Reviewer’s report

Title: Rationale and Design of a Statewide Cohort to Examine Efficient Resource Utilization for Patients with Intracerebral Hemorrhage (EnRICH)

Version: 0 Date: 28 Jul 2017

Reviewer: Elisabeth Breese Marsh

Reviewer’s report:

This manuscript outlines the study design for a prospective multi-state trial designed to evaluate the impact on long-term outcomes of transfer of patients with ICH to Comprehensive Stroke Centers.

The concept of transfer to a higher level of care (HLOC) is common and there is a lack of data regarding which patients are most appropriate for transfer and the impact on long-term outcomes. This is an important topic, both for patient care, and from a resource utilization standpoint- not only is transfer costly, but can be difficult for CSCs from a capacity standpoint.

While study highlights an important issue that should be investigated, and a strength of the study is looking at long-term functional outcomes, I have several concerns regarding the study design, mainly with respect to the inclusion criteria for evaluation and triage criteria for transfer/way these factors are considered in the analysis.

Major Concerns:

- Outcomes:
  - I think there is need for other outcomes such as LOS, need for later transfer, need for neurosurgical or other intervention, disposition following hospital (rehab facility, home, etc) would be helpful
  - functional outcomes- I don't know that that mRS is specific enough overall to consider in isolation- based so predominantly on ability to walk- should be included as used in many trials, but consider something else such as the Stroke Impact Scale as an example.

- Inclusion Criteria:
  - this is an observational study with unclear criteria for transfer to CSC: optimal would be criteria by which patents are transferred. Currently, there is significant potential for bias—patients are referred to CSC because "someone thought they needed it". A trial randomizing patients to CSC v PSC or specific criteria decided on for transfer would be more ideal and allow for change in practice
recommendations. At the very least, I would like to see how they plan to account for the differing practice patterns of the hospitals to take this into account. They say the details of the network and practicing sites are readily available, but what about their practice for transfer?

- They include IVH- concern they may need EVC- unclear what other centers are capable of
- After 24 hours of symptom onset is currently an exclusion- if included will have to be another variable that you look at for risk assessment- how necessary?
- Excluding folks who have secondary causes of hemorrhage- how is this determined? If it is later at CSC then doesn't help in your initial triage. Are all patients getting this work-up at the PSC first prior to decision to transfer- unclear in methods.

Introduction:

- In the introduction the authors state that there is not currently much intervention, however many trials are underway currently for clot evacuation that could warrant patients being sent to HLOC

Analysis:

- They state in intro need to determine the factors that would require HLOC, however I am not clear that they are actually doing that with this study. The statistics section is vague on how they will determine these factors… will they use stepwise multivariable regression? What will generate the variables for the AUC?
- In the analysis, the authors say that they will adjust for confounders, however don't specify how those will be chosen- a priori, in univariate analysis?
- Sample size- the authors calculate a required sample size of >1000 patients over a 2.5 year period. How feasible is this? Are there numbers to support feasibility?

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.

No

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?
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I recommend additional statistical review

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