Reviewer's report

Title: Towards an efficient hospital bed management by reducing admission and discharge variation

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Reviewer: Bernard Silke

Reviewer's report:

This paper examines an interesting question as to what can be done to improve patient flows in the modern hospital. Healthcare Research is not well regarded or supported. In a recent meta-analysis of Acute Medicine, the evidence base (from 300 Acute Medical Units worldwide) was from 7 units with only 9 papers listed. Research therefore should be encouraged in this area.

The authors of this submission look at a before and after scenario after process change and suggest major improvements as the result of their interventions. Such a before and after study has limitations in terms of ascribing causality. There is no control group and changes over time in the system cannot be allowed for. There also is the limitation of concentrating on the process (length of stay, planned discharges, surgical cancellations, waits in the emergency room) and not the outcome (inpatient hospital mortality). Why not report the latter? Physicians are not administrators and should be looking for quality improvement. If there is merit and quality in the system, perhaps inpatient mortality might have improved.

As it stands, this study has a repeated measures design (i.e. 2007 vs 2009) but the bivariate statistics do take that into account. Differences between the two periods were evaluated by the T-test (continuous measures) and Chi-square test (categorical measures). The recommended bivariate statistics for repeated measures are the Wilcoxon signed-rank test (for non-normal continuous variables) or the repeated measures t-test (for normal continuous variables); for categorical variables, the recommended test is the Chi-squared for linear trend (also known as the Linear-by-Linear Association test).

Besides this technical issue, the main problem of the study is that it only reports bivariate associations. There is no attempt to control the bivariate trends found by simple confounders such as age and/or gender. We know that variables such as “discharge planning” and overall LOS are very influenced by age.

The authors have other metrics undoubtedly on the system that would support a more complete analysis and allow for a much better manuscript. Diagnoses and procedures can be coded into comorbidity (Charlson or Elixhauser) indexes and lab data at admission could give a measure of acuity (Scores such as Apache or MARS or various lab scores). A muti-variate model could be derived to look at
the data in a unified analysis.


Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

No completing interests to declare