Reviewer’s report

Title: Identifying and characterizing COPD patients in US managed care A retrospective, cross-sectional analysis of administrative claims data

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Reviewer: JOAQUIM J GEA

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This is an interesting study which focuses on the stratification of COPD in different complexity phenotypes using claims data. In this case, stratification is based on the occurrence of comorbid conditions. In addition, the authors also intended to stratify exacerbations of the disease and to relate their occurrence to the presence of comorbidity.

The study is based on a population of almost 8 million people from elderly (Medicare, >65 yrs) and younger (commercial, <65 yrs) cohorts. Around 50,000 COPD patients were identified in these two subgroups. In addition to their age, the authors have stratified these COPD patients on the basis of their comorbid conditions. As expected, complexity was higher among the older individuals, who also presented certain specific comorbidities such as cardiovascular problems. In addition, within either age group those patients with more complex disease experienced more exacerbations. The authors conclude that the more complex the disease the higher utilization of healthcare services and more frequent exacerbations. The study is well designed and the results are interesting and useful but somewhat obvious: for any given medical situation, the greater the complexity, the greater the use of healthcare resources.

The rationale of the study is well described, the hypothesis is obvious and the objective is clear. There is no doubt that a better definition of those patients with more healthcare requirements is a useful tool for health providers and payers. Among the strengths of the study both the inclusion of a very large population and the use of a new scale of disease complexity should be highlighted. I have, however, some comments:

Major:

1. Methods: The use of claims to diagnose COPD is rather unspecific. Although this simple method could be useful for large studies, the risk of other respiratory conditions, such as bronchial asthma, bronchiectases, hypoventilation-obesity, overlap syndrome, and even simple chronic bronchitis or pulmonary emphysema without persistent airway obstruction, encroaching on the study is very high. This is recognized by the authors but only with respect to asthma. Nevertheless, other entities could also have been present.

2. Results: some comorbidities such as allergic rhinitis were more prevalent in younger individuals. Again, I wonder if the criteria used to define COPD
(necessarily limited in a claim data approach) have been able to discriminate between this condition and asthma. In the same regard, I wonder if the high rate of both “exacerbations” (in fact light exacerbations) and “multiple exacerbations” in the younger cohort (71 and 47%, respectively) were not, at least in part, due to asthma attacks.

3. Results & Discussion: I miss an evaluation of costs, at least in relative terms. This would be extremely useful in terms of requirements for health providers and payers, even in very different models of health systems. This would not be difficult for the authors since some of them are experts in the field.

Minor:

1. Abstract: The first paragraph in the conclusion section is badly constructed (some words are repeated).

2. Results: The percentage of lung function tests performed during the study period is relatively low. However, it involves a very interesting information: which percentage of the patients codified as COPD by claims data were confirmed by post-bronchodilator data from forced spirometry (GOLD or ATS-ERS criteria). Although this datum probably overestimates the accuracy of claims data (those patients who were tested for lung function were more likely to have COPD than those who were not), functional data might help in interpreting the results.

3. Results & Discussion: How does mortality impact on the results. I have not found any record on this. Presumably the rate of deaths was not low, at least in the elderly cohort.

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

**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.