Managing Drug Shortages: A Collaborative Approach

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Situation Analysis
Drug shortages are a common challenge encountered by pharmacy personnel. In recent years, this issue is occurring with alarming regularity, and pharmacy departments have quickly realized the importance of taking a central role in the proactive management of drug shortages within their health systems.

Drug shortages may arise from a variety of different points in the drug procurement process, including, but not limited to, manufacturing delays, raw and bulk material unavailability, voluntary recalls, single suppliers, industry consolidations, manufacturer's production decisions and economics, and increase in demand. Frequently, drug shortages occur with little warning and often with minimal data to help pharmacy practitioners determine the duration of the shortage. Due to these non-ideal circumstances, it is imperative to have a proactive plan in place to manage new and existing shortages.

Drug shortages have affected many specialties and practices. Over the past year, medications used in medical emergencies such as cardiopulmonary resuscitation (such as epinephrine, 50 percent dextrose, and sodium bicarbonate) have been affected by national inventory challenges.

Primary Intended Outcome
1. Address medication shortages with a proactive team approach of pharmacy professionals with interdisciplinary input.

Project Associated with Following PPMI Recommendation
B.26: Every pharmacy department should:

B 24k: Identify problem-prone and high-risk therapies using pre-established criteria.
Shortages of anti-epileptics, oncology agents, vitamins, lipids, and other problem-prone and high-risk therapies have significantly affected clinical practice. Providers have had to prescribe alternative, second-line therapies that represent a significant process change for established preparation, delivery, administration, and monitoring practices. Health-system pharmacy departments have both the opportunity and responsibility to take a central role in managing these shortages to ensure adequate patient care.

Early identification of a shortage as well as communication to key stakeholders in the medication-use process helps establish a reasonable and comprehensive planning process. At minimum, evidence-based allocation tactics and thoughtful conservation strategies help temper the effects of the shortage and maintain a supply of available therapy for individuals truly in need. Identification of alternative agents or therapies when clinically appropriate is crucial to the success of drug shortage management. As with all scarce resources, it’s important to glean insights from all affected stakeholders to ensure that all steps in the medication-use process are considered.

Standard communications to all hospital staff is also paramount to a successful shortage plan. This is best accomplished with set information templates and multiple distribution methods, such as email and internal internet site postings. Furthermore, clear, concise and timely communication with pharmacy personnel regarding operational changes, alternative therapy, and other important information is crucial.

Pharmacists and pharmacy technicians are often on the front lines of drug shortage management, receiving phone calls and questions from providers and nursing staff regarding a missing medication or confusion over the alternative therapies. Ensuring that all health care professionals, including the pharmacy staff, are up to date on drug shortages will minimize frustration and ensure appropriate and timely treatment for our patients. This is even more important in emergency situations.

Johns Hopkins Bayview Medical Center (JHBM C) is an academic teaching hospital in Baltimore, Md. Like other medical centers across the country, JHBM C faces constant drug shortages that have inundated the medical community over the past few years. The inpatient Pharmacy Department at JHBM C developed an internal drug shortage task force to help proactively combat this issue.

Service Description
The Drug Shortage Task Force at JHBM C utilizes the strengths of key pharmacy personnel. The task force is composed of clinical pharmacy specialists, front line staff pharmacists, pharmacy administration, the pharmacy buyer, and the pharmacy system administrator.

This task force is further strengthened by additional input from non-pharmacy content experts within various subspecialties to provide insight into the impact and feasible alternatives on specific shortages in their area. An example of this collaboration was the recent loop diuretic shortage. Cardiology and nephrology experts helped to develop and implement effective conservation strategies.
Identification of a shortage is multifaceted. A continuous source of drug shortage information originates from the drug shortage portal on the ASHP website, professional listserves, and peer communications. Furthermore, market vigilance systems alert pharmacy purchasers and administration of manufacturer-reported recalls that may result in shortages. A key to our success has been the vigilance of all staff members in keeping the committee abreast of changes in practice or shortages.

Upon identification of a potential shortage, the task force assesses our current inventory and ability to obtain additional supply. This information, coupled with usage trends, is used to estimate time-to-depletion of the available agent.

Alternative therapies are identified, if possible, and inventory and availability of these medications are also assessed. Often, a change in practice is necessary to accommodate the shortage, including compounding products that are usually available commercially, ensuring that agents with short stability aren’t stored in automated dispensing cabinets, and vigilantly monitoring for expiration.

If a change in practice is required, we work with affected providers and the pharmacy and therapeutics committee. Once a plan is developed for a specific agent, changes are made to the computerized provider order entry and electronic medical record systems. This may range from sending an alert notification to providers upon order entry, to sending a message to the pharmacist upon verification, to blocking ordering of the affected product altogether. Affected providers and nurses are notified, and the shortage is posted on the hospital’s drug shortage intranet page. Additionally, pharmacists will provide verbal updates during rounds and other clinical activities.

Key Elements for Success
1. Clear expectations of each member of the drug shortage management team.
2. Early identification of medication shortages, real-time inventory and usage data, and identification of alternative agents.
3. Effective communication strategies to all individuals impacted by the shortage situation.
4. Identification of key stakeholders for each shortage.
5. Real-time implementation of conservation and management plans, including modification of computer order entry systems.

Resource Utilization
Personnel: One-hour weekly meetings for all task force members with additional requirements dependent upon the specific drug shortage. Additional time is required for inventory assessment and modification of the automated dispensing cabinet contents. Communication memoranda and research into alternative therapies or conservation strategies also require time commitments by team members.

IT and other infrastructure: Changes to computer order entry systems and communication delivery through listserves and intranet postings.
Recognized Intangible Benefits

The largest benefit seen from this proactive drug shortage management is continuing adequate care for patients. Aside from the management of medication shortage situations, this task force approach has allowed for the assessment of current practices and prescribing patterns. JHBMC has been able to streamline many formulary items and implement thoughtful ordering practices upon the resolution of a particular shortage.

Outcome Measures

The development of a drug shortage task force with the sole purpose of identifying and managing drug shortages lead to increased satisfaction and transparency regarding this process. While frustration with the current situation is inevitable, providers and nurses have expressed increased satisfaction with the current pharmacy approach.

Pharmacy staff satisfaction has been evaluated via an anonymous survey, and feedback has been incorporated into the functioning of this task force. Due to this new process, pharmacy personnel are able to confidently answer questions regarding medications on shortage, actively participate in patient care, and supply nurses and providers with access to timely information affecting their practices.

Lessons Learned

1. Develop a clear pathway for drug shortage management that encompasses discovery to resolution.

2. Effective communication strategies are critical for the implementation for any drug shortage management plan.

Helpful References
