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Medication Reconciliation: Will the Real Medication List Please Stand Up?

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To The Editor

Medication reconciliation is defined by The Joint Commission as “a process of obtaining and documenting a complete list of the patient's current medications upon the patient's admission to the organization and with the involvement of the patient.”¹ Medication reconciliation on admission to the hospital is an essential step to prevent downstream medication discrepancies and adverse drug events.² At Magee-Womens Hospital (MWH) of

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Royalties		X		X		X		X
Expert Testimony		X		X		X		X
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UPMC, nurses document initial medication lists as soon as possible upon admission as one part of the admission process. Pharmacists are not routinely or systematically involved in admission medication reconciliation at MWH; however, prior research has shown tremendous promise for pharmacist-led medication reconciliation.³⁻⁶ Thus, using a pharmacist-led quality improvement process, we sought to describe the prevalence of medication clarifications (i.e., initial differences between outpatient medication list and first-documented list that require clarification to be reconciled) and medication discrepancies (i.e., unexplained differences between outpatient medication list and inpatient list present after 24 hours); and to describe the potential severity of detected medication clarifications and discrepancies.

Methods

We conducted a prospective, cohort study of a convenience sample of 69 older adults (65 years) who were admitted from a non-nursing home setting to MWH from July 1, 2013—June 30, 2014. Included patients were admitted to either a general medicine or geriatric inpatient ward. Excluded patients were those unable to communicate and those discharged from the hospital within 24 hours or before an interview could be conducted. A clinical pharmacist identified newly admitted patients using a computer-generated admission roster and conducted medication reconciliation interviews after 24 hours of admission. A thorough history of all medication use was conducted, using as many of the following sources as needed: patient or caregiver, community pharmacy, and/or electronic medical record (inpatient and outpatient). Medication clarifications and discrepancies were recorded. To prevent misclassifying a medication clarification or discrepancy for an appropriate modification to the regimen, all events were reviewed with the admitting medical team, who was asked whether the identified events were intended or unintended. Unintentional events were the focus of this project. One geriatrician and one geriatric nurse practitioner independently classified each medication clarification and discrepancy for its potential to cause harm. Disagreements were resolved by discussion, and consensus was reached for all discrepancies. The UPMC Total Quality Council approved this study as a quality improvement project.

Results

Among 69 patients assessed, there were 219 total medication *clarifications* (mean=3.2; median=2; range=0-14) on admission. After at least 24 hours of admission, there were 28 total medication *discrepancies* (mean=0.4; median=0; range=0-4). Prevalence of medication clarifications and discrepancies by severity are shown in Table 1. Among those medication clarifications and discrepancies rated as having any clinical significance, most were rated as minor. The two medication clarifications rated as major included: an 83 year old patient with atrial fibrillation where warfarin 20 mg daily was listed on the initial medication list rather than the correct dose of 5 mg daily, and a 68 year old patient with Alzheimer's dementia and confusion where zolpidem was listed on the initial medication list even though the patient was not currently prescribed the medication. An example of a medication discrepancy rated as moderate involved an 84 year old patient with Lewy Body dementia who received quetiapine 50 mg twice daily rather than the outpatient prescribed amount of 50 mg once

daily. The best sources for medication information were as follows: community pharmacy (n=36), outpatient electronic record (n=16), inpatient electronic record (n=15), and patient/family (n=2).

Discussion

This quality improvement project provides important data on medication clarifications and discrepancies collected via pharmacist-led medication reconciliation among older adults admitted from community settings. We found that initial medication lists had an average of 3.2 medication clarifications, with less than one medication discrepancy per patient after 24 hours. These medication-related events have the potential to start a cascade of medication misinformation. Of note, approximately 50% of all medication clarifications and medication discrepancies were deemed to have potentially minor/moderate severity. The most important limitation of this study was the relatively small sample size and single site.

Moreover, contrary to popular belief, community-based pharmacy sources offer an often neglected, but important medication list in addition to electronic-based medication lists from inpatient/outpatient settings and patient/family reports. Future work includes piloting use of a clinical pharmacist in the emergency department to lead medication reconciliation, evaluating areas for improvement in electronic documentation of medication lists as well as sources of medication information (e.g., community pharmacy), and exploring use of a stand-alone “Medication Reconciliation” note with important narrative collected from the medication reconciliation process.⁷

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References

1. The Joint Commission. [May 5, 2015] Using medication reconciliation to reduce errors. [online]. Available at http://www.jointcommission.org/assets/1/18/SEA_35.pdf
2. Boockvar KS, Liu S, Goldstein N, Nebeker J, Siu A, Fried T. Prescribing discrepancies likely to cause adverse drug events after patient transfer. *Qual Saf Health Care*. 2009; 18:32–36. [PubMed: 19204129]
3. Steurbaut S, Leemans L, Leysen T, et al. Medication history reconciliation by clinical pharmacists in elderly inpatients admitted from home or a nursing home. *Ann Pharmacother*. 2010; 44:1596–1603. [PubMed: 20736427]
4. Beckett RD, Crank CW, Wehmeyer A. Effectiveness and feasibility of pharmacist-led admission medication reconciliation for geriatric patients. *J Pharm Pract*. 2012; 25:136–141. [PubMed: 22048929]
5. Kwan JL, Lo L, Sampson M, Shojania K. Medication reconciliation during transitions of care as a patient safety strategy. *Ann Intern Med*. 2013; 158:397–403. [PubMed: 23460096]

6. Rennke S, Nguyen OK, Shoeb MH, Magan Y, Wachter RM, Ranji SR. Hospital-initiated transitional care interventions as a patient safety strategy: a systematic review. *Ann Intern Med.* 2013; 158:433–440. [PubMed: 23460101]
7. Greenwald JL, Halasyamani L, Greene J, et al. Making inpatient medication reconciliation patient centered, clinically relevant and implementable: a consensus statement on key principles and necessary first steps. *J Hosp Med.* 2010; 5:477–485. [PubMed: 20945473]

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Table 1
Prevalence of Medication Clarifications and Discrepancies by Severity

Problem	Medication Clarifications (n=219) ^a			Medication Discrepancies (n=28) ^{b,c}		
	Minor ^d	Moderate ^d	Major ^d	Minor ^d	Moderate ^d	Major ^d
Omission	29	6	--	4	1	--
Duplication	2	--	--	--	--	--
Wrong drug	9	7	1	3	2	--
Wrong dose	23	17	1	3	2	--
Missing information	2	1	--	--	--	--
Other	2	2	--	--	--	--
Total	67	33	2	10	5	0

^a 117 medication clarifications were rated as "none" regarding clinical significance

^b 13 medications discrepancies were rated as "none" regarding clinical significance

^c 7 medication discrepancies were present on the Discharge Note (i.e., persistent medication discrepancies)

^d *Major*: life-threatening adverse event would be likely; *moderate*: clinically important adverse event would be likely; *minor*: clinically important adverse event would be possible