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

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Author's response to reviews: see over
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Mr. Paolo Mabuyo and Prof. Dominique Somme, Editors

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Dear Mr. Mabuyo and Prof. Dominique Somme,

We would like to thank the Reviewer for reviewing our manuscript and providing us with insightful comments and suggestions on how to improve its quality. We have revised the manuscript in light of them. Revisions are highlighted in yellow and details of our responses to each comment are shown below. Please do not hesitate to contact us for any additional information.

Sincerely,

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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 interpretations 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.

Authors’ comment: We thank the reviewer for the insightful comments. We agree that the absence of pharmacists on the surgery unit contributes to both the variability in quality and amount of time of the process. The reviewer is also correct in pointing out the need to better understand what the ideal time to spend on medication reconciliation process should be and the factors that may be associated with it. We agree that a number of additional factors, including those pertaining to patient, care provider and health system, would likely influence the length of the process. We have edited the discussion and limitation section to include these points (p.11-13).

2. 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.

Authors’ comment: We thank the reviewer for the suggestion. We have edited the discussion section to mention that tasks such as faxing, calling, and/or documentation could be most amenable to electronic assessment, freeing up time better allocated to direct patient contact-based tasks and subtasks (p. 13).

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 professionals are involved in the process.

Authors’ comment: We thank the reviewer for bringing this point out. The discussion has been edited to emphasize the potential of having more than one health care professional involved (p. 11).

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.

Authors’ comment: We have edited the discussion section to mention the likelihood of poorer quality of the medication reconciliation process in the general surgery unit (p. 12-13).

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.

Authors’ comment: The reviewer’s comment highlights another challenge within surgical services: performing medication reconciliation in patients admitted urgently and immediately directed to the operating room for an emergency procedure. Logistical reasons prevented us from performing time and motion analysis on this clientele.
Additionally, the challenge of accurate drug use information in these patients differs in that compared to other patient populations. Documentation on a specific and non-exhaustive list of medications is critical on the way to the operating room (e.g. anticoagulants, anti-platelets, antibiotics). This is already covered by another patient safety process performed by surgical teams, the “time-out” check list. In the context of a clinical trial, we are currently exploring opportunities in optimizing information on active drug lists at surgical time out, through the use of health information technology (p.5-6).

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.

Authors’ comment: The observations reported in this manuscript were performed between Mondays and Fridays, 7:00 AM to 6:00 PM. We specifically limited our study to these time periods to characterize the medication reconciliation process during “optimal” staffing conditions. The reviewer is right in noting that this process may differ outside of regular operating hours. Smaller numbers of more junior house officers with lesser direct supervision, absence of some of the health care professionals typically involved in mediation reconciliation (e.g. pharmacists) and urgency or acuity of admissions creates unique challenges that warrant a separate study on the process of medication reconciliation outside of regular hours of operation. The methods section has been reformatted and the discussion expanded to better reflect this point (p. 7, 14-15).

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."

Authors’ comment: The section alluded to has been completely reformatted to better highlight challenges in performing medication reconciliation on surgical services (p.13).