHR was very high, and much higher than in an earlier sample of lifeguards. The potential of selection bias appears to be low, but another explanation of this high prevalence is not given.

Discretionary Revisions:

1. AHR is a hallmark of asthma, but I think it is usually not regarded as a marker of airway inflammation (page 3, line 4).
2. page 3, 3rd paragraph: “…has a good reproducibility and seasonal variability”. Now it seems as if seasonal variability is an advantage of FENO testing. Could this be clarified?

3. It would be interesting to discuss relevant occupational exposures in lifeguards, and their possible relation to AHR or FENO.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**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