Educational Session Abstract
2011 Midyear Clinical Meeting
New Orleans, Louisiana

MCS-34

Title: Managing change for successful implementation of new pharmacy systems

Purpose:
Implementation of a barcode scanning system to improve safety and workflow for sterile compounding in the IV room was initially plagued by staff resistance, non-compliance and long turnaround times. This case describes actions taken to reverse these issues, primarily the application of change management principles. Change management is a critical component of project planning.

Methods:
Barcode scanning and image capture in the IV room was a major departure from the decades old method of preparing and verifying pharmacy compounded sterile products (CSPs). Management communicated reasons for this change and provided training for staff. However, serious issues surfaced within two weeks after go-live. A survey of technicians and pharmacist showed a lack of buy in to the project. Although aware of the potential benefits of the system, desire to change was low. At this juncture pharmacy management incorporated several change management strategies to address these issues. First, management reiterated full commitment to the new system. Secondly, employees attended a presentation designed to reinforce the need for safer and more efficient methods of preparing CSPs. Staff was also given the opportunity to voice their concerns. Super users provided focused training for technicians and pharmacists to ensure staff had the knowledge and ability to use the system effectively. Lastly, managers shared usage, user compliance and error data to demonstrate system benefits and staff progress.

Results:
After incorporating these tactics an immediate reduction was seen in user non-compliance, falling from 14% of doses in week one to 4% in week three, and leveling off at 1% by week six. The average turnaround time per dose fell from 66 minutes in week one to 31 minutes in week three, and to 16 minutes by week six. The number of system-intercepted errors remained steady at 22/week while pharmacist-rejected doses decreased from nine per week to five.

Conclusion:
Application of change management principles helps assure the success of any major change. Staff buy in is critical when implementing new pharmacy systems, especially when it involves changing deeply ingrained habits and processes. Change management principles are best used prior to the change, but can be employed successfully post-live.

Learning Objectives:
1. Gain an understanding of change management principles.
2. Describe how change management can affect the success of new technology in the pharmacy.
3. Describe how data can be used to reinforce acceptance of change.

Self-Assessment Questions:
1. Name five key components of change management.

   Answer: Awareness, Desire, Knowledge, Ability, Reinforcement

2. (True or False) Staff buy in is critical to the success of new pharmacy systems.

   Answer: TRUE

3. (True or False) Change management strategies are of no value after implementing the change.

   Answer: FALSE

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Educational Session Abstract
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MCS-32

Title: Improving pharmacy and nursing collaboration: implementation of a senior pharmacy technician program

Purpose:
Inefficient communication between nursing staff and pharmacy negatively impacts the quality of care provided. To facilitate collaboration between disciplines and improve pharmacy services, unit-based senior technicians were created to serve as a liaison between pharmacy and nursing and assist with the identification, analysis and resolution of procedural and operational concerns related to all aspects of medication use process.

Methods:
The senior pharmacy technician pilot program began with the promotion of a pharmacy technician to Senior Pharmacy Technician (SPT). The SPT worked closely with the Nurse Clinical Manager on one inpatient unit during the 3 month pilot period. The SPT and the NCM met weekly to discuss and resolve current issues with the medication use process with an initial focus on reducing missing medications. A system for investigating and following up on missing medication requests and medication administration record communication issues was developed. In addition, operational reports including those related to robot medication and manual pick lists were reviewed to identify automation glitches or out-of-stock medications. Information learned from these weekly meetings was communicated to the appropriate individuals in a timely fashion via pharmacy meetings and nursing meetings on the unit. During the pilot, the SPT also interacted directly with the floor nursing staff and provided educational in-services and automation support.

Results:
The pilot program was well received by both pharmacy and nursing staff. In addition to improved communication, a marked reduction in missing medications was observed. Missing medication communications were reviewed and categorized as being attributed to one of the following: Pharmacy, Nursing, Robot, or Systems/Other. During the pilot phase, Nursing and Systems/Other missing medication volume decreased by 33%. The pilot program resulted in procedural improvements and created new lines of communication between the nursing and pharmacy.
Key areas for process improvement were identified and staff gained comfort and efficiency with automation resulting in reduced turnaround time for discrepancy resolution. This program increased nursing staff's understanding of pharmacy operations and provided a forum for discussion of concerns regarding pharmacy services.

Conclusion:
Developing a senior pharmacy technician program has helped to increase constructive communication between pharmacy and nursing and improved pharmacy and nursing relationships. Improvements in the medication use process resulted from the identification of root causes of missing medications and the number of missing medications reported was reduced. Based on the success of the pilot, two additional SPT positions were created and the program has been expanded to all inpatient units.

Learning Objectives:
1. Describe the role of a senior pharmacy technician.
2. Discuss potential opportunities for improving aspects of the medication use process by increasing pharmacy and nursing collaboration.
3. Recognize the potential benefit of implementing unit-based technician services on pharmacy and nursing communication.

Self-Assessment Questions:

1. (True or False) A senior pharmacy technician is not qualified to serve as a liaison between pharmacy and nursing.

2. (True or False) The following aspects of the medication use process can be improved by implementation of a senior pharmacy technician program: missing medications, medication administration record issues, resolution of automation discrepancies.

3. (True or False) Targeting focus on identifying, resolving and communicating issues with the medication use process can improve pharmacy and nursing relationships.

Answers: 1. (F); 2. (T); 3. (T)

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MCS-12

Title: Development and implementation of a patient-centered integrated practice model in a community teaching hospital.

Purpose:
This case describes the development and implementation of a patient-centered integrated practice model in a 240-bed community teaching hospital. Prior to the model change, the pharmacy practice model at our institution was a drug processing and dispensing model with centralized pharmacy operations. Pharmacists were primarily responsible for order entry and verification, medication distribution and preparation of sterile products. Pharmacists had limited involvement in direct patient care and were unable to utilize their clinical skills and training. Basic clinical services provided to our patients were limited to vancomycin dosing on physician request, therapeutic interchanges and provision of drug information.

Methods:
The first step towards model change was identification of desired clinical services and comprehensive evaluation of pharmacy workflow and workload. All pharmacist and technicians participated in this process. Clinical services identified include parenteral to oral conversions, pharmacokinetic dosing, renal dosage adjustments and therapeutic interchanges. Guidelines were developed for each initiative and comprehensive pharmacist education was implemented with competency assessment incorporated into the pharmacist annual evaluation process. A comprehensive workflow and workload assessment was also conducted. All pharmacy-related activities performed within the pharmacy department and those provided outside the pharmacy were outlined. Each pharmacist and technician listed their daily activities and documented time to task completion. Hourly workload reports were generated to determine the number of orders processed at different shifts, as well as during weekend and weekdays. At that time the pharmacy department was staffed by 8.75 full time equivalent (FTE) pharmacists and 8 FTE technicians. Four pharmacist and four technicians worked during the morning shift (6:30 am to 3:30 pm); one pharmacist and two technicians worked during the afternoon shift (2pm to 11:30 pm) and one pharmacist worked the night shift (10:30 pm to 6:30 am). Our hospital dispenses approximately 4,100 doses daily, an average of 421 doses per FTE pharmacist and 513 doses per FTE technician. This comprehensive workflow and workload review resulted in the redesign of pharmacy operations that improved efficiency and provided clarity in technician duties and responsibilities. However, the volume of orders processed by the pharmacy was prohibitive and did not allow time for clinical activities. There was a need for additional pharmacist, and technicians in order to expand our clinical program. The second phase of our model change was the justification of clinical services expansion and need for additional clinical pharmacists and technicians. A proposal was presented to hospital administration that outlined potential cost savings and cost avoidance from expanded clinical services based on the services implemented in our institution as well as published data from literature. Additionally, we also conducted a survey of 3 similarly sized area hospital (200, 258 and 278 licensed beds) to determine their pharmacy staffing based solely on number of doses of drugs dispensed. Average daily doses dispensed per FTE pharmacists in these hospitals 286,220 and 333 respectively, and 232,367 and 324 doses per FTE technician respectively. Armed with this data we were able to justify additional 2 FTE pharmacists and 2 FTE technician positions.

The final phase of our model change was workflow redesign and implementation of our "general practitioner decentralized practice model". In this model the hospital was divided into 3 pharmacist areas and each pharmacist was responsible for all order entry and targeted clinical services in their service units including daily participation in the multidisciplinary discharge planning rounds. Each pharmacist was provided with a wireless computer on wheels. Distributive functions and intravenous drug preparations were done by two pharmacists in the central pharmacy. Although, this model improved pharmacist involvement in patient-care activities, pharmacists were unable to efficiently perform all targeted clinical activities while entering orders. Pharmacist involvement in order entry was often delayed due to pharmacist participation in rounds and during patient therapy assessment sessions or these activities were interrupted so that pharmacist can enter first doses of medications for their patients. This model was modified, so that pharmacists will either perform distributive and order entry duties or clinical duties during the morning shift. We maintained the same number of pharmacist per shift. However, all order entry, distributive and intravenous medication preparation duties were assigned to the two pharmacists located in the central pharmacy. All pharmacists with the exception of the night pharmacist have equal numbers of days per month performing either clinical functions or distributive/order entry functions. Additionally, we expanded our clinical services to include a pharmacist-managed anticoagulation program and some antimicrobial stewardship activities, and participation in the daily multidisciplinary discharge planning rounds. Expanded clinical activities were enabled by improved operational efficiencies and automation that included the implementation of the electronic medication administration records; OmniLinkRx system (Omnicell, Mountain view, CA), acquisition of twenty-two Omnicell's automated dispensing machines hospital-wide, with patient profiling capabilities, mini-bag plus system for most intravenously administered medication, outsourcing of total parenteral nutrition compounding, bar-coding technology, purchase and implementation of a web-based clinical documentation tool, (quantifi; pharmacy OneSource) and infection control management program SafetySurveillor (Premier). Quantifi allows the pharmacist to document and track clinical interventions with related cost savings based on cost-avoidance values. SaftetySurveillor provides data mining for targeted antimicrobial stewardship activities. Additional critical elements contributing to the success of our program include pharmacist and technician involvement and consultation in designing, implementing and modification of the workflow as well as comprehensive pharmacist and technician education and skills assessment prior to the implementation of any new clinical initiative. These skills were reassessed annually.

Results:
This practice model has been in place in our hospital for 4 years. The average number of orders processed per FTE pharmacist per year remained steady over the years averaging 24,777 orders in 2006 compared to 25,112 orders in 2010 as has the average number of doses dispensed per pharmacist FTE averaging 348 doses per pharmacist FTE in 2006 and 342 doses in 2010. The number of interventions performed by pharmacist have increased by 95% (408 interventions per FTE 2006 to 797 in 2010) with a corresponding cost avoidance per pharmacist in dollars that has increase by 127% (24,477dollars in 2006 to 55,545 dollars in 2010). In fiscal year ending June 2010, the total cost avoidance from pharmacist interventions in dollars was 652,652.

Conclusion:
Patient-centered integrated practice model is the most appropriate and robust practice model for our community hospital and is enhanced by redesign of pharmacy workflow, expansion of technician duties as well as implementation of technology.

Learning Objectives:
1. Describe the steps necessary for developing and implementing a patient-centered pharmacy practice model.
2. Describe the role of pharmacy personnel in developing and implementing a pharmacy practice model.
3. Describe resources that can support a patient-centered practice model.

Self-Assessment Questions:
1. (True or False) Factors that should be considered prior designing and implementing a pharmacy practice model include pharmacy workflow, workload and staffing

2. (True or False) The director of pharmacy, clinical manager and pharmacists are the only pharmacy personnel needed to design and implement a patient-centered integrated pharmacy practice model.

3. (True or False) The director of pharmacy, clinical manager and pharmacists are the only pharmacy personnel needed to design and implement a patient-centered integrated pharmacy practice model.

Answers: 1. (T); 2. (F); 3. (T)

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