Reviewer's report

Title: Changes in Healthcare Utilization and Costs After Beginning Sildenafil for Pulmonary Arterial Hypertension: A Retrospective Cohort Study

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Reviewer: Zhi-Cheng JING

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In their article “Changes in Healthcare Utilization and Costs After Beginning Sildenafil for Pulmonary Arterial Hypertension: A Retrospective Cohort Study”, Ariel Berger and colleagues examined the effects of sildenafil on healthcare utilization and cost in 567 PH patients. This work provides indirect evidence of the effectiveness of sildenafil.

There are several issues that deserve further consideration by the authors:

Major Compulsory Revisions

1. The acronym PAH is not used correctly. ICD-9-CM diagnosis code 416.0 and 416.8 are Primary pulmonary hypertension and other chronic pulmonary heart diseases (secondary). Pulmonary hypertension is currently classified into 5 groups (Simonneau G, J Am Coll Cardiol. 2009 Jun 30;54(1 Suppl):S43-54.). the use of the most recent and accepted classification will add clarity to the study. And comorbidities in Table 2 should be divided into comorbidities (such as anxiety and atrial fibrillation) and Group of PH (PAH, Group2 and so on).

2. Method, study sample section and results paragraph 1: had all patients done the RHC and have a clear diagnosis? I'm so confused why 86% patients had claims for both primary and secondary pulmonary hypertension. Because of uncertain-diagnosis?

3. Results, paragraph 2: The use of PAH-related medications, except for sildenafil, was significant difference between pretreatment and follow-up. Which indicated the reductions in healthcare costs could not be directly attributed to sildenafil. bosentan, iloprost could also improve 6MWD and symptom of PAH patients. They treatment effect may also reduce the cost of healthcare. It may difficult to get the conclusion: the cost of sildenafil therapy appears to be partially offset by reductions in other healthcare.

4. Results section: did you divided those subjects into subgroup. Were there any differences in the healthcare utilization between severe and non-severe patient, and among PAH, PH Group 2 and PH Group 3?

5. Discussion section: the authors discussion was short and did not thoroughly analysis the result. The emphasized two limitations, but did not analysis why total healthcare costs increased among patient with PAH following initiation of sildenafil therapy and how do you find the cost of such therapy appears to be partially offset by reductions in other healthcare costs.
Minor Essential Revisions
6. Method, measures and analyses section, paragraph 2: CCB could be also for coronary artery disease, so
7. The author used the ratio of a patient's total healthcare costs during pretreatment to mean total pretreatment healthcare costs as a proxy for disease severity, but there was no relative result.

Discretionary Revisions
8. Healthcare utilization may also be influenced by Coverage type and the reimbursement. High cost and low reimbursement rate may also reduce the healthcare utilization. If the database contain the relative information, it' better to show.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I have relationships with drug companies including Actelion, Bayer, Pfizer, GSK and United Therapeutics in addition to being an investigator in trials involving these companies; relationships include consultancy services and membership of scientific advisory boards.