Reviewer's report

Title: Evaluating processes of care and outcomes of children in Hospital (EPOCH): Protocol of a multi-center cluster randomized trial

Version: 1 Date: 8 November 2014

Reviewer: Patrick Brady

Reviewers report:

Major comments:
1. This is a very important and well-thought-out study with great implications for the safety of care delivered to hospitalized children. The protocol would be a valuable addition to the fields of critical care, hospital medicine, and safety.

2. Please be clearer on how the participating hospitals were identified/recruited. I could not find this anywhere in the protocol, and if this were a process where hospitals could self-select due to interest in BPEWS, this may over-state (or under-state) the effect size of BPEWS.

3. While most of the paper is quite well-written I felt the introduction was rather uneven. I'd ask the author group to consider framing this is the context of rapid response systems with afferent limbs (of which BPEWS is a robust and well-validated example) and efferent limbs that would include some of the recommendations from BPEWS and METs. I think the statement that "MET-RRT have not fulfilled their promise," but I was bothered that two systematic reviews of pediatric RRTs showing decreased mortality were not referenced. I agree this literature is not perfect, but a mortality benefit in systematic reviews needs to be acknowledged.

4. Another issue with the MERIT study was that several of the "control" hospitals implemented some kind of MET during the study period, biasing it towards the null. The authors were clear on hospitals agreeing not to use an EWS if assigned to control, but they should be clearer on what if anything was to be done with METs.

5. The conflict of interest section of this protocol and of the study overall were quite well done, and I appreciate that the author has acknowledged and that this group continues to contribute to scientific knowledge and describe their methods. I, however, am unclear what difference if any there is between what they were testing and the product of Bedside Clinical Systems. If this is the exact product please state that clearly.

6. Related to this I think it would be both better for readers and better writing if the lead author would acknowledge that he developed the BedsidePEWS; it seemed odd to the this section in the third-person when most of the references were to papers by Dr. Parshuram.
Minor comments:

1. I did not understand the rationale behind the survey of decision makers. Could you please explain this briefly? The other outcomes assessed are so robust that I'm not sure why the CEO's thoughts have particular scientific validity if they disagree with outcome and process of care measures.

2. The tables are generally useful but consider if CRI scale which you've published elsewhere could be referenced and the surveys included instead. I appreciate the counterargument that the CRI is more central here.

3. Even if you do not choose to include the surveys please comment briefly on how they were developed and any evidence of their validity and reliability.

4. I'm not sure if this has to do with IP, but it would be quite valuable to see what guidance the BPEWS provides in the event of certain scores (are they related to mandatory ICU consults, increased VS, contact with members of the primary team). I could not find this in other papers nor how the process worked with the 280 doctors that helped shape these. The high number is a strength but I wonder how this worked since they probably couldn't talk back and forth on the strengths and weaknesses of strategies at different scores.

5. In the first paragraph of the methods it states "more than 200 inpatient admissions in eligible inpatient wards" Should this be eligible admissions or pediatric admissions or are these all children's hospitals?

6. The table with the measure definitions is generally quite well done, but there are two measures I still fail to understand. Urgent PICU admission seems to be arriving in the PICU within 6 hours of decision to admit. Why is this important? This seems at least as much about PICU bed availability as it is child's status, at least when it comes to the difference between 5 hours and 6.5 hours.

7. I also don't understand how 'stat' calls were operationalized/measured in a multisite fashion. The concept makes sense but I imagine the scenarios that a nurse would call for 'stat' would vary from hospital to hospital and nurse to nurse.

Smaller comments not for publication:

1. BedsidePEWS is at times written BedsidePEWS, Bedside PEWS and Bedside-PEWS. Please be consistent.

2. In table 3 and throughout paper, please change unplanned readmission and unplanned PICU readmission within 48 hours as to "within 2 days." It's no validity threat that you measure this in days at 3rd midnight but writing it as hours is a bit misleading.

3. There are a number of occasions where the future tense is used. This read oddly since the study is underway.

4. Table 4, row 6 needs stretched out a bit.
5. Enrollment is misspelled in row 5 of table 6.

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I have no competing financial interests. I have performed work on a different Pediatric Early Warning Score which was recently published.