Reviewer's report

Title: Age, neurological injury, trauma and prolonged acute respiratory failure are the most important factors for physical functional status long-term after critical illness: a prospective, longitudinal, multicentre trial

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Reviewer: Serge Brimioulle

Reviewer's report:

The authors investigated patients' physical performance (Karnofsky index, K) and ability to perform daily activities (Lawton index, L) before ICU admission and 2 years after ICU discharge of 2 ICUs. Among 1216 admitted patients, 928 survived the ICU stay, 575 survived after 2 years, 540 were found and 506 accepted to participate. In these 506 patients, average K decreased from 87 ± 12 to 81 ± 18 and L from 28 ± 8 to 24 ± 11 (P < 0.001). K and L decreased most after neurological injury (-24 and -12) and after trauma (-16 and -7) (P < 0.001).

Major comments

1. Several numbers in the data classification don't make sense. A decrease of K by 21 to 29 does not fit in any category. A decrease in L by 11 or 12 is both moderate and major.

2. About the factors suspected to influence long-term status. How did the authors select these factors? When was the SOFA score computed? Why was APACHE or SAPS score, the ICU LOS and the hospital LOS not taken into account? The significant factors should be included in a multivariable analysis to identify independent factors.

3. Statistics. "Poisson regression was used to estimate ... the relative risk ...". Many results include such a relative risk. Please clarify to what relative risk you are referring.

4. Results. What was the proportion of patients admitted for routine postoperative care, who remained in the ICU less than 24 or 48h. How did these patients influence the results?

5. Results. In view of the impact of the "neurological admission" on outcome, should the Glasgow coma scale score (a more quantitative variable) not be included in the analysis?

6. I would propose to emphasize the high 2-year mortality rate (about 50%) in the conclusions.

7. Key messages 3 to 5 are just statements and are disputable. They do not rely on the study results.

Minor comments
8. A shorter and more striking title would have more impact on readers (e.g. "Determinants of long-term physical functional status after critical illness"). Does the inclusion of 2 centers really justify the "multicentric" descriptor? Why is age mentioned in 1st position?

9. The title of the disclosure form does not match the title of the manuscript.

10. Data collection. Please reference the original papers describing the Karnofsky and Lawton indices.

11. Data collection. Please mention clearly that K-ICU and L-ICU reflect the patient status before - not during - the ICU stay.

12. Were neurosurgical patients listed as neurological or postoperative?

13. The discussion repeats parts of the introduction. It should be more focused on the results.

14. How does the present manuscript differ from ref 6, except for the 506 instead of 100 patients.

15. Table 1. Line 5: replace "<= 2" with "1 or 2" (to exclude 0 which is already listed just above).

16. Table 3. Many erroneous numbers in the n values (last line of almost each "L" subdivision).

17. Figure 1. Please give the number of patients who were discharged alive from the hospital.

18. Figure 3. Title. Remove "between mean scores" and avoid abbreviations.

19. Many mistakes, improper words, lacking words ... Please have the manuscript edited by a native english speaker.

S. Brimioulle, Brussels

**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.