Reviewer’s report

Title: Clinical Predictors of Protracted Length of Stay in Ontario Complex Continuing Care Hospitals

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Reviewer: James Tiessen

Reviewer's report:

The paper is interesting because it speaks to an important topic - patient LOS in Complex Continuing Care (CCC) -- and can contribute to understanding ALC in these types of facilities. The analyses are empirically sound, as the authors apply appropriate statistical analyses to a very large CCC patient database. The study's objectives and potential implications - such as using the analyses for benchmarking, capacity planning and/or earlier discharge planning - matter. The assumption that many 5th percentile LOS patients are ALC, used to work around the lack of direct ALC data, is reasonable.

Analyzing differences between the characteristics of long stay patients discharged to LTC with those who go to community settings is interesting. However, the reasons for doing this should be more obvious. Further, the large number of variables tested and identified as mattering makes it difficult to distill clear and useful conclusions. Some data reduction, perhaps in the analyses (or another paper) could contribute to clarifying the paper's contributions to knowledge and practice.

Particularly two sets of issues came to mind.

1. Analyses of the full sample, community and LTC discharge groups

   a. The CC and LTC subsamples are used for separate analyses because factors "may vary by discharge destination". This claim makes sense but could use more support and explanation in the introduction/literature review and/or discussion.

   b. In the "Descriptive Statistics" the authors state that the community discharge median episode length is shorter than the LTC median, though these are reported as 38 and 33 days respectively. The IQR for community discharge (23-64 days) is tighter than that for LTC (33-127). The 95th percentiles are of course much different. I presume the mean episode length is shorter for community discharges than that for LTC.

   c. It is implied, but it would be useful to explicitly state whether the 95th percentile cut-off varied for the analyses done on the full and sub-samples. That is, for the full sample, was the
long-stay cut off 235 days, and those for the community and LTC discharge groups 154 and 362, respectively? Or was it 235 for all tests?

If the same cut-off is used for all analyses the factors associated with being a long stay outlier are the similar to those associated with discharge to LTC. This link is noted in the literature review, as long stay patients are more likely to be discharged to LTC.

d. A related question is whether patients are or can be identified at admission as destined for LTC or CC discharge.

I wonder whether some of the long stay patients discharged to LTC are those originally viewed as having a reasonable chance of developing capacities enabling them to live in the community. This group may have extended stays in CCC until physicians, the patients themselves and/or family determine discharge to LTC is necessary. CCC is resourced much better than LTC, and unlike retirement homes, inexpensive, so many would rather stay there rather than in LTC or a more expensive alternative.

This is more of a comment than a request for further analysis/explanation.

e. One group of patients is not mentioned. They are the more than one third who die in CCC. Certainly, as noted, CCC is designed to accommodate patients who are unable to be discharged. However there likely is a group of those who die in the hospital who are ALC or have had ALC days. I don't know how important this group is or whether it matters, but it may be a significant population that should be acknowledged. I do recognize that, as stated in the Discussion, the CCRS database does not identify ALC patients.

The implicit and reasonable assumption is that savings to the system can best be realized by learning how to more efficiently transition patients who can be discharged; the CCC facilities presumably have to accommodate those who cannot.

2. Data reduction/summary

As mentioned, there are a lot of significant findings. This is not surprising given the sample size.

a. Tables 1 and 2 display about 120 Chi-sq tests (if I understand this correctly). Only six of these indicate non-significant differences. This suggests that almost all variables differentiate between regular and long stay patients in the full and sub-samples. This first pass analysis is useful if it helps create categories of effects. This is done to a point, but there remains a lot to interpret.
b. The multivariate logistic regression analyses could help reduce the variables, as they can partial out effects. However, again most of the variables are identified as statistically significant. Including all of the variables studied can work but there could be redundancy, as several factors are linked (particularly clinical scale values).

Simply, it is difficult to see how a manager could use the findings, when so many patient characteristics are associated with very long stays of patients who are discharged.

This probably cannot be addressed in this particular paper, which identifies many links between factors and very long stays. The findings though suggest there could be opportunities to create scales summing the incidences of health conditions and therapies, for example. This could frame future research to create a tool more easily applied to identify patients likely to have very long stays, in the absence of appropriate interventions. It also would go a ways towards identifying the influence of comorbidities.

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Yes

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