Medication Reconciliation—Too Much or Not Enough?

Jeffrey L. Schnipper, MD, MPH

Medication reconciliation is an activity where the gap between face validity and proven benefit remains frustratingly large. Multiple studies have shown the high prevalence of error in taking a preadmission medication history upon hospital admission and the high rate of unintentional medication discrepancies in admission and discharge orders. And multiple studies have also shown the ability of medication reconciliation to reduce these discrepancies. Given the high rate of drug-related problems after hospital discharge and the fact that adverse drug events are by far the most common form of postdischarge adverse events, it only stands to reason that effective medication reconciliation interventions should reduce hospital readmissions. And yet, systematic reviews have failed to show this effect.

This message is repeated in the study by Ceschi and colleagues. In this randomized clinical trial of 1702 patients who were aged 85 years or older and/or were receiving more than 10 medications at the time of hospital admission to 1 of 2 teaching hospitals in southern Switzerland, a standardized admission medication reconciliation intervention was associated with no difference in the incidence of 30-day readmissions or emergency department visits (39.3% vs 39.5%). There were also no statistically significant differences in a range of secondary outcomes.

There are several possible reasons for this finding, related to both this study in particular and what we know about medication safety during care transitions. First, while the intervention was standardized and included the most important elements (a "best possible medication history" by a pharmacy assistant, reconciliation by an experienced clinical pharmacist, communication with ordering physicians regarding possible medication changes), there are several questions about the fidelity of the intervention, including the extent to which the pharmacy assistants possessed verified competency in history-taking (which is by no means guaranteed), and the nature of the communication with physicians and the extent to which they followed the pharmacists' advice. There are also several methodological concerns about the study, the most serious of which is the possibility of selection bias, since only the patients in the intervention arm had to provide consent, and more than one-third did not and so were excluded only from that arm of the study (although if anything, this might bias the study in favor of the intervention). Furthermore, there was no multivariable adjustment (eg, Cox proportional hazards analysis of the time-to-event outcomes) to adjust for possible confounders that might have arisen from this selection bias. Very few patient characteristics were captured from patients in both study arms with which to judge their comparability.

Another possible set of reasons for the study's lack of significant effects is related to what the intervention did not include. The authors note a recent Danish study by Ravn-Nielsen and colleagues that did find significant reductions in 30- and 180-day postdischarge outcomes. Contrary to popular belief, this was not the first study of medication reconciliation to show a significant effect on postdischarge health care utilization; indeed, a study by Gillespie and colleagues found this effect more than a decade ago. Like the study by Ceschi et al, both these studies focused on high-risk patients (aged ≥80 years in the study by Gillespie et al, ≥5 medications in the study by Ravn-Nielsen et al). Unlike the study by Ceschi and colleagues, their interventions included several other elements, including medication regimen review, medication reconciliation at discharge, patient counseling at discharge, patient follow-up after discharge, and communication with each patient's primary care practitioner. These elements are crucial: medication regimens are often suboptimal, and optimizing them can have long-term patient benefits; medication discrepancies at discharge are more likely to be potentially harmful than those at admission because of decreased monitoring in the
postdischarge setting and can be due to new reconciliation errors; patients require education and follow-up after discharge to ensure they have the knowledge, skills, and attitudes to take their medications correctly and safely; and primary care practitioner involvement in the postdischarge care plan is essential for ongoing care continuity.

Lastly, while readmissions often drive health care resource decisions, it is not the only important measure of the safety of care transitions, and it is a metric that is notoriously difficult to change. The high rates of readmission in the study by Ceschi et al reflect not only the authors’ ability to identify a high-risk patient population but also the many other competing causes of readmission in these patients. Estimates from rigorous studies are that only approximately one-quarter of readmissions are preventable by any intervention, much less one focused narrowly on admission medication reconciliation (the caveat to this statement is that a greater proportion of readmissions may be preventable by addressing so-called post-hospital syndrome by avoiding hospitalization in the first place, eg, substituting the index hospitalization with hospital at home). Other metrics of transitional care safety include postdischarge adverse events, patient and caregiver experience, and caregiver burden. Medication reconciliation may indeed improve several of these, but they need to be measured to show these effects.

So, is admission medication reconciliation useless? Of course not. First of all, a well-done medication history is essential for any other acute care intervention focused on medication safety (and for that matter, for making the diagnosis, since at least 5% of hospitalizations are due to drug-related problems). It is also notable that in the study by Ceschi et al, there was a 24% relative reduction in inpatient adverse drug events, the outcome most directly related to admission medication reconciliation (albeit not statistically significant, likely because of low rates of documentation of these events and therefore low statistical power). Rather, admission medication reconciliation needs to be combined with other interventions that together are likely to impact postdischarge outcomes: medication regimen review, discharge medication reconciliation, patient and caregiver counseling, postdischarge follow-up, and communication with primary care practitioners (and community pharmacies). We are currently conducting a 2-site study in the US of exactly this kind of intervention (NCT04071951), powered to detect a 2.5% absolute reduction in 30-day readmission and emergency department visit rates.

In conclusion, while skeptics of medication reconciliation would like to view it as an unnecessary step, the truth is more likely that it is important but insufficient by itself, just one piece of a larger set of interventions needed to improve medication safety during care transitions.


