Reviewer's report

Title: Chronic respiratory disease amongst children presenting to a tertiary paediatric emergency department with acute respiratory illness: study protocol

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Reviewer: Niamh Redmond

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Summary:
This paper is an interesting protocol paper on a subject which is topical at present. There is a lot of focus on RTI's at present and studies in children are known to be difficult to conduct. The paper is well written overall however there is clearly some information missing. That is to say, it is not written in enough detail to enable another team to clearly replicate this. The paper is written as if it is the start of the main paper of the study whereas this is the protocol paper, so should detail the purpose of publishing the protocol, as well as the purpose of the study itself.

In its current form, I cannot recommend this for publication but I think with modification of the points described below, this could be re-reviewed again.

I feel this paper would benefit from the following:

Major compulsory revisions

1) The background describes the problem sufficiently but there are a number of references that should be cited. There are no references to support neither the first sentence statement nor the second part of the second sentence (after “internationally”). Secondly it is not clear immediately that this study is about chronic cough, possibly due to the first sentence mentioning acute respiratory illness. The background would benefit from a clear distinction between referenced studies in primary care and secondary care. For example reference 2 reflects a study in primary care but the third sentence does not make it clear that this is related to a primary care study. Given the protocol for this study is being conducted in a tertiary care environment then it would help the reader to separate these services. A revision of the references would be helpful as the most recent paper cited is from 2011.

2) It is not clearly stated that this is a protocol paper and the purpose of this paper is to describe the study. A protocol paper gives the researchers an opportunity to clearly state what they want to do to investigate a particular topic and why. A lot of detail can be put into this paper about how this will be done. This information may not make the final study outcomes paper (as the study results are usually most interesting), so it is worth putting this information in.

3) I'm unsure of the point of the 6th paragraph and what this adds to the background. I think the need for this study is not sufficiently 'sold' in the
background. The last paragraph would benefit from a revision to summary the need for this study and what it is likely to add to the body of literature already available. The second sentence under ‘Aims and objectives’ could be used to aid this.

4) Aims and objectives: The primary objective is stated as the determination of the prevalence of chronic cough at day 28. How will this be measured? The secondary objectives are more detailed.

5) Setting: This paragraph would be better rephrased to state in more detail the reason for the setting of this study protocol. For example “The setting for the cohort study was chosen as the Royal Children’s hospital, Brisbane, Australia because it is the largest paediatric tertiary public hospital in the state.” Information about the numbers of potential participants presenting to the ED are helpful but should be properly referenced if not published data (e.g. audit data from hospital admission records with a date etc) and may be better put into the recruitment section.

6) Recruitment: This section would benefit from being much more detailed. I have multiple questions;

How long is the study running for and from when to when (an example would be “the study will recruitment participants for 2 years in line with epidemiological years (June to June) in order to capture seasonal variation in cough presentation”)? -Who is doing the recruitment? How are participants invited? Is every single child with the symptom of a cough presenting being invited and when is this happening? – at reception or at first assessment by a doctor/nurse? What is given to the participants to invite them and obtain informed consent? Who is doing the consenting and who are they in the context of the clinical presentation? Is normal treatment allowed (I would expect this given this is a cohort study but it is better to state this)? What are the parents/children expected to do whilst participating in the study? What is specialist review? When does this happen and what criteria will define that this needs to be done? What is the recruitment target, how is this broken down into the recruitment period and how will this be monitored to ensure recruitment is on track?

There is no reference to Figure 1 or Table 1 in this section.

7) Procedures: There is no reference to a protocol being followed, good clinical practice guidelines being adhered to or the development and implantation of standard operating procedures (SOPs) to carry out the study and collect the data. This would be expected and should be stated if occurring.

At the end of the first paragraph, I am wondering if there will be differentiation logged between the possible different bugs being collected – nasal swab or aspirate.

It is not clear who will be completing the diary. Table 1 and Figure 1 reference telephone calls that will be occurring, which I assume is to collect the diary data—this is not explicitly stated in this second paragraph of this section. Will the nurse be doing these calls to obtain data? –more clarity to tie in with the table and figure would be helpful.
There are no details on how the diary completion will be managed to facilitate completeness of data. How many call attempts will be made? If so, what happens if you cannot get through to parents? There is a lot of evidence to show that diary cards are hard to complete so it would be helpful to state contingencies for possible problems.

There is no section on how data will be recorded and managed e.g. a paper CRF (case report form) or web-based management system?, how will data be stored? Validated and cleaned? I would expect some information on this to be detailed in the protocol.

8) Discussion section; Limitations; Selection Bias:
This section does reference the limitations adequately but there are some minor queries. In this paragraph, the third sentence details the anonymised demographic and diagnostic data will be collated and analysed – this should be described in the methods – I could not find any mention of how this will be done in the methods.

The second paragraph attempts to discuss the limitations of the setting. The authors should also discuss the limitations of carrying out this study in one hospital site – how representative are these data likely to be to other cities within Australia and internationally?

9) Table 1:
I did not find this particularly useful to refer to as there was no mention of this table in the body of the paper and the details do not match up with the information in the body of the paper.

10) Figure 1:
It is very helpful to have a participant flowchart to visually see how participants move through the study. More detail is required in this and this needs to tie in with what is written in the body of the paper.

11) Abstract: This needs to be revised to fully reflect the paper better.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**
I declare that I have no competing interests