Reviewer's report

Title: The impact of ICU format change on the outcome of high risk surgical patients: a cohort analysis

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Reviewer: Judith Jacobi

Reviewer’s report:

The authors are to be congratulated on developing a prospective database and then using that data to examine the impact of a single variable on patient outcome. The challenge of course is to establish the relationship between 1 variable and outcome over a very long span of time. Unfortunately, the limitations of this study design and the unmeasured practice changes that occurred over a decade of care diminish any findings and the strength of association.

Some specific limitations include:

Database entries and complication reporting are not verifiable, and may be subject to reporting bias - in particular the contemporary climate is much more open to reporting of complications than it may have been a decade prior.

Many things have changed in practice - measures to prevent CRBSI, VAP, available drugs, more sophisticated monitoring (or better use of existing), etc. that could influence outcome. Even with a measure of intensity of treatment, I am not sure that would balance the populations. Several sources suggest that mortality has fallen for a variety of diagnoses - sepsis, ARDS, etc. in the last decade.

Patients transferred into the ICU from another hospital have a higher mortality, but that type of data are not addressed. The availability of a hospice service outside the hospital or earlier transfer to a rehab facility could influence whether a patient died in the hospital. Those are factors that would be important in the US, but not sure if that is a factor in the Netherlands.

A change in bed availability or number could influence who is admitted to the ICU or how long they stay. A change in within hospital care could influence LOS.

More detailed statistical analysis, linear regression may be able to account for the multiple variables.

Specific comments:

page 4: hospital characteristics. IS the hospital the Zaandam MC or Zans MC - both names are used.

page 5, results: cardiopulmonary complication is not defined

page 6, para 2, last line: stating that the IRIS tool is a practical solution for patient care decision making is a conclusion that was not studied in this paper.
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare I have no competing interests