Reviewer's report

Title: The association between prescription change frequency, chronic disease score and hospital admissions: a case control study

Version: 2 Date: 20 June 2013

Reviewer: Chun Shing Kwok

Reviewer's report:

Dear Authors,

Thank you for submitted this article on prescription change frequency, chronic disease score and hospital admission.

Below are some major and minor comments.

Major Compulsory Revisions:

1) Why was a matched case-control design used for this study? One can observe an association using this design rather than causal relationship and you cannot determine absolute risk. Could observational results also be reported? Ie. A cohort of non-hospitalized patients was analyzed for prescription changes frequency and hospital admission.

2) The analysis should include a model where both chronic disease score as well as prescription change frequency are accounted for not just stratification of prescription change frequency by chronic disease score. It needs to be known the predictive value of the chronic disease score alone, the prescription change frequency alone and consideration of both chronic disease score and prescription change frequency to know which is better when both are accounted for. Furthermore, it needs to be known whether or not they are independently associated with hospital admission. The authors state that “the PCF cannot replace the CDS” but the question is if we have one measure which should one use?

3) Why were patient comorbidities not considered in the analyses(not matched for or adjusted for)? Patients that are more ill (more comorbidities) are likely to die.

4) What is the significance of prescription change frequency? The authors state that “it was outside the scope of this study to distinguish between different reasons for changing medication” but they should talk about the significant of prescription change frequency in the discussion. What is the current understanding of this based on literature. Does this reflect more ill patients (ie refractory to standard treatment or non-concordant patients due to adverse events or non-compliance)? Does it reflect prescribing habits of doctors and frequencies of changes in prescribing guidelines?
Minor Essential Revisions:

1) How reliable is the prescription change measurement? Could patients have medication changes and this not be recorded?

2) Can polypharmacy (use of 5 or more medications) be considered? Is there any association with more tablet and more admissions? Does prescription change among higher tablet users and lower tablet users have different rates of admission?

3) More results need to be reported in the abstract including detailed comparisons with the chronic disease score and the results from Major revision 2).

4) Second sentence of conclusion in the abstract does not make sense.

5) How was sample size determined? How were the number of cases and controls determined?

6) Statement that “Unexpectedly, patients on polypharmacy had a decreased risk of hospitalizaton: PCF 4 or higher decreased between 9 and 3 months before index date” is misleading because polypharmacy can also mean use of 5 or more medications. Please re-write.

Level of interest: An article whose findings are important to those with closely related research interests

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'