"The young physician starts life with 20 drugs for each disease, and the old physician ends life with one drug for 20 diseases."
—William Osler, MD

This quotation likely resonates with many physicians, pharmacists, and others challenged each day with the complexities of medication management. In 2004, the Madison Patient Safety Collaborative (MPSC) formed a Medication Reconciliation Team. Two years later, even with a number of outspoken proponents, progress is difficult.

A Challenging Goal Worth Pursuing

The goal of medication reconciliation is deceptively simple: to ensure that patients receive all intended medications and no unintended medications following each care handoff, whether within or between health care settings. The processes that contribute to achieving this goal are remarkably complex, however.

Why pursue this goal if achieving it is so difficult? Adverse drug events (ADEs) can and do result from wrong or incomplete information about the medications patients are taking.

• An estimated 770,000 Americans each year experience ADEs that result in injury or death at a total cost of $2 billion.1
• Hospital patients who experience an ADE are nearly twice as likely to die as those who do not.2
• In 1993 ADEs caused almost 1200 deaths among hospitalized patients.3
• According to a 2004 study, 23% of patients experienced at least 1 adverse event after discharge from the hospital; the most common events were ADEs.4
• ADEs account for more than 6% of malpractice claims.5

The medication reconciliation process is not just compiling a patient’s medication list; it is using and sharing this medication list. Well-designed medication reconciliation processes enable physicians and pharmacists to compare multiple lists (medications the patient was on prior to a procedure, prior to hospital stay, etc.) in order to catch discrepancies at the time of admission, throughout the hospital stay, and at discharge. In this way, medication reconciliation has been shown to reduce ADEs.6 By reducing ADEs, in turn, these processes hold great potential for improving health, saving lives, and contributing to the delivery of the best quality care for each and every patient.

For these reasons, the Institute of Medicine, the Institute for Healthcare Improvement, and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) all have identified medication reconciliation as a priority. In fact, JCAHO has made medication reconciliation a National Patient Safety Goal in acute care, ambulatory care, assisted living, behavioral health, home care, and long-term care organizations.

In Wisconsin, CheckPoint (a program of the Wisconsin Hospital Association) includes a measure of medication reconciliation in its public reports of hospital quality. At its core, however, medication reconciliation supports what Wisconsin Medical Society President Bradley Manning, MD, describes as “the dogged pursuit of what comprises health care excellence.”7

The Process, Simplified

The steps in medication reconciliation have been described in a number of ways.8 For simplicity, we describe 3 stages of activity:

• COLLECT an accurate medication history, including prescription and over-the-counter medications. In the hospital, this step often is initiated by nursing or pharmacy but also in parallel by physicians. A medication history is gathered from multiple sources, perhaps by interviewing the patient or a family member or by calling the patient’s community pharmacy. This initial

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Focus On Quality . . .

Medication reconciliation in Wisconsin: Insights from a local initiative

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medication list then travels with the patient throughout the hospital stay and beyond, so its accuracy is critical.

- **ACT** on the medication list. In hospitals, this is a clarification step where pharmacists, nurses, or physicians will compare the list with current medication orders, and it takes place each time the patient is admitted to the hospital, transferred to a new unit, or is discharged. Discrepancies are then forwarded to physicians who will decide how to proceed. Many hospitals simplify this step with a combined medication list and order sheet on which the physician continues, discontinues, or prescribes additional medications. To be complete, this form requires a physician signature (also required by JCAHO). In this step the physician’s expertise is supplemented with reconciliation by a pharmacist, nurse, or other provider.

- **SHARE** the complete list, including discontinued medications, with the next provider of care and with the patient. A seamless transition to the next care setting requires detailed coordination, precise handoffs, and above all else, accurate information. Responsibility for this step is usually embedded in the transfer or discharge process.

### The Madison Experience

Since 2004, MPSC participants—Dean Health System, Group Health Cooperative of South Central Wisconsin, Meriter Hospital, St. Mary’s Hospital Medical Center, University of Wisconsin Hospital and Clinics, UW Health Physicians, and the William S. Middleton Memorial Veterans Hospital—have been working to reduce ADEs and to improve patient care through medication reconciliation in hospitals. The MPSC Medication Reconciliation Team has focused, in particular, at the point of patient discharge from the hospital.

In the literature the team found no data collected by “end users” of the discharge reconciliation process, so community pharmacies and long-term care institutions in the Madison area were recruited to document pharmacist tasks related to processing discharge prescriptions. Local results reveal issues similar to those found in studies using data collected within hospitals.\(^{9,10}\) MPSC data showed a high incidence of dose and frequency discrepancies in discharge prescriptions and high incidence in pre-admission medications that were not restarted.

The MPSC’s preliminary data also documented the potential for untoward events: over half of patients missed next doses due to the time spent on medication clarification, and two-fifths of patients experienced a wait of greater than 30 minutes in the process.

The most common reconciliation hurdles identified by the MPSC were health care culture and communication practices, which are often fragmented and dependent on incomplete or illegible paper records. The team is exploring approaches to overcoming these barriers, including improving electronic medical records.

Overall, the MPSC Medication Reconciliation Team has learned the following:

- **Improvement** in this area is an iterative process.
- **Minimizing** rework and miscommunication requires patience and persistence.
- **Physician engagement** is critical.
- **Quality improvement** teams need feedback from everyone affected, especially when a process or form represents an improvement.

- **Implementing** the electronic medical record to support medication reconciliation can be successful only if it can dovetail with existing work processes.
- **We must** all approach medication reconciliation with great care, particularly because its results reach far beyond hospital walls.

Most recently the team agreed to focus on optimizing the discharge process from hospitals to long-term care facilities. Eventually the lessons learned from this pilot will inform the process for all Madison discharge patients.

### Conclusion

Years ago, the primary care physician managed a patient’s hospitalization from admission through discharge, overseeing both in-hospital and follow-up care. Today, hospital discharges can involve dozens of people in addition to physicians: discharge planners, nurses, residents, pharmacists, social workers, and the patient and her/his family, among others.

Medication reconciliation shows great promise for improving communication between health care professionals, reducing adverse drug events, and improving transitions in care, including hospital discharge. Can it deliver?

To date, medication reconciliation success has been gauged primarily through process measures. CheckPoint, for instance, reports the percent of hospitalized patients for whom a completed and signed medication reconciliation form is available within 48 hours of admission. Some organizations compare rates of ADEs before and after implementation of medication reconciliation processes. Nationally accepted outcome measures are likely to follow.

In 2005 the Agency for Healthcare Research and Quality...
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