

Consequences of Undocumented Medication Use

Kimberly M. Crosby,¹ Sarah Hausner,² and Nancy Brahm³

Obtaining complete medication histories is imperative to treating patients effectively and avoiding unintended medication consequences. Health care providers (HCPs) receive training and learn skills to help elicit complete medical information, including but not limited to medication use, but the system falls short in some instances (1,2). In these instances, undocumented medication use can complicate patients' treatment. Examples encompass confounding of the differential diagnosis and unforeseen medication interactions. The potential for unintended medication consequences can be increased by omissions in reporting usage of herbal, homeopathic, or over-the-counter (OTC) treatments.

Although warnings about the risks of self-medicating, such as possible variability of medication effects from one person to another, date back for decades, this practice has become increasingly common (3,4). Self-medication through the use of old prescriptions or OTC products has the potential to pose problems, but self-medication via prescription sharing with other individuals—often family members or friends—is especially problematic. This practice can be dangerous because it can remain undetected for long periods of time and may be accompanied by a wide range of effects.

Prescription medications are intended to be used under the supervision of licensed HCPs. The sharing of prescription medications among

individuals removes pharmacists and other HCPs from the medication use process, resulting in the loss of education and instruction regarding the safe use of medications and increasing the potential for adverse effects (5,6). A survey distributed to patients in community pharmacies in New Zealand showed that, among prescription sharers, about half of prescription borrowers received written instructions with the medication, and about half of prescription lenders gave verbal instructions with the medication (7). That leaves many individuals with no instructions at all, and those who do receive instructions cannot be certain that they have received correct information because the source is not an HCP. Prescription sharing can delay a person from seeking needed professional help while time is spent seeking treatment outside of the traditional health care system. Additionally, circumventing the health care system can lead to increased side effects, interactions, and drug allergies (5,7,8).

In this article, we report a case of uncontrolled type 2 diabetes secondary to the use of an undocumented shared prescription for quetiapine, a second-generation antipsychotic (SGA) medication.

Case Presentation

The patient, a 56-year-old African-American man, was seen for an initial diabetes education and management visit in a longitudinal primary care clinic with a pharmacist who was also

¹University of Oklahoma, School of Community Medicine, Department of Family Medicine, Tulsa, OK

²Pharmacy Practice Resident, Department of Pharmacy Practice, University of Illinois at Chicago College of Pharmacy, Chicago, IL

³College of Pharmacy, University of Oklahoma, Tulsa, OK

Corresponding author: Kimberly M. Crosby, kimberly-crosby@ouhsc.edu

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a certified diabetes educator. The patient's medical history included type 2 diabetes, hypertension, dyslipidemia, and erectile dysfunction. His medication list as documented in the electronic medical record (EMR) included insulin glargine 28 units subcutaneously at bedtime, insulin glulisine 20 units subcutaneously before each meal, pravastatin 10 mg by mouth daily, bisoprolol/hydrochlorothiazide 5/6.25 mg by mouth twice daily, amlodipine 5 mg by mouth daily, and sildenafil 50 mg by mouth as needed. The patient had started insulin 2 months before this diabetes education and management visit.

The patient had been seen in the clinic for 12 months before this visit. His type 2 diabetes was poorly controlled, and his A1C had increased from 9.3 to 13.9% during this period.

A comprehensive medication history was obtained as part of the diabetes education and management visit. The patient was asked about his current medication use, medication adherence, OTC medications, and other nondisclosed medications as part of this history. The patient disclosed that he had been taking quetiapine 200 mg at bedtime regularly for several years for insomnia and that he was obtaining this medication from a friend. He reported having difficulty falling asleep several nights per week. He reported that he had tried hypnotics in the past with mixed results and so had begun taking the quetiapine. The quetiapine was not listed on the patient's medication list or otherwise documented in the EMR. When asked why he had not disclosed the quetiapine use to any of his other HCPs, the patient said, "because no one asked."

The patient was educated about the risks of taking medications not prescribed for him. He was advised to discontinue the quetiapine use and to follow up in 1 month. He was also taught how to self-monitor his blood glucose. He was instructed to check his blood glucose regularly.

At the follow-up visit 1 month later, his insulin glulisine dose was increased to 25 units before each meal. His insulin glargine dose remained 28 units daily. At a second follow-up visit the next month, his insulin glulisine dose remained 25 units before each meal, and his insulin glargine dose had been increased to 36 units daily by his primary care provider. He was seen 1 week later for a follow-up diabetes management appointment with the pharmacist. His average blood glucose readings for the past month were as follows: morning fasting glucose 186 mg/dL (above the goal of 70–130 mg/dL) and post-lunch glucose 115 mg/dL (at goal). His A1C decreased to 9.3% during the 4-month period after his initial diabetes management visit. The patient denied taking any quetiapine since that first visit. The patient's insomnia was treated with various hypnotic agents with mixed results.

Discussion

Medication sharing is a problem that has received relatively little attention from HCPs to date. Available literature regarding the prevalence of prescription sharing highlights the problem. In a small group of veterans prescribed opioid medications, 34% shared or diverted unused opioids at least once (9). A recent review of the literature of prescription medication sharing revealed that medication borrowing rates have been reported from 5 to 52%, with medication lending rates of 6 to 23% (10). In a study of patients from urban clinics, individuals who reported borrowing prescriptions from someone else were less likely to have a primary care provider who regularly asked about medication usage, and many reported that convenience was the motivation for borrowing prescription medications (11). More research is needed regarding the adverse effects of prescription sharing, as well as methods of discovering undocumented medication use.

Even if a shared medication is theoretically appropriate for a given con-

dition, individuals who self-medicate via prescription sharing may be using the medication incorrectly (e.g., at the wrong dose or interval). Therefore, if the same medication or class of medication is then prescribed correctly after seeking care from HCPs, these individuals may have doubts about the efficacy or appropriateness of the medication or usage instructions. They may not take the medication as prescribed, and their condition could fail to improve or even worsen (5).

Sparse literature exists on the adverse effects of prescription sharing, possibly in part because of the wide range of potential adverse effects. In one case report, a patient with chronic kidney disease (CKD) and diabetes was experiencing lactic acidosis, but the ascertainment of the actual source of the problem was delayed. The etiology was the use of metformin, which had been discontinued for the patient because of a low glomerular filtration rate and advanced CKD. The patient's HCPs were unaware that the patient began taking metformin that had been prescribed for her son after her own prescription for it was discontinued (12). The patient improved after stopping the shared metformin. Our case is similar to this one in that prescription borrowing that negatively affected the patient's diabetes management was not communicated to the patient's HCPs. In both instances, the patients' medical condition improved when the inappropriate medication was stopped.

A score of 7 on the Naranjo Adverse Drug Reaction Probability Scale (13) indicated a probable relationship between our patient's hyperglycemia and the quetiapine therapy. This drug is in a class of SGA agents that has been linked to hyperglycemia. More data exist for olanzapine and clozapine than for other SGAs, but all SGAs can raise concern for individuals who have type 2 diabetes or are at risk for developing it (14–16). Other serious adverse effects of SGAs can include dramatic weight gain and dyslipidemia (17).

Results in the literature for the risk for diabetes in quetiapine users is discrepant (17). However, associations between quetiapine use and new-onset diabetes have been reported in a handful of cases (18–22).

The correlation between our patient's spike in A1C and his quetiapine ingestion period and his decrease in A1C after discontinuing the quetiapine suggest an association between his use of this drug and worsening of his glycemic control. However, other unknown variables could have contributed to the glycemic fluctuation. Potential recall bias limits our ability to draw a firm conclusion; the 2-year retrospection in this case could have prevented the patient from remembering or communicating relevant information other than the quetiapine use. However, this does not take away from the important point of his undocumented, unprescribed medication use.

Future research is warranted to ascertain the varying consequences of prescription sharing, especially of medications not typically categorized as drugs of abuse. In addition, more research is needed to determine the type and amount of education that HCPs provide to their patients regarding the dangers of prescription sharing. Finally, future research should focus on improving HCP-patient communication to identify prescription-sharing habits faster and more thoroughly.

Conclusion

Given the apparent prevalence of prescription sharing among patients, clinicians should exercise great intentionality and thoroughness in communicating with patients. Some patients may be reluctant to admit to prescription sharing without pointed questioning. Heightened awareness

of the pervasiveness of prescription sharing could lead to more accurate medical records. Clinicians should be proactive in inquiring about prescription sharing practices with their patients.

Duality of Interest

No potential conflicts of interest relevant to this article were reported.

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