Reviewer's report

Title: Dual use of VA and non-VA hospitals by veterans with multiple hospitalizations

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Reviewer: Jean Yoon

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This manuscript makes use of an innovative dataset that combines hospital discharge records from 7 states with VA hospitalization records for veterans over a 4-year period to look at hospitalization patterns. However, the objectives of the study were confusing, and there were several methodological questions in addition to lack of clarity in the writing. The title references patients with multiple hospitalizations, but the paper presents data on patients with only one hospitalization in addition to multiple hospitalizations. Paper seemed to focus on comparing dual users versus single-system users, so it wasn’t clear why including patients with one hospitalization was needed.

Background section, line 113 suggests that patients using multiple systems could use hospitals for both medical and mental conditions compared to exclusive users, but it was not directly addressed. Table 1 and figure 1 present admissions by diagnostic category, but there was no data presented on patients who had admissions in multiple categories. Couldn’t the authors look at how many patients had both medical and mental admissions or admissions across diagnostic categories?

Major Compulsory Revisions

1. For the descriptive statistics in Table 1, it should be limited to three columns of data for multiple admissions only – for dual users, exclusive users at VA hospitals, and exclusive users at non-VA hospitals.

2. Some of the comparisons being made between groups are not informative. In Table 1, for priority for VA care, patient residence, and principal diagnosis, percentages should be calculated by column (versus row) and then compared.

3. On line 133, the authors state that “the study population included all veterans who in 2007 were enrolled in VA healthcare,” but the hospitalization data are from 2004 to 2007, so some veterans were not enrolled in VA prior to 2007. Enrollment in VA should be confirmed for all study years – 2004-2007 for the cohort. Otherwise, it doesn’t make sense to compare patients with multiple non-VA hospitalizations who weren’t enrolled in VA at the time to patients using both systems and enrolled in VA.

4. Were patients who died excluded from the study? The authors do not indicate if they have or have not made this exclusion.

5. The abstract background section does not mention anything about multiple
hospitalizations being the focus even though it is in the manuscript title. Some justification for focusing on multiple hospitalizations is needed here.

6. In the abstract results section, line 52, the sentence should be clarified regarding the comparison group, e.g. these patients are more elderly and higher income ….compared to patients using only VA hospitals or patients using both types of hospitals, or both groups? The same goes for the following sentence. The abstract conclusion focuses on dual users and fails to mention patients with multiple hospitalizations.

Minor essential revisions
1. Results section was difficult to read. F and x2 values should be removed from the text.
2. Figure 1 needs a title. Axes should be labeled. What are the units for the horizontal axis?
3. Table 2 data could be integrated into Table 1. P-values should be added to table 1.
4. Some rationale for the study years chosen (2004-2007) should be included.
5. The authors state that the 7 states studied are not representative of other states. What are the implications of this?
6. The abstract should clearly state that this study is descriptive. In the Methods section of the Abstract, the authors should indicate that they conducted chi2 and ANOVA.

Discretionary revisions
1. The analysis would be improved by adding multivariate analysis. For example, a regression with the number of admissions as the outcome variable and categorical key independent variables of interest including VA hospitals only, non-VA hospitals only, and dual users could be run – with the other variables as controls. This would allow for an analysis of the independent predictors of multiple hospitalizations, instead of just the characteristics of the population with multiple hospitalizations.
2. Writing was awkward in several places, eg. Referring to patients as admissions rather than patients.

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.