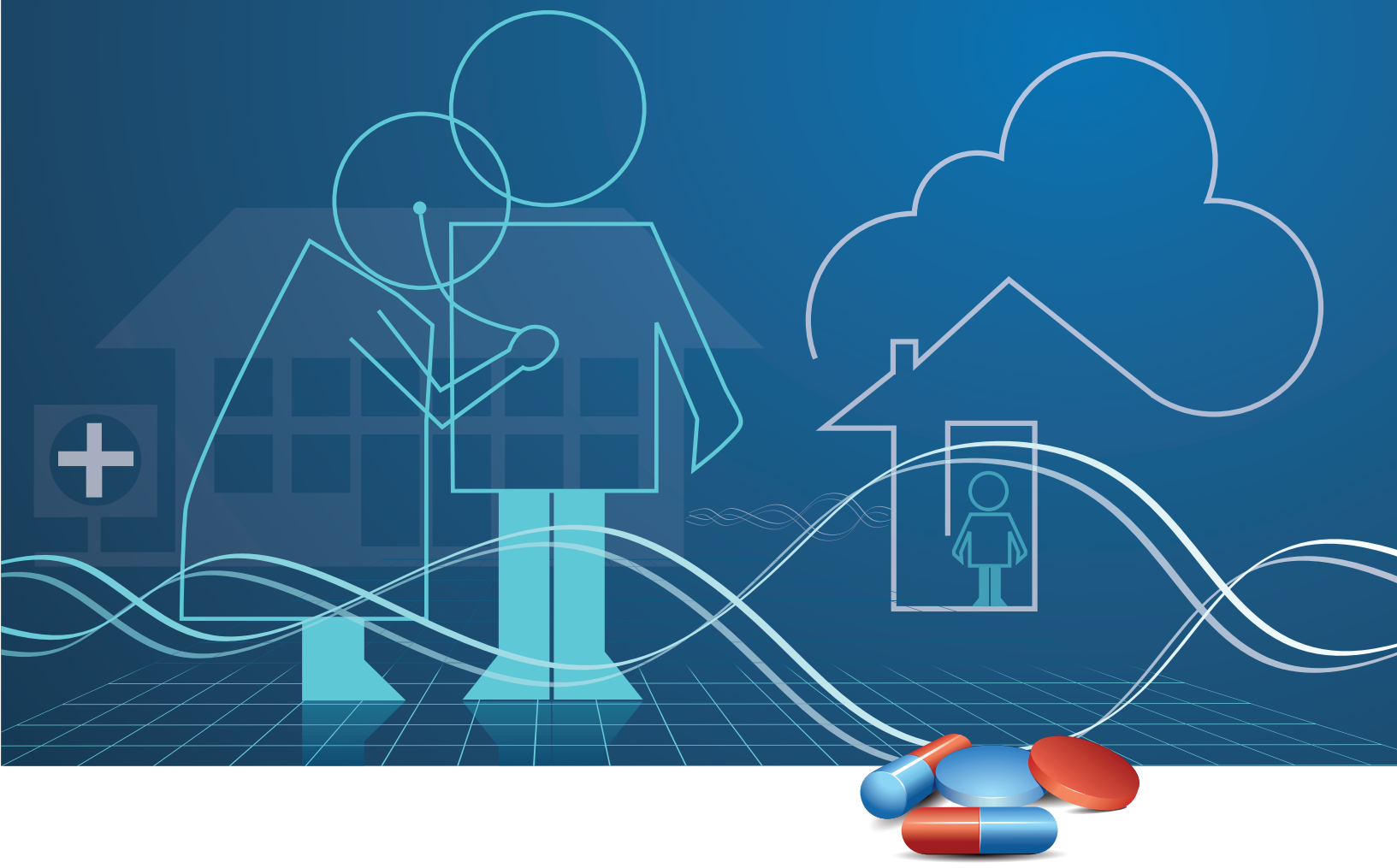
ASHP-APhA Medication Management in Care Transitions Best Practices



American Society of Health-System Pharmacists®
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Best Practices from the ASHP-APhA Medication Management in Care Transitions Initiative

American Society of Health-System Pharmacists
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Introduction

With millions of Americans taking multiple medications for chronic conditions, the costs of poor medication management surrounding hospital admission and discharge run into the billions of dollars.

Effective transitions from the hospital to home setting are as crucial as the patient care provided during the hospital stay. Likewise, the transition from a community setting to the hospital for acute care is a period when people are particularly vulnerable to critical medication errors resulting in more complex and extended care along with attendant increased costs. Even maintaining patients at home is an active part of the transitions process to avoid newly emerging medication-related problems from escalating into conditions that might cause patients to cycle back into more intensive inpatient care. With millions of Americans taking multiple medications for chronic conditions, the costs of poor medication management surrounding hospital admission and discharge run into the billions of dollars.

Care transitions with a focus on medication management are well known to improve health outcomes. The distinct medication expert on the multidisciplinary health care team is the pharmacist. In concert with physicians, nurses, and others who contribute to the overall medical care of patients, pharmacists reconcile discrepancies in medication therapy that translate into improved outcomes and reduced readmissions that would otherwise require more extensive interventions and expensive utilization of services.

Preventing costly readmissions and containing health care costs is in the forefront of national concerns. Payers, patients, providers, and quality regulators share a common goal of optimizing care in a reliable, consistent manner. The American Society of Health-System Pharmacists (ASHP) and the American Pharmacists Association (APhA) jointly developed the Medication Management in Care Transitions (MMCT) project to ascertain best practices in transitions of care by pharmacists, share these practices with stakeholders involved in the clinical and fiscal aspects of care, and ultimately offer scalable models that make best use of pharmacists' ability to deliver expert and efficient care.

Strategies to provide cost-effective, quality health care also are being pursued by the Centers for Medicare & Medicaid Services (CMS). In 2011, the CMS Innovation Center launched its Partnership for Patients program, which has a goal of reducing preventable hospital readmissions by 20%—equating to 6.5 million fewer costly hospital admissions—by the end of 2013. Furthermore, CMS is testing models to reduce readmissions for high-risk Medicare beneficiaries through the Community-based Care Transitions Program, a $500 million initiative stemming from Section 3026 of the Affordable Care Act. Other publicly and privately funded programs also are underway. Smart spending on these systems initiatives is pragmatic; instituting low-cost safety measures through pharmacist-provided care transitions is expected to yield the paired benefits of providing better care without escalating overall spending. The national trend to improve care transitions confirms the importance of the findings of the MMCT project.

Pharmacists' extensive education on evidence-based use of medications and their clinical counseling skills position them as integral patient care providers. Medication reconciliation as a part of medication management is the key to counter the fragmented care that may occur subsequent to changes of patient care setting, modifications in medication regimens, or multiple medications prescribed by different prescribers. In addition to improving communications between providers, pharmacists are trained to communicate with patients and educate them about proper medication use and the importance of adhering to what are oftentimes complex medication regimens. Pharmacists' patient counseling interventions at discharge and continued follow-up activities can reduce serious adverse drug events, use of emergency care, and hospital readmissions.

The MMCT project directly aligns with several categories in the National Quality Forum's *Safe Practices for Better Healthcare*. The safe practice areas addressing transitions of care include: #15 Discharge Systems, #17 Medication Reconciliation, and #18 Pharmacist Leadership Structures and Systems. Relaying discharge plans must be timely to ensure continuity of care; accurately communicating a reconciled medication list is essential; and having pharmacists in administrative leadership positions should reflect their capacity for overseeing medication management systems.

Care transitions models involving pharmacists as leaders of the medication-use process are emerging, but have not yet been well-defined. Through the MMCT project, ASHP and APhA have partnered to assess examples of currently implemented care models that improve patient outcomes by involving pharmacists in medication-related transitions of care across all settings ranging from acute care and long-term care facilities to assisted living arrangements and home in the community. This report serves as a summary of the framework of best practices among these well-accomplished programs.

Process

In December 2011, ASHP and APhA jointly issued a profession-wide call for best practices involving pharmacists in the care transitions process. The purpose of the MMCT project was to identify and profile existing best practice models that are scalable for broad adoption. The deadline for submissions of models was in January 2012. More than 80 institutions from across the country responded with MMCT models.

To evaluate the models for best practices, ASHP and APhA assembled expert panels composed of pharmacists skilled in working with MMCT programs. The review of submissions was a two step process. In the first step, blinded reviews of the model submissions were completed by expert pharmacists working either directly with transitions of care initiatives or in areas impacted by TOC. These individuals were identified by ASHP and APhA and were provided a standardized rubric for reviewing the models. Every submission was reviewed by one APhA reviewer, one ASHP reviewer, and the project coordinator. These reviews and corresponding rubric scores assisted in narrowing the field to 20 semi-finalists which were further reviewed by the second expert panel in the next step. These pharmacy professionals were asked to guide the multilevel review process, which included an initial electronic rubric, additional data submissions from semifinalists, and telephone interviews with finalists. Selection was highly competitive. In October 2012, eight programs were distinguished as best practices. The assessment process focused on three main criteria:

- Impact of the care transitions model on patient care.
- Pharmacy involvement in the transition process from inpatient to home settings.
- Potential to scale and operationalize the process for implementation by other health systems.

ASHP and APhA extend thanks to all of the organizations that submitted models to share their strategies, methods, and experiences providing transitions of care services at their practice sites. The expertise and diligent work of the reviewers who volunteered to assess the MMCT project are also greatly appreciated. A complete list of expert panel reviewers is located on the inside front cover of this publication.

Common barriers to the implementation of care transition models:

- Financial resources
- Staffing resources
- Electronic transfer of patient information and data
- Communication
- Difficulty developing partnerships with inpatient/ outpatient partners

Common Barriers

Implementations of care transitions models have overcome a number of barriers. An assessment of common barriers reported by each of the award winners is important to understand problematic situations associated with the development and maturation of systems. Health care teams can anticipate and prevent obstacles in their own care transitions processes before they arise. Several common barriers became evident to the expert panel while reviewing the submissions.

Financial Resources

Financial resources were secure for only a few of the submitted programs. Budgeting and creative use of existing resources created valuable return on investment (ROI) through reductions in preventable harm. These creative solutions provided a case for dedicated funding from administrative leadership to ensure continuation of services. Commonly, finances were needed to assist with staffing and the progression of electronic health records (EHR) to streamline workflow. The awardees were able to overcome financial barriers by justifying their programs as self-sustaining and sometimes revenue generating. Many programs increased discharge prescription capture and documented decreased readmissions and decreased length of hospital stay. Access to data and solid documentation proved crucial attributes of program sustainability. Many programs applied for and successfully received a variety of grants; sources of the grants ranged from local nonprofit organizations to federal funding.

Staffing Resources

The adjustment of staffing responsibilities was a challenge for many of the applicants. Some programs were tasked in executing a new model without new staff resources. Others reported challenges in expanding services such as providing coverage on weekends or in the evenings. Few programs described large volumes of patient discharges in the evening; however, patients commonly requested follow-up phone calls in the evenings outside regular work hours. Creative use of resources was a key element of success for programs to overcome staffing issues. Awardees embraced a multidisciplinary approach and/or more fully integrated all members of the pharmacy team: pharmacists, student pharmacists, postgraduate pharmacy residents, and pharmacy technicians. Some programs fully assessed staffing models and reallocated resources or changed staffing models completely.

Electronic Transfer of Patient Information and Data to Partner Groups

An element that consistently impacted efficiency was the bidirectional flow of electronic patient information and data transfer. Time spent on documentation of pharmacist interventions was doubled or tripled when a separate system was required for tracking and auditing. Awardees with bidirectional ability to view and augment EHRs had a distinct advantage in assisting educational efforts and communication of drug therapy. Most programs within a health system had a shared EHR for both inpatient and outpatient providers. In unique situations, such as in Minnesota, a subscription-based statewide network allowed providers to view patient records from other providers participating in the network. Information sharing unified and coordinated care, thereby improving quality and efficiency.

Communication

Accurate and timely communication has been a critical component of preventing harm. Awardees reported hindrances in communication at several levels of operation including barriers between:

- Pharmacists and providers.
- Inpatient and outpatient partners.
- Inpatient and outpatient pharmacists.
- Pharmacists and patients/caregivers.
- Pharmacists and administrative leadership.

Communication of patient information is only one of the challenges. Organization-wide education and awareness of the need for allocation of resources for pharmacist involvement in care transitions was resolved by acquiring data and evidence. Metrics were used to objectively show improvements to various stakeholders. The most successful programs provided metrics and detailed communication strategies used to gain support and resources.

Difficulty Developing Partnerships With Inpatient or Outpatient Partners

Many programs noted challenges in identifying and securing partnerships beyond the immediate organization. The common barriers previously listed (e.g., finances, staffing, electronic data transfer, and communication) compounded the difficulty in developing partnerships. Disinterest was seldom a barrier. Usually, the longer a program was in existence, the more community partners were acquired. Programs found that an initial internal assessment and improvement effort should be conducted to generate data for acquiring external partners.

Elements for Success

The expert panel identified key tenets common to transitions of care models that can be applied to prevent harm, reduce readmissions, and optimize patient care. The elements for success outlined in this report provide guidance but remain broad for applicability across settings and patient populations.

Multidisciplinary Support and Collaboration

Transitioning patients from the acute health-system environment to home involves collaboration of many health care professionals, the patient, and the patient's family or other caregivers. The ability for multiple health professional disciplines to collaborate and communicate effectively and efficiently was evident in all successful models. Many of the models had a pharmacist serving in the role of director or co-director of the transitions of care responsibilities, highlighting the importance of a medication-use expert in this process. Support for pharmacy and an expanded role for pharmacists was not inherent in all programs, and sometimes required a degree of cultivation. Programs that were able to overcome silo management styles and turf conflicts through collaborative efforts demonstrated pronounced benefits to patient care, decreased length of stay, and decreased readmissions.

Elements for Success in Transitions of Care Models:
- Multidisciplinary support and collaboration
- Effective integration of the pharmacy team
- Data available to justify resources
- Electronic patient information and data transfer
- Strong partnership network

Continuous quality improvement (CQI) processes involving multidisciplinary teams were prevalent and programs were able to document the positive effects of changes. Organizations lacking a formal CQI strategy or without a channel for pharmacy or medication-related problems fared worse in making the case for improvement.

Effective Integration of the Pharmacy Team

Successful MMCT models relied on pharmacists as well as the effective integration of student pharmacist interns, pharmacy residents, and pharmacy technicians. A common term to describe non-pharmacist pharmacy staff involvement was "pharmacist extender." Entire pharmacy teams were trained on elements of medication management in transitions of care including medication reconciliation, prior authorization, documentation, communication, and data management. Competencies and protocols were developed to ensure a high standard of care. The reassessment of job responsibilities was a common element in many successful programs. Some departments developed an "attending" pharmacist for redistributing patient workloads to the pharmacy team, while others added innovative roles for pharmacy technicians. Educational resources and training opportunities in conjunction with colleges and schools of pharmacy have played an important part in addressing the needs of patients during care transitions. Notably, some pharmacy schools have added rotations for student interns while others have developed postgraduate residency programs to support facilities and enhance specialized training of newly degreed pharmacists.

Data Available to Justify Resources

The evidence driving winning programs included solid data collection processes and the ability to systematically review applicable metrics. Customary metrics evaluated included:

- Readmissions.
- Length of stay.
- Emergency department visits.
- Medication-related problems at medication reconciliation (e.g., duplication of therapy; omission of needed drug therapy; correct drug but dosage too high or too low; drug interactions).
- Disease-specific metrics.
- Patient satisfaction or Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)–related metrics.

The ability for a program to document ROI proved beneficial in securing additional resources or moving a pilot program into a fully funded program. Goal setting and data collection for justification were always planned before initiating the program; without the appropriate evidence base, drives to justify expansion would have been futile.

Winning MMCT Programs:
- Einstein Healthcare Network
- Froedtert Hospital
- Hennepin County Medical Center
- Johns Hopkins Medicine
- Mission Hospitals
- Sharp HealthCare
- University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center
- University of Utah Hospitals and Clinics

Electronic Patient Information and Data Transfer Between Inpatient and Outpatient Partners

Resources were required to be budgeted and allocated for training and security of the health information. However, the ability to securely and efficiently transfer patient information always proved beneficial to these model programs. Needs met by electronic transfer of information included e-prescribing, prior authorizations, EHR access, ability to reach prescribers quickly, and billing options.

Strong Partnership Network

The successful MMCT programs have not operated in silo management styles; within the pharmacy departments and throughout the organizations, shared goals prevailed. The 30-day post discharge period was only a guiding timeframe, and patients required follow-up across the spectrum of care. When community partners were secured, a large pool of resources was available for shared responsibility. Pharmacy partnerships involved hospital pharmacy departments, community pharmacies, regional pharmacy chains, ambulatory pharmacy services and clinics, health clinic pharmacies, home infusion pharmacies, and many others. Referrals to behavioral health programs, homeless populations outreach organizations, Visiting Nurse Associations, and Area Agencies on Aging were among the multidisciplinary service partnerships with the care transitions programs across the country. The alignment of resources was a keystone to providing a unified approach to patient care.

Winner Profiles

The winning MMCT programs selected by ASHP and APhA are profiled here in alphabetical order: Einstein Healthcare Network, Froedtert Hospital, Hennepin County Medical Center, Johns Hopkins Medicine, Mission Hospitals, Sharp HealthCare, University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center, and University of Utah Hospitals and Clinics. All eight models are to be considered MMCT best practices. The appendix provides an overview of the models by noting key attributes and elements of success for each program.

Einstein Healthcare Network

Einstein Healthcare Network Program:

- (R) Medication reconciliation
- (E) Patient-centered education
- (A) Medication access issues
- (C) Comprehensive counseling
- (H) Healthy patient

The Medication REACH program is based out of the department of pharmacy services at Einstein Medical Center in Philadelphia, Pennsylvania, the largest facility within the Einstein Healthcare Network. The purpose of this model is to enhance the patient discharge process at this safety-net hospital by addressing the array of issues associated with medication management of high-risk populations.

This model began in 2010 within a disproportionate share hospital; multiple sites are now involved including an outpatient pharmacy, hospital-owned clinics, and medical practices. The Medication REACH program has direct pharmacist involvement prior to discharge to validate medication reconciliation (R), deliver patient-centered education (E), resolve medication access (A) issues during the transition, all of which are executed through a comprehensive counseling (C) approach. The overarching goal is to achieve a healthy (H) patient at home who is adherent with his or her medications without adverse outcomes.

Owing to its nature as a safety-net facility, many of the patients served are uninsured or underinsured and face challenges with accessing care. As part of the model, patients who have no insurance are provided with medications free of charge for the first 30 days, pending applications for state medical insurance programs. Because co-pays remain an insurmountable burden for many patients, pharmacy direct billing to patients at home has been added to allow for alternative payment options. Value-based purchasing has a significant impact on formulary management and the organization has worked diligently to ensure the most cost-effective therapies.

Pharmacy Team Involvement in MMCT

The hospital pharmacist or pharmacy resident performs all aspects of the Medication REACH consult. The pharmacist also contacts the patient at home for follow-up care. An outpatient pharmacist is usually involved with the actual dispensing and preparation of the medications. The pharmacist who prepares the discharge prescriptions for home is actively involved in working through insurance access, pharmacy benefits management (PBM) issues, and patient's ability to cover co-pays. The entire Medication REACH program is overseen by pharmacy leadership including the network pharmacy director, manager of outpatient pharmacy, and associate director of clinical pharmacy.

A new position, the Ambulatory Pharmacy Patient Liaison Empowerment (APPLE) role, was created and has been filled by an advanced pharmacy practice technician. The organization awarded the opportunity to a highly skilled and experienced certified pharmacy technician. The APPLE will lend much needed support to the Medication REACH program pharmacists by attending discharge rounds, interviewing patients and assessing their medication needs, identifying prospective patients who require direct pharmacist education, and assisting patients with insurance issues. The APPLE role will address many front-end activities and tasks to enhance a smooth transition, while the pharmacists concentrate their efforts on safe medication

Einstein Healthcare Network REACH Program Consists of:

- Medication reconciliation on discharge
- Patient education
- Minimization of barriers to access
- Interactions with the care team

management, medication reconciliation, and patient education. In this model, a pharmacy technician in a leadership role works directly with a pharmacist to facilitate the prescription fulfillment responsibilities. This assistance gives the pharmacist more time to focus on the direct care to patients.

Patient Progression Through MMCT

In the Medication REACH project, patients identified as high risk for readmissions or adverse outcomes receive a strategic patient-centered medication management consultation with follow-up interventions. The pharmacists collaborate with the multidisciplinary care team. The program developed a form to gather patient-specific information including current medication list, allergies, insurance information, medical history, and contact information. The pilot program initially targeted telemetry and medical, surgical, and cardiac patients with congestive heart failure, acute myocardial infarction, and hypertension.

The goal of the initiative was to measure and validate the Medication REACH program by performing an institutional review board (IRB)–approved, randomized controlled study between a group of patients receiving the Medication REACH program intervention versus a control group receiving the traditional nurse-mediated discharge procedure. Targeted patients were adults with complex medication regimens, using at least five current prescriptions, and having more than one chronic medical condition. Patients' length of hospital stay had to be greater than 48 hours.

The current intervention consists of pharmacist validation of medication reconciliation upon discharge, patient education utilizing customized learning tools with a hospital pharmacist or pharmacy resident, and minimization of barriers to medication access and adherence. The pharmacist also interacts with members of the multidisciplinary care team including patient advocates and navigators of care transitions.

In assessing the efficiency of the process, pharmacy leadership determined that delivery of prescription information to and from the pharmacy should be delegated to support staff. The APPLE role is embedded in the process. Nursing unit clerks ensure complete order information is communicated to the pharmacy.

Discharge prescriptions were not initially filled on site. To minimize access barriers, pharmacy leadership expanded outpatient pharmacy services to include the filling of 30-day discharge prescription medications. Patients' maintain liberty to choose pharmacy services. The Medication REACH consult is beneficial to community pharmacists as well as the patient because the medication list has been reviewed thoroughly and prior authorization and potential pitfalls have been overcome. Ideally, patients have medications upon discharge to provide a stronger patient-pharmacist relationship.

Every patient, regardless of outpatient pharmacy service, has the entire Medication REACH intervention performed. Pharmacists complete a consultation with patients prior to their discharge from the hospital. Since program initiation, the physician outreach component has become standardized. Partnerships exist with providers in the organization to reduce loss to follow up.

After discharge, patients receive medication counseling calls from a pharmacist to review and resolve potential medication-related issues. These calls occur at 72 hours and again within 30 days after discharge. The program focuses attention on medication management through the implementation and integration of innovative practices with the following goals: reduce adverse medication events, improve quality, ensure responsiveness of care, and prevent hospital readmissions. As part of the follow-up counseling activity of the Medication REACH consult, the pharmacist reinforces to patients the value of revisiting their physician. These calls are scripted with key questions to ensure the consistent information is collected for each patient (Figure 1).

Use of Technology

Patients are initially identified by social workers, case management, nurses, and physicians for the Medication REACH consult. Once the patient is in the intervention group, the pharmacist has direct interaction with insurance companies, the patient, physicians, possibly other pharmacies involved with dispensing, and hospital-based clinics post discharge. Patients are asked about their interest in filling their discharge prescriptions on site. The pilot occurred prior to going live with the new clinical information system, and thus required manual clinical documentation. As the organization progresses toward use of EHRs exclusively, all essential patient information will be integrated electronically as part of the medical record and will improve program efficiency.

Figure 1. Einstein: Medication REACH Post-Discharge Phone Call Counseling

1. What medications are you currently taking?
2. Explain to me when and how to take your medications?
3. Have you missed any doses of your medications?
4. How do you feel since taking your medications?
5. Are you having any unwanted effects from your medications?
6. What questions do you have about your medications?
7. Has anything changed with your health or medications since we last met?
8. What date/when is your appointment with your primary care doctor?
9. What other questions do you have?

Metrics

The finalized IRB study data were collected from October 2010 to June 2011 with the Medication REACH intervention group of 47 patients versus a control group of 42 patients. The 30-day inpatient readmission rate was 21.4% for the control group and 10.6% in the intervention group (Figure 2). Pharmacist interventions were tracked in the Medication REACH intervention group and the number of interventions (59) exceeded the number of patients (47) in the treatment group. The Medication REACH program identified medication discrepancies, adherence issues, and the need for initiation of therapy. Twenty-five percent of interventions were due to a gap in therapy, a key pharmacy performance measure in the Pharmacy Quality Alliance measures.

Figure 2. Einstein: 30-Day Readmission Rates

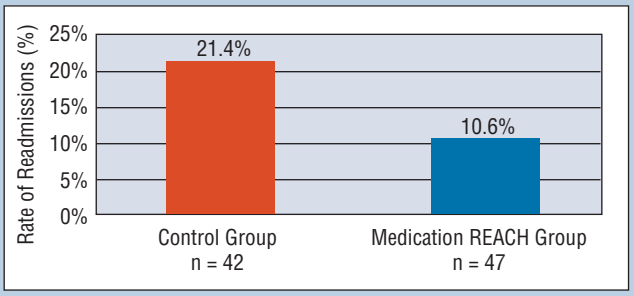
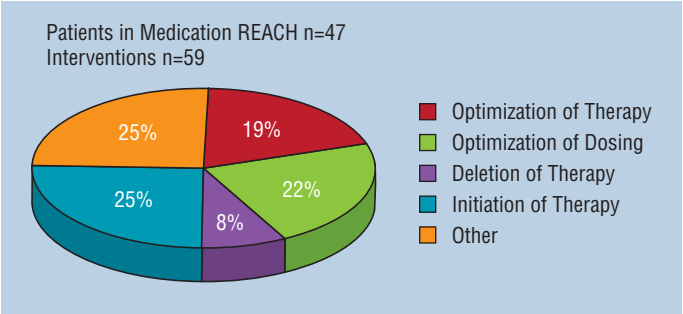


Figure 3. Einstein: Pharmacist Interventions



Other pharmacist interventions included dose optimization (22%) and deletion of therapy (8%), indicative of key measures that affect an older cardiac patient population. Twenty-five percent of pharmacists' interventions designated as "other" involved nonclinical interventions such as insurance formulary restrictions and medication access barriers (Figure 3).

In efforts to improve patient satisfaction, an outpatient discharge pharmacy service was initiated to improve patient access to medications at discharge in support of the Medication REACH program. Uninsured patients received medications pending their enrollment in insurance programs to improve medication adherence. Leadership supported patient rounding during the Medication REACH pilot program. Patient interviews concerning their desire to speak to a hospital pharmacist prior to discharge resulted in an 80% positive response rate.

Less than 1 year after initiation of the Medication REACH program, the pilot study was ended and the program was expanded due to pronounced efficacy of the interventions. The program is ongoing and 6 months beyond the initial IRB pilot continued to sustain reduced readmissions between 14% and 17%.

Continuous Quality Improvement

The CQI model developed by William Edward Deming is utilized and feedback regarding additional needs for interventions is solicited from pharmacists. Several points of augmentation have been identified, such as the need to include information about medication-related action plans into the core patient education on medications. The pharmacist works closely with the patient to develop an action plan and next steps for disease-state management. The program also altered the discharge prescription process. The group is evaluating software to aid risk stratification and screening. Additionally, an electronic reminder system is being developed to automate certain components of follow up including notice of upcoming appointments and refill reminders.

Barriers

The largest barriers are limited staff resources and justification for additional support. Demonstration of the positive effect pharmacy staff has had on readmissions played a major role in receiving a Community-based Care Transitions program grant from CMS. Einstein Medical Center is one of two hospitals in the Philadelphia area that received this grant to continue the transition efforts with focused attention on a high-risk Medicare population. In conjunction with this partnership, the organization formed a relationship with the Philadelphia Corporation for Aging to work with home-based community partners in the region. A transition of care pharmacist focused on geriatric care was hired using the grant resources. The organization must meet a threshold of improvements to reduce readmission by 20% in the next 2 years.

Program preparation time included training pharmacists on health literacy, developing pictorial educational tools, engineering the auditing process and database, and orienting pharmacists to the multidisciplinary team involved in the patient discharge process. As the program gained momentum and demonstrated real value to patients with proven and sustained outcomes, the network's department of pharmacy services opened an outpatient discharge pharmacy with medication dispensing to a broader base of patients at discharge. The pharmacy provided patients with direct interaction with pharmacists for counseling.

The allocation of resources allotted to the critical medication management aspect of care transitions continues to grow. The grant allowed for a patient navigator and bridge coordinator to work with the transition of care pharmacist. The Corporation for Aging has a representative who comes to the facility to meet with patients as well. The transition of care pharmacist resides on the same unit as the care management department which facilitates improved communication and efficiency.

Einstein Healthcare Network Future Plans:

- Partnering with organizations
- Working with community pharmacies to communicate care plans
- Gathering relevant information and automating processes

Cost Justification

Prescription discharge volumes allow the organization to assist patients in need. In cases where patients do become insured, prescription charges can be made retroactively to capture payment.

Future Plans

Future plans include partnering with organizations such as the Hospital & Healthsystem Association of Pennsylvania, which is working on a project for better outcomes in elderly patients in conjunction with the CMS hospital engagement networks. Community pharmacies are another valuable potential partner. Ensuring communication of care plans through outpatient pharmacies would be mutually beneficial. Einstein Medical Center is evaluating a system to gather the information on patients' medication lists prior to hospitalization. In an automated system, the community pharmacist would not be interrupted and could focus on direct patient care. Furthermore, electronic communication of the medication list at admission would streamline the reconciliation process. Einstein Healthcare Network also partners with the local nonprofit Health Care Improvement Foundation, which represents approximately 35 hospitals and strives to improve patient safety and outcomes. The collaborative PAVE (Preventing Avoidable Episodes in Elderly) project will attempt to standardize the discharge documentation pertaining to medications.

Froedtert Hospital Care Transitions Activities:

- Attending daily multidisciplinary rounds
- Completing medication reconciliation at admission, transfer, and discharge
- Counseling and educating patients
- Follow-up care when patients return home

Froedtert Hospital

Froedtert Hospital is a part of the Froedtert Health System, which is composed of an academic medical center, community hospitals, and primary care clinics and providers in Milwaukee, Wisconsin. In 2010, the hospital's department of pharmacy initiated a model for medication management transitions of care as a pilot program serving a limited number of patients discharged from the facility. As a result of the impact made during that pilot project, the transitions of care services have been expanded to include all patients discharged from Froedtert.

Pharmacy Team Involvement in MMCT

The transition of care activities are included as a part of the daily activities of the health system's pharmacists. They attend daily multidisciplinary rounds to assist with medication-related plans for day of discharge. The pharmacists are required to complete medication reconciliation for every patient at admission, during transfer among levels of care in the health system, and at discharge. They also counsel patients on appropriate medication therapy at discharge prior to departing the facility.

Certified pharmacy technicians assist in the prescription acquisition process including insurance verification, adjudication, prior authorization, filling, and delivery. A team of technicians facilitates prior authorizations days before discharge for patients with high-risk complex disease states such as transplant recipients and oncology patients. Dedicated pharmacists have responsibilities within the primary care outpatient setting to assist in the education of patients when they return home. These pharmacists select patients based on disease state and number of medications. The services outlined in Froedtert's transitions of care model demonstrate patient-centered care and they are in accord with the recommendations of the ASHP Pharmacy Practice Model Initiative to enhance the pharmacist's involvement in direct patient care.

Patient Progression Through MMCT

When patients are admitted to the hospital, a pharmacist or pharmacist extender (e.g., student pharmacist, pharmacy intern, or postgraduate pharmacy resident) completes a detailed medication history. Information gathering often includes calling the outpatient pharmacy to verify adherence, dosages, and insurance information. The medication history is reconciled when the physician enters inpatient orders. Pharmacists also complete medication reconciliation when patients are transferred among levels of care in the health system.

At discharge, a pharmacist reconciles the home medication list with the inpatient medications as well as the discharge medications. The inpatient pharmacist resolves any discrepancies with the provider and can change medications as needed with physician cosignature in the EHR. The inpatient pharmacist counsels patients on their new medication list. This task can be delegated to pharmacist extenders or nurses. When there are new prescriptions at discharge, the pharmacist alerts a discharge technician of the patients' anticipated time of departure and sends the prescriptions to the pharmacy to fill and deliver the medications to the patient at bedside.

The outpatient pharmacy involvement in the transitions of care process begins at discharge, although the outpatient pharmacy technician is alerted of a new patient interested in the discharge delivery service on day of admission. If the patient expresses interest in the discharge delivery service during the admission medication history, then the prescription insurance information is collected either by the inpatient pharmacist or the outpatient technician. On the day of discharge, the outpatient technician coordinates processing and filling of discharge prescriptions.

Regardless of where patients receive care after discharge, their medication list will be complete. For patients on high-risk or high-cost specialty medications, an attempt is made to fill all prescriptions before sending patients to another pharmacy. The medication list is also transmitted to the patient's primary care provider. Many patients live a great distance from Froedtert Hospital and are on specialty medications; in such cases, hospital pharmacists attempt to enroll patients with a mail-order system.

The second phase of outpatient involvement occurs within 2 to 3 days after discharge. High-risk patients who have primary care associated with the hospital receive a phone call from a pharmacist high-risk manager. These patients are counseled on medications and any other self-management issues associated with their disease state. When patient needs additional help, a visit with the pharmacist is scheduled.

Use of Technology

Both the inpatient and ambulatory settings utilize the same EHR. The health-system pharmacist documents completion of the medication history, medication reconciliation, discharge reconciliation, and discharge counseling. The ambulatory care pharmacists who make post-discharge phone calls also document activities in the EHR. The outpatient pharmacy management system differs from the health-system medical records and presents a challenge for communicating up-to-date patient status.

Metrics

The model of integrating discharge reconciliation, counseling on medication therapy, and delivery of new prescription medications to bedside has shown a dramatic reduction in adverse events. The initial expanded demonstration project utilized 2 full-time equivalent (FTE) pharmacists. Every intervention made by the pharmacists was documented. Documentation of clinical interventions by pharmacists showed that 52% of patients required some type of intervention. Of these interventions, 45% were categorized as D or higher according to the National Coordinating Council for Medication Error Reporting and Prevention index (i.e., an intervention would be required to preclude harm if the error were to occur). Medication classes with the most interventions (in descending order) were antimicrobials, antihypertensives, opioids, and anticoagulants. These medications encompass some of the highest-risk medications used, and underscore the importance of having pharmacist oversight of this process.

Froedtert Hospital Metrics:
- Identification of medication-related problems
- Improvement in patient satisfaction
- Improvement of care of high-risk patient populations

The most common types of interventions (in descending order) were correct drug but dispensing or dosage error; unnecessary medication; and medication needed but missing. Pharmacists may not know whether the discrepancy is an actual medication error until clarifying with the physician; however, reports at Froedtert reveal that physicians agreed with pharmacists' detection of errors 78% of the time. Additionally, physicians agreed with pharmacists' recommendation for change in 90% of errors detected.

As the service expanded to the entire hospital, error avoidance tracking continued. To help streamline the process, pharmacists report only those interventions considered to have precluded patient harm. From the mid-September 2011 hospital-wide implementation of the discharge reconciliation service through early February 2012, 800 interventions were recorded. The results have been consistent with the results of the initial pilot project. Among detected errors, correct drug with dosage or dispensing error continues to be most prevalent (43%), followed by missing medication (17%), operational issue (11%), unnecessary medication (10%), adverse event/contraindication/drug interaction (8%), duplicate therapy (6%), incorrect drug (2%), and other (2%). The most common classes of medication requiring intervention were antimicrobials followed by anticoagulants, antihypertensives, and opioids.

Patient satisfaction scores have improved since the full implementation of discharge pharmacy services. In response to patient survey item "The information I received from the pharmacist was very helpful to me," an increase greater than 1 point, from 88.73 on average to 89.94, was seen. The number of responses to that question also increased by an average of 30 per month. This increase demonstrates the greater visibility of the health-system clinical pharmacist from the perspective of the patient. Responses to the survey item, "Medications and care at home were explained to me in a way I could follow" also saw a measurable improvement in the mean score from 93.75 to 94.33.

Several ambulatory pharmacy services assist patients during their transition from the health-system setting to their home environment. In high-risk populations, such as transplant recipients and oncology patients, mail-order service for home delivery is offered. Recently, a review of the quality of transplant pharmacy services was completed. The results demonstrated a statistically significant increase in medication adherence as well as improved blood pressure and glucose control at 1 year in patients who were enrolled in the home delivery service and seen by the clinic pharmacist, compared with those who did not receive these services.

Anticoagulation clinic services are offered for patients requiring warfarin management after discharge. These patients must be followed by a physician affiliated with the health system, although all medication therapy is managed by the pharmacist team. This service manages more than 1,800 patients and boasts a high quality of care including 71% of international normalized ratios (INRs) in range (+/– 0.2) and less than 0.4% of INRs greater than 6. Approximately 20% of the patients are managed via telephone, allowing patients to focus on recovery while the pharmacists coordinate their anticoagulation therapy remotely.

Finally, ambulatory pharmacy services to assist in high-risk patient populations during the transition of care period have been implemented. These services include post-discharge phone calls to patients with heart failure, pneumonia, a history of myocardial infarction, or diabetes. The initial assessment of this service showed a reduction from 30.37% to 20.13% in 30-day all cause readmissions for the heart failure patients contacted by the pharmacist in relation to historical comparators. Some of these patients are now being seen in a combined provider/pharmacist visit following discharge; this arrangement allows the pharmacist to proactively assess patients' medications to ensure the most accurate medication list is available for provider evaluation. During the visit, pharmacists also have the opportunity to assess patient adherence and understanding of the medication regimen. A medication titration service has been developed for recently discharged heart failure patients, which allows those who are not at goal to have dosage adjustments of their angiotensin converting enzyme (ACE) inhibitor or beta-blocker therapy.

Continuous Quality Improvement

Pharmacy leadership frequently discusses needed improvements and other committees bring specific topics to or get feedback from staff regarding adjustments to the workflow or other issues. A system-wide medication reconciliation committee addresses subjects impacting the health system. Floor coordinators identify patients at discharge and ensure that work is completed. The floor coordinators are key partners with the pharmacy department, and their feedback is crucial to improving the process of care transitions.

One of the CQI activities is an Imperatives for Quality project, through the University HealthSystem Consortium, to develop referrals to the medication therapy management (MTM) clinics. A Six Sigma Black Belt in quality improvement is assigned to the pharmacy to help further develop the data to ensure accuracy of the metrics and drive improvement. A new business process through the quality improvement group will focus on health care access issues, especially acquiring necessary medications for patients before they are discharged.

Barriers

Progress has been made in getting inpatient pharmacists involved in care transitions home and getting ambulatory care pharmacists to embrace the workflow in the health system. A barrier, however, has been ensuring pharmacist understanding of their impact on the health system from a multidisciplinary perspective. Education and technology have been primary resources in overcoming this barrier. Continual efforts to promote best practices has helped reinforce the value to pharmacist staff. A focus on accountability and staff engagement from the managers also has assisted in this process. New models are piloted to assess effect and determine processes for optimal outcomes.

Froedtert Hospital is investigating more effective use of pharmacy technicians so they can be accountable for higher level services. Technicians have worked very well with patients in the collection of accurate information on medications.
To identify an ideal multidisciplinary transitions of care model, Froedtert Hospital conducted a

Froedtert Hospital was able to bill for many of the visits provided by pharmacists in this program. Additionally, the ROI associated with discharge prescriptions allowed for the expansion of the program and the work tasked at discharge.

full-day task force meeting and included physicians and nurses. Unit-by-unit education to nurses and formal education to physicians was completed. Nurses, pharmacists, or technicians will often reapproach patients who initially decline the prescription delivery service. However, all patients have their medications reconciled by a pharmacist and are counseled at discharge regardless of request. During initial evaluations, Froedtert Hospital found many patients were discharged with medication errors, and 35% to 40% of patients were not having their prescriptions filled due to access issues such as time, affordability, and lack of understanding the importance of adhering to medication therapy. Filling medications on site at discharge alleviates some of these problems.

Cost Justification

The initial pilot program was started in February 2010. The data from that program justified 2 pharmacy FTEs. The second pilot ran from September 2010 to July 2011, and the full program has been operational for more than 1 year. Based on time estimates and work volume data from the pilot program, 9 FTE positions (6 FTE pharmacists and 3 FTE technicians) were approved to expand the service hospital-wide.

The model of layered pharmacist support for discharge along with the decentralized clinical pharmacist was improved by utilizing the decentralized clinical pharmacist to complete the reconciliation. Therefore, the 6 pharmacist FTEs were incorporated into the existing pharmacist team structure, which allowed a decrease in the patient beds per pharmacist ratio. Extensive data were collected on outcomes and financial metrics to obtain additional approved FTEs. The number of prescriptions are captured daily. As prescription capture at discharge increased, so did medication costs, but fees from dispensing contributed to savings for the financial model.

The 3 FTE technicians allocation was based on volume of workload per unit statistics derived from a pilot study. Existing staff were used for other ambulatory services and growth or additional FTEs in these areas were based on volume associated with additional patient visits and prescription capture (with the mail order/home delivery service). The FTEs in the transplant unit and primary care were jointly supported by pharmacy and those respective departments.

Froedtert Hospital was able to bill for many of the visits. The ROI regarding the discharge prescriptions allowed for expansion of the program and the work tasked at discharge. Although Froedtert Hospital is not a stand-alone community pharmacy, it serves as a community pharmacy within a larger health system.

Residents play a significant role in the transitions model. A major factor affecting expansion of the residency program is a partnership with Concordia University School of Pharmacy. The organizations collaboratively applied for and received grants from both APhA and the National Community Pharmacists Association for the residency program. Student assistance is utilized in two ways in the health system. First, pharmacy interns are hired to work part time during evening and weekend shifts collecting admission medication histories. Additionally, approximately 50 advanced pharmacy practice experience (APPE) students rotate through the health system. Students on rotations are responsible for completing the admissions history as well as some of

the discharge counseling and education. Outpatient APPE rotations were modified as well. Interns also provide support services in the outpatient pharmacy. The goal is to engage the student pharmacists as they enter the program to increase familiarity and create a mini-longitudinal experience. As they advance in their internships, so do their responsibilities.

Froedtert Hospital Plans for the Future:

- Integrating Federally Qualified Health Centers
- Examining a post-discharge program for heart failure patients
- Creating a process for transitioning patients to long-term care

Future Plans

Concordia University School of Pharmacy has placed pharmacists in local Federally Qualified Health Centers. Froedtert Hospital plans to partner with these pharmacists with emphasis on providing services to high-risk patients.

Froedtert Hospital is partnering with the AIDS Resource Center of Wisconsin and supporting utilization of pharmacists at their site. The vast majority of the patients stay in the region, and a strategic goal is to provide for patients after they receive specialty care at Froedtert Hospital.

The organization is considering starting a post-discharge program specifically for heart failure patients. A service was developed to identify inpatients with heart failure, and a multidisciplinary team determines whether a patient needs medication reconciliation post discharge. When required, the patient is sent to a pharmacist-run clinic for a visit approximately 10 days following discharge. The patients should visit their primary care physician 72 hours after discharge and again several weeks later. Examples of metrics to be tracked are the number of confirmed visits, adherence to medications, and therapy optimization. Patients who do not follow-up despite having a need will comprise the comparator group.

Approximately 27% of the hospital's patients are discharged to a nursing facility and future plans include a process to improve the flow of information sent with the patients to long-term care facilities.

Hennepin County Medical Center Enrollment Criteria:

- 3 or more admissions in last year
- Diagnosis of congestive heart failure, pneumonia, or acute MI
- Readmission in the last 30 days
- Patient request to participate

Hennepin County Medical Center

The Enhanced Discharge Transitions of Care Team is a part of the Health System Pharmacy Services of Hennepin Health Systems, Inc. located in Minneapolis, Minnesota. Hennepin County Medical Center is a 462-bed safety-net community hospital with 21,500 discharges annually. This model is an example of a modified patient discharge plan in a general medicine service. The program began in June 2011 as a 2-month pilot project to reduce rates of readmissions within 30 days of hospital discharge. It has since expanded to include services throughout the community-based health system and associated primary care and retail clinics. Approximately 10% to 20% of the total discharges from the acute care facility are impacted directly by this model.

A modified discharge plan was implemented similar to the reengineered discharge model Project RED designed by Brian Jack at Boston Medical Center. During the pilot from mid-June to mid-August 2011, a total of 75 patients were involved in the enhanced discharge process. The program is exceptional as the health-system pharmacists are tasked to complete medication reconciliation upon discharge and MTM at the follow-up clinic appointment that occurs 5 to 7 days following discharge.

Pharmacy Team Involvement in MMCT

Pharmacists are extensively involved in the care transitions workflow. They are accountable to facilitate transfer of patient information to outpatient providers and provide follow-up phone calls or in-person consultations (e.g., drug information, adherence counseling). The pharmacists provide medication therapy reviews (i.e., conduct patient-centered medication reconciliation and request detailed information from prescribers and external sources) and submit billing. They also provide patient education following discharge. These functions are provided by multiple members of the pharmacy team; however pharmacy technicians are not formally integrated into the Hennepin model because Minnesota state regulations prohibit technician involvement in the medication reconciliation process.

Patient Progression Through MMCT

A nurse clinical care coordinator reviews patient eligibility for participation when patients are admitted to the general medicine service. Enrollment inclusion criteria are: (1) three or more admissions in the last year; (2) diagnosis of congestive heart failure, pneumonia, or acute myocardial infarction; (3) readmission within the last 30 days; or (4) patient request to participate. Enrollment exclusion criteria are: (1) admission for chemotherapy treatment; (2) admission from a skilled nursing facility; or (3) planned transfer to a long-term care facility.

Discharge planning starts at admission and continues throughout the course of the hospitalization by the care coordinator. When discharge orders are written, the care coordinator notifies the pharmacist to complete discharge medication reconciliation. The pharmacist communicates any recommendations to the provider. After the recommendations are discussed and reviewed, the pharmacist documents the medication therapy plan in the patient EHR and includes a current medication list. Scheduling follow-up appointments and counseling sessions on medications is

planned by the care coordinator. The pharmacist and care coordinator have complementary and defined roles, and they are always in close communication.

The hospital outpatient pharmacy can fill the prescriptions for delivery to the bedside, if the patient desires. Dispensing services and bedside delivery were already in use prior to implementation of the transitions of care model. Thus, discharge prescription volume did not increase significantly. Patients are still offered services such as counseling and follow-up monitoring even when they do not fill prescriptions at a Hennepin Health Systems, Inc. pharmacy.

At discharge, all patients receive a detailed summary of their inpatient encounter that addresses the primary episodes of their care that occurred in the health system. This summary includes changes to the medication therapy and clear action steps for their return home. Patients meeting the listed inclusion criteria receive a post-discharge phone call and may receive a post-discharge pharmacy visit depending on severity and risk for medication-related harm.

Patients at risk who do not have established primary care services or are unable to schedule follow-up visits with their primary care physician are scheduled with a nurse practitioner and an MTM pharmacist in the enhanced discharge clinic within 7 days of discharge. The care coordinator calls patients 3 days after discharge to address any health and social concerns and, if needed, arrange transportation to upcoming appointments.

Pharmacists complete thorough medication reconciliation and an adherence assessment during the MTM visit. Emphasis is placed on medications that were discontinued or added during the hospitalization. The MTM pharmacist helps coordinate care through documentation in the EHR. The visit is completed in conjunction with the nurse practitioner to ensure that the patient has appropriate tests ordered and future follow-up appointments scheduled. Enhanced discharge clinic support personnel call patients who missed their appointment and reschedule when appropriate.

A joint home care pharmacist position with the University of Minnesota College of Pharmacy supports the clinic. This pharmacist focuses on MTM home visits with high-risk patients following hospital discharge and geriatric home visits in conjunction with the Senior Care Clinic.

Use of Technology

Hennepin Health Systems, Inc. places a strong emphasis on the specific method of documentation. Within the pharmacy, thorough staff training is conducted to ensure that critical points are available in the EHR and that the documentation is consistent.

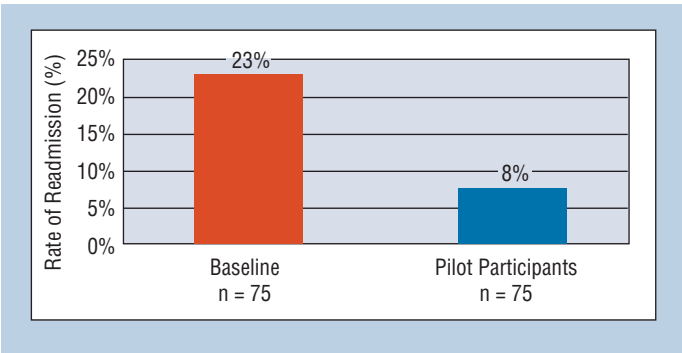
Both inpatient and outpatient providers in the Hennepin Health Systems, Inc. may access the EHR. Seventy-five percent of providers throughout the state of Minnesota are involved with the EPIC Care Everywhere system, which allows participating providers to view documentation of previous clinician visits. These encounters may have occurred within Hennepin Health Systems, Inc. or another health system in the EPIC Care Everywhere network.

Pharmacists are able to access medication refill history through the state Medicaid online system. EPIC Surescripts also can integrate refill information from external pharmacies. Use of these two resources can help identify medication problems before they occur.

Metrics

The baseline 30-day readmission rate for the target population during the pilot was 23%. For patients who completed all steps of the process, there was a reduction in the 30-day readmission rate to 8% (Figure 4). Required steps include receiving discharge medication reconciliation, attending appointments, and being reached by a phone call. Required steps do not include evidence of prescription fills. Patients involved with the clinic but who did not complete every step of the process had a readmission rate of 19%.

Figure 4. Hennepin County Medical Center : 30-Day Readmission Rates



During the pilot period, a monthly audit was performed to track errors found from discharge medication reconciliation. Audits revealed that 63% of patient discharge medication lists contain errors. Following pharmacist medication reconciliation and communicating recommendations to the physician, the rate of errors decreased to less than 1%. Nearly 30% of the corrected errors were classified by the pharmacist as "likely to cause readmission."

In a random sample of 10 participants in the pilot, 30 medication-related problems were found; 57% were inappropriate adherence, 17% were related to medication safety, 10% were inappropriate medication indications (i.e., appropriately prescribed agents without indication), 6% were problems with medication effectiveness, and 7% were classified as "other." Issues included in the inappropriate adherence category were not following directions for use, medication directions not understood, and failure to use required adherence tool recommendations (pillboxes and additional follow-up appointment with MTM pharmacists). Medication-related safety issues included adverse effects and need for alternative therapy or administration schedule.

A 12-question survey was administered by a clinic volunteer to a random sample of 11 enhanced discharge clinic patients within 1 to 2 weeks after their appointment. All patients were satisfied with the care they received at the enhanced discharge clinic appointment, and they reported that the visit was beneficial. The success of the pilot established this model as the standard of care for select high-risk patients at Hennepin Health Systems, Inc..

Approximately 60% of patients in the current (post-pilot) program adhere to their scheduled appointments. The current 30-day rate of readmission for patients seen in the enhanced discharge clinic remains stable at 8.8%, compared with 23.4% for those referred to the clinics but who do not attend their scheduled appointment. Hospital administration is in the process of requesting expansion of the service to provide discharge medication reconciliation for all patients.

Approximately 250 patients have been seen in the enhanced discharge clinic since the end of the pilot in August 2011 and through June 2012. During May and June 2012, a total of 69 patients were seen in discharge clinic; 175 medication-related problems were identified for an average of 2.5 problems per patient. The categories of medication-related problems were:

At Hennepin County Medical Center loss to follow-up is a continuing challenge and has a substantial effect on readmissions.

- Adherence (44%).
- Medication safety issue (23%).
- Inappropriate indication (23%).
- Poor efficacy requiring dosage adjustment (10%).

Continuous Quality Improvement

The performance improvement department that leads most CQI initiatives at Hennepin Health Systems, Inc. oversees this transition of care program. Weekly meetings occurred during the initial stages to discuss progress of the program. As the model has advanced, the meetings are monthly and consist of subcommittees. There is representation by inpatient and outpatient pharmacy, an advanced practice provider, a clinic manager, and a care coordinator. The group discusses successful improvement and barriers that need to be addressed.

The CQI process has brought about modifications such as changing the number of days after discharge before follow-up occurs. The original target time frame was 5 to 7 days, although it is adjusted in accordance with the level of patient risk. The group began evaluating risk factors associated with harm. Criteria are continuously adjusted for determining patients at high or moderate risk. Items considered in calculating the risk score include the number of previous hospitalizations, number of previous readmissions, number of previous emergency department visits, number of concomitant medications, and patients' or caregivers' ability to understand therapy. Certain disease state criteria also may be included in the score.

The development of patient incentives was started through CQI. Initially, incentives were offered to attract patients to return for follow-up visits. Transportation to and from the clinic was one such incentive. However, when it was determined that difficulty in transportation to the clinic was not a primary reason for loss to follow up, the incentive structures were modified to be specific to the individual patient.

Barriers

Loss to follow-up is a continuing challenge and has substantial effect on readmissions. Depending on the week, 30% to 50% of patients may not be seen for follow-up appointments due to absence. Methods to change this behavior have the potential for a substantial effect on outcomes.

Another barrier is the lack of a standard discharge order time or a discharge orders cut-off time. The care coordinators lead the steps of discharge; however discharge orders are needed to complete medication reconciliation. The group is working on streamlining the process of receiving final discharge orders in a timely manner.

The Hennepin County Medical Center program allows for six patients to be seen by pharmacists each half day. Based on complexity, the Minnesota Department of Human Services reimbursement standards for MTM average $100 for a new patient visit and $82 for follow-up visits. A cost avoidance of $10,000 per admission avoided has been demonstrated.

Cost Justification

During the pilot phase of this program, care transitions processes were added to the pharmacists' regular patient workflow. Nursing contributed a dedicated care coordinator and social work added services to their patient workflow. An ambulatory pharmacist from the internal medicine clinic was reassigned to the enhanced discharge clinic and the department of medicine allocated a provider from a same day/next day clinic to the discharge clinic to meet the needs of the pilot program.

The clinic expanded to three half-day sessions, and there are plans to expand again to full days over the next year. The current schedule allows for six patients to be seen for MTM in each half day. Based on the patient visit complexity, the Minnesota Department of Human Services reimbursement standards for MTM provide an average of $100 for a new patient visit and $82 for follow-up visits. The pilot demonstrated the potential for cost savings with an estimated cost avoidance of $10,000 per admission. With the success of the data findings, hospital administration has elected to continue dedicating resources to the enhanced discharge process.

Funding was approved for 6.5 additional FTEs to continue the inpatient process for the targeted population (including a care coordinator, a social worker, and clinical pharmacists); however pharmacy is asking for additional support to provide the discharge medication reconciliation process for all patients in the health system.

This pilot has opened the opportunity to further expand the ambulatory clinical pharmacy services through the addition of more patient visits, increased revenue from MTM, improved quality of care to patients, and an overall reduction in health-related expenditures. A full-time advanced practice provider was hired. Three community health workers for the internal medical clinic and a nurse care coordinator were added to interface with the inpatient care coordinator. Pharmacy also added 1 FTE technician to function as a support analyst to the MTM department. Existing positions reprioritized and adjusted functions to accommodate the new program. Pharmacy residents are involved during their general medicine or ambulatory care rotations. A main goal is to assess the reduction on overall cost of care.

Future Plans

The group has been working on bridging the gap for patients who do not use the health system's discharge pharmacy by identifying the community pharmacies most commonly used. The pharmacy department is working on a collaborating with a larger community pharmacy to develop a transition of care residency program. This program would allow the resident to spend time in the Hennepin Health Systems, Inc. clinics integrated as part of the care team and allow access to the EHR while in the chain community pharmacy to ensure continuity.

Health Care for the Homeless provides health care for the large homeless population in Hennepin County. The transitions of care model has been working with nurse practitioners and physician assistants who lead these programs to add clinical pharmacy support through the postgraduate year 2 (PGY2) Ambulatory Care Pharmacy Residency. Many Hennepin Health Systems, Inc. patients receive follow-up care at those convenient sites.

Johns Hopkins Medicine

Johns Hopkins Medicine's adaptability of their model has led to their ability to meet the needs of the various practice sites within their healthcare system.

The Medication Management Transitions of Care Team spans Johns Hopkins Medicine through the health system's departments of pharmacy. The comprehensive health system, based in Baltimore, Maryland, consists of academic medical centers, community hospitals, home health care, outpatient pharmacies, managed care, and primary care clinics and providers. The transitions of care model was created as a result of a system-wide readmissions prevention task force organized to develop a strategic plan to respond to the Affordable Care Act. This model employs a multidisciplinary approach to improve care coordination and reduce preventable readmissions. Improved coordination is achieved by optimizing acute care management and improving the care handoff from the acute care setting to the ambulatory setting.

Five acute care hospitals within Johns Hopkins Medicine have implemented pilot programs focused on improving the discharge planning process during the inpatient stay. Logistics of the model have been adapted to fit specific sites. The two academic medical centers—The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center (hereafter referred to as Hopkins and Bayview, respectively)—are modeled similarly. The three participating community hospitals—Sibley Memorial Hospital, Suburban Hospital, and Howard County General Hospital—have modified the model to fit their practice needs.

Adaptability of the model was important to serve the needs of the various practice sites. The academic medical centers implemented a bundled approach of services that included patient education, medication reconciliation, follow-up phone calls, discharge prescription planning and delivery, and home-based medication reconciliation. The community hospitals strategically focused on implementing one service at a time, beginning with patient education for high-risk medications. The Hopkins and Bayview models have daily rounds as a core component, whereas the community hospitals do not have structured daily rounds with all members of the multidisciplinary team. The community hospitals also developed innovative services to serve their community's needs. For example, many patients from Suburban Hospital are discharged to a local skilled nursing facility. To assist with this transition, the department of pharmacy at Suburban Hospital developed a program at the skilled nursing facility to provide patient education and ongoing post-discharge follow-up services.

Pharmacy Team Involvement in MMCT

To provide the most comprehensive medication management services with judicious use of resources, the departments of pharmacy developed and implemented a team-based model. In the model, a pharmacist serves as the team leader, with pharmacists, pharmacy residents, student pharmacists, and pharmacy technicians serving as members of the pharmacy team. Hopkins was the first hospital within the health system to implement the full medication management bundle, and the majority of data have been collected from this site's model.

Pharmacists participate in the Johns Hopkins Medicine program by:

- Participating in multi-disciplinary rounds
- Providing patient education
- Conducting medication reconciliation
- Ensuring that patients have access to appropriate medications

Patient Progression Through MMCT

Daily multidisciplinary rounds at Hopkins include physicians, nurses, pharmacists, social workers, physical therapists, respiratory therapists, nutritionists, and home care coordinators from the organization's home health care entity. Rounds are scripted with time reserved for input from all members of the team. The rounds are facilitated by the nurse case manager. The goals of rounds are to address all inpatient care needs, plan for discharge care needs, and ensure that all team members understand the plan, including the anticipated date of discharge. Pharmacists optimize medication therapy by participating in multidisciplinary rounds, providing patient education, conducting medication reconciliation, and ensuring that patients have the opportunity to acquire the appropriate medications in hand for outpatient management upon discharge.

During the inpatient stay, all patients are screened by the bedside nurse using validated discharge readiness tools, such as the Early Screen for Discharge Planning, to determine the patient risk level for readmission. Based on the risk category and the discussion during rounds, the patient receives tailored multidisciplinary interventions, including post-discharge phone calls, follow-up appointments, post-acute referrals, personal health coaches, and in-depth patient and caregiver education. The pharmacy team expressed that the global screening tools utilized did not fully capture patients' medication management needs; therefore, the pharmacists developed pharmacy-specific screening tools based on the primary literature and data unique to Hopkins. Separate screening criteria were developed for patient education and medication reconciliation services. Currently, the pharmacy team manually screens for medication reconciliation criteria and patient education criteria. Opportunities to automate the pharmacy screening process are being explored.

Johns Hopkins Medicine criteria:

- 10 or more home medications
- Documented medication nonadherence
- Admission due to medication complications
- Identification of patients by pharmacist or referral by care team members

The criteria for medication reconciliation are 10 or more home medications, a documented history of medication nonadherence, or admission due to medication therapy complications. Members of the multidisciplinary team also can request pharmacist assistance with medication reconciliation and pharmacists can flag patients for the service based on clinical judgment. Once identified, the pharmacist clarifies the home medication list, updates the medication list in the EHR, and provides recommendations to the patient's physician if discrepancies are identified. Student pharmacists play a key role in assisting with medication reconciliation services, including conducting patient and family medication history interviews and contacting community pharmacies to clarify the home medication list and fill history.

Provision of patient education is triggered by initiation of high-risk medications during the inpatient stay. The high-risk medications targeted are anticoagulants, dual antiplatelets, insulin, metered-dose inhalers, opioids, and complex bowel regimens. The pharmacist provides education within 24 hours of initiation of the high-risk medication. This strategy is employed to ensure that the key concepts can be reinforced throughout the inpatient stay rather than overwhelming the patient with information in the last hours before discharge. Pharmacy residents and student pharmacists play a key role in assisting with this service.

As a component of the Johns Hopkins Medicine program, post-discharge phone calls are made to the patient by the pharmacist within 72 hours of discharge.

Each patient's outpatient medication regimen is developed by the acute care physician and pharmacist, taking into account both clinical effectiveness and financial sustainability of the medication therapy plan. Pharmacists, pharmacy technicians, and social workers collaborate to ensure the patient is able to obtain outpatient prescriptions, using either the hospital-owned pharmacy with prescription delivery to bedside or the patient's community pharmacy of choice. The multidisciplinary team is alerted in advance of prior authorization needs or prescription benefit coverage concerns. The service created an innovative role for pharmacy technicians. In this new role, pharmacy technicians work collaboratively with pharmacists, physicians, and nurses to process insurance claims and adjudicate prescriptions. The pharmacy technician also discusses payment options with the patient and helps to assess the patient's ability to afford the medication regimen, referring the patient to social work or financial assistance programs as appropriate. For patients receiving outpatient medications outside the health system, prescriptions and instructions are faxed to the community pharmacy of the patient's choice.

Based on the inpatient pharmacist's interactions with the patient during the acute care stay, the inpatient pharmacist uses clinical judgment to determine whether the patient would benefit from a post-discharge phone call or a home-based medication reconciliation visit by a pharmacist. Inpatient and outpatient pharmacists collaborate to determine the patient's medication management post-discharge needs, including follow-up appointments in a hospital-owned pharmacy clinic or MTM with an outpatient pharmacist. Anticoagulation monitoring and clinic based pharmacotherapy management are among the ambulatory pharmacy service options.

Upon discharge from any of the five acute care facilities using the transitions of care model, patients are provided ambulatory services as needed. Patients are discharged with a follow-up primary care appointment, and the post-discharge plan and instructions are communicated to the patient's primary care physician. All patients who are considered at high risk for readmission (based on their Early Screen for Discharge Planning score) are given a personal health coach; a trained nurse, who provides follow up at the patient's home to screen for complications, ensures the patient is following discharge instructions and attending follow-up appointments. Patients may be referred to the organization's outpatient pharmacy and ambulatory pharmacists for additional outpatient pharmacy services by home health care nurses, personal coaches, and physicians.

Post-discharge phone calls are made by the inpatient pharmacist within 72 hours of discharge. The pharmacist documents the interaction in the EHR. During the phone call, the pharmacist reviews the patient's discharge medication regimen to assess for proper use, problems with access to medications, effectiveness of therapy, and potential adverse effects. Based on the patient's individual needs, the pharmacist may facilitate interventions through collaboration with the discharging physician or triage patient needs to the appropriate member of the multidisciplinary team.

A new service added to the bundle is home-based medication reconciliation performed by a pharmacist. Both inpatient and outpatient pharmacists provide the service according to scheduling availability. In this pilot program, patients referred by the inpatient pharmacist or home

care nurse receive a comprehensive medication review and medication reconciliation. A summary of the findings and recommendations are communicated to the patient's primary care physician, and a reconciled list of medications is faxed to the patient's community pharmacy. A survey accompanies the list faxed to the community pharmacy, and modifications in the organization of the information have been made in response to important feedback from community pharmacists.

Use of Technology

The majority of the patient information transfer occurs through shared EHR software systems that allow all Johns Hopkins Medicine health care practitioners access to the patient information. When conducting handoffs to health care practitioners outside the organization, the information is usually e-mailed or faxed to the outside entity. Phone calls between practitioners are utilized to transfer information as well, especially for more complicated patient care issues.

Metrics

Prior to the initiation of the care model, from July 2010 to June 2011, the readmission rate on the unit was 13.7%. After the initiation of the care model, from July 2011 to January 2012, the readmission rate on the unit was 11.7%. The average length of stay on the unit also decreased from 4.52 days to 4.48 days; this occurred in the setting of increased expected length of stay from 4.46 days to 4.51 days as calculated using the University HealthSystem Consortium model. Initially, concern was voiced that length of stay would increase due to the need for more coordination. The thought behind why the length of stay has not increased is that proactive coordination of care and discharge planning have prevented unnecessary delays in discharge.

Patient satisfaction is measured using HCAHPS. The pharmacy care model specifically targets educating patients about new, high-risk medications started during their hospital stay. One HCAHPS question aligns with this intervention, stating, "Before giving you any new medicine, how often did hospital staff describe possible side effects in a way you could understand?" With the implementation of this intervention, Hopkins has seen a 17% increase in the number of respondents choosing "Always" when answering this question.

Continuous Quality Improvement

Each hospital in the health system has a committee focused on transitions of care. These committees report to a system-wide, multidisciplinary committee that oversees the initiative. Pharmacy has representation on all levels of the committee structure. These groups are focused on CQI efforts. On a quarterly basis, process and outcomes measures are reviewed at the system level, the hospital level, and the department of pharmacy level. With the gradual expansion of the transitions of care model, the pharmacy team is able to learn from past implementations and determine whether there are changes that need to be made before moving forward. As of the end of 2012, Hopkins is approximately 30% live with transitions program. Areas for expansion include implementation in surgery, oncology, and pediatric services.

Johns Hopkins Medicine addressed workload issues associated with their program through a strategic workload analysis in which technical and distributive tasks were delegated to pharmacy technicians.

The departments of pharmacy have created a pharmacy network with representatives from all entities, including home health care and outpatient pharmacy, to collaborate on transitions of care projects. The group has monthly conference calls to discuss strategies that are working for the system as a whole and discuss modifications that are needed to meet individual entity needs. The goal is to standardize processes when feasible, while recognizing that pure standardization may not work in all facilities. Successful standardization has occurred with development of patient education materials for high-risk medications, creation of staff training and competency programs, and establishment of data collection tools. The group is focused on making the distinction in value and efficiency when incorporating standard operating procedures across environments. During the calls, the group also shares challenges and strategies to overcome identified obstacles.

Barriers

As the pilot models have been implemented across the health system, the pharmacy team identified that not all pharmacy staff are adequately trained for the new roles and responsibilities associated with the transitions of care model. For example, acute care practitioners who have been practicing in the inpatient enviroment for many years were not familiar with the best way to contact outpatient pharmacies to gather medication history information. Additionally, the evolution of the teach-back technique was a new concept for many staff. A comprehensive training program was developed to address this barrier.

Ensuring provision of adequate pharmacist resources has been a barrier. The departments of pharmacy strategically utilized student pharmacists and pharmacy residents to assist with the increased workload needs. In the new team-based pharmacy model, the pharmacist team leader oversees a larger number of patient beds with assistance from pharmacy residents, student pharmacists, and pharmacy technicians. The student pharmacists are regarded as an indispensable resource to provide patient care services with preceptor supervision. Training and competency programs for these students have been developed. This model has been positively adopted by frontline staff. Preceptors who previously took only residents on rotation are requesting up to 2 students per month to assist with transitions of care activities. Additionally, Hopkins and Bayview were awarded a 3-year CMS Health Care Innovation grant that included funding for 7 pharmacist FTEs. This funding will provide time and resources to demonstrate cost savings through pharmacist involvement.

Barriers with staffing resources and increased workload were addressed through a strategic workload analysis. All pharmacist responsibilities were tracked and documented. A team of pharmacy staff reviewed the responsibilities and determined the appropriate staff member to complete each task. Technical and distributive tasks were delegated to pharmacy technicians to allow more pharmacist time for clinical activities, including medication reconciliation and patient education. The team is continuing to evaluate how technology can assist with additional improvements in workflow efficiency, including automated patient screening.

Johns Hopkins Medicine future plans include:

- Full scale implementation across the health system
- Strengthening the connectivity of inpatient, ambulatory and outpatient pharmacy services
- Developing tools to assess patient needs
- Exploring home-based pharmacy services

Cost Justification

With the team-based model using student pharmacists and pharmacy residents more efficiently, the departments of pharmacy increased the number of students participating in APPE internal medicine rotations and added 3 postgraduate year 1 (PGY1) pharmacy residents. The resident positions were justified using multiple factors, including value provided through staffing and project contributions, enhanced retention of advanced trained practitioners in pharmacist positions after completion of training, and overall organizational support of education and training. As noted earlier, this team-based staffing structure minimizes the additional resources needed for scaling the project across all units.

Deployment of the discharge prescription bedside delivery process necessitated addition of 3 more outpatient pharmacy technician FTEs. These advanced pharmacy technician positions are a hybrid inpatient/outpatient role with primary responsibility for discharge prescription facilitation, including adjudicating test claims to provide the inpatient team with projected discharge prescription cost information, assisting with prior authorization processing, and ensuring patients have their medications supplied through the patient's community pharmacy of choice. Based on projected financial calculations, these positions will increase discharge prescription capture and outpatient prescription revenue.

The overall medication management bundle is projected to assist with decreasing unnecessary rehospitalizations and emergency department visits. With new reimbursement penalties linked to hospital readmissions, pharmacy involvement in transitions of care activities can help prevent the health system from incurring financial penalties and contribute to overall cost savings. Additionally, from a payer perspective, increased focus on affordability of discharge prescription regimens has the potential to decrease prescription costs, improve medication adherence, and decrease overall health care utilization expenditures.

Future Plans

The pharmacy team recognizes the importance of planning for full-scale implementation of the pilot model across the health system. The departments of pharmacy have begun planning for expansion of the readmissions reduction pilot programs and variations of the model have been described. As expansion occurs, the team will continue to perform CQI and make changes to the model as needed.

The health-system pharmacy network is focused on continuing to strengthen the connectivity of inpatient, ambulatory, and outpatient pharmacy services. The group is considering developing a post-discharge pharmacy stratification tool to systematically determine which post-discharge pharmacy services each patient should receive based on patient characteristics and pharmacist evaluation. As the newest element of the bundle, the team is continuing to evaluate the impact, need, and feasibility of home-based pharmacist services through the work of a resident project. The group is also focused on incorporating these services into patient-centered medical home models and potential accountable care organization (ACO) models in the future.

Finally, Johns Hopkins Medicine plans to continue to develop strategies with entities external to the health system, including skilled nursing facilities, community pharmacies, and other hospitals to promote information sharing and support during transitions of care handoffs.

Mission Hospital pharmacists collaborate with multiple community resources to enhance patient care, reduce emergency department visits and prevent readmissions.

Mission Hospitals

Mission Uninsured Safe Transitions (MUST) is a service of the nonprofit Mission Health System in North Carolina. The MUST program is part of the health system's Medication Assistance Program (MAP) for low-income patients and the outpatient clinical pharmacy services at Mission Hospital. MAP pharmacists work collaboratively with others in the health system including hospital departments, care management, discharge planning, and Mission's community pharmacy locations. They also work with many partners in the community such as various nonprofit clinics, the Area Agency on Aging, and a clinic dedicated to serving homeless patients. Two foundations that provide grants and financial support also are involved.

Mission Health System has a partnership with the Institute for Healthcare Improvement with an initiative to get each patient to the desired health goal without harm, without waste, and while providing an exceptional patient experience. The health system is dedicated to optimizing the delivery of health care and recognizes access to prescribed medications and clinical pharmacist disease management services as priorities. Mission pharmacists collaborate with multiple community resources to enhance patient-centered care and reduce emergency department visits and inpatient readmissions.

When Mission started the MAP in 1999, the program focused on medication access and education services for the elderly population. With the advent of Medicare Part D, access issues for senior adults decreased. Mission restructured and expanded the program to serve uninsured and underinsured patients. Each month, 30 to 90 patients are transitioned through this program. Disease and medication management services are provided to high-risk, uninsured patients with incomes at or below 200% of the federal poverty level. These patients may have multiple disease states and unmet medication access needs and they are at high risk of experiencing preventable harm. The goal of the program is to ensure that uninsured patients have access to needed pharmacy services.

Pharmacy Team Involvement in MMCT

Initially, Mission's MAP started with 1 pharmacist and the program has grown to include 2 residency-trained clinical pharmacists, 2 pharmacy technicians, 2 medication assistance specialists, a licensed clinical social worker, and an office assistant. A pharmacist serves as the MUST program director.

APPE students rotate through the program monthly and there are 2 PGY1 pharmacy residents. The MAP at Mission is among the residency program's core sites, providing residents with an opportunity to participate in an innovative multidisciplinary care setting. The level of student engagement is high. For example, a student pharmacist designed a resilient laminated card with medication information for homeless patients to use as a reference and reminder to promote proper health.

Mission Hospital MAP pharmacists provide:
- Enhanced medication access
- Improved patient safety
- Effective care transitions in the community

Patient Progression Through MMCT

Patients identified as requiring medication assistance and at high-risk for readmission or complications based on their medical history are referred to Mission's MAP upon disharge by care management and discharge planning services. Many of the patients have chronic disease states including diabetes, asthma, chronic obstructive pulmonary disease, heart failure, hypertension, and depression and thus are prescribed a variety of medications.

Chronic disease management, medication review, and education services are provided by the clinical pharmacists. The program strives to link patients with other needed resources in the community. In addition to providing medication management services, the MUST program collaborates with inpatient discharge planners and the care management team to provide an initial 30-day supply of medications to uninsured patients discharged from the hospital. Mission's outpatient pharmacists inform patients of resources in the community and provide pertinent medication information at discharge.

In collaboration with inpatient care managers, cardiology, safety-net providers, community resources, and primary care providers, MAP pharmacists provide enhanced medication access, improved patient safety, and effective transitions of care in the community. The expanded care model, which is based on Project BOOST (Better Outcomes for Older Adults through Safe Transitions), follows up with patients discharged from the hospitalist service. Pharmacy technicians make initial contact with patients at discharge. The technicians follow up by telephone or by scheduling patient visits to safety-net systems, primary care, or other long-term assistance programs. Medication reconciliation and disease state management needs are addressed and the pharmacy technicians make arrangements for appropriate follow up with specific providers.

To improve care transitions for discharged patients, the pharmacy technician completes a series of three follow-up phone calls:

- Within 72 hours of discharge.
- Within 1 week of first refill (with continued transition assistance as needed).
- After the first visit with the primary care provider (as established from inpatient discharge summary).

During the call process, the technician is responsible for determining whether the patient has any questions after hospital discharge, ensuring patient understanding of the follow-up care plan, and alerting a pharmacist regarding medication discrepenicies. The technician schedules patients for face-to-face or telephonic encounters with MAP pharmacists to clarify and resolve any medication problems.

Mission's MAP uses 340B pricing and the pharmacy is well stocked to fill prescriptions. Common patterns of discharge medication prescribing are known. A variety of alternate resources are used for patients on a generic medication and when there are no prescription assistance programs in place.

Mission Hospitals goals of the program are to reduce readmissions to less than 7% and increase patient satisfaction with the process to greater than 85%.

After discharge, the community health center pharmacy is one of the main care centers where patients are referred for primary care services. The pharmacy works within a strict budget but is able to secure medication for patients requiring long-term therapy. Additionally, the Asheville Buncombe Community Christian Ministry clinic pharmacy acts as a bridge to the community health center services. This clinic is staffed by volunteers and patients can utilize the clinic services until they are reconnected with the community health center.

Patients are contacted after 3 weeks to ensure adherence and access to medications. The service is complete when the pharmacy service is certain that the patient has access to medication supply and has established communication with a primary care provider. The outreach efforts may continue beyond the 30 days depending on patient needs and care coordination. A flowchart depicting the MUST intervention and the scripted technician phone call questions are presented in Figure 5 and Figure 6, respectively.

Use of Technology

Access to a common EHR is available within the Mission Health System. A discharge planner or nurse calls the MAP to check availability of required discharge medications prior to faxing prescriptions. Several aspects of patient follow-up care are discussed at this time. An Internet-based EHR is available with one community clinic partner. The health system uses the Midas electronic data collection tool to track program interventions and outcomes.

Metrics

The baseline readmission rate for the hospitalist group was 10% (2010 data from hospitalist group report). The hospital readmission rate is 10% to 20% across all services. Patient satisfaction with the discharge planning process from January 2009 to June 2009 using HCAHPS scoring averaged 70%. The majority of patients had at least one discrepancy in their medication list. Adverse drug events at baseline were reported in 40% of clinical pharmacy visits in a sample population of 2009. Sixty percent of pharmacist visits resulted in the identification of a potential adverse drug event. There was a statistically significant increase in patients reaching goal blood pressure through the program.

Major goals of the program are to reduce readmissions to less than 7% and increase patient satisfaction with the discharge process and outpatient follow-up measures to greater than 85%. Medication reconciliation issues are expected to decrease to less than 60% of patients at time of final follow-up encounter. The expected estimated cost avoidance is approximately $130,000 in one year.

Figure 5. Mission Uninsured Safe Transitions (MUST) Program Discharge Process

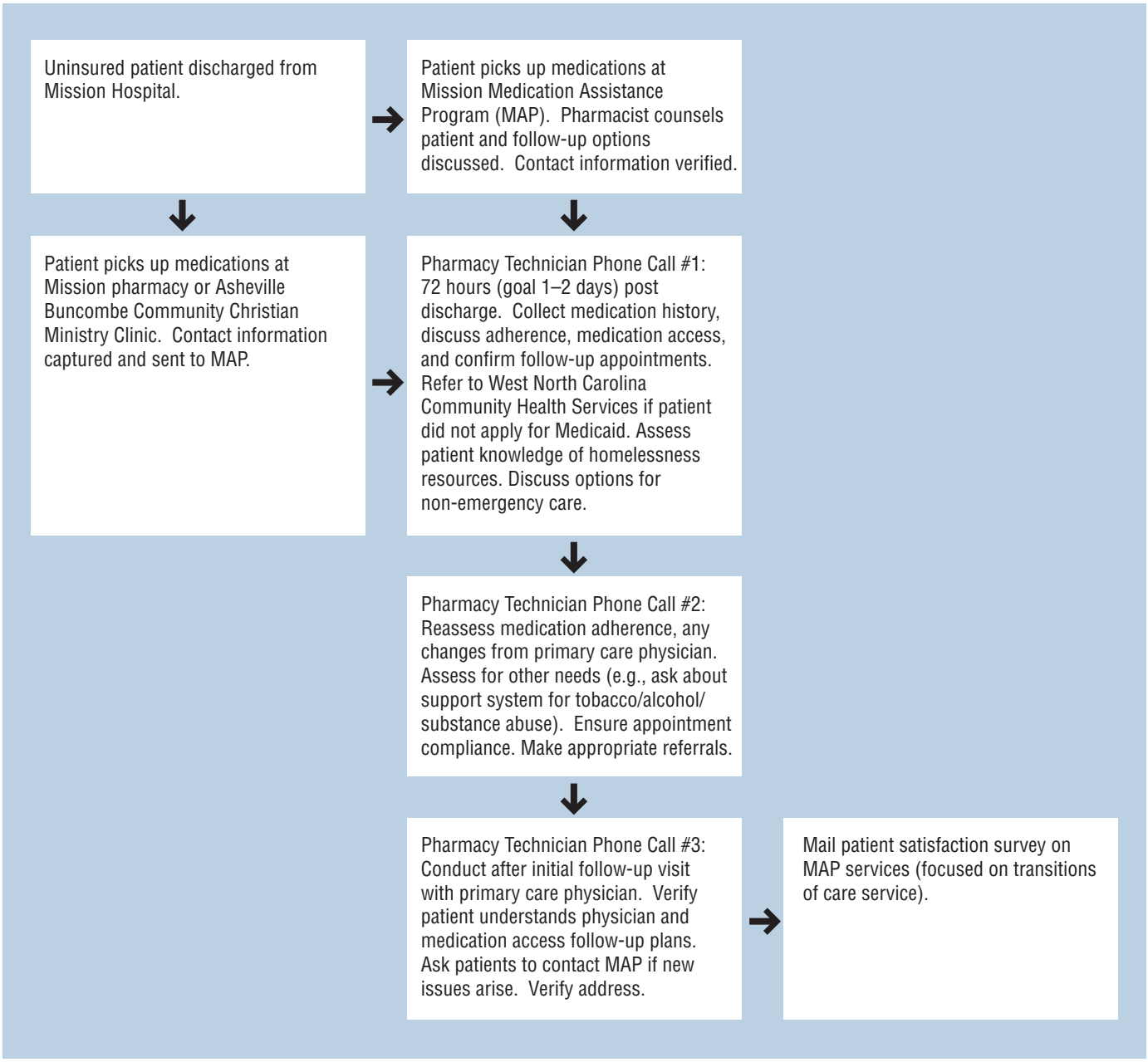


Figure 6. Mission: MUST Technician Phone Call Script

1. How have you been since your discharge?
2. What's been going on?
3. How are you doing with your medications? May I go over them with you?
4. Have you experienced any side effects or felt or noticed any difference after taking a medication?
5. Where do you get your medications?
6. Are you able to afford them?/Do you need assistance?
7. Are you aware of scheduled appointment(s)? or
8. Have you called to schedule an appointment with your primary care physician?
9. Do you think you will be able to make the appointment(s)?
10. Do you drive/have transportation?
    a. Do you live close to the bus line?/Are you able to ride the bus?
11. Do you feel you are able to care for yourself or do you have the support you need at home?
12. Do you feel safe where you are?
13. Do you have any sad thoughts or ever think about hurting yourself or others?
14. Do you feel like you need to talk to someone?
15. Is there anything you feel you need help with at this moment?

Continuous Quality Improvement

Weekly team meetings are one of the primary methods of maintaining efficient communication among program staff. Shared offices are used to ease the communication strategy. Formal process improvement plans also are accomplished through weekly team meetings. Partner organizations provide input for team leaders at a monthly meeting to coordinate outcomes and discuss CQI long-term plans.

Barriers

Barriers of limited resources and staff have been been overcome by grants to continue funding pharmacy technician positions.

An accurate and complete discharge plan and follow-up appointments in the community have been a challenge. MAP staff must query primary care physicians to confirm follow-up visits and verify the correct appointment times before contacting patients. Plans have been outlined to have technician encounters with patients in their hospital rooms at discharge.

Adaptations to existing EHRs have been cumbersome. Many partners use proprietary software called Data Link. Mission Health System is currently working to acquire access to this information system. The MAP does have access to EHR clinic records. Collaborating with the clinic managers was a key to progress. Technology itself is usually not the direct barrier; rather, the logistics of the implementation plan pose a greater concern. The managers simply needed to understand why the MAP required access to the EHR. After making a case to leadership of the profound benefits, access was granted quickly.

Mission Hospital cost justification is based on reducing preventable harm and increasing the quality of care. Mission has demonstrated an ROI of $2.41 for every $1 invested in the program.

Transportation barriers, lack of trust, and access to health care by the homeless population are areas where the MAP continues to work. Success with reaching the homeless community has come through a strategy to provide a trusted staging place for health care encounters. One of the pharmacy technicians from the MAP has taken it upon herself to go to AHOPE, a daytime homeless shelter in Ashville, where patients have lockers, access to mail, and telephones along with other counseling services. Through her visits to AHOPE, the technician has become an ambassador for the MAP program and she is known and recognized by the patients. This strategy has helped decrease access barriers with this patient population and ensures a consistent and trusted connection with the MAP.

Formalizing the set of standard questions that technicians asks while on the follow-up phone calls was important to maintain consistency and was a critical part of improving documentation and efficiency. Assessing the management of follow-up phone calls and outreach to patients will be useful for developing a standard process.

Cost Justification

Safe care transitions lead to reductions in preventable harm and increases in the quality of care. Leadership has supported the expanded care transitions model utilizing a certified pharmacy technician and clinical pharmacists.

The initial funding for the expanded transitions in care clinical service was obtained through a national Cardinal Healthcare Foundation grant to hire a certified pharmacy technician. The technician's primary responsibility was to conduct the follow-up phone calls to uninsured patients. Oversight and accountability of clinical issues identified by the technician was incorporated into the duties of the MAP clinical pharmacists. The only additional funds required for project implementation has been the FTE required for the certified pharmacy technician. Clinical interventions are tracked in a database. The goal is to provide justification of the technician's position by showing reduced emergency department and inpatient admissions for uninsured patients contacted through the service.

In a 2012 internal data analysis, Mission's MAP was shown to have an ROI of $2.41 for every $1.00 that the system invested in the program. Additional financial benefits were seen with medication reconciliation services for preventing both major and minor adverse drug events.

Future Plans

Future plans are to expand the service to the entire Mission Health System. The organization is evaluating the potential for having a technician and pharmacist who would be based in a family practice clinic to address transitions of care. This dedicated service would be beneficial for improving safe medication use.

Sharp HealthCare is an Accountable Care Organization that has incorporated a transitions of care pharmacy residency program to implement their program.

Sharp HealthCare

The Continuum of Care Network, started in 2011, is a care transitions model based at Sharp Memorial Hospital. Sharp HealthCare is an ACO operating as a regional health care delivery system with headquarters in San Diego, California. This model incorporates a transitions of care residency program supported by Touro University California College of Pharmacy.

The Continuum of Care Network involves services from at least three organizations. These entities may include a community hospital, hospital-owned clinics and medical offices, a regional community chain pharmacy, PBM, home health, managed care organization, and the overarching ACO. One of the health system's two medical groups is a multispecialty group with more than 400 physicians. Sharp is an integrated delivery system with large incentives to maximize quality of care and prevent unnecessary costs. Up to 90 patients receive care transitions services through this program monthly, representing approximately 5% to 10% of the total discharges from the acute care facility.

Pharmacy Team Involvement in MMCT

In July 2011, Sharp HealthCare created a PGY2 transitions of care pharmacy resident position. As a priority, the resident focuses on the discharge process from hospital to home with a goal of reducing medication-related readmissions. The hospital's informatics department hired pharmacy technicians (1.75 FTEs) to help document admission medication histories. Technicians interview patients admitted to the hospital for 24 hours or more. When significant medication discrepancies are found, the pharmacy technicians notify the hospitalists.

Patient Progression Through MMCT

Patients are enrolled in the Continuum of Care Network under the following circumstances:

- Referral by a physician, case manager, social worker, or diabetes educator.
- Patient self-request for transitions of care assistance.
- Diagnosis of congestive heart failure.

The clinical nurse specialist screens patients for heart failure and alerts the transitions of care pharmacy resident to review medication lists for discharged patients. Under the preceptorship of a clinical pharmacist, the resident works closely with the case manager and social worker to assess and manage patients with heart failure. The resident also reconciles medication lists for heart failure patients who were admitted overnight. Ideally, high-risk patients are identified early during the hospitalization to resolve any medication-related problems. Hospitalists also refer specific non–heart failure patients for follow up based on their risk for medication-related harm and potential for readmission.

Hospitalist rounds occur twice during the day, at 8:00 AM and 1:00 PM. Morning rounds address handoffs from overnight admissions and initiate the discharge planning process with the case manager and transition of care pharmacy resident. Discussion of discharge plans includes discharge

Sharp HealthCares' transition of care resident works closely with community pharmacists to ensure patients have access to their medications. The transitions of care resident conducts follow-up visits with patients via telephone or home visit usually within 5 days of discharge.

location (e.g., skilled nursing facility, rehabilitation facility, home with home health care) as well as medications that may require prior authorization (e.g., enoxaparin, oral vancomycin, dabigatran). The 1:00 PM rounds more specifically focus on potential issues with the medication-use process and include plans for counseling and patient education, mitigating financial burden, or adherence issues.

The transition of care pharmacy resident reconciles medications prior to discharge by comparing admission medications with those prescribed during the hospital stay. The resident also identifies any medication-related problems and attempts to simplify the medication regimen, while addressing the total cost of therapy. Using the MedAction Plan software application tool for discharge planning, the resident creates a medication list for the patient and comprehensively counsels the patient on the discharge medication regimen.

Case managers refer unfunded, County Medical Services, and Medicaid patients with any diagnosis to the transition of care pharmacy resident for evaluation of medication therapy. The resident reviews the medication regimens for cost effectiveness and makes recommendations to the hospitalists to adjust therapy if possible. Nearby pharmacies with $4.00 generic plans are identified for patients. Manufacturer prescription assistance programs also are identified to reduce costs. Patients are referred to the health system's medication recovery specialists. These recovery specialists are pharmacy technicians tasked with helping patients obtain medications by applying for prescription assistance programs. The resident is often able to obtain the appropriate signatures from the hospitalists to expedite the application process. Applications are approved within 2 to 3 weeks after discharge.

The transition of care pharmacy resident works closely with community pharmacists for patients who may require treatment authorization requests to ensure these requests are processed in a timely manner. For patients without an established pharmacy and patients raising concerns of nonadherence, the pharmacy located across the street from the hospital is recommended. This pharmacy belongs to a regional pharmacy chain and has a department dedicated to processing treatment authorization requests efficiently. The resident acts as the liaison between the hospitalized patient and the community pharmacy. When prescriptions are ready, the pharmacy provides bedside delivery, and patients have several co-pay options.

After discharge, the transition of care pharmacy resident conducts follow-up via telephone or home visit, usually within 5 days. The follow-up structure depends on patient-specific priorities and time of referral. For example, if the primary reason for referral was lack of funding yet the patient was on only three medications, the resident calls the patient to determine his or her ability to acquire all medications and any possible questions about therapy.

Home visits are typically offered to patients who may be confused and overwhelmed by the discharge medication list. These patients are identified during discharge counseling. The resident visits elderly patients living alone or who lack a caregiver support structure. During home visits, the patient's actual medications are compared with discharge medication lists to verify adherence. When urgent medication-related issues are identified, the resident immediately contacts the primary care physician for clarification. For nonurgent issues, the resident records a list of questions for the patient to bring to his or her follow-up appointment and a copy is faxed to the physician's office.

The Sharp Rees-Stealy Medical Group offers comprehensive primary and specialty care as well as laboratory and pharmacy services. The group has 3 pharmacists and 1 pharmacy resident managing patients in the anticoagulation, lipid, and refill clinics. The Sharp Community Medical Group has 3 pharmacists managing patients in the MTM clinic including anticoagulation therapy. These resources have been brought into the model as it continues to expand. For Sharp Rees-Stealy patients, once discharge orders are entered, outpatient assistants are notified. These assistants subsequently call patients while they are still in the hospital to schedule a follow-up visit with the primary care physician within 7 days of discharge. The scheduled follow-up appointment is recorded directly in the discharge summary ensuring a plan and written reminder.

All patients who have been in the emergency department or hospital are followed by the Sharp Rees-Stealy continuity of care unit. The group uses an intensive telephonic intervention process. Within 48 hours of discharge, a nurse or medical assistant calls the patient to review the discharge summary, explain medication use and check adherence, confirm follow-up appointments with the primary care physician, and address special issues. Staff in the continuity of care unit use the EHR to communicate with physicians to clarify follow-up issues. Complex patients are referred to case management for more intensive follow up. Sharp Rees-Stealy uses the Cardiocom telehealth service, a home disease management tool that asks patients daily questions about their health and contributes to at-home monitoring. Based on the patients' answers and weight monitoring, a phone call may be triggered. Cardiocom has significantly reduced hospitalization rates for this patient population.

In 2007, Sharp implemented a preventive model of care to better manage patients with advanced heart failure, chronic obstructive pulmonary disease, and dementia. This program, called Transitions, is a home-based palliative care consultation service that incorporates evidence-based medicine to manage each patient's current medical issues and anticipate future needs. Many patients are referred to the program while they are in the hospital. Transitions is based on four pillars: proactive in-home consultation, evidence-based prognostication, caregiver support, and advance health care planning. During in-home consultations, a registered nurse provides the patient and family with the skill set to aggressively manage the disease. This education includes information on disease process, medications, diet, exercise, and early recognition of signs and symptoms to report and manage. Typically, patients who are enrolled in the Transitions program are contacted within 1 week after discharge.

Use of Technology

The health system uses an inpatient EHR that is linked to the Sharp Rees-Stealy EHR. Therefore, all hospitalization notes are automatically transferred to the outpatient medical record and available for follow-up visits. However, the medication lists in the outpatient EHR must be manually updated following discharge to reflect any changes that occurred. Hospitalists are responsible for updating patients' medication lists at discharge, and the transition of care pharmacy resident also has access to make changes as needed.

Sharp HealthCare has effectively reduced their readmission rates for heart failure patients from 20% to 13% by implementing the Continuum of Care Network.

For patients who see physicians outside this medical group, case managers typically fax notes to those physicians when they are setting up patient appointments. The resident regularly communicates with community pharmacists and primary care physicians via telephone and fax to ensure that patients obtain their medications and to explain any medication-related issues.

Metrics

Initially, the value-based purchasing HF-1 measures (i.e., the discharge instructions for heart failure) were the primary target for improvement. The HF-1 measure description states, "Heart failure patients discharged home with written instructions or educational material given to patient or caregiver at discharge or during the hospital stay addresses *all* of the following: activity level, diet, discharge medications, follow-up appointment, weight monitoring, and what to do if symptoms worsen." Initially, the lowest score at the facility was with the discharge measure for heart failure.

The national threshold for compliance is 90.8% and the Sharp HealthCare compliance rate at baseline (i.e., prior to the start of the Continuum of Care Network) was 85.3%. The element of the core measure most likely to be scored as noncompliant was the accuracy of the medication list. After implementation of the Continuum of Care Network, the compliance rate consistently has been above the national threshold. Prior to the initiation of Continuum of Care Network, the readmission rate for patients with congestive heart failure was approximately 20%. From September 2011 to June 2012, the transition of care pharmacy resident enrolled approximately 318 patients. Sixty-three percent of these patients were admitted for congestive heart failure. Upon implementation of the Continuum of Care Network, the readmission rate was reduced to 13%.

Continuous Quality Improvement

The pharmacist currently serving as both residency director and senior clinical pharmacy specialist is responsible for leading CQI activities. This leadership position requires constant communication with the pharmacy administration, staff pharmacists, technicians, heart failure navigators, case managers, diabetes educators, and hospitalists.

The responsibilities of the transition of care pharmacy resident are continually evolving in accord with the needs of the patients and the gaps encountered throughout the health care system. The resident is responsible for documenting all interventions and metrics for auditing and assessment of the effect of the program. A gap in education for non–orthopedic anticoagulation patients had been identified and addressed through this auditing process. Care coordination to outpatient providers also improved. The resident had previously been faxing follow-up medication issues and recommendations to all primary care physicians. With the help of the ambulatory care pharmacists, the resident was able to obtain appropriate access to electronically "task" the physicians, which facilitated communication between providers.

Sharp HealthCare's program providing support with patient assistance has helped 1,179 patients in the community and has saved close to $440,000 in patient medication costs.

Barriers

Initially, the hospitalist group was not receptive to the Continuum of Care Network model. The transitions of care pharmacy resident had to obtain special permission to attend hospitalist rounds every morning. There are not many opportunities for face-to-face interactions between the hospitalists and staff pharmacists due to the lack of multidisciplinary internal medicine rounds. By consistently attending rounds and being available throughout the day via telephone for referrals, the resident quickly gained trust and acceptance. The hospitalists are now eager to work together along with the case manager to create a safe discharge plan early in the patient's hospitalization with the shared goal of providing seamless care.

A second barrier was incorporating the transition of care pharmacy resident into the current discharge workflow with case management and overlap of responsibilities. The resident discovered that the hospitalists and case managers were generally good about identifying common prior authorization or high-cost medications (e.g., oral vancomycin, enoxaparin) prior to discharge; they had an established workflow for these medications. However, when reviewing discharge medication lists, the resident often discovered less common medications that could potentially cause concern (e.g., rifaximin, albendazole). In these cases, the hospitalists and case managers did not recognize these potential medication-related problems in terms of potential burden. The resident often worked on less common cases and educated the hospitalists and the case managers for addressing future patients.

Communication between the transition of care pharmacy resident and the ambulatory care pharmacists was another barrier. Increasing communication was essential in establishing a workflow for the ACO post-discharge medication reconciliation metric. All the ambulatory care pharmacists have access to the inpatient medical records using the Cerner EHR system; however they were not familiar with accessing the home medication lists, the discharge medication lists, and other provider's interdisciplinary notes. Recently implemented ACO-wide weekly meetings were integral in opening communication lines among colleagues to improve continuity of care.

Barriers currently being addressed are justification for a transition of care pharmacist FTE, formation of a continuum of care multidisciplinary team, and leveraging the staff pharmacist involvement with patient education and discharge planning.

Cost Justification

Two pharmacy technicians (1.75 FTEs) are tasked with documenting admission medication histories. In contrast to other programs, the technicians are not physically located in the emergency department. Instead, they are on the wards working closely with patients, family members, nurses, and physicians. Their work has improved the quality (i.e., completeness and accuracy) of the medication lists at discharge. Plans are to incorporate 1 or more technicians in this process.

University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center have created a true partnership to improve the care transitions process and the quality of care provided to patients.

Three pharmacy technicians (3 FTEs) coordinate the patient assistance program throughout the health system's four acute care hospitals and three specialty hospitals. Their duties consist of helping unfunded or underfunded patients obtain medications through available resources. In the last 6 months, the technicians have helped 1,179 patients in the community and saved the system close to $440,000 in medication costs.

With implementation of the Affordable Care Act, there are two separate programs that justify the decision to focus on patients with heart failure. The first is the hospital value-based purchasing program, which rewards hospitals for quality of care based on twelve clinical process of care measures and eight patient experience of care measures. The impact of implementing the Continuum of Care Network was described previously. Improvement in this score would directly affect payments to the hospital. The second program is the hospital readmissions reduction program, in which hospitals with higher than expected 30-day readmission rates for three conditions including heart failure will be penalized beginning in 2013.

Future Plans

The organization is seeking to maximize current resources by collaborating with the existing partners, such as formalizing involvement of the community pharmacies and securing handoffs from the transition of care pharmacy resident to the ambulatory care pharmacists of both medical groups. Future goals include aiding patients who are discharged to skilled nursing facilities and expanding the program system-wide to the other three acute care hospitals.

University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center (UPMC)

The Pharmacist Advocates in Care Transitions model is a partnership between the University of Pittsburgh Medical Center's department of pharmacy and the University of Pittsburgh School of Pharmacy in Pennsylvania. This pharmacy-based program to improve care transitions was piloted on a hospitalist unit and staffed by clinical pharmacists and pharmacy residents. A researcher from the university worked in conjunction with the on-site clinical practitioners to identify challenges and operationalize potential solutions.

Anecdotal evidence had shown a significant portion of patients were lost to follow-up through the existing care transitions process. Some departments had strong care transitions programs, but there were still patients who were not receiving a consistent level of high-quality follow-up care. This information was not associated with any specific outpatient physician group or pharmacy service. The overarching goal was to focus on all patients, regardless of outpatient provider or insurance, and utilize the pharmacist as their champion for optimizing medication management during the transition period.

Four main problem areas were identified and provided the catalyst for the project:

1. Pharmacy resources were limited. Although hospital administration values the pharmacist's role, 24-hour coverage was not feasible. Nursing and admissions teams were conducting most care transitions activities.
2. An effective system was needed to identify high-risk patients who would benefit from interacting with a pharmacist for care transitions. Previous experience led the team to believe that there was a poor correlation between the number of active medications or disease states and risk of medication misadventure. The risk of adverse event is multifactorial and specific to each patient.
3. A method to demonstrate additional clinical benefit and ROI was lacking; patients and the institution needed evidence of tangible gains from having a pharmacist-based medication management transitions of care model.
4. There was poor communication between inpatient care and outpatient follow-up concerning medication-related care transitions activities after hospital discharge.

To address these issues, a care transitions model was developed in which the hospital pharmacist works with the inpatient care team to identify and manage patients' medication-related problems. The same pharmacist conducts follow-up with the patient after discharge from the hosptial and returning home.

Faculty from the University of Pittsburgh School of Pharmacy developed the Medication Access and Adherence Tool (MAAT) for use with tablet devices (Figure 7). This survey tool was validated and used to identify patient problems with medication access, affordability, and adherence to medication regimens at home. The MAAT was administered to inpatients, which enabled pharmacists to engage patients in conversation about appropriate medication management. The MAAT also was piloted in the emergency department where the admissions team used it to screen for patients who would benefit from medication management and follow up with a pharmacist after discharge.

Figure 7. Pittsburgh: Medication Access and Adherence Tool

1. How sure are you that you need medications to treat your health problems?
   ❑ Not sure at all ❑ Somewhat sure ❑ Very sure

2. How sure are you that you can take your medication every day as prescribed when you are at home?
   ❑ Not sure at all ❑ Somewhat sure ❑ Very sure

3. When you are at home, how often do you skip doses of your medications or stop taking your medications?
   ❑ Very often ❑ Somewhat often ❑ Not often or never

4. How difficult is it for you to pay for your medications?
   ❑ Very difficult ❑ Somewhat difficult ❑ Not difficult at all

5. How often do you experience adverse effects from your medications?
   ❑ Very often ❑ Somewhat often ❑ Not often or never

In the University of Pittsburgh School of Pharmacy and UPMC program pharmacist activities and documentation were standardized for efficiency

Pharmacy Team Involvement in MMCT

The hospital pharmacists work with the inpatient care team and outpatient health care providers to identify and resolve medication discrepancies and medication-related problems. This information is communicated, when appropriate, to the outpatient pharmacist and other members of the outpatient health care team.

Patient Progression Through MMCT

Patients were seen by the hospital pharmacist shortly after admission. The pharmacist conducted transition of care activities such as reviewing the medication history and reconciling prescribed medications. The pharmacists used the MAAT and interviewed patients to assess for medication access and adherence problems. Throughout the inpatient stay, the pharmacists provided medication education and resolved medication-related issues. Additionally, the pharmacists informed patients that they would be providing follow-up medication management with them after hospital discharge.

During the pilot, checklists of pharmacist activities and corresponding documentation were developed for the process to be standardized and ensure efficiency. These checklists also facilitated education and training of new pharmacists or pharmacy residents rotating through the service. The inpatient care transitions activities of the pharmacist include:

- Interviewing the patient, family members/caregivers, and outpatient pharmacists to establish an accurate medication list.
- Conducting medication reconciliation on admission and updating the EHR.
- Using the MAAT to identify patients at risk for medication problems after discharge.
- Identifying and resolving medication-related issues throughout hospital stay.
- Providing medication education and discharge medication counseling.
- Reconciling medications during hospitalization and at discharge.
- Communicating with the patient's outpatient physicians and resolving medication-related issues extending into the outpatient realm.
- Identifying and resolving any medication coverage issues that may affect outpatient medication regimens.
- Preparing a discharge medication list and facilitating delivery of these medications prior to discharge.
- Obtaining preferred contact information from patients to follow up with them after discharge.

The unique aspect and key to this model is that the same hospital-based pharmacist who follows the patient during inpatient care also conducts the outpatient care transtions follow up. The team believed that a patient-caregiver relationship is difficult to establish through a third party. Furthermore, having a third party conduct medication-related care transitions activities after hospital discharge was inefficient because the third party lacked information regarding the patient's clinical condition, clinical course of the hospital stay, and rationale for medication changes during the hospital stay.

In the University of Pittsburgh School of Pharmacy and UPMC program patients are contacted by the pharmacist within 72 hours after discharge and the pharmacist utilizes a standardized checklist of activities to ensure consistency of service delivery.

Within 72 hours after discharge, the pharmacist who cared for the patient during hospitalization contacts the patient by telephone. The primary goal of this interaction is to identify and resolve any medication-related problems that have arisen after discharge. Outpatient follow-up checklists were developed to standardize this process among the pharmacists. The outpatient care transitions follow-up activities of the pharmacist include:

- Reviewing the patient's discharge medication list and home medications.
- Identifying and resolving any medication discrepancies.
- Communicating any medication-related changes to the appropriate outpatient pharmacist.
- Identifying and resolving any ongoing medication-related problems.
- Contacting other health care professionals, where appropriate, to convey and resolve any issues identified during the post-discharge follow-up call.
- Updating the patient's outpatient home medication list in the outpatient EHR.
- Sending a follow-up note to the patient's primary care physician.

Patients are eligible for a post-discharge follow-up call if they were discharged home. Post-discharge calls were conducted at the patient's preferred times. Three attempts were made to contact the patient after discharge. To date, the pharmacists have conducted a follow-up call with 72% of eligible patients.

Use of Technology

The MAAT survey is administered to inpatients using tablet devices. All of the interventions are documented in the inpatient and outpatient EHRs. During the post-discharge period, the pharmacists communicate their recommendations directly to the primary care physician.

Metrics

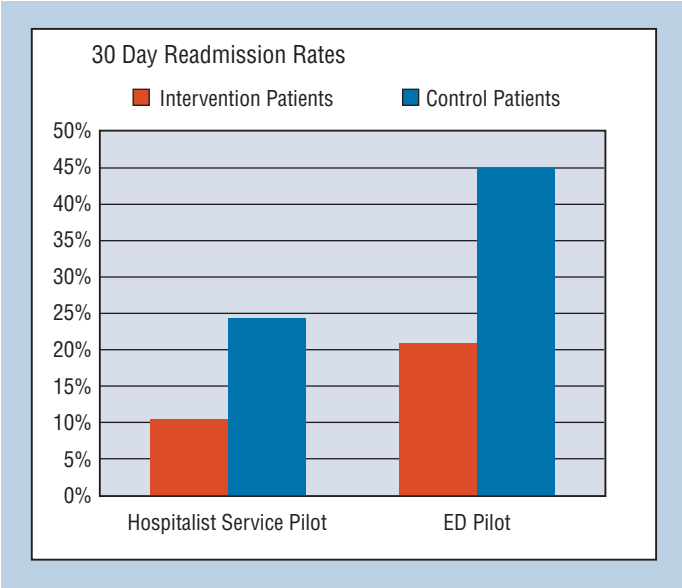
The study group hypothesized that inpatient pharmacists who are familiar with patients during their hospital stay would be well-positioned to identify and manage medication-related problems during the time of transition from hospital to home. In this model, the pharmacist worked with providers in the inpatient and outpatient settings to resolve medication-related problems. A novel 5-item MAAT was developed and utilized to identify patients at risk for medication access and adherence problems. Finally, use of the MAAT was modified and extended to the emergency department.

Pharmacists performed care transitions activities for 220 inpatients on the hospitalist service in the first pilot. Patients had a median of 5 comorbidities (range 0–18) and averaged 8 scheduled medications (range 0–23) on admission. Insurance coverage included Medicare (53%), Medicaid (15%), private (28%), and no coverage or pending coverage (4%). Home medication lists were compared with those listed in the EHR on admission. Pharmacists conducted medication histories for 216 patients and identified 774 medication discrepancies (mean 3.6 ± 3.4 per patient; range 0–19).

The most common medication discrepancies were missing medications (n = 330; mean 1.5 per patient) and incorrect dosage or frequency (n = 231; mean 1.1 per patient). A total of 206 patients completed the MAAT: 10% reported that they were not sure they could take their medications as prescribed after discharge and 28% found it somewhat to very difficult to pay for their medications. Upon further questioning, the pharmacists identified and helped resolve medication adherence issues in 16% of the patients and access/insurance issues in 24% of patients (34% of patients had either problem).

Among the 158 patients who were eligible for a post-discharge follow-up call (i.e., patients discharged to home), the care transitions pharmacists were able to speak with 113 patients (72%). The pharmacists identified 886 medication discrepancies (mean 7.8 per patient) between the current medications and those included on the outpatient EHR. The most common medication discrepancies were missing medications (n = 423; mean 3.7 per patient) and discontinued medications (n = 258; mean 2.3 per patient). Pharmacists identified a mean of 1.7 medication-related problems per patient and made an average of 2.5 medication-related interventions per patient including therapeutic drug monitoring and medication counseling in addition to managing medication adherence issues.

Figure 8. Pittsburgh: 30-Day Readmission Rates



The overall 30-day readmission rates for patients followed after discharge by the pharmacist was 13%. Of these patients, a control group from the same time period was selected and matched 1:1 for age, sex, hospital service, and primary diagnosis. Thirty-eight of these patients were matched successfully and the 30-day readmission rates was 10.5% for the patients in the care transitions program compared with 23.7% for the matched control patients ($P = 0.22$) (Figure 8). Additionally, HCAHPS scores on the unit where the pharmacist care transitions program was piloted improved from 22% before the pilot to 75% during the pilot on the item measuring whether patients were informed about their new medications and from 27% to 75% on the item measuring whether patients were told about the side effects of their medications.

The success of this initial pilot program led to identification of ways to expand the pharmacist care transitions program to other hospital areas. Because there were not enough pharmacists available to conduct care transitions activities for all admissions throughout the day, the MAAT is used to screen patients in the emergency department. A goal of screening is to use the MAAT to successfully identify patients who would benefit most from a comprehensive pharmacy intervention including medication reconciliation, assessment of medication access and adherence, and follow up after discharge.

In the emergency department pilot, 47 patients were screened by the nurses on the admission team using the MAAT and 17 patients (36%) scored 2 or higher, resulting in a comprehensive evaluation from the pharmacy team (pharmacists, pharmacy residents, and student pharmacists).

On review, 93% of these patients had either a medication adherence or access/insurance problem requiring 72 interventions (mean 5 per patient). Interventions included contacting the patient's community pharmacist, counseling patients on adherence, recommending lower-cost alternatives, and assisting in identifying prescription assistance programs.

Thirty-day hospital readmission rates were 21% for the intervention group and 45% for the non–intervention group ($P = 0.19$, Fisher exact test). The MAAT was shown to be a useful tool in the emergency department to identify patients who would benefit from a comprehensive medication evaluation by a pharmacist. This information is especially important with limited pharmacy resources because it enables efforts to focus on patients with the most pressing needs.

Continuous Quality Improvement

In this model, the project team met weekly to troubleshoot problems as they arose and to ensure the program was providing quality care. The CQI process uncovered a challenge that patients face in obtaining medications. When patients were unable to acquire medications because they were underinsured or uninsured, the inpatient pharmacists were called upon to intervene in an uncustomary manner. Prior to project implementation, UPMC hospital pharmacists did not routinely work directly on insurance issues. The team determined that the pharmacists would benefit from resources and information on methods to address medication access issues in the outpatient setting. Another challenge identified through CQI was infection control and patient use of tablet devices. The team worked with other departments to determine a way to cover and disinfect the tablet devices to meet the organization's infection control guidelines.

Barriers

Chart documentation was a barrier because inpatient pharmacists were required to document in the outpatient medical records, but did not have training in this system. Templates were created for pharmacist notes in the EHR to ensure consistency in documentation. A pharmacist was transitioned to staff the emergency department model and student pharmacists were used to support the activities. Another barrier involved increasing the time pharmacists spent with patients providing direct patient care. At first, the pharmacists were somewhat hesitant about this new role, however they ultimately found direct patient care to be very rewarding.

Cost Justification

The main pilot was funded by the Jewish Healthcare Foundation and was located on a single unit of the hospital. The service was staffed by either a pharmacy resident or a clinical pharmacist. Time was allocated primarily for conducting medication histories, medication reconciliation, medication teaching, and post-discharge follow-up activities. The average time with each patient was 40 minutes during the hospital stay and 23 minutes during the post-discharge follow-up period. Additional time was allocated for documentation of interventions in the patient chart. The emergency department pilot was staffed by 1 pharmacist and 2 to 3 student pharmacists. The nursing admission team administered the MAAT, which requires approximately 1 to 2

In the University of Utah program pharmacists reconcile medications upon admission, during hospitalization, upon discharge and in the clinic. Specialized services are provided for transplant, cardiology, oncology and thrombosis.

minutes. Nurses saved time by consulting the pharmacy team to conduct medication histories and reconciliation on patients who scored 2 or higher on the MAAT survey. Student pharmacists conducted most of the evaluations as part of their experiential rotation and were supervised by the pharmacist. The pharmacist conducted the post-discharge follow-up calls. This model is being implemented into standard practice at the institution and will be staffed by 1 full-time pharmacist in the emergency department with 1 to 2 student pharmacists during daytime and evening shifts. Pharmacy technicians could be utilized as well but were not part of the current model due to the availability of student pharmacists.

Future Plans

Researchers at the University of Pittsburgh School of Pharmacy are working with UPMC-Presbyterian to expand the program to other hospital units. Additionally, other organizations outside of UPMC-Presbyterian, both hospitals and community chain pharmacies, are interested in using the MAAT tool. Logistics and a process for implementation are under consideration.

University of Utah Hospitals and Clinics

At the University of Utah Hospitals and Clinics in Salt Lake City, the transitions of care model operates through the department of pharmacy services. This model involves a multidisciplinary approach that encompasses services of a university health system with multiple specialty hospitals, primary care clinics, hospital-owned pharmacies, and home infusion services. Every month, more than 600 patients make the transition from hospital to home through this program, representing 90% of the discharged patient population. (The model does not provide 24/7 coverage or obstetrics discharges).

Pharmacy Team Involvement in MMCT

Pharmacists reconcile medications upon admission, during hospitalization, upon discharge, and again in the clinic. Specialized services are provided in patient cases involving transplant, cardiology, oncology, and thrombosis. The general service has been providing transitions support since 2008, although many of the specialty services had already been assisting patients with transitions of care. All areas display a multidisciplinary approach that integrates pharmacy services to enhance patient care. Pharmacy technicians in the health system are partnered with pharmacists for hospital discharge, thrombosis referrals, clinic services, transplantation care, and MTM services.

Patient Progression Through MMCT

Several different models are used to provide medical management during transitions of care. A general service is provided for hospital admissions and specialty services are used in certain departments.

Inpatient

All patient admissions. When patients are admitted to the hospital, pharmacists and pharmacy interns perform medication reconciliation and document this process in the EHR. The pharmacy team contacts local pharmacies to request medical records and to obtain the most current and accurate information that patients or caregivers are not always able provide. Three pharmacists and 3 technicians comprise the inpatient pharmacy team. The pharmacists, as part of the inpatient interdisciplinary care team, monitor patients throughout the hospital stay. As patients prepare for discharge, the inpatient pharmacists coordinate the management of medications with the discharge services team. At discharge, the admission reconciled medication list is used as a baseline. Discharge medication reconciliation compares the admission list to the hospital course to determine completeness, accuracy, and appropriateness of discharge orders. The pharmacist contacts the provider to address any potential medication issues. A pharmacist follows up with each patient prior to discharge to review the medications and provide a complete medication list. In conjunction with discharge counseling, the pharmacy can provide bedside delivery of medications, if the patient desires.

Transplant services. A multidisciplinary team manages patients along the continuum from pretransplant through surgery, and then as patients transition to outpatient settings. Specialty trained clinical pharmacists actively monitor inpatients. The pharmacists make medication recommendations with consideration of patient-specific factors such as clinical, social, and economic issues while paying close attention to insurance implications. Patients receive predischarge counseling on insurance issues, and access to health care is addressed for each patient. A pharmacist reviews patient medications at discharge and the transplant team pharmacists follow up with patients in the clinic.

Cardiology services. In addition to the transitions of care model used for all patients, pharmacists coordinate inpatient to outpatient transitions more closely for cardiac patients to ensure safe medication use. The same pharmacist team that meets with the patient at discharge also sees the patient for follow-up visits in the cardiology clinic.

Oncology services. In the bone marrow transplant service, pharmacists participate as part of a multidisciplinary team, rotating through both inpatient and outpatient clinics. While the patient is admitted, pharmacists verify physician orders, participate in rounds, adjust immunosuppressive medications under physician supervision, and track darbepoetin (supporting the Assisting Providers and Cancer Patients with Risk Information for the Safe Use of Erythropoiesis Stimulating Agents [APPRISE] program), intravenous immunoglobulin, and biphosphonate use to meet practice guidelines. Pharmacists provide orientation to patients receiving bone marrow transplant and coordinate discharge orders with home health care. Inpatient staff perform discharge

medication reconcilation for all oncology patients and counsel patients prior to discharge. Pharmacists make recommendations and adjust orders as needed. Prescriptions may be filled at the oncology hospital retail pharmacy and delivered to the bedside for discharge counseling. Prior authorization and patient assistance is provided by the pharmacy department.

Thrombosis service. All inpatient, emergency deparment, and vascular laboratory consults for thrombosis services are coordinated by a pharmacy-hired nurse based in the pharmacy department. Upon consultation, the nurse team takes over inpatient anticoagulation management. The team conducts warfarin management for all inpatient and outpatient orthopedic patients. At discharge, the team transitions patients by working with case management and discharge planners and by providing anticoagulation education for orthopedic patients in particular. A transitions of care note was integrated into the EHR that facilitates the referral process to one of the two outpatient thrombosis clinics or to a provider in the community. A pharmacy technician was hired to manage referrals to the outpatient service and to triage the referrals to the appropriate clinic or provider. Another nurse coordinates patient safety and quality initiatives, including the development of proprietary educational materials, a multidisciplinary anticoagulation and safety committee, and compliance with all Joint Commission requirements. The nurse also reviews anticoagulation-related patient event submissions for quarterly presentation to the pharmacy and therapeutics committee.

Infusion services. The pharmacy department employs nurses to aid transition of patients from the inpatient to outpatient by setting up infusion services. Home infusion pharmacists ensure the orders are appropriate, deliver the medications, provide the infusions, and monitor patients.

Post Discharge

All inpatient discharges. The discharge pharmacist places a discharge note in the EHR for the next care provider; the discharge pharmacist also communicates directly with the pharmacist who will provide follow-up care in the clinic. Daily e-mail lists of all discharges, including those from the emergency department, are sent to care managers and MTM pharmacists in the health system's community clinics. Pharmacists in the community clinics review discharge records, verify follow up appointments, and call patients to determine whether they have any concerns since discharge. For patients with complex medication issues or considered at high risk, follow up is scheduled with the pharmacist before the primary care visit to provide an opportunity for medication education and recommendations. Either the care manager or the pharmacist sends hospitalization information, discharge medication reconciliation, and notes regarding follow-up issues to the provider.

Transplant services. The multidisciplinary team sees patients in clinic after discharge and for routine follow up. The pharmacy billing department coordinates outpatient medication payment, helps patients with medication access, and serves as a resource for discharged patients. The billing department alerts the transplant pharmacists if patients have not been seen at clinic visits as per Medicare guidelines. A community pharmacy within the health system can dispense and deliver all discharge prescriptions to the transplant pharmacists. The pharmacist counsels the patient at bedside. Refills are coordinated through this same pharmacy that has mail-order capability for patient convenience. Pharmacy technicians help with prescription assistance programs.

Cardiology services. Two specialty trained cardiology pharmacists alternate between 1 week of discharge service and 1 week in the clinic. This system promotes continuity of care as patients discharged are seen by the same pharmacist in the clinic the following week. The discharge pharmacy team consists of a pharmacist and a technician. Daily responsiblities include medication reconciliation, dispensing discharge prescriptions, if the patient desires, and coordinating issues relating to insurance or patient assistance. The team also provides bedside medication and disease state education to the patient, and documents the accurate medication list in the EHR. Heart failure core measures are reviewed for outpatient quality reporting for quality assurance. Within the clinic, these pharmacists work as part of a multidisciplinary team. The pharmacist is the first clinician to encounter the patient at the cardiology clinic appointment. Information gathered is communicated to the prescriber (e.g., nurse practitioner, physician assistant, or physician) and the pharmacist is involved in the assessment and care plan for the patient.

Oncology services. Pharmacists see patients in most oncology clinics and are involved with services following inpatient stays. Pharmacists also provide continuity of care by seeing patients undergoing bone marrow transplantation as both inpatients and outpatients.

Thrombosis service. Pharmacists review all discharge orders for patients on anticoagulants to ensure appropriate anticoagulant monitoring. Two thrombosis clinics manage over 2,000 patients in addition to the orthopedic patients managed by the nurse team. A dedicated pharmacy technician manages the care transition from inpatient and outpatient settings for the service. The technician also ensures patients are not lost to follow up. The nurse team or inpatient pharmacist is notified when thrombosis clinic patients are readmitted to the health system. Electronic alerts are set to inform thrombosis pharmacists or technicians of the patients admitted to the hospital or emergency department; the electronic system also alerts the team of patients with an INR outside target range. The emergency department pharmacists notify the clinics or inpatient team for new consults or outpatient follow-up services.

Use of Technology

Providers and clinical staff have access to patients' EHRs. An EHR exists for each care setting, both inpatient and oupatient, posing a challenge for currency and accuracy for health information. Transitions of care notes are documented in either EHR. In addition to the paper medication reconciliations provided by the discharge pharmacists, provider-to-provider letters are sent upon transitions from inpatient to outpatient and from specialty clinics back to the primary care provider. Information may be faxed to outside providers, scanned into the medical record, or communicated by secure e-mail.

University of Utah Hospitals and Clinics Outcomes:

- Improved patient satisfaction
- Increased detection of medication related problems
- Decreased readmissions
- Improvement of CMS Core Measures

Metrics

Patient Satisfaction

Two questions are related to pharmacy services on the hospital Press Ganey inpatient satisfaction survey. The first question addresses the patient's opportunity to talk with a pharmacist about medications and the second question focuses on wait time for discharge medications. Significant improvements in scores were observed since the discharge medication reconciliation and prescription program was implemented. The mean score for patients responding favorably regarding the opportunity to talk with a pharmacist about medications increased from 70.6% to 73.4% in the first year and continued to increase to 82.4% the following year. Wait time for medications showed similar increases starting at 73.1% at the start of the program and increasing to 84.2% the following year. Patient satisfaction surveys for ambulatory care services have consistently shown high scores (average higher than 4 on a 5-point scale) for all areas.

Medication Safety

Prescribers were contacted due to identified medication-related problems upon discharge 40% to 50% of the time in the main hospital and 90% to 100% of the time in the cancer center. The most commonly identified problems are related to omission of a prescription or discontinuation of a medication, insurance coverage issues, and access to medications (e.g., drugs too expensive for patient). Other issues frequently addressed included change to alternative medications, decrease in dose frequency or duration, and duplicative therapy.

Medication-related issues are easier to address prior to discharge. This program has addressed previously undetected errors revealed after discharge and the difficulty in communication among providers when problems were identified.

Preventing Readmissions

Quality data from the core measures program showed that patients with congestive heart failure who were discharged on the weekend had a 39% higher chance of readmission compared with patients discharged on a weekday. The primary process difference identified lack of a pharmacist-conducted reconciliation service. After implementation of weekend coverage, the 30-day readmission rate decreased from 20.5–22.1% to 16.0% (a 28% to 38% reduction in readmissions).

Core Measures

Discharge pharmacists confirm immunization status of patients prior to discharge. Prior to the program, the inpatient pharmacists screened for immunizations during admission medication reconciliation. However, the administration of the vaccine would be delayed or omitted. The discharge pharmacists are attributed as a key factor in reaching the immunization targets for the CMS core measures program.

The cardiology pharmacists have been instrumental in improving outcomes and achieving nearly 100% compliance with core measures for both heart failure and acute myocardial infarction. Prior to adding the cardiology pharmacists, the discharge instruction core measure reported 74.4% and is currently 100%; the ACE inhibitors or angiotensin receptor blockers for left ventricular systolic dysfunction previously reported 87.5% and is currently 100%.

Continuous Quality Improvement

The discharge medication reconciliation pilot was conducted with existing staff (i.e., 2 pharmacists and 1 pharmacy technician) in January 2008. The technician made initial contact with patients and worked with the pharmacist to organize prescription fills. Pharmacists would conduct medication reconciliation, and prescriptions would be filled in the outpatient pharmacy and delivered to the bedside if desired. Pharmacists provided discharge medication counseling and a medication list to the patient. Outpatient pharmacists familiar with issues of discharge prescriptions, prior authorization, and other insurance and access challenges were tasked with resolving these issues. Inpatient pharmacists were rounding when the majority of the discharge prescriptions needed to be addressed and would not have been readily available.

Since that time, workflow has adjusted from manually identifying patients with written discharge orders to automatically receiving an electronic text page when a patient discharge order is entered into the computerized physician order entry system. Staff are more efficient at coordinating and dispensing discharge prescriptions.

Rehabilitation services were not included during the first 18 months of implementation because these patients had longer hospitalizations and more exposure to inpatient pharmacists during hospitalization. However, an analysis of discharge prescriptions showed rehabilitation patients were discharged with more than twice as many medications as patients from other units (average of 6.6 versus 2.8 prescriptions, respectively) and would benefit from the medication management transitions of care process.

Barriers

Identifying resources to provide the transitions of care service and ensuring competency for high quality are important challenges. Over time, assessment of the program showed that a dedicated team with 1 pharmacist matched with 1 technician provided the most successful mix of limited resources. All staff involved in the program must have exceptional communication skills because they work directly with patients and must coordinate with many other divisions.

An initial perceived barrier included a delay in the discharge process. The discharge process had previously emphasized efficiency. The medication management transitions of care program did not typically delay discharge because the unit would work closely to notify the pharmacy team in advance about impending discharges. The service expanded to cover the majority of inpatient units and all cancer center units over 18 months. Prescription capture went from 27% of discharge prescriptions filled in the pharmacies to greater than 80%. This additional prescription capture covered the costs of additional staff. Pharmacists, on average, expended 25 to 30 minutes per patient.

In the University of Utah Hospitals and Clinics program the majority of the funding has come from capturing discharge prescriptions.

Provisions needed to be adjusted for the expansion to the cancer center. Inpatient pharmacists had a better understanding of patient goals of therapy and were well-positioned to conduct discharge reconciliation. Patients with cancer typically had longer hospital stays and fewer discharges compared with other inpatient units. The outpatient pharmacy filled prescriptions and a pharmacy technician coordinated delivery.

Discharges during the week employ 3 pharmacists and 3 pharmacy technicians, and 2 each on the weekends. There continues to be a gap in overnight coverage and late discharges are not taken care of by a discharge pharmacist.

Identifying resources to provide for the patient care transitions process had been problematic. Joining a national collaborative (i.e., Patient Safety and Clinical Pharmacy Services Collaborative) to show outcomes of clinical pharmacy services as well as a reorganization of the approach to patient care enabled pharmacy services to become part of the patient care flow in and out of the hospital.

Other barriers include lack of understanding of the importance of the service, defining pharmacist roles in the clinics, and uniformity of daily pharmacist resources. Providing consistent pharmacist and technician presence in all areas has improved staff understanding, utilization, and expectations. The next big challenge is to explore methods to dependably communicate information about the reconciliation process to the next provider of care. The organization is working globally to ensure dissemination of discharge medication lists.

Cost Justification

The organization evaluated the ambulatory pharmacy structure in advance of the transitions model. All needs and coverage were reevaluated, making sure there was a precise role for each clinic. Pharmacist and technician roles were clearly defined within this structure and a focus on patient safety and patient satisfaction resulted in improved HCAHPS scores.

Simultaneously, community clinics in the system received grants to use care managers and they inquired about pharmacy involvement. This opportunity opened discussions on pharmacist roles and the value of having pharmacists involved in transitions of care.

While many of the programs can be justified by improvement in patient safety and disease state outcomes, the majority of the funding for these programs has come from capturing discharge prescriptions. A major hurdle in setting up discharge services was billing for patient co-pays. A process was implemented by which patients were billed for co-pays through the Pharmacy Specialty Billing division, increasing compliance to over 92% of patient bills paid. Credit card readers can be carried to the floor in many areas; patients without a credit card are billed at home.

Transplant services. Three pharmacists, 1 PGY2 transplant resident, and 1 pharmacy transplant manager form the transplant team. The team is clinic based and works with patients from pre-transplant throughout the transplant process. The Pharmacy Specialty Billing division coordinates coverage, medication payment issues, and supports the core team. Prior to implementation of this team, the return was 3 cents per dollar for reimbursement. Following implementation, capture is 97 cents per dollar.

Cardiology. A pharmacist was added to the cardiology clinic in 2011 based on decreasing readmission rates for heart failure patients and expanding weekend coverage. Discharge prescription capture justifies this team financially. Reimbursement related to core measure performance and the financial benefit to the hospital is robust.

Oncology services. Tens to hundreds of thousands of dollars were being lost by the institution by not billing for erythropoiesis stimulating agents or improper administration mechanisms. When the oncology pharmacists became involved, they improved appropriate drug product selection and clinical documentation necessary for payment such that all erythropoiesis stimulating agents were billed for and payment was received for this patient population.

Thrombosis service. The cost for the staff is justified based on improved quality in managing patients on anticoagulants, specifically by improving the transitions of care and taking extra measures to make sure patients arrive at the next provider of care.

Future Plans

Service expansion will improve capabilities and strengthen patient care transitions through safe and effective medication use.

Embracing comprehensive pharmacy services throughout the medication-use process can cost effectively optimize patient outcomes.

Pharmacist-driven medication management in care transitions makes a significant difference in reducing overall health care spending.

Conclusion

The nation is looking for ways to cope with the population's increasing utilization of health care resources in an environment of limited funds to furnish needed care. The solution to curtailing preventable medication errors and the consequent overutilization of resources is staring us square in the face. Embracing comprehensive pharmacy services throughout the medication-use process can cost-effectively optimize patient outcomes. Although no individual change can solve all economic stress, the evidence vigorously shows that pharmacist-driven medication management in care transitions makes a significant difference in reducing overall health care spending.

Care transitions models can tap into pharmacists' specialized knowledge of medication management and their abilities to communicate effectively with internal and external partners to gain support for these practices. Pharmacists also are proficient at educating patients to use medications correctly and make them feel comfortable reporting problems before simple outpatient therapy turns into complex inpatient care.

The MMCT project winners are deserving of special recognition for their ingenuity and success in developing and implementing care transitions models. Notably, these models distinguish the significant contributions and capabilities of pharmacists for rejuvenating contemporary health care processes. Filling gaps in the continuum of care and defragmenting the outdated ways that hindered previous systems will better serve the nation's health care goals.

These models of MMCT best practices embody the public goals of effective, safe, efficient, patient-centered, equitable, and timely health care. These transitions of care profiles can serve as an extensive template, an opportunity to implement aspects of various models, a means to spark creativity and problem solving, and a resource document for sustaining the dialogue within the health professions and among payers, regulators, and others with an interest in measuring quality.

As demonstrated in these projects, many factors contribute to the success of medication management in care transitions. Additionally, contributions by many individuals including pharmacists, technicians, student pharmacists, supportive personnel and others in these projects are critical to achieving success in improving patient care and outcomes during care transitions. Collaboration and effective communication between members of the multidisciplinary health care team both within an institution and between health care providers in various settings is critical to effective care transitions. Bidirectional access to health information through electronic health records creates efficiencies in information sharing and provides needed information to health care providers across the spectrum of care. Use of quality and financial metrics to quantify the value of care was needed to gain institutional support for moving from pilot to full implementation phase in many of the programs.

There is still much work to be done in developing effective programs that span the various health care settings where care transitions occur. These best practices programs demonstrated that patients benefit from the pharmacist's medication expertise on care transitions teams. These projects focused on the involvement of pharmacists in care transitions from hospital to home, and the lessons learned provide valuable insight for involving pharmacists from other practice settings as new care transitions programs are developed or existing ones are enhanced to expand the reach of care. Pharmacists are urged to act now by taking leadership roles in oversight of medication management during care transitions or getting involved as part of the care transitions team!

References

Abrashkin KA, Cho HJ, Torgalkar S, et al. Improving transitions of care from hospital to home: what works? *Mt Sinai J Med.* 2012;79:535–44.

American Pharmacists Association; American Society of Health-System Pharmacists; Steeb D, Webster L. Improving care transitions: optimizing medication reconciliation. *J Am Pharm Assoc.* 2012;52:e43–52.

Cawthon C, Walia S, Osborn CY, et al. Improving care transitions: the patient perspective. *J Health Commun.* 2012;17(suppl 3):312–24.

Centers for Medicare & Medicaid Services. Partnership for Patients. Available at: http://www.innovations.cms.gov/initiatives/Partnership-for-Patients/index.html. Accessed December 24, 2012.

Centers for Medicare & Medicaid Services. Quality Measures. Available at: http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/index.html. Accessed December 29, 2012.

National Quality Forum. *Safe Practices for Better Healthcare—2010 Update.* Available at: http://www.qualityforum.org/Publications/2010/04/Safe_Practices_for_Better_Healthcare_%E2%80%93_2010_Update.aspx. Accessed December 24, 2012.

Naylor MD, Kurtzman ET, Grabowski DC, et al. Unintended consequences of steps to cut readmissions and reform payment may threaten care of vulnerable older adults. *Health Affairs.* 2012;31:7.

Schnipper JL, Kirwin JL, Cotugno MC, et al. Role of pharmacist counseling in preventing adverse drug events after hospitalization. *Arch Intern Med.* 2006;166:565–71.

U.S. Department of Health and Human Services. *National Strategy for Quality Improvement in Healthcare: 2012 Annual Progress Report to Congress.* Available at: http://www.ahrq.gov/workingforquality/nqs/nqs2012annlrpt.pdf. Accessed December 24, 2012.

Appendix A. Key Attributes of Programs Demonstrating Best Practices in Medication Management in Care Transitions

	Einstein Healthcare Network	Froedtert Hospital	Hennepin County Medical Center	Johns Hopkins Medicine	Mission Hospitals	Sharp HealthCare	University of Pittsburgh School of Pharmacy and Medical Center	University of Utah Hospitals and Clinics
Structured and consistent processes for communication between inpatient pharmacists and outpatient pharmacists	X	X	X	X	X	X	X	X
Structured and consistent processes for communication between pharmacists and other health care providers (i.e., identified point of contact at each transition point)			X	X	X	X		
Ability for outpatient organization to view inpatient data or inpatient organization to view outpatient data		X	X					X
Ability to overcome barriers						X		
Documentation of improved Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) score		X		X			X	X
Documentation of reduced readmissions	X	X	X	X	X		X	X
Documentation of sustained impact on patient care (patients followed at least 30 days post discharge)	X					X		
Model has innovative process for transition referrals								X
Model has innovative process for transitioning patients based on disease state	X					X		
Model utilizes pharmacy personnel (i.e., pharmacy technicians, student pharmacists, and pharmacy residents) in innovative ways	X	X		X	X	X	X	X
Model uses risk stratification tool to identify patients							X	
Model has documented return on investment		X						
Model has structured way of enrolling patients into patient assistance programs					X			
Model has large network of community partners					X			
Model represents Medication Management in Care Transitions in an accountable care organization						X		

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