Reviewer's report

Title: A prospective study of symptoms, function, and medication use during acute illness in nursing home residents: design, rationale and cohort description

Version: 2 Date: 5 February 2010

Reviewer: Mark McCann

Reviewer's report:

This is an interesting study with potentially important findings, however I have concerns about the methodology, in particular the power calculations, and would hope the authors will take the time to check these to improve the paper and the study.

Major Compulsory Revisions:

1. I was unable to replicate the first power calculation on the basis of a logistic regression model with the characteristics described. This makes me think the calculation used may not have been appropriate.

I replicated the second calculation based on an independent samples t-test; however this is not the appropriate test for this data. If 75 people are surveyed once when healthy and once when ill, then a paired t-test would be appropriate. In the current design it appears some individuals may be surveyed more than twice, and individuals are considered in separate healthy and sick groups (of approx 113 people).

For this data I think a multi-level approach to change in characteristics over time within individuals would be necessary. In all cases, I am very worried about the current calculations and feel the study may be underpowered. I would encourage the authors to look into this and seek advice on sample size and appropriate statistical methodology for the study.

2. Further details of the calculations need included in the paper, as will the proposed analyses, specifically the analyses the calculations are based upon.

Minor Essential Revisions:

Measures:

3. Opiate withdrawal is measured with COWS, and Anti-depressants with DESS for SSRI. There appears to be no mention of withdrawal measures for anti-psychotics other than the separate issue of relapse. How will this affect how anti-psychotics cessation is dealt with in analysis?

Statistical Analysis:

4. Can the following points be clarified in the text: is the full battery of measures administered at diagnosis of an acute illness, and then 14 days afterwards? Is baseline information collected at recruitment, and 14 days afterwards, or at multiple time points throughout the study? The statistical analysis mentions
comparing functional decline when healthy and when unhealthy, is this change between these two 14 day periods i.e. the change in decline, or the change in score for each item? What statistical test is to be used to compare these two changes?

Discretionary Revisions:
5. This protocol outlines two areas of interest, the effect of acute illness and the effect of medication cessation. The way these two factors relate and overlap may need more clearly stated. My initial feeling is that it may be more useful to separate the assessment of the physical effects of acute illness on one hand, and correlates of drug cessation on the other.

Study Model:
6. While I agree that different factors may affect decisions at different stage of the treatment process, I would suggest that illness severity is more important at the start of treatment than at discharge, because at discharge, the illness is less severe, or cured, by nature of having been treated.

Can the authors justify including medication withdrawal symptoms as a symptom of acute illness? Would it be more likely that acute illness (of a particular type, or a particular severity (e.g. one that causes a hospital transfer) may be a cause of medication cessation?

7. While I understand withdrawal is an important outcome in itself, I would worry that including it as an outcome would lead to “double counting”. Pain may be both an outcome measure and an item on the withdrawal outcome.

Eligibility Criteria:
8. The title states this is a prospective study of symptoms, function and medication use during acute illness. As the eligibility criteria includes only those currently using medication and who are not sick, this is a study of onset of illness, symptoms, function, and also medication cessation & withdrawal symptoms among nursing home (NH) residents being treated with Opioids, antidepressants or anti-psychotics, and only those who have used the drugs to a level developing tolerance. The protocol title may benefit from clarity of purpose.

I wish the authors well, and hope for successful completion of their study.

**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