Reviewer's report

Title: Interruptions and time spent on continuity of information tasks by critical care providers prior to the introduction of a critical care clinical information system: an observational study

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Reviewer: Phillip Asaro

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This is an observational study of the activities of health care providers in the setting of intensive care unit using a continuous observation methodology. Time-motion study has been used extensively in health care settings to study workflow and changes in workflow due to various interventions including introduction of electronic medical record systems. This study was performed to collect pre-implementation (baseline) data for later comparison to data after the implementation of an electronic medical record in an ICU.

Major Compulsory Revisions
none

Minor Essential Revisions
1) It seems to this reviewer that the statement “the data presented here … suggest that these patterns of work may be improved by enhanced information sharing in ICU's” may be stretching the science a little. This type of data rather crudely describes workflow and allows some inferencing regarding information flows. One might hypothesize that information sharing may be enhanced by some intervention such as an introduction of an electronic information system, and the time observation studies provide a means to measure the effects. However, it seems a stretch to assert that “these data suggest” that information sharing could be improved without describing in what way the data suggest this. For example, if the authors mean to say that they have uncovered deficits in information sharing that might be improved through some intervention, then they should point out those deficits.

2) In the 3rd paragraph of the background section, it is said that work sampling methods may systemically neglect tasks performed during busy periods and that observational techniques reduce concerns about incomplete data. These statements seem to confuse terms describing studies of workflow and tasks. It might well be said that the continuous sampling of time-motion studies such as described in this study provide a richer data set than intermittent work sampling methods. However, intermittent work sampling methods are not necessarily self-reported; they can be performed with data capture by observers and thus provide accurate and statistically valid data. Decisions regarding how and by whom data are collected are separate and different from decisions of whether to use an intermittent vs. continuous sampling approach.
3) The ability to describe periods of time using multiple task descriptions is useful and has been used in other studies. For example, it has previously been found in the emergency department setting that physicians frequently access results in the patient’s record during discussions with consultants, either by phone or face-to-face. However, when time is attributed to multiple tasks, the analysis of the results is complicated. Since the time attributed to tasks is not mutually exclusive, care must be given to comparisons of time spent at aggregate levels. This will likely become of greater concern in the reports of future work when pre- and post-implementation comparisons are performed.

4) In reporting the results in this study, time percentages and interruption rates are reported without confidence intervals, although there appear to be unlabeled and undefined error bars in the bar graphs. Confidence intervals or other certainty measures become more important when the results are compared to similar results from other settings or after intervention. In this manuscript, we really have no idea whether the difference between 3.8 interruptions per hour in this study and 2.9 per hour in a previous study on hospital wards is significant.

5) In the Discussion under the sub-heading “Participant reactivity”, the first paragraph does not appear to be about participant reactivity at all. Perhaps a little reorganization is in order.

6) While I can appreciate that the authors view this study as a precursor to further studies and that the results are just part of a larger picture, the framing of this study within that larger picture seems out of place in the Results section of the Abstract. Something on this might well fit in the Background section of the Abstract.

Discretionary Revisions

1) The authors compare the activity patterns found in this study with those found in other studies, particularly their own studies performed on non-ICU hospital wards. They aptly note differences in activities related to the critical, time-sensitive nature of information flows in the ICU. It might also be of interest to compare their finding to those of published time-motion studies performed in the emergency department, another clinical setting with critical, time-sensitive information flows. The differences between task categorizations are a barrier to comparison, but at some level of aggregation of categories, meaningful comparison should be possible.

2) There are several typographical/editing errors in the paper - a close reading by someone different that the primary author should uncover these.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**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