Reviewer's report

Title: Comprehensive Geriatric Assessment predicts mortality and adverse outcomes in hospitalized older adults.

Version: 1 Date: 24 October 2014

Reviewer: Stefanie L De Buyser

Reviewer's report:

This paper has an interesting and important topic.
The paper has a good structure, which makes it easy to read. The paper needs some language corrections.

Major Compulsory Revisions

The results concerning the association of CGA components with in-hospital mortality, incident delirium, nosocomial infections, and length of hospital stay are clearly described.

1. However, the results concerning functional decline are not elaborated.

1.1. Objectives: Do you consider functional change during hospital stay as one of the secondary outcomes?

1.2. Methods: The methods section does not mention how functional change / functional decline is defined. Did you use the difference between admission and discharge score? What difference do you consider clinically meaningful?

1.3. Statistics: Did you perform linear regression analyses to assess the association? Which covariates did you include in the model?

1.4. Results: It is more correct to say that there is “no significant mean change in functional status during hospital stay”, because some individuals might have a clinically significant change.

1.4.1. Abstract Line 62: Please report “there was no significant mean change in functional status” instead of “there were no significant changes”, some individual changes might have been clinically significant.

1.5. Discussion (Line 295) The lack of a significant mean change in ADL and IADL score during hospital stay might also indicate that these instruments are not sensitive enough to measure change. 52% and 33% of patients had a maximum score on ADL and IADL respectively at admission. These instruments clearly have a ceiling effect. Therefore, it is difficult to assess functional improvement during hospital stay using these instruments.

Minor Essential Revisions

1. ! Line 211: You report in the text that 124 patients died in hospital, however in Table 1 and 2 you report 96 patient died.
2. More details on multivariate analyses are required. “Multivariate analyses included all variables that yielded p<0.01 in univariate analyses.”

2.1. Which variables were examined in univariate analyses? All the variables listed in Table 1 and 2?

2.2. Which variables were included in the multivariable model to predict in-hospital mortality?

2.3. Line 24: Were BISEP and CIRS-G included in the multivariate analyses, but only significant in univariate analyses?

2.4. Line 235: Which variables were included in the multivariable model to predict delirium incidence?

2.5. Line 238: Which variables were included in the multivariable model to predict nosocomial infections?

3. Please clarify in the text that your results concerning functional dependency refer to the ADL and IADL scores at admission and not at baseline (3 months before).

4. Line 202 and 203: I suggest to report the absolute number of patients instead of the percentage, since the total number of patients with inadequate completion of the protocols was less than 50 (=42).

5. Table 1

5.1. It is not mentioned that continuous variables are presented as mean ± SD. Please add this for: age, the risk assessment instruments, laboratory parameters, and hospital stay.

5.2. Report the unit of age (years).

5.3. Report the scale of the risk assessment tools.

6. Table 2

6.1. Please add that the number of medications is presented as mean ± SD.

6.2. Polypharmacy is an important missing CGA component in Table 2.

7. Figure 1

7.1. The scale on the Y-axis is not the same for the 3 figures, this makes it difficult to compare the distribution.

8. References

8.1. Line 144. Reference 19: Rudolph et al. “Delirium: an independent predictor of functional decline after cardiac surgery”. Please verify if this reference is correctly placed. It doesn’t seem to suit the text which deals with IADL. Moreover, the IADL scoring range used in this reference article differs from your IADL range.

9. Please ensure that abbreviations are defined at first use in text.
9.1. Line 41: “ADL” and “IADL” are first used in the abstract, please define them.
9.2. Line 50-51: abbreviate “instrumental activities of daily living”
9.3. Line 56: abbreviate “Activities of Daily Living”
9.4. Line 80: “Activities of Daily Living” is first used in the text, please add the abbreviation ADL
9.5. Line 141: “Activities of Daily Living” has been used before in Line 80, you can use the abbreviation.

10. Language corrections
10.1. Line 74: please use the term “Older individuals” instead of “elderly”.
10.2. Line 80: “20% develop” should be “20% developS”

11. Please ensure results from regression analyses are reported in a uniform way. Sometimes you separate results with a slash, other times you use a semicolon.
12. Line 235: The reporting of these results is not clear, please mentions the OR, CI and p after each variable.
13. Line 131: The semicolon should be replaced with a comma.

Discretionary revisions
1. Line 40: “Logistic regression was performed to assess independent factors associated to these outcomes”. This is not entirely correct, because linear regression was performed to assess independent factors associated to length of hospital stay. Please either specify the outcomes or simplify the analyses to “regression analyses”.
2. Lines 102 - 104: I suggest to describe the aims of your study more precisely. I would transfer the description used in Lines 178-181 to this section.
3. Line 125: Evaluations were completed “at the end of hospital stay”. Could you be more precise? Do you mean the day of discharge?
4. Lines 142-144: How many (instrumental) activities of daily living were assessed? Was each activity scored binary (dependency: yes/no) or did you use a Rupert-like scale?
5. Line 173: Indeed, much information was collected in this study. Has some of your data already been described in other articles? If so, you should refer to such work.
6. Lines 174 – 181: I would adjust this paragraph. It should only report the primary and secondary outcome variables considered. I would transfer lines 178 – 181 to the background section to describe your objectives more precisely.
7. You do not mention the assessment of pressure ulcers in the methods section,
while this seems to be an independent predictor of in-hospital death.

8. Line 333: I would not refer to “quality of life” in your conclusion, since this has not been investigated in your study.

9. Perhaps you can discuss whether the in-hospital mortality rate and the rate of other adverse outcomes is similar to those reported in other studies / representable?

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

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

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