

# Prevention of Medication Reconciliation Errors: Results of a Quality Improvement Study

Temekis Hampton, Manisha Singh\*

Division of Nephrology, Department of Internal Medicine, University of Arkansas for Medical Sciences, USA

\*Corresponding author: Manisha Singh, Division of Nephrology, Department of Internal Medicine, University of Arkansas for Medical Sciences, 4301 West Markham st #501, Little Rock Arkansas - 72205, USA. Tel: +15012405804; Email: msingh@uams.edu

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## Abstract

Medication errors and adverse events related to medication errors occur more frequent than we would like. The resulting burden of the error on patient welfare and healthcare is significant. As technology advances, and more is available, we expect that the potential for these errors will also grow. There are errors in the patient's medication at every transition of care, including inpatient to outpatient settings, change of providers, change of pharmacy, or travel needs. Patients on dialysis are usually on multiple medications and many have expressed concerns that they are missing medications- on their own or at transitions between facilities. We have reports of these errors being quite common. We believe that the one unifying thread that can help in minimizing these errors is the patient himself. We understand that given the complex medical needs many of the patients are not able to keep up with the changes. We hope to enable the patient to carry with him the tool that can be updated as and when necessary, that can easily reflect his/her current prescription. This Quality Improvement (QI) measure aimed to empower the patient, himself/herself to have the most active role in their health by utilizing medication wallets. This QI measure was introduced to improve medication reconciliation in peritoneal dialysis patients at Dialysis Clinic Inc. (DCI)/Little Rock Renal Services. Data collected for 6 months.

**Keywords:** Medication Reconciliation; Patient Satisfaction; Patient Safety; Quality Improvement

## Problem

- i. Medication reconciliation:- Healthcare systems strive to provide competent care at no additional harm [1]. Current statistics on medication errors are staggering. Medication reconciliation is one way to address medication errors and prevent potentially life-threatening outcomes. Dialysis patients have multiple significant comorbid conditions and various specialty providers. Dialysis patients take an average of 10-12 medications from an average of 4.7 prescribers, about 19 pills a day [2].

Developing an intervention that allows all healthcare teams to have access to a current health summary and medications is optimal in our efforts to do no harm. It is our (the health care providers) responsibility to provide a culture of safety to our patients [3].

- ii. Home dialysis patients:- Each patient can, at an average, have 2-3 providers which may be geographically separated widely. The patients have multiple problems and multiple medications. Our patient subgroup tends to travel widely, and is also a relatively frail patient subgroup, at risk of falls, infections and need for emergent healthcare visits.

## Available Options

The era of EMR (electronic medical records) does enable better follow up between institutions and providers that share the EMR (collaborating systems). Sometimes the consent to share medical information can take long between non-collaborating health care settings.

Smart phones have apps that can address some of these issues, however there are needs of charging the phones as well as a certain degree of digital intelligence, which can be a challenge to older, more frail patients. The Medication Wallet is the QI intervention addressing these concerns.

## Measurement

We followed the impact of the intervention by questionnaire based survey, detailed under. We also plan continue to review the patients charts every 6 months for follow up.

## Strategy

### The QI measure consisted of three phases

**Phase 1:** Identification of peritoneal dialysis patients for participation in this QI measure. (12/15 consented).

**Phase 2:** Chart review to identify the extent of the problem. Review of medications noted in patient's dialysis record/EMR and comparison to available admission/discharge records and/or other hospital medication lists. Accuracy was determined between these two medication sources. Medications verified with patients. Errors noted in 95% patients. That is, there was at least 1 medication not listed or omitted between two provider visits.

**Phase 3:** Introduction of intervention (Medication Wallet) and monitoring to determine its effectiveness in aiding in the medication reconciliation process.

A questionnaire based survey was undertaken at the start of every clinic visit to assess the efficacy of this intervention.

## Wallet

We developed the wallet as a tool that the patient could carry upon himself/herself, with no additional discomfort or expense. The wallets were purchased from online sources, priced at about ten dollars per wallet. The funds were provided by the dialysis unit.

Blank visiting cards, index paper was used to write down by hand, the information we planned to provide. This was not time consuming at this step as we did not have too many patients. To expand at next level, we plan to print off medications as labels. Once created, the wallet can be updated with minimal effort, by any member of the team. We encouraged our nurses, patient's health care buddy as well as the patient himself if capable to update the wallet.

## Content of Medication Wallet

Patient and Care buddy details (with phone number). Allergies, Code status (if DNR).

Dialysis Center information (name, address, phone number and fax number).

Nephrologist, Nurse Practitioner, Registered Nurse, Dietician and Social Worker (with phone number and/or email).

Pharmacy and primary care provider (with phone numbers).

Patient dialysis prescription (type of dialysis, PD catheter

placement date and surgeon, dialysis start date, type of cycler if cycler is used).

## Medical History

Medications (listed 1-4 per page) including dosage and frequency.

## Immunization History

There are slots for ID and credit card/cash/insurance cards.

## Results

Percent of study population	Reported Result
17%	Admitted over last 6 months.
67%	Had other healthcare visit (ER, PCP) in the prior month.
100%	Medication reconciliation occurred at admit or at the health care encounter using the wallet.
33%	No reconciliation at discharge from the other encounter.
67%	Brought their wallet to dialysis clinic visit.
100%	Patients reported the wallet to be a very effective and helpful intervention.

**Table:** Results of follow-up questionnaire

## Lessons and Limitations

At the start of the project, as a quality improvement measure and as a patient safety tool, we planned introduce a pocket diary, a wallet or an app for the patient to carry in person. The diary/app was to have simple details of his/her medications and dialysis prescription, as well as contact information of his/her regular doctors. This diary/app could be reviewed and updated by the patient, nurse, pharmacist or the doctors. It could serve as a tool to help minimize medication omissions, as well as help expedite care transitions, also serve as a tool of communication between various caregivers. It could serve as a reminder for the patient, and empower him/her to feel more in charge of his medical needs. However, the diary was abandoned in favor of the wallet by patient preference. We could not get the app ready in time, and due to urgency of intervention, we introduced the wallet. We are still working on the app, which may benefit the more tech-savvy patients.

## Wallet

All patients and their providers felt that the intervention was positive and saw the benefit of the wallets. We received multiple positive comments and endorsements for this effort from patients as well as providers.

Major challenges included patients not always carrying the

wallet with them (usually when a caregiver is involved) and other providers not updating medication changes, even after reviewing its contents and making medication changes. The patients did not always remember to share this knowledge with their other providers.

Our sample size is small as we had only these many patients to work with. Our first design had a lot more information like the starting dialysis prescription, which we realized over time to be too much information to carry. We attempted to make this practical by including only current prescription. The wear and tear of the wallet is a concern, as well as a potential of losing the wallet. So far no one has lost a wallet from this group and we are planning to buy more wallets to replace old ones as needed. The last batch is holding well for about one year. One patient did not like the wallets cover, so he took out the middle section and attached it to his own preferred wallet. Over all, this has not changed anything in the outcome of his wallet as he still has all the relevant information on his person.

We are attempting to educate our patients at every visit the importance of getting the wallet updated.

Through grand-round presentations and publications, poster presentations, we are educating providers regarding our medication reconciliation efforts.

We hope to expand to all our patients and encourage its use in other centers.

## Conclusion

Accurate reconciliation can greatly decrease the risk of medication errors and associated adverse outcomes. End stage renal disease patients have high health care utilization, requiring communication between multiple providers and health care

systems [4]. Dialysis patients have increased risk of polypharmacy (average of 12 medications per patient in our home dialysis clinic). Our results prove that the Medication Wallet to be an effective way for medication reconciliation. From the prior estimated medication -reconciliation errors at 95%, we now estimate a significant reduction to 100 % correct medications at hospital admits when the patient made available their wallets to admitting provider, and 70% correct list at discharge. We continue to address the challenge of educating providers and patients on effective use of this intervention. This has proven to be an inexpensive, and practical solution for our patients. We opine that this is sustainable, and we are being encouraged by the dialysis center to expand the project to all dialysis patients. This was more a pilot study and we hope that expansion would let us see how effective this remains over time.

## Acknowledgements

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