In June of 2002, the American Journal of Health-System Pharmacy published an article entitled “Ensuring Continuity of Care and Accuracy of Patients’ Medication History on Hospital Admission.” In September of the same year, they published a second article demonstrating the inconsistencies between medication lists reported by patients and the actual lists. From September 2004 to July 2005, the United States Pharmacopeia received 2,022 reports of medication reconciliation errors. Of those reports, 66 percent occurred during the patient’s transition or transfer to another level of care, 22 percent occurred during the patient’s admission to the facility, and 12 percent occurred at the time of discharge. Half a decade later, the Joint Commission has elevated the issue to a National Patient Safety Goal (NPSG) with accountability required on the part of the healthcare institution.

Put simply, medication reconciliation is the process of acquiring and comparing a patient’s most recent medication list to the physician’s admission, transfer, and discharge orders.

The updated 2009 NPSG Goal 8 has four parts:

1) Collect a complete current medication list at the onset of a patient encounter.

2) Share the most current list with (any) next care provider.

3) Provide an up-to-date list of medications to the patient, along with counseling, upon discharge.

4) Allow a modified reconciliation process for one-time procedures and short-term needs.

It is important to note that medication reconciliation applies to all care settings to assure continuity of care and prevent avoidable adverse events.

**Risk Factors for Medication Errors**

With an aging population and an increasing number of patients with multiple care providers (and more than one pharmacy), there is a significant risk of medication misadventures and outright medication errors that can occur at every transition of care. Common misadventures include duplication of therapy, multiple dosing schemes for the same medication, and the retention of medications that are no longer necessary. Missing drugs are most common when patients receive care from multiple providers at different sites, especially when clinicians do not share records with each other. In addition, many specialists may not be familiar with the product names and indications of every drug their patients are taking, leading to incorrect documentation. Inaccuracies can also occur when medications that are no longer necessary are retained on the list, when supplemental verbal instructions are not recorded, and when orders are transmitted without concurrent changes being communicated. The risk of inaccurate documentation is particularly high with medication prescribed for short-term symptom relief, such as antibiotics, H2 blockers, and proton pump inhibitors. Another area of concern is taper and increase dosing changes that are communicated verbally to the patient, but are not transmitted to pharmacies or other providers.

Challenges occur when there is no clear ownership of the reconciliation process. Unfortunately, when physicians and nurses are charged with performing medication reconciliation, the focus is often on completing the task, rather than meeting the intent of the process. As medication experts, pharmacists are in the unique position to champion this cause and own it. In fact, I believe there is no area of healthcare delivery that can (and should) be affected by a pharmacist more appropriately than medication reconciliation. There is no staff member better trained in pharmaceutical applications, more aware of doses and dosage forms, or more focused on the drawbacks and contraindications of certain courses of therapy than the pharmacist. Furthermore, the nature of pharmacy work attracts detail-oriented practitioners.

**Opportunities for Risk Reduction**

Ideally, a pharmacist should greet and take the medication history of each and
every patient entering a healthcare delivery site. This includes retail pharmacies as well as institutions and ambulatory office settings. Each medication should be matched with a condition or disease state that it treats, prevents or cures. When a condition no longer exists, medications “assigned” to that condition need to be eliminated from the list with the joint collaboration of the pharmacist, the patient, and the prescriber. When a medication is no longer deemed effective or causes undesirable side effects, a switch should be made in conjunction with the prescriber. Should the development of additional conditions preclude using a particular medication as indicated, the agent should be eliminated or changed by teaming up with the prescriber and patient. This agreement should then be communicated to the providing source(s) of the medication.

During the course of treatment, be it a one-shot encounter or a multi-day hospital stay, the medication list and conditions must be reviewed regularly to keep the information up-to-date. In our institution, as with most others, we rely on computers to retain data and contribute to a more paperless environment. For those institutions without an automated process or with an older system, viewing all of the data on a single computer screen may not be possible. This often results in a fragmented picture, which can lead to oversight and errors. In our institution, we use a printed hard copy at the beginning and the end of the process. In the past, we found that the author of the end process (i.e., prescriber or reconciler) rarely reviewed the final product effectively. In fact, over 28% of pharmacy interventions in our institution are attributed to errors. In our institution, we use a printed hard copy at the beginning and the end of the process. Instituting pharmacist ownership of the front-end processes should eliminate a significant number of these issues.

**Steps to Ensure a Quality Process**

During the initial patient interview, the list of medications is obtained. When it is impractical for the pharmacist to perform this interview personally, the pharmacist needs to review the list with the patient at the earliest possible opportunity, and certainly within 24 hours. A system-by-system approach can help jog the patient’s memory for additional medications and often uncovers conditions, which can be attributable to some of the other medications. For example, try asking, “Do you take anything for headaches?” “Do you have any dental problems?” “What do you take for an upset stomach?”

The initial interview should also include inquiries as to the use of over-the-counter medications and alternative products, such as herbs and other health-related ingestibles. Even if these are not being continued during a hospitalization, this information should be considered as it relates to dosing interactions and post-hospitalization compliance.

Getting a compliance and last dose history helps address inappropriate dose tapering and changing, in addition to providing an opportunity to address any of the patient’s misconceptions. For instance, a psychotic break is more often attributable to a lack of access to the medication—forgetting to get the prescription refilled, deciding that one is cured, having other priorities—than a lack of medication efficacy. If a patient is intermittently taking blood pressure medication, this is better remedied through education, rather than adding more agents which will also probably not be ingested as prescribed. A patient coming in for a procedure or operation that would warrant pain medications may have leftovers from a prior prescription waiting at home. The subsequent addition of a new pain reliever to the adjudicated pre-admission list can increase the risk of poly-pharmacy, resulting in imminent admissions for altered mental status or overdose.

Any dosing inconsistencies or look alike/sound alike products that raise red flags should be followed up with a call to the pharmacy and/or the prescriber. We have often found ten- to one hundred-fold errors in the dose reported by the patient versus the actual dose. In the case of levothyroxine, the number of erroneous orders reading levothyroxine “0.05mcg”, “50mg” or “0.5mg” resulted in a system-wide training initiative. We also had a warfarin 0.5mg dose that was subsequently found to be 5mg when the dispensing pharmacy was called.

The brown bag approach is quite helpful in reducing these discrepancies as it allows a review of the medications that the patient agrees to share along with the filling dates, pharmacy numbers and prescriber data. Of course, this is most helpful if the patient is not using the little pillboxes for weekly or daily dosing.

It is often said that discharge planning should start at the moment of admission. Early planning allows for thorough medication review and optimization, patient education, and a comprehensive list at the time of discharge. Generating a perpetual discharge summary during hospitalization will provide an up-to-date list, which can easily be edited by a pharmacist in a timely, rather than a rushed manner. That list must be created in a language that is accessible to the next provider(s) of care as well as the patient. Be sure to eliminate all Latin abbreviations in the instruction portion of the form. Use drop down menus where possible to allow for data entry with minimal typing, which can
reduce the opportunity for error, while also ensuring patient-friendly language in the final document.

**Pitfalls to Avoid**

With the practice of “technicians checking technicians” in use at many institutions, the medication profile may not be carefully reviewed on a daily basis. Profiles and administration records should be reviewed daily on hard copy to assure that outdated orders are not being continued and that appropriate dose adjustments have been made. We have found many intravenous-prophylactic agents continued past their indicated usefulness simply because of a lack of medication review. For those interested in saving paper, the fill lists generated for the cassette fill can serve double duty for this process.

An area for potential error in a teaching hospital is the assignment of the lowest level physician to the medication reconciliation process. In community hospitals, a lack of training on the computer system or interest in the process can yield the same result. The risk is the same in medical offices when a medical assistant or secretary is assigned to input the data. Instead of looking at medication reconciliation as the opportunity to “first, do no harm,” these practitioners may regard it as one more roadblock to getting the orders in or the patient discharged. The practitioner with the least knowledge of and familiarity with medication names should not be responsible for verifying this information. Be sure that adequate education and accessible resources are provided so that doses and medications can be looked up easily.

**Pharmacy Taking Leadership**

Pharmacy should be designated as the lead in the medication reconciliation process. At our hospital, pharmacy did not serve in a key role in the initial program. It did not take long, however, to accumulate data, which demonstrated that physicians, nurses and medical assistants were not the correct personnel for this process; rather the data clearly demonstrated that the process required the expertise of a pharmacist. The most common errors under the previous system included separate trade and generic entries made for the same agents, basic dosing errors especially when multiple tablets were necessary for an accurate dose, therapeutic duplications particularly in pain and nausea treatments of non-cancer patients, and completely unidentifiable orders due to incorrect spelling. This evaluation process was led by a passionate, hands-on medication reconciliation pharmacist.

We are very grateful to the insight of our chief medical officer, Eugene Spiritus, MD, who not only championed our cause, but after initially viewing our data, also invited us to demonstrate how appropriate it was for pharmacy to be the driver of the medication reconciliation process. With his support, we demonstrated to members of the performance improvement committee and the medical executive committees that physician-led medication reconciliation was not effective. By sharing the data and examples we collected, we were able to generate support for pharmacy to lead this important endeavor.

**Summary**

Pharmacists are uniquely educated in medication use and the nuances associated with it. The pharmaceutical treatment of patients across the continuum of care needs to be communicated accurately and completely to each and every practitioner in contact with that patient. Equally important is the communication of that same information to the patient. The ongoing treatment of most diseases and conditions is through medication. Therefore, medication reconciliation is essential and as such, we cannot afford for it to be haphazard, inaccurate, incomplete, or poorly communicated.

Each healthcare facility needs to develop its own procedures to manage the process. Having physician and nursing support for a pharmacy-run program increases the likelihood that an optimal process will be achieved. It is also essential that pharmacists understand that medication reconciliation is the best use of their talents and education. This is not to say that interventions for individual patients are not significant, but for across-the-board, overall impact, medication reconciliation is the best place to focus pharmacy services for the optimal impact on medication safety. ■

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References: