PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Using decision support for population tracking of adherence to recommended asthma guidelines
AUTHORS	Ahmed, Sara; Tamblyn, Robyn; Winslade, Nancy

VERSION 1 - REVIEW

REVIEWER	Gene Colice Washington and The George Washington University School of Medicine
REVIEW RETURNED	10-Sep-2013

GENERAL COMMENTS	The authors attempt to address the value of a decision support approach to helping primary care physicians care for asthma patients. They use an administrative database approach to identifying patients in need of further evaluation of asthma treatment. These objectives are valuable and potentially helpful. Unfortunately, I have two concerns about the manuscript, an overriding general issue and worries about the specific numbers in the manuscript. My overriding concern is in regards to the percent of the asthma population found to be "controlled" in this analysis. There is an extensive literature documenting very clearly that many asthma patients are indeed "not controlled". The authors quote some of this information in the first paragraph of the introduction. Surprisingly, though, in this analysis the authors found that 93-94% of their asthma patients were "well controlled". It is not clear, and I find no explanation in the discussion, why there is such a difference between the rest of the literature and the authors' findings. My assumption is that the huge disparity rests in the authors definition of control which appears in the first paragraph of page 8. I am not sure if the authors take into account nebulized SABA meds as well as MDIs and how the authors actually define doses (Is 2 puffs from an MDI 1 dose and does that mean that 250 doses represent 500 puffs and almost 3 canisters? Is one nebulization therefore the same as 2 puffs?). However, using a 3 month period to quantify SABA usage is problematic. I usually prescribe 2 canisters of a SABA once every year, assuming that 1 will stay at home and 1 will travel with the patient. How does that approach translate into control in this analysis? My suspicion is that the percent of "well controlled" patients is artificially high in this paper because of the methods used. I have specific questions as well. The numbers used in this analysis are confusing. In Figure 1 the authors note 16,803 RAMQ asthma patients but in table 1 and page 11 para 1 they describe 18013 study patients who were RAMQ insured. Why the difference? In figure 1 my addition of the subcategories under the control group gives 15643 patients but not 15843. Why the difference? The authors

	should reconcile these numbers.

REVIEWER	Xue Song Truven Health Analytics Inc. USA
REVIEW RETURNED	19-Sep-2013

GENERAL COMMENTS	The authors should provide p values in table 1. The limitation section is well written, but another limitation is also worth mentioning. Due to lack of EMR data, asthma control status can only be measured using dose and ED visit, not by asthma severity or relapse. Yes and I have performed this review I made some edits in the manuscript. See the attachment.

VERSION 1 – AUTHOR RESPONSE

Comment:

It is not clear why there is a high proportion of well controlled individuals as compared to what is reported in the literature.

Is it related to the definition of out of control?

Revision:

We did expect a higher number of not well controlled individuals, and have included a discussion of this unexpected finding in the limitations section. To calculate control status we used 2 inhalations of ventolin MDI = 1 dose.

4 doses per week x 2 inhalations per dose x 12 weeks per 3 months = 96 inhalations for rescue use in the past 3 months. To this we added 1 dose per day x 2 inhalations per dose x 6 days per week x 12 weeks per 3 months = 144 inhalations for exercise use. Total is 250 inhalations over previous 3 months as defined on page 8. We did not distinguish between SABA MDI and nebulizer in our calculations.

We have further elaborated in the limitations section that the percent identified as not well controlled in this study compared to previous studies may in part be due to the methods we used for estimating control status. Also, we note that the percent not well controlled reported in the introduction are based on self-report of control status.

Comment:

There is a discrepancy in numbers between Figure 1 and what is shown in Table 1 for the number of individuals RAMQ insured, and the number well controlled.
The addition of the sub-categories in figure 1 gives 15643 and not 15843 as currently indicated

Revision:

We have clarified in the title of Table 1 that the numbers are for index date 2 and therefore match the numbers in Figure2.

Thank you for catching the discrepancy in the total number in Figure 1 for index date. The number of missing should have read 1739 and not 1539.

Comment:

The authors should provide p values in Table 1.

Revision:

We have added a footnote showing that all p-values were < 0.01.

Comment:

The limitation section is well written, but another limitation is also worth mentioning. Due to lack of EMR data, asthma control status can only be measured using dose and ED visit, not by asthma severity or relapse.

Revision:

We have added a few lines in the limitations section stating that asthma control status can only be measured using dose and ED visit, and not by asthma severity or relapse.

Comment:

Edits to the manuscript

Revision:

We have applied all edits to the manuscript

VERSION 2 – REVIEW

REVIEWER	Gene Colice Washington Hospital Center and The George Wasington University School of Medicine
REVIEW RETURNED	25-Nov-2013

GENERAL COMMENTS	When I initially reviewed this manuscript, I expressed concern over the high rate of "well controlled" asthma patients described by the authors in their analysis. The authors acknowledged this concern but they have not adequately addressed the issue. I will refer them to the work that I have done in this area. In JACI 2010;126:511 we used database analyses to look at asthma control. We used a composite measure of clinically relevant outcomes. We also used a secondary measure which included SABA use. In the secondary measure we assumed 2 puffs of a SABA per day would be the threshold for asthma control. With this measure that would mean 180 puffs over 3 months which is substantially below the measure of 250 puffs used by the authors. With this measure of asthma control we found about 60% of patients were well controlled. This was a study in the UK. We published another study (JACI 2013;132:45) using a US database population and found a much lower rate of controlled patients (about 35%). I actually believe that this latter finding probably reflects what is actually happening in practice. Again, from one of my publications, a telephone survey of 1000 US patients with asthma and of the 510 on controllers only 14.3% were well controlled.

	When I try to understand why the rate of well controlled patients was so high in this study there are several possibilities: The SABA use rate may have been too high. Other clinically relevant outcomes were not considered in control status (see above publications for these other outcomes). I also noted two other oddities. On page 10 para 2 the authors state that only patients with full drug coverage by RAMQ were included, but on page 12 para 3 the authors note that 35% of individuals were RAMQ insured for prescription drugs at least 75% of the year. On page 11 para 2 the authors note an ED visit for respiratory related problem in the last 3 months was considered evidence of not well controlled asthma, but on page 15 the authors note that 13% of those well controlled had at least one ED visit related to a respiratory problem. Besides careful consideration of the definition used for well controlled, the authors should reconcile the above points.

VERSION 2 – AUTHOR RESPONSE

We agree with Dr. Colice's explanation for the lower rate of well controlled in our study, mainly, that we likely had a higher rate of well-controlled because of our definition of overuse (> 250 puffs of SABA). In our estimation for overuse of SABA we added an additional amount to account for potential use for exercise (Over use: 4 doses per week x 2 inhalations per dose x 12 weeks per 3 months = 96 inhalations for rescue use in past 3 months. Amount added for exercise use: 1 dose per day x 2 inhalations per dose x 6 days per week x 12 weeks per 3 months = 144 inhalations for exercise use). Given the importance of considering how control status is assessed, we included the references Dr. Colice provided in the limitations section, with a contrast of the methods used to evaluate control status in our study compared to previous work. Please note that in our explanation we make use of the proportions of control status reported in these publications.

On page 10 para 2 the authors state that only patients with full drug coverage by RAMQ were included, but on page 12 para 3 the authors note that 35% of individuals were RAMQ insured for prescription drugs at least 75% of the year.
Our definition of provincial health insurance coverage was that individuals had to have RAMQ insurance for 75% of the year. Our previous use of the word 'full' coverage on page 7 is incorrect and we have now changed this to reflect our definition (i.e. 75% of the year)

On page 11 para 2 the authors note an ED visit for respiratory related problem in the last 3 months was considered evidence of not well controlled asthma, but on page 15 the authors note that 13% of those well controlled had at least one ED visit related to a respiratory problem.

We clarified that the comparison of characteristics described in the paragraph on page 15 is over the past year and not 3 months. We calculated control status over a period of three months prior to the index date.