Reviewer's report

Title: Drug cost by a multidisciplinary approach to potentially inappropriate medications for older patients in home care settings: cross-sectional study and propensity score analysis

Version: 3
Date: 22 November 2014

Reviewer: Jeffrey Clark

Reviewer's report:

Thank you for the opportunity to review this paper!

Please see uploaded document with numbered comments.
Please also see responses to questions below.

1. Is the question posed by the authors well defined?
No. The information provided does not present a clearly defined question. Neither the structure of “nurse home visiting programs” nor of the “pharmacist home visiting programs” in Japan are defined for the reader. When the question is proposed it is unclear whether or not the question intends to examine something that is currently in place in Japan or if the nurse home visits and pharmacist home visits are a new intervention. However, this becomes apparent later on in the discussion of the limitations.

2. Are the methods appropriate and well described?
Appropriate, probably. Well described - No. Please see comments in attached document. As a clinician I have a very limited knowledge of statistical methods, but I think it is too hard to tell if the study was well designed from information provided. If I were in a managerial position, I would not know what type of program to implement from this information to achieve this noted cost savings. As a scientist I would not know how to set up the same scenario to replicate the results.

I am not competent to assess whether or not they applied the use of propensity scores correctly to the data.

There is no definition as to what these pharmacists and nurses are doing in the home visiting programs. There is no background information offered as to why some patients see pharmacists, some see nurses, and some see both? My hypothesis is that pharmacists see patients which are more complex and that the underlying differences between the population seen by the pharmacist and the population seen by the nurse are probably not reconcilable. To support this hypothesis, if you look in table 2 at the number of prescriptions in the patients using the pharmacist home visiting programs, you’ll see that there was a statically significant difference in the mean number of prescriptions used that was
higher in the group seen by pharmacists at baseline. I am not surprised that the conclusion was PIMs are more expensive in the group that had the most medications prior to the use of propensity scores. In the home healthcare setting where I work, the patients that only need nursing services when compared to those that only need pharmacy services are vastly different in terms of their medical complexity and their drug related problems. I realize that the propensity scores try to adjust for these differences, but the down side to using propensity scores if you have to identify all confounding variables in advance, the results will be greatly altered. For instances, I wonder if high cost of prescriptions at baseline is a predictor for those who see a pharmacist? In my practice setting, I frequent receive referrals from the nurse and other disciplines to see people because they cannot afford their prescriptions. Similarly the patients that benefit the patients that benefit the most from both a pharmacist and a nurse home visit are generally those who already take PIMs or who already have known drug related problems and require expertise of the pharmacist to help resolve them resolve the problem since the nurse feels it is outside of her scope of her practice. Additionally, some clinicians believe clinically relevant DRPs may be more easily resolved by the pharmacist rather than the nurse or even the primary care provider.

In line 132 and 133 it mentions categorizing the patient age into three groups. However, I don’t know why this is mentioned. Based on my very limited knowledge about propensity scores, there are 4 ways to apply the scores to the data (matching case to controls, stratifying cases and controls, using propensity score as independent variable in multivariable model, and using propensity scores to weight observations). The mentioning of these classifications would seem to indicate the data would be stratified; however I don’t see these strata results reported. Table 4 and Table 5 seemed to indicate the weighting method was used. I would like a statistician to look at which method was used as I am not qualified. If stratification was used, at least 2 articles suggested 5 strata should be used rather than just 3. (Landrum, M. B. and Ayanian, J. Z. "Causal effect of ambulatory specialty care on mortality following myocardial infarction: A comparison of propensity score and instrumental variable analyses." Health Serv. Outcomes Res. Methodol. 2 (2001): 221-45. AND Mitchell H. Katz. Evaluating Clinical and Public Health Interventions: A Practical Guide to Study Design and Statistics (Kindle Locations 2286-2287). Kindle Edition.)

Were matched propensity scores tried first? Matching produces the least amount of bias. It would be interesting to see the results published from both approaches… this would strengthen the data. If they are not the same when using both approaches you will have learned something about the data.

3. Are the data sound?
Not sure. Prices seem very low especially since the Brand name prices were used.

4. Do the figures appear to be genuine i.e. without evidence of manipulation?
Yes

Does table 1 need permission of the authors of the STOPP criteria to reproduce
it?

5. Does the manuscript adhere to the relevant standards for reporting and data deposition?
I think so.

6. Are the discussion and conclusions well balanced and adequately supported by the data? No. See comments.

7. Are limitations of the work clearly stated? Yes, but could have more clarity in how they would alter the results.

8. Do the authors clearly acknowledge any work upon which they are building both published and unpublished? No. But I did see a reference (#19) to one of their works.

9. Do the title and abstract accurately convey what has been found? No. See comments.

10. Is the writing acceptable? Needs minor revisions.

**Level of interest:** An article of insufficient interest to warrant publication in a scientific/medical journal

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

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.