

Discontinued Medications: Are They Really Discontinued?

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The Case

A 69-year-old man with a history of chronic atrial fibrillation and associated cerebrovascular accident (CVA) treated with warfarin and aspirin, presented to the emergency department (ED) with a severe headache. A STAT computed tomography (CT) scan revealed bilateral subdural hematomas. His international normalized ratio (INR) was determined to be supratherapeutic at 4.9. He was admitted to the intensive care unit (ICU) for monitoring of his neurologic status. After resolution of the severe headache, warfarin was restarted because of the high risk associated with his previous CVA (CHADS2 score of 3).

One day after re-initiation of his warfarin, he experienced a recurrence of his subdural hematoma. The warfarin was discontinued, the patient stabilized clinically, and he was later discharged home. Although warfarin was not included on his Discharge Medication list, a few days after returning home the patient received warfarin via mail order from his outpatient pharmacy. While confused by the receipt of the warfarin, the patient restarted the medication. At his follow-up appointment he was noted to have an elevated INR. Recognizing the elevated INR was a result of the patient's re-initiation of warfarin, a repeat head CT was performed which fortunately was negative for recurrent hemorrhage. In response to these events, warfarin was added to his allergy list with the comment "Never to be resumed." Regardless, when the primary care provider (PCP) contacted the pharmacy weeks later, warfarin remained on the active medication list, with available refills. The PCP had it removed from this list.

The Commentary

Transitions of care represent a period of increased vulnerability for patients, and reduction of transition-related errors is a priority for organizational performance-improvement efforts.(1) Approximately half of adults experience a medical error after hospital discharge, and 19% to 23% have an adverse event, usually associated with medications.(2) A comparison of medication records for patients older than 65 years discharged from hospitals to subacute care revealed that 86.2% of the records had at least one medication

discrepancy.(3) Medication reconciliation is a potential mechanism toward the prevention of adverse drug events and has been a Joint Commission requirement since 2006.(4) The process of "med rec" includes documentation of a complete list of a patient's current medications at hospital admission and discharge with a goal of communicating this list to the next clinician. Many studies have looked at using medication reconciliation as a way to decrease medication errors and adverse drug events (ADEs).(4) A recent review associated with emergency department (ED) discharge demonstrated that utilization of a best practice model for medication reconciliation could provide a framework to expand ED collaboration with community partners.(5) Such collaborations are increasingly important in the face of emerging payment models such as bundling and accountable care organizations.

In this specific case, the error involved an inadvertent refill and delivery of a high-risk medication despite discontinuation of the drug during a recent hospitalization. The prevalence of this error has not been well described; however, it is likely that it takes place commonly.(6) A retrospective cohort study in Massachusetts of electronically discontinued medications found that 1.5% were subsequently dispensed by the pharmacy at some point during the 12-month follow-up.(6) Communication of the reasoning for discontinuation (e.g., adverse drug reactions [ADRs]) to general practitioners and pharmacists is insufficient; a 27% rate of re-prescription after an ADR during the first 6 months following discharge has been observed.(7)

Failure to truly discontinue a medication that a clinician wants to discontinue can result in serious, if not fatal consequences, particularly with high-risk medications such as warfarin. Upon receipt of a medication order, the prescription becomes part of the pharmacy database. Unfortunately, there is no similar process to notify pharmacies when medications have been discontinued. If a medication is discontinued in the hospital or clinic setting, the patient should be instructed to no longer take the medication. Furthermore, the drug should be removed from the patient's active medication list during medication reconciliation. However, this list is unlikely to be communicated to the pharmacy unless the provider actively contacts the pharmacist regarding the discontinuation. Consequently, automatic refills of discontinued medications may still occur.

To prevent similar errors in the future, pharmacies should have an accurate medication list, including notification of both added, as well as discontinued, medications. This information transfer should take place either through the electronic medical record or via a pharmacist or discharge coordinator associated with the clinic or hospital setting. As is the case with newly prescribed medications, discontinuation of a medication should result in the pharmacist's removal of the drug from the patient's medication list. Community pharmacists receive post-discharge information rarely, but they almost always receive this information for patients with medication issues that are considered complex (8), suggesting that the ability of community pharmacists to improve patient safety after hospital discharge is not being maximized. The use of pharmacists in medication reconciliation can decrease the rate of readmission and ADEs. In one study, pharmacist-conducted medication reconciliation at discharge reduced discrepancies for elderly patients admitted for exacerbation of chronic obstructive pulmonary disease; the 30-day readmission rate was decreased further by expanding pharmacist responsibilities during transitions of care.(9) One study using pharmacist home visits for medication review and education after discharge from hospital (3) and another with pharmacists involved in post-discharge transitions (10) showed improved medication use and reduced health care resource utilization. Nurse-pharmacist collaboration is another potential way to more

accurately reconcile discrepancies.(11,12)

A key piece in medication reconciliation is the review of discharge drugs, including changes in the medication list, with the patient. Engaging patients in medication reconciliation via a patient portal following hospital discharge (13) is another promising approach. In the current case, if the discontinuation of warfarin had been discussed with the patient in detail, perhaps the patient would have notified his primary care provider (PCP) before starting this medication again.

Communication with the PCP and other specialists at discharge reduces medication discrepancies.(14) In this patient, the missing factor was the pharmacy communication. Educating our medical trainees about the importance and practice of this process could help reduce these errors.(9)

Finally, electronic medical records, and more importantly, access to these records through a Health Information Exchange (HIE), should be fully utilized to prevent these types of errors. A medication reconciliation process in which the discharge summary and discharge medication list are sent automatically to all relevant parties (PCPs, other providers, pharmacies) is worth exploring.

An Assessment of Risk Tool has been developed to monitor pre-specified clinical flags for high-risk medication use and other ADE risk factors.(15) Hospital-based clinical pharmacists intervened with medication reconciliation and clinical review in a more timely and targeted manner using this tool. Another study evaluated the use of secure messaging for medication reconciliation, particularly during transitions of care, to reduce ADEs.(16) The Seamless Transfer of Care Protocol, an electronic transfer of care communication tool, is currently being studied to determine if it can help decrease readmissions, adverse events, and deaths.(17)

After reviewing this extensive literature, we believe that a multidisciplinary approach would yield the best opportunity to create and maintain an accurate medication list. Such an approach would include an inpatient pharmacist connecting with the patient and the community pharmacy as well as the PCP. It would also have the nurse and/or pharmacist conduct patient education, preferably using the "teach back" technique. A follow-up appointment with the PCP, nurse/pharmacist home visit, and sharing of updated discharge medication list with PCP and pharmacy would also facilitate this process. In this specific case, we believe any one of these techniques would have resulted in the patient not restarting his warfarin, thus preventing a serious, and what could have been fatal, medication error.

In the end, all parties responsible for patient care transitions should ensure that the correct and most accurate medication list is being utilized. Hospitals, patients, pharmacies, and PCPs must develop systems to communicate with each other in real-time about changes to the patient medication list. It is time for there to be a single, always correct, medication list, and for that list to follow patients across the continuum.

Take-Home Points

- Medication errors are common, particularly at the point of care transition.
- Medication reconciliation must include the primary care physician and the patient's community pharmacy.
- Using health information technology and exchange platforms are key to addressing this issue and improving communication among all parties.

- Patient education is an integral component of medication reconciliation.
- A multidisciplinary approach is the best option for decreasing ADEs after hospital admission including communication with the PCP and outpatient community pharmacy.
- The goal must be an always-accurate medication list that follows patients across the continuum of care.

Celina Garza Mankey, MD Ambulatory Medical Director Seton Healthcare Family, Austin, TX Associate Professor of Medicine UT Southwestern-Austin

Prathibha Varkey, MD, MBA, MPH President & CEO, Seton Clinical Enterprise Seton Healthcare Family, Austin, TX Adjunct Professor of Medicine and Preventive Medicine Mayo Clinic, Rochester, MN

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