Author's response to reviews

Title: Childhood asthma and indoor allergens in Native Americans in New York

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Author's response to reviews: see over
Dear Dave:

We have attempted to address the comments of the reviewers of our manuscript entitled "Childhood asthma and indoor allergens in Native Americans in New York." Specific responses to individual comments are listed below within the review.

We certainly agree, and did acknowledge in the first version of the manuscript, that the greatest limitation in this manuscript is sample size. As indicated below the small sample size was a function of several factors, the first being the relatively small number of Mohawk children from which to draw the subset with asthma, the fact that our funding (a small grant from EPA Region 2 office) was very limited, and the fact that the two lead authors (Drs. Surdu and Montoya) left Albany for other positions immediately after the results reported were obtained, which made it almost impossible to expand the study even if we could have obtained additional funding.

In spite of these limitations, we do believe this study is important given the little attention given to asthma in Native American populations. We have addressed the specific comments, but cannot do anything about the sample size.

I hope that you will find this revised manuscript acceptable for publication in Environmental Health. Thanks for your consideration and best regards. David

Reviewer #1: Dr. John Hisnanick, US Census Bureau

Overall, I found the paper to be well-written, with only some minor editorial concerns and missing words. The major shortcoming of the paper is the lack of an adequate sample size that could lead to rejecting any proposed hypotheses. However, the authors do note that their small sample size is problematic, but do a good job of providing a qualitative assessment of how the proposed risk factors should/could impact upon a study with a more appropriate sample size. In short, I view this paper a nice preliminary study that could serve as the bases for other researcher to study the incidence of asthma among another minority population of children.

In regard to the Introduction -- the authors do a nice job in the background and laying out the most notable research citing the possible causes of an increase in the incidence of asthma among children in general, and Native American/Alaska Native children in particular. No real concerns were raised in reviewing this section.

In the Methods section -- I have several concerns:
1. Why enroll only 50 patients in the study, 25 cases and 25 controls. Was there a resource issue that did not permit enrolling more study participants? The authors might want to note in this section why the underlying reasons (if any) on why they had such a small sample size.

Response:
This reviewer is correct in his assessment. The availability of funds was the...
major determinant in the selection of the number of subjects. A statement discussing this important information has been added to the Methods section (page 6, paragraph1). In addition we were limited by the population size. According to the 2000 Census, there are 1,000 housing units with a total population of 2,500 inhabitants at the US part of Akwesasne, that being those persons obtaining health care at the clinic from which our population was drawn. Thus 50 cases of asthma within the age range of 0 to 14 years represents a large proportion of the source population.

2. On page 7, 2nd line down, change 'domestic' to 'non-commercial grade.'

Response:
We appreciate the suggestion by the reviewer; however, we believe that the term “domestic” better describes the nature of the vacuum we used in this study. We fear that the “non-commercial grade” term may be misinterpreted by readers as “custom-made” or “designed in-house”. The vacuum, although only used for purposes of the study, was store-bought.

3. On page 7, 3rd paragraph, the authors note the "mean of the normally distributed data were compared by students' test." Don't they mean that they were collecting their sample data from a universe that is assumed to have a normal distribution for the population of interest? It is hard to imagine that the data collected from 50 patients would mirror the normal distribution.

Response:
The reviewer is correct: the assumption is that the sample data were extracted from a population that is assumed to have a normal distribution, not that the sample data have a normal distribution. A corrected statement has been inserted.

Results section:
The authors do a nice job presenting their findings, even though their results are not statistically significant, with the exception of breast-feeding.

Response:
The authors appreciate the positive comment.

Discussion section:
The value of this study needs to be moved up in the discussion. The 2 sentence statement on at the end of page 12 such be move to the beginning of this section, since it clearly lays out the value of this study.

Response:
We agree that bringing these sentences to the beginning of this section will add clarity and purpose to our Discussion and we have accepted the suggestion.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1. page 10, 3rd line, change 'significantly' to 'significant' and change 'correlated' to
Response: These minor corrections have all been made.

Reviewer #2: Dr. Russell Lopez, Boston University School of Public Health

As you wrote, asthma is one of the greatest health threats to children. It was particularly interesting to review a paper on the results of a study of Native Americans because these children have very high asthma rates and their needs have not been adequately addressed by the scientific community. This paper could have potentially provided an important addition to the literature. However, the small sample size and the lack of statistical power in almost all of the results is difficult to overcome. Only one result of all the various statistics reported passes the 95% CI test. Most problematic are the Der p1 results. Unexplained in the text, why were so few samples collected (in absolute numbers and in relation to the numbers of Fel d 1 samples collected)? Were there sampling problems? Were large numbers refused? Did the study just run out of money? It is difficult for a reader to understand what happened.

Even the Fel d 1 sample numbers are difficult to rely on. While it is important to not overly rely on statistical significance, if the study had found just one more high level sample among the controls and one less among the cases, the percent exposed would have been identical. As it was, the control geometric mean was higher than that of the cases.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

If the lack of sample size was to be overcome and the study was to be publishable, there are a couple of changes that might strengthen the paper. What was the initial sample size? (Number of cases and controls initially approached, number refused to participate, number that did not end up in final sample, etc.)

Response:
We acknowledge that the sample size is a problematic issue in this study. As mentioned in our response to Reviewer #1, the sample size was limited by the total number of Mohawk children between the ages of 0 to 14 (762), which means that the number with asthma is not great even if the incidence is high, and by the available funds, even after in-kind contributions by some of the authors. An additional complication was the field-work arrangements required by the Akwesasne Task Force on the Environment, the overseeing body within the community. Collection of the samples was the direct purview of the Akwesasne collaborator (Mrs. Alice Tarbell) who faced shortage of volunteers, cancellations and unreliable samples, in some occasions. The samples analyzed were the entire sample collection brought back from the field. As noted by the Reviewers,
this was an important first look at a population that has been understudied in the context of incidence of asthma. As such, the authors view this Pilot Study as a demonstration of a protocol that may work with similar populations, provided there is better funding and more oversight over the field work, which in this case was a difficult issue to overcome.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

On page 4, you state “there is no evidence of an increase in environmental pollution, occupational exposure or tobacco use for the time period investigated. This raises the possibility that indoor air quality and life-style might have played a role in the asthma development or onset.” Unless you can provide evidence that indoor air quality or life-style changes have influenced changes in asthma prevalence rates, this last sentence needs to be substantially rewritten. It seems to imply that there is some indoor air change that has occurred. This borders on blaming the families of the children with asthma, which I am sure is not what was intended.

Response:
This sentence has been revised, since it is certainly not our intention to blame the family for the elevated incidence of asthma. We suspect that the factors causing the increases seen among the Mohawks are similar to those elsewhere in the developed world. These are still unknown, but must be related to life style, reduced rates of infectious diseases and other causes.