Reviewer's report

**Title:** Reducing complexity: A visualization of multimorbidity by combining disease clusters and triads

**Version:** 2  **Date:** 8 September 2014

**Reviewer:** Gillian Caughey

**Reviewer's report:**

**Major Compulsory Revisions**

This is an interesting study that uses network analyses to identify clusters of diseases within those with multimorbidity and visually presents the results of the multimorbidity clusters. Whilst the authors describe this method as providing increased information on the complexity of multimorbidity, it seems the results are in concordance with the prevalence of the conditions in the older population. i.e. metabolic syndrome and musculoskeletal conditions are both highly prevalent in the older population, I think it needs to be emphasized by the authors of what additional and novel information is provided here in this study and how the results of this study will facilitate the improvement of multimorbidity in clinical guidelines is unclear.

**Abstract**

Include the aim of the study at the end of the background.

Include the name of the data source. In the methods section only include the current method used, ie the network analyses of disease triads identified from previous study. Include total number of patients included in study.

**Background.**

The background section is too long and includes a lot of superfluous information. Line 101, use the correct definition of multimorbidity. ‘Multimorbidity is the presence of two or more conditions’ that can include any type of disease combinations.

“over the last decade many research groups have tried to understand the complexity of multimorbidity, due to it’s high prevalence estimated between 50 and 99% in the older population and its association with adverse health outcomes such as decline in functional status….

Delete sentences starting with out team until reference 5.

Line 112 Question: how will analysis of associations of diseases reduce the complexity of multimorbidity exactly?

Paragraph starting 115-140 needs to be summarized in a more succinct manner. Delete from line 141, this is not needed and simply state the aims of the current study. In this study we conducted a network analysis to ….
Methods
Include subject headers where possible to help readability.
Given previous publications I think line182-199 could be summarized. The methodology of the current paper begins on line 202. It would be helpful to explain what exactly is meant by the terms numbers of edges and betweenness centrality and what this means for the observed multimorbidity clusters, in the methods (I see this is clearer in the results section).

Discussion
It needs to be emphasized about the importance of using the network analysis approach to identifying multimorbidity clusters and what additional and novel information is provided here in this study. How will the results of this study facilitate the improvement of multimorbidity in clinical guidelines is unclear, over and above what is already known?

Conclusion
Delete sentence starting line 465 to end of sentence line 470 ending in academic vault. Simply present conclusions of current study and its implications for improving care / understanding of multimorbidity and potential to improve clinical guidelines.

Level of interest: An article of importance in its field

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.