Primary Intended Outcomes

1. Decrease patient adverse events and medication errors by ensuring proper discharge medication reconciliation and education,
2. Improve patient access to outpatient prescriptions by eliminating common barriers that delay filling discharge prescriptions,
3. Improve patient satisfaction with and visibility of pharmacy services to inpatients, and
4. Financially justify additional pharmacists for hospital-wide implementation of Project PRIMED by increasing discharge prescription capture to generate revenue for the onsite outpatient pharmacies.

Relevant PPMI Recommendations

B20: Pharmacists should facilitate medication-related continuity of care.

B23k: Pharmacists should be involved in medication reconciliation in the emergency department, upon admission, during interhospital transfer, and at discharge, as well as in the ambulatory care setting.

B23l: Pharmacists should be involved in the establishment of processes to ensure medication-related continuity of care.

B23m: Pharmacists should be involved in the provision of discharge education to patients.

1. Medication reconciliation is required by Joint Commission during each transition in care, and pharmacists are best suited to assume this responsibility.
2. Several national organizations strongly advocate for pharmacy-led medication reconciliation.
3. When inpatient pharmacists start taking responsibility for the continuity of care of each patient, they transform into a health-system pharmacist, thereby resetting the bar for what it means to establish a comprehensive pharmacy practice model.
Situation Analysis
Froedtert Hospital, a 500-bed academic medical center, is staffed with 12 decentralized pharmacy teams and uses an integrated pharmacy practice model in which pharmacists obtain detailed medication histories and perform medication reconciliation upon admission. Since 2004, various pharmacy residents have helped to lead the implementation of these initiatives. In 2010, the focus shifted solely to the hospital discharge process by assessing the impact a pharmacist could have by providing medication reconciliation and counseling patients at discharge.

Service Description
A four-week pilot study was conducted in 2010 with one full-time equivalent (FTE) ambulatory discharge pharmacist who covered 60 beds on a general medicine floor and general surgery floor of the hospital. After identifying patients who were potentially being discharged, the pharmacist reviewed progress notes in the electronic medical record (EMR), EPIC, to assess each patient’s medical conditions, reasons for hospitalization, and course of hospital stay. To identify drug therapy problems, the pharmacist also reviewed items such as the patient’s allergies, medications taken prior to admission, medications received while hospitalized, list of problems, and frequency of PRN medications administered. The full reconciliation of the medication list took place once the physician signed off on the discharge orders.

Next, the pharmacist notified the physician of any medication discrepancies and offered recommendations for change where applicable. After any necessary changes were made, the pharmacist alerted the patient’s nurse that the medication list had been reconciled and a list of the discharge medications was printed and given to the patient. The pharmacist asked patients if they would like to have their new or changed prescriptions filled at one of the onsite outpatient pharmacies. If so, the pharmacist obtained insurance information, remotely processed the retail prescriptions on the floors, and sent the scripts down to the retail pharmacy for filling. The discharge pharmacist counseled patients discharged to home on their new medication regimens prior to their departure from the hospital. The pharmacist documented each intervention in an Excel spreadsheet.

We presented the data collected from the initial pilot to senior leadership, who supported expanding to two pharmacist FTEs on four medicine/surgical units. We continued to collect quality and volume data throughout the expanded project. The project was coined as Project PRIMED (Pharmacist Reconciliation and Medication Education at Discharge).

Key Elements for Success
1. We found that 45% of the Project PRIMED pharmacists’ interventions prevented medication errors of category D or higher. We also identified that the Project PRIMED pharmacists were most often intervening regarding antimicrobials, as well as other high-risk medications.

2. Onsite pharmacies had a low utilization rate for discharge prescriptions at baseline. During the three months of data collection, there was a 300% increase in the capture rate of discharge prescriptions to our outpatient pharmacies.
Also, 60% of patients who had a PRIMED encounter and had prescriptions to be filled chose to fill those prescriptions at our outpatient pharmacies. Throughout the implementation of Project PRIMED, efficiency at capturing patients upon discharge improved because the staff had a better understanding of the process and workflow and because the program layered pharmacy technician support for the prescription acquisition process.

3. Patient satisfaction is a continual focus for the organization, especially with Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) included as a component of value-based purchasing for hospital reimbursement from Medicare. Patient satisfaction ratings could not be assessed using HCAHPS, but were measured using an internal patient satisfaction survey provided by Avatar International. We did see an increase of one to two points on the various questions that addressed medication use, discharge understanding, or the interaction with the pharmacist.

**Resource Utilization**

**Personnel:** Six pharmacists and three technicians with salary and benefits.

**IT and other infrastructure:** We needed to optimize existing infrastructure within our electronic medical record (EMR). For example, we developed an insurance collection questionnaire that was populated at admission and added an “Expected Discharge Day” field for all disciplines to view and adjust. We also adjusted the record’s security so that pharmacists can order or change discharge meds after verbal order from the physician, and with physician co-signature. With the expanded FTE, corresponding additional computers were also required.

**Recognized Intangible Benefits**

The projected annual cost avoidance associated with a reduction in medication errors totaled more than $1.1 million for the four intervention units. Seventy-six percent of patients discharged have scripts to be filled, with an average of three scripts per patient. If we only capture 50% of all discharges (roughly 12,000 discharges per year), 76% of those will have scripts to fill (roughly 9,120 discharges per year). This would mean more than $1.4 million in additional revenue.

Given the total salary cost for pharmacists and technicians combined, we experienced a net gain of over $500,000.

**Outcome Measures**

1. Percent of patients with discharge reconciliation completed by a pharmacist. The goal is 95%. Pharmacists document a reconciliation note in the EMR to indicate that discharge reconciliation was completed.

2. Percent of patients with discharge medication teaching completed by a pharmacist. The goal targets the most complex patients. Pharmacists document a teaching note in the EMR (in addition to reconciliation note) to indicate that teaching was completed.

3. Pharmacists were asked to place an I-vent note in the EMR when an error prevented by discharge reconciliation could have caused harm to the patient. This allows us to associate a cost avoidance value with the service.
4. We currently track the daily number of prescriptions captured from the discharge program. This does not reflect the number of patients or revenue associated with the prescriptions.

5. Not all measures worked. We initially tracked the patient capture rates manually via a process that relied on unit clerk records. This was time-consuming and not always accurate. Also, in planning for pharmacist shift times, we assessed the time of discharged by looking at the time the patient left the EMR. This was inaccurate and associated with significant delays.

Lessons Learned
1. Successful discharge involves extensive coordination and communication. It requires hand-off communication tools and methods specifically designed for discharge.

2. Communication with nursing staff regarding their expectations and pharmacist expectations is key. During the month before we went live with the process, we attended nursing staff meetings on every unit to present expectations and answer questions.

3. When training decentralized pharmacists in this new process, we did not include a hands-on portion where they could practice in the EMR. This caused anxiety and initial inefficiencies when the project went live.

4. To facilitate bedside delivery of prescriptions, Froedert purchased two credit card portable swipe machines. However, after much time and effort, these were deemed to be unreliable from an IT standpoint. Instead, technicians now call the patients and collect information over the phone prior to delivery.

5. Collection of prescription insurance information and payment for prescriptions continues to be time-consuming. We recommend attempting to integrate prescription insurance collection into the intake process upon admission.