Reviewer’s report

Title: Post-Acute Care Referral in United States of America: A Multiregional Study of Factors Associated with Referral Destination in a Cohort of Patients with Coronary Artery Bypass Graft or Valve Replacement

Version: 0 Date: 19 Sep 2018

Reviewer: Amol Karmarkar

Reviewer's report:

The manuscript titled "Post-Acute Care Referral: A Cohort Study of Patients with Coronary Artery Bypass Graft or Valve Replacement" examined factors associated with post-acute care (PAC) referrals for patients with Coronary Artery Bypass Graft or Valve Replacement using an Electronic Health Record (EHR) system by Cerner. Below find overall and specific comments related to the manuscript.

Overall:

The objective of this manuscript is not clear. The authors are looking at several issues: patient-, provider-, and region-level, without accounting for the effect of these on post-acute discharge settings. There is a good amount of literature, mostly coming from the Medicare claims data, that has shown the association between hospital and regional variables with post-acute care discharges. Use of EHR could have the benefits of looking at some of these variables (mostly patient-level) at a more granular level. May be this is not the case? In any case, clearly defining the objective is important.

The clustering effect of patients in hospitals in regions in well documents, thus the choice of single level analysis is not appropriate for this type of study. The authors should use analytical methods that can address the issue of data clustering.

Interpretation of the results needs to be focused on few key variables, that are pre-defined, backed up by apriori research questions.
Specific Comments:

Background:

Clarify what authors meant by "joint trauma"? Are these fractures, replacements.

Long-term acute care hospitals (LTC) needs to be replaced by long-term care hospitals (LTCH).

Methods:

More information is needed on Cerner Health Facts data warehouse. What information, variables, follow up.

Provide more details on access to data, since it was obtained from a third party.

Why only ICD9 procedure codes were used, and not CPT code or combination of the two.

Validation of Post-acute discharge destination: There is no mention of validation of this variable. From claims point of view, we know accuracy of such variable is a questionable, considering this is the primary variable of interest it is important to address this issue.

Condition-specific comorbidity: Please provide more details on how these variables were identified/defined (ICD9 codes?).

Predictive Model: It is somewhat misleading to call these as "predictive models" while in reality the models are simply testing association (strength of association) between several covariates with post-acute discharge destination.
Clustering data structure: As mentioned in overall comments section, there is a good amount of literature that talks about implications for ignoring clustering/nesting in data structure, as is the case with this study. The authors should carefully evaluate primary variable(s) of interest and what level (patient, hospitals, or region). Analyzing all these variables at the same level can provide biased estimation.

Results:
Will change based on changes in the analytical plans.

Discussion/Conclusion:
Will change based on changes in the methods/results.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:
Needs some language corrections before being published
Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organisation that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

'I declare that I have no competing interests'

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal