Reviewer's report

Title: Medication Reconciliation at Admission and Discharge: a Time and Motion

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Reviewer: Stephanie K Mueller

Reviewer's report:

The authors present an interesting time-motion analysis of the medication reconciliation process at admission and discharge of 3 different services, including geriatrics, internal medicine, and surgery. They used these analyses to document the personnel and time spent on various tasks related to the medication reconciliation process and ultimately demonstrate much variability in this process.

Although the study and presented results are of interest, I have the following questions and suggestions for revisions to this study.

MAJOR COMPULSORY REVISIONS:

1. The authors main conclusion based on the variability of time spent on the med rec process (ranging from an average of 9.9 minutes spent at time of discharge from the surgical service to an average of 92.2 minutes spent at time of admission to geriatrics service) is that inefficiencies exist in this system, that may be ameliorated by use of health IT. Although inefficiencies likely exist, and can be included as one of the intpretations of their results, I would like to see them focus on the likely variability of quality of the med rec process that also likely exist. Although 90+ minutes spent on med rec on admission to the geriatrics service is likely too long (indicating inefficiency), likewise, 9.9 minutes spent on med rec on discharge from the surgery service is likely too short (indicating poor quality). This is likely supported by the fact that pharmacists were involved in the med rec process on the geriatrics (and medicine) services, but only residents and medical students were involved on the surgery service, and evidence supports use of pharmacy staff for best practice of inpatient medication reconciliation (Mueller et al, JAMA-IM, 2012). A better understanding what is the ideal amount of time to spend on med rec process is therefore likely needed to further evaluate these results relative to some standard. Further, the ideal time spent on med rec is likely dependent on a number of factors, including the number/type of medications a patient is taking as well as other baseline patient characteristics (health literacy, comorbid conditions, number of medications changes, etc.); none of these factors are accounted for in this analysis and therefore this should be mentioned as a limitation to this study. All of these factors should be discussed in their discussion and conclusion sections.

2. In addition, the authors mention on a couple of occasions that tasks spent away from direct patient care are nearly double time spent in direct patient care, related to med rec. However, some of this time spent away from patient care is
appropriate (i.e. Verifying medication lists with outpatient pharmacies). The authors could modify their conclusions to this finding by looking through the list of subtasks and identifying which ones that are not directly related to patient contact may be most amenable to delegation to a health IT system, and which are still required by person-work.

3. The authors also conclude that because 1-3 health professionals (MDs and pharmacy staff) are involved in the med rec process, that unclear role responsibilities exist. Although unclear role responsibilities may exist, again, it could be a good thing that more than 1 health professional a involved in the process.

4. As alluded to above, I think it is an interesting finding that the services where pharmacists are involved in med rec (geriatrics and medicine) spend longer on the med rec process than services that don't involve pharmacist (surgery); this also indicates likely poorer quality med rec on the surgery service, since evidence suggests that best practices of inpatient med rec include pharmacy staff as stated above.

MINOR ESSENTIAL REVISIONS:
1. In the methods section, I don't follow why surgical admissions through the ER were not included in the time-motion analysis? How do these patient admissions differ from geriatrics and medicine patients as I presume most of these patients are also admitted through the ER.

2. The methods sections should also detail where and when providers were shadowed for the time-motion analysis. Was it only on the wards, or in the ER as well? Only during weekdays or did it also include nights and weekends? This could skew the results if shadowing did not include nights or weekends, as the med rec process may have been shorter during these times of generally less staffing. Therefore, if shadowing for time analyses only occurred during weekdays, this should be clearly mentioned in the methods section, and should also be included in the limitations.

3. I did not understand the following sentences in the discussion sections: "in addition, medication reconciliation intent may vary over the care episode, in relation to the timing and acuity of the surgical procedure. In addition, there is concern about the competency of surgical specialists undertaking therapeutic decisions on increasingly complex medication lists. "

**Level of interest:** An article of importance in its field

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
I have no conflicts of interest to declare.