Author's response to reviews

Title: Prescription of respiratory medication without an asthma diagnosis in children: a population based study.

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Author's response to reviews: see over
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To the editor

BMC Health Services Research


Dear Editor,

Please reconsider the enclosed manuscript entitled ‘Prescription of respiratory medication without an asthma diagnosis in children: a population based study.’ (MS: 1755730350164070). Your reviewers made valuable comments, which led to a number of revisions. Please find the revised manuscript enclosed. We added a detailed point-by-point reply on how we incorporated the reviewers’ suggestions.

We thank you sincerely for giving us the opportunity to improve our manuscript and hope that you will find our manuscript suitable for publication in the BMC Health Services Research.

Yours sincerely,

Mira G.P. Zuidgeest on behalf of all co-authors
Response to reviewers’ comments

Reviewer 1 (T. Jartti)

1. The topic is up-to-date and well-defined, but different wheezy phenotypes need more attention. Most of young wheezers have transient or self-limiting disease. One or two sentences would suffice in the introduction or discussion.

We agree with the reviewer that this is a very important subject in the field of childhood asthma that we indeed did not stress enough. In the revised version we put more emphasis on wheezing phenotypes (especially on the transient early wheezers) in both the introduction and the discussion (page 5, line 19; page 13, line 12).

2. The methods are appropriate and well described, but on-line repository material is needed about definition of “doctor-diagnosed asthma”.

This piece of comment (and comment number 4) made us realise that we did not explain properly our definition of “doctor-diagnosed asthma”. Our data are from a General Practice database where GPs who participated in the survey registered all contacts with their patients. Every single health problem presented within a consultation was coded by the GP himself/herself using the International Classification for Primary Care (ICPC). We totally agree that since asthma is a chronic condition our definition of “doctor-diagnosed asthma” might not be the true reflection of asthmatics in our study population. However, since our interest lies in the relationship between the two GP based actions of diagnosing and prescribing and GP’s were asked to assign a ICPC code to every health problem presented within a consultation we do feel that this is the correct definition of asthma for this study. We changed the part of the ‘Methods section’ on ‘Doctor-diagnosed asthma’ to clarify the issue (page 8).

3. Conclusions are correct and adequately supported by the data. Discussion follows strictly the results, but I think it needs a bit broader view. Especially, the high prevalence of ICS in young children needs more attention. To begin with, introduction section of the paper needs numbers (%) about the prevalence of different wheezing illnesses/phenotypes. In the discussion section, it should be shortly stated what the guidelines say about the treatment of these early/recurrent wheezers. Finally, is the observed prevalence of treatments in balance with the prevalence wheezing illnesses and suggested treatments in the guidelines. The numbers of systemic corticosteroid courses should be added if they are available and discussed.

As suggested by the reviewer we added information on prevalence of asthma and asthmatic symptoms in the Introduction (page 5, line 3). Information on oral corticosteroid use is added to the Table 1. Furthermore, to the discussion section we added a comparison between the applied therapies we found in our study (including the high use of ICS only) and the recommendations in the guidelines (page 14, line 10).
4. Tables are clear and informative. Although Fig. 1 is informative, the definition of doctor-diagnosed asthma is not clear, is it limited to physician visits during the past year etc., I think “asthma ever and symptoms within 12 months” or something like it would be more clear, since asthma by its definition is a chronic illness.

See response to comment 2.

5. The paper should start with shortened version of the international definition of asthma, emphasis on the chronic inflammatory nature of illness and its association with recurrent typical airway symptoms / exacerbations.

We have adjusted the text according to this suggestion (page 5, line 1).

6. More patient characteristics available for Table 1, e.g. allergies, parental asthma, pet ownership…?

We have added information on respiratory problems, number of contacts with the GP, oral corticosteroid use and parental asthma to Table 1.
Reviewer 2 (T. van der Molen)

1. The background of the abstract starts with the wrong logical hypothesis that asthma medication is prescribed more congruent with the diagnosis when asthma is or can be more accurately diagnosed in children. These are two separate phenomena and it is therefore logical that the hypothesis is rejected. Furthermore, most asthma medication will be prescribed by general practitioners when patients come with symptoms and not really with asthma. The diagnosis of asthma especially in older children is a product of severity of symptoms, time, number and impact (parent behaviour) of consultations and last but not least the effectiveness of the medication itself. In my view as a physician that would be logical. It would be better to show the number of pulmonary symptoms as reasons for encounter and relate that to the asthma medication prescriptions and time and show the relationship between these descriptors and asthma diagnosis. I would suggest to add pulmonary symptoms as reasons for encounter and number of consultations.

We totally agree with the reviewer that in clinical practice the ideal world where a diagnosis of asthma and use of asthma medication will have a one on one relationship as soon as a diagnosis can be made with more certainty does not exist. Also we underscore the remark that diagnosing and prescribing are two separate phenomena. However, the hypothesis that an asthma diagnosis can be made with more certainty from age 6 has been expressed in important literature concerning asthma in the childhood population such as the GINA guidelines. We take this hypothesis one step further. As the reviewer mentions ‘most asthma medication will be prescribed by GPs when patients come with symptoms and not really with asthma’ so we do not expect a 100% congruence. However, in older children where less transient wheezing occurs, symptoms are much more often a sign of true asthma and therefore we do expect that when a GP bases his diagnosing on all the factors mentioned by the reviewer, still in older children asthma medication use and a diagnosis will be more congruent with each other. Simply because of the fact that there is not such a large group of transient wheezers ‘diluting’ the group of true asthmatics.

The aim of this exploratory study was to determine the relationship between use of asthma medication and the variable which we expected to be most strongly related to this use: a diagnosis of asthma. The fact that there is such a gap between the two does ask for further research investigating which other variables are relevant in this matter, which we plan to undertake.

2. Many primary care Physicians prescribe asthma medication in order to get more certainty about the diagnosis during follow up. Trial and error medication should be considered and preferably excluded by excluding all children who had only one prescription for asthma medication.

This is a good point. Trial and error medication is indeed an important phenomenon when looking at use of asthma medication in children. We tried to take this into account by stratifying the children into 3 groups: children receiving 1, 2 or 3 or more prescriptions.
We feel that by leaving out the total group of children with only one prescription we would lose valuable information. Table 3 shows that 38% of children with only one prescription has a diagnosis of asthma which makes it unlikely that this is all trial medication. In order to address the reviewers concerns, we repeated the analyses changing our cut-off point for defining ‘use of asthma medication’ from 1 to a minimum of 2 prescriptions (see results section, page 11, line 22). The results from these analyses are added as online repository material (Table 4). From this table it can be concluded that although the PPV increases, as was expected, it still does not come close to 1.

3. From the same set of data we know that although young children seldom for certain can be diagnosed with asthma, GP’s in the Netherlands very often diagnose asthma in children from 1-2 years old (as stated later in the article 11.6 %) this indicates that the physicians diagnosis of asthma in these age groups is profoundly flawed. The diagnosis of asthma in the age group of between 0-4 years old in GP practice is so difficult and uncertain that I recommend to exclude these age groups from the sample. This clear overdiagnosis of asthma disappears when children reach the age of 5 or 6. To my opinion not really because the diagnosis has become more clear but because less children visit the GP because of symptoms.

We agree with the reviewer that the physicians diagnosis of asthma in 1-2 year olds is most likely to be flawed and remains that way until children reach the age of 5-6. To take this into account we performed an analyses stratified by age group ( < 6 years and ≥ years). We added the table for children aged 6 and older in an online repository file.

The reviewer suggests that overdiagnosis of asthma might disappear at a certain age because less children will visit the GP because of symptoms. This is a very interesting point and although it would be beyond the scope of this article to correct for number of GP visits for symptoms, we did add the variable ‘Number of contacts with the GP’ to Table 1.