Practice Spotlight

Baystate Health - Baystate Medical Center
Springfield, Massachusetts
www.baystatehealth.org

Erin Taylor, PharmD
Clinical Pharmacy Supervisor

Gary Kerr, PharmD, MBA
Director, Pharmacy Services

Aaron Michelucci, PharmD
Assistant Director, Clinical Pharmacy Services

Mark Heelon, PharmD
Medication Safety Specialist

IN YOUR VIEW, HOW WOULD YOU DEFINE THE IDEAL PHARMACY PRACTICE MODEL?

The goal of Baystate Health’s pharmacy services model is to design a collaborative medication use process across the health-system that allows caregivers to do the right thing every time. In an effort to accomplish this, we strive to effectively integrate state of the art automation, technology, and evidence-based science, while working continuously to improve the safety and efficiency of patient care. We are also committed to contributing to the education and development of our future pharmacy leaders, serving as an education center for several local schools of Pharmacy as well as providing post-graduate training.

The pharmacy services at Baystate Health (BH) are responsible for providing pharmaceutical care and general operational support to three hospitals within our health-system (Baystate Medical Center, Baystate Franklin Medical Center, and Baystate Mary Lane Hospital). Additionally, four outpatient clinic pharmacies operate under the pharmacy umbrella, with a self-insured drug benefit plan established.
The Baystate Health pharmacy services vision and mission statements incorporate our definition of the ideal pharmacy practice model. The employees and leaders of Baystate Health pharmacy services work to ensure clinical and cost-effective excellence in pharmacotherapy by using Lean principles. Lean work process principles are also referred to Six Sigma, indicative of the high degree of accuracy and efficiency (work processes without waste) that the department is continually striving for.

Baystate Medical Center (BMC) pharmacy services currently operate in a mostly centralized pharmacy model, with specialty satellite pharmacies in the NICU, OR, and outpatient chemotherapy center. We have begun the implementation of several key disease state management programs and have recently implemented a decentralized practice model for several care units. Our clinical pharmacy team at BMC includes five clinical pharmacy specialists, forty clinical pharmacists, four PGY-1 pharmacy practice residents, four assistant professors of pharmacy (MCPHS-Worcester Campus), and fifty-three certified registered pharmacy technicians. In July 2012, we will be expanding our residency program further, adding an additional PGY-1 pharmacy practice resident as well as a PGY-2 critical care pharmacy residency program. We have also developed a longitudinal program for APPE students, which offers P4 students an opportunity to complete all of their rotations at BMC. The experience provides the students with a “residency-like” feel and allows them to participate in research and longitudinal projects. One of the major benefits of this program is the continuity of student coverage, which has allowed us to pilot a discharge education program in our heart failure population this year. We are hoping to expand this idea to the other schools of pharmacy, focusing on providing “clinical blocks,” which benefits both the student and the institution.

**HOW DO PHARMACISTS IN YOUR RE-DESIGNED PHARMACY PRACTICE MODEL PROVIDE CARE TO PATIENTS AND ENSURE SAFE AND EFFECTIVE MEDICATION THERAPY?**

Baystate Health pharmacy services are highly dedicated to utilizing employee engagement and Lean principles to ensure high-quality, cost-effective pharmaceutical care to our patients. Engagement of our employees ensures acceptability and successful implementation of new initiatives and instills ownership in individuals. This will benefit internal and external customers. We define our customers as any party outside of the pharmacy that we interact with and provide services to. This includes not only patients, families, and caregivers, but also the full gamut of health professionals and service and product vendors.

We recognize that delays in medication order verification may result in harm to patients, which increases nursing frustration and workload for the pharmacy department. In an effort to
improve medication safety and better serve the needs of our customers (patients, nurses, and physicians) we have employed Lean and engagement principles to improve pharmacist order verification processes.

Using Lean metrics (the numerical representation of work processes so that we can measure performance against benchmarks or our own historical performance to ensure improvements are made and sustained), our team was charged to establish a “safe” rate of medication orders verified per pharmacist per hour. We were also charged to create actionable plans to reduce both waste and workflow interruptions in the order verification process. We attempted to identify a “safe” rate of medication order verification in part by a survey of external institution data, as well as through objective observations of our own current workflow. This medication order verification rate data will be used to build and maintain appropriate staffing levels to ensure safe and efficient order review. In addition, an improvement in staffing ratio will also allow for an increase in documentation of clinical pharmacy interventions, expansion of clinical pharmacy services, a decrease in medication errors, and improvements in the job satisfaction of pharmacists. We look to translate the clinical pharmacy interventions, especially the notable interventions (“good catches”), to appropriate committees and BH senior leadership. We have developed a “good catch” award for our Pharmacy staff that highlights their work on a monthly basis. An example of a recent “good catch” award was an intervention made in a 32-week pregnant female admitted for nausea and vomiting and had an order entered for misoprostol. Upon order verification, the pharmacist questioned the order and called the prescriber, who noted that this order was entered on the wrong patient! This prescribing error was used to correct identified gaps in our order alerting. We believe that highlighting interventions such as this will help stress the importance of medication safety and the role of pharmacy services in the medication use process.

The pharmacy department is presently involved with several additional Lean initiatives to continue to improve safe and effective medication delivery, including evaluation of missing medications and incorporation of cost-savings into our pharmacy intervention database.

**WHAT SERVICES HAVE YOU DETERMINED TO BE ESSENTIAL TO SUPPORT YOUR PHARMACY PRACTICE MODEL?**

Baystate Health remains committed to utilizing technology to assist in safe and cost-effective medication use processes. Established technology systems in place at Baystate Health include a fully electronic medical record (EMR), computerized provider order entry (CPOE) for both inpatient and ambulatory prescribing via the clinical information system (Cerner Millennium),
bedside barcode scanning for patients and medications, PYXIS profile (Care Fusion) automated dispensing cabinets (ADC), electronic medication reconciliation, and ePrescribe to ensure appropriate transitions of care.

As an institution, we strive to ensure that clinicians are supported with up-to-date, evidence-based clinical pharmacy decision support that is appropriate and valuable. An example of some alerts incorporated into our information system include: dose-range checking, drug-drug interactions, drug-food interactions, drug-allergy interactions, therapeutic duplication, and clinical rule “discern” alerts, such as associated lab order recommendations (i.e. INR, SCr, CBC), notification to the prescriber of a rapidly changing clinical picture (i.e. dropping platelets), or a missing indication (i.e. immunizations, CMS CORE measure criteria, DVT prophylaxis). These alerts are regularly reviewed and managed by the pharmacy informatics committee, which is co-chaired by representatives from the division of health care quality and pharmacy services. Additionally, the pharmacy plays an integral role in the development and maintenance of medication order sets, which are developed for CPOE. These medication order sets provide the prescriber with up-to-date, evidence-based, and cost-effective treatment pathways.

The combination of technology systems and clinical decision support allows our clinical pharmacists to be involved in more advanced services, such as pharmacokinetic and drug information consults, as well as key disease state management initiatives.

The addition of a pharmacy business manager to our team (a non-pharmacist, MBA) has also been a key component to supporting our practice model. She currently manages a team of purchasers and business analysts to ensure we maximize contract compliance, inventory management, and 340b reimbursements, as well as creating and maintaining our departmental budget. This role will become especially important as we move towards the transition to an accountable care organization (ACO) in the upcoming year, as well as during on-going assessments of our current pharmacy business model.

**What technologies have you implemented within your practice site to facilitate your practice model?**

Barcode Point of Care (medication and patient barcode scanning) technology is a major safety initiative of our health-system. The pharmacy department has played (and continues to play) a central and key role in the implementation of medication bedside barcode scanning. Leading up to and following the initial implementation, the pharmacy staff worked to ensure that the majority of medications dispensed from the pharmacy were scanned. The pharmacy also utilizes an automated drug inventory replenishment system that manages costs, improves
inventory turns, and ensures up to date, readable barcodes that are shipped six days per week; thus reducing scan failure rates. Implementation of this automated drug inventory replenishment system has reduced inventory management functions for the technicians and purchasers, which has allowed for redesign and redeployment of these positions. Bedside medication and patient barcode scanning was implemented in April 2008, and in October 2010 pharmacy technicians began scanning medications into the ADC. As a result of the implementation of barcode scanning at the bedside and at the point of delivery to the ADC, medication error rates have dropped by 63% since the first quarter of 2008 as a result of scanning (Jan-Mar 2008: 1.6 events per 1,000 patient days; Apr-Jun 2011: 0.6 per 1,000 patient days).

Many of the programs recently developed, or currently in development, rely heavily on information system technologies. Creating detailed clinical rules and alerts that inform healthcare team members of a rapidly changing lab values or identifying potential candidates for oral conversion positively impacts both patient care and budget management.

Other technologies currently in place to support our practice include a variety of electronic communication and documentation tools, including EMR clinical note documentation, as well as intervention and ADR/medication error reporting tools. We recently updated our EMR-embedded intervention documentation program to include cost-avoidance information. We will be presenting this information in dashboard format which will allow us to better outline the impact of pharmacy services on patient care to senior leadership. We continue to work collaboratively with prescribers and the informatics teams to enhance the rules and alerts in an effort to capitalize on the pharmacists’ role in patient care.

**HOW WOULD YOU SHARE THE SUCCESSES OF YOUR PRACTICE MODEL WITH OTHER PHARMACY DIRECTORS AND ADMINISTRATORS?**

Pharmacists have struggled for decades to “get out of the basement,” and as a result have encountered, and sometimes inadvertently perpetuated, the lack of understanding of the clinical pharmacist’s role in the delivery of patient care at Baystate Health. We work hard to ensure we actively participate in multidisciplinary committees within our institution, as well as celebrate and promote our measured successes with our health-system. We strive to share our medication safety work and initiatives internally through safety awards and grants, as well as externally, via list servs and publications. Some recent examples include:
Awards/Grants:
Raman K, Heelon M Baxter Healthcare Corporation Bronze award as a national LEAP (lean excellence award in pharmacy) 2010
Baystate Health President’s Quality Award 2010: Verification Process Improvement Team
Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS) Project 2010 - 2013

Publications:
Raman K, Heelon M. *Hindrances to Bedside Barcode Scanning*. Poster session presented at: unSUMMIT for Bedside Barcoding; 2011 April 27-29; Louisville, KY.
Taylor E, Heelon M, Kopcza K, Illig S, Kerr G. *Pharmacy Department Optimization of Medication Order Verification: A Lean Process Improvement and Benchmarking Initiative*; Poster session presented at: ASHP Midyear Meeting; 2011 December 4-8; New Orleans, LA.
Roggie S, Taylor E, Heelon M, Kerr G. *Missing Medications: The Estimated Financial Impact to an Organization*; Poster session presented at: ASHP Midyear Meeting; 2011 December 4-8; New Orleans, LA.

The pharmacy department maintains a comprehensive internal website, which helps to serve as a platform of communication for a variety of issues. We regularly participate in data sharing through our UHC membership and premier buying group, as well as deliberately networking at local and national events/conferences. Several members of the leadership team also maintain advisory and other positions at the regional pharmacy schools (Massachusetts College of Pharmacy and Health Sciences and the University of Connecticut School of Pharmacy).
WHAT ARE SOME KEY CONSIDERATIONS TO GAIN EMPLOYEE ACCEPTANCE AND BUY-IN TO IMPLEMENT A NEW PRACTICE MODEL?

Baystate Health operates with four major goals in focus: quality, advancement of knowledge, workplace of choice, and long term viability. Baystate Health is committed to creating a workforce that is sufficient, engaged, high performing, and reflective of the communities we serve in order to sustain the goal “workplace of choice.” One of the measures of this goal is employee engagement.

Employee engagement encourages “buy in” by incorporating front line staff into the pharmacy department decision making process, which leads to increased productivity and job satisfaction. As a result of this new focus Baystate Health is transitioning from a top-down management model to one that involves deliberate engagement of the front line staff.

Several years ago the pharmacy department created a “Line of Sight” team, in association with a Baldrige self-assessment. The initial goal of this team was to create and maintain staff engagement through the formation of a multidisciplinary group of pharmacy employees. Opportunities for front line staff to share and problem solve with their peers helped to reinforce the concept that everyone’s voice is taken seriously. The objective of this team was to identify types of medication errors that were occurring in the pharmacy and subsequently collaborate to identify processes that could be implemented to reduce medication errors. The team was highly successful in creating an engaged department culture, supported by evidence from the subsequent Gallup employee engagement survey scores and sustained low employee turnover rates. The leadership team was also able to identify several high-performers in the department that have since become key contributors on recent and ongoing projects. The team was successful in the implementation of several processes, including medication scanning at the Pyxis machine and other operational workflow changes that have reduced dispensing errors that reach our patients.

HOW DID YOU GAIN SUPPORT OF HOSPITAL ADMINISTRATORS, PHYSICIANS, AND NURSING TO IMPLEMENT YOUR NEW PRACTICE MODEL?

Our practice model is based largely on collaboration and engagement, which mirrors the Baystate Health initiatives and requires us to regularly engage the support of prescribers, nursing, and administration. We are fortunate to have formed strong relationships with key leaders within the institution, who are also critical for gathering and ensuring pharmacy support.
The majority of our initiatives are generated from collaborative committee involvement, such as the Pharmacy & Therapeutics Committee, BH Medication Safety Committee, various specialty safety subgroups, and the Pharmacy and Clinical Informatics Committees. Pharmacy services at Baystate Health continue to build excellent relationships with key thought leaders within our institution. This has proven to be pivotal in sustaining a high level of excellence towards safe use of medications for our patients.

**WHAT ARE SOME LESSONS LEARNED WHILE IMPLEMENTING YOUR PRACTICE MODEL THAT YOU WOULD LIKE TO SHARE WITH OTHER PHARMACISTS?**

Based on our experience, we have determined that collaboration, engagement, and communication have been the three key critical success factors for successful initiative implementation. It is crucial to involve other disciplines when focusing on medication safety issues. We also found that taking advantage of pilot exercises allows us to plan for unforeseen issues, while encouraging engagement and ensuring that communication occurs across the organization. However, we have learned that engagement takes time, and despite our best efforts not everyone gets engaged, thus we often rely on our key contributors. Strategically sharing measured successes is also viewed as a critical success factor for modernizing our pharmacy practice model.