White Paper

LACK OF CONTINUITY OF SUPPLY IN THE INJECTABLES MARKET AND ITS IMPACT ON PATIENT CARE AND HOSPITAL COSTS

Mary Nazzal, Pharm.D., Clinical IQ, LLC., Eric S. Kastango, MBA, RPh, FASHP, Principal-CEO, Clinical IQ, LLC & CriticalPoint, LLC

The US drug market has been facing a drug shortage and if you haven't been affected by it, consider yourself lucky. There are 180 drugs in shortage as of July 31, 2018, mostly injectables according to a list on the American Society of Health-System Pharmacists (ASHP) website[1]. Drug shortages are caused by many factors, including difficulties in acquiring raw materials, manufacturing problems, regulatory issues, business decisions, and many other disturbances within the supply chain.[2] While there has been a steady decrease in new shortages over the past few years, 2017 was a challenging year for shortages.[3]

180 drugs in shortage

as of July 31, 2018, according to a list on the American Society of Health-System Pharmacists (ASHP) [1]

First, there was a major manufacturer who shut down a facility for remediation purposes resulting in loss of manufacturing capacity needed for the supplies of numerous products.[3] Critically, disruptions were also caused in 2017 by Hurricanes Harvey, Irma, and Maria the latter of which ravaged Puerto Rico, home to numerous manufacturing facilities.[3] This created delays in the release of some products, resulting in both new shortages and the worsening of existing shortages.[3]

The FDA works with manufacturers to prevent or reduce the impact of shortages, but it does not fully prevent them resulting in a negative effect on hospital pharmacies and patients across the United States.

The Institute for Safe Medication Practices (ISMP) conducted a national survey from August through October 2017 and about 300 respondents completed the survey. The ISMP found:

- Shortages were reported across all treatment categories with the following at the highest percentages: More than two-thirds of respondents reported shortages impacting emergency care (87%), anesthesia care (85%), pain management (81%), infectious disease treatment (71%) and cardiovascular care (68%).[4]
- 5% of respondents reported intravenous fluids in short supply, affecting all service lines (which worsened after Hurricane Maria).[4]
- Few respondents reported consistently receiving advanced notifications from drug manufacturers, wholesalers, distributors group purchasing organizations, or the US Food and Drug Administration (FDA) about impending drug shortages (12%) and 38% still said they never or rarely received this information.[4]

Sponsored by Xellia Pharmaceuticals

White Paper

77% of respondents

were aware of medication errors occurred based on shortage (Audience poll at ASHP Summer in Denver) [5]

Drug shortages place hospitals at risk for increased medication errors. According to an interactive discussion held at the ASHP Summer Meeting and Exhibition in Denver in 2018, an audience poll showed seventy-seven percent of attendees responded that they were aware of medication errors that occurred at their site based on shortage.[5]

So, what happens when pharmacy personnel finally receive notification or identify a drug shortage? There is a multitude of factors that go into handling a shortage including but not limited to the following:

- **Access Inventory**
  - First and foremost, pharmacy personnel will access their inventory to identify how much stock is available. They may consolidate it to one location and send out a notification to pharmacist's, nurses and physicians to limit its use. Ninety-four percent of the ISMP survey respondents reported rationing or restricting drugs in short supply.[4] Examples included establishing criteria for using products, restricting access to drugs via override in automated dispensing cabinets (ADCs), and providing kits for emergency drugs. [4]
- **Prepare to Use Alternatives**
  - They may suggest alternatives to use which likely requires some research by the Drug Information Team and/or pharmacists. Many times, this information must be brought to the Pharmacy and Therapeutics Committee to be discussed with other members (physicians, nursing, etc.) before deciding on alternative treatments which may not be as effective or have increased side effects. The saddest part is there may be no alternative, which may delay treatment and compromise patient care.
  - The purchasing department will likely be looking for alternative products to purchase. They may have to call around or search for and make deals with vendors they are not set up with. After surveying 311 pharmacy experts from 228 hospitals in late 2010, Premier Healthcare Alliance estimated shortages cost hospitals at least $200 million annually because of the need to purchase more expensive therapeutic substitutes.[2] Compounding pharmacies are sometimes a viable source of drugs in short supply.[2] However, drug preparations from these pharmacies might not meet applicable state or federal standards, so caution may be warranted.[2] At least ninety percent of respondents of the ISMP survey reported adding backup inventory for critically important drugs in short supply, changing par levels, purchasing excess inventory from a wholesaler and/or purchasing a more expensive brand, generic, or therapeutic alternative product from a wholesaler.[4] More than half purchased more expensive products from a new distributor (67%) or an outsourcer (58%).[4]

- **Planning/Education/Training/Communication/Updating**
  - Any changes need thorough planning, education and training to hopefully eliminate the risk of errors that may occur with using new products and procedures. Pharmacy and clinical personnel will likely need to be trained on new products and/or procedural changes. You may have to have vendors come in to give training on new products. You may need to produce education and training documentation as well as communications (emails, flyers, etc.) to get the changes out to personnel. Consideration should be taken into how alternatives are prepared? Is the change going to require additional resources to prepare? Who is going to be involved in the change? A shortage of IV fluid forced many facilities into switching administration of medication from IVPB into IV-push. This required a big change, including research to verify that the medications could be given IV push and how they were to be prepared and administered. Many times, automation (TPN compounders, robotics, IV workflow, etc.…) and health information systems need to be updated. Attendees of the interactive discussion held at the ASHP Summer Meeting and Exhibition in 2018 indicated an increase in manual compounding (47%), increased outsourcing (31%), the introduction of automation or technology (8%), or an increase in high-risk compounding practices (12%).[2]

It takes extra manpower and hours to do all this extra work. At the height of the drug shortage crisis in 2011, it was found the annual labor cost of drug shortages had been estimated to be an additional $216 million.[2]

$216M
Estimated annual labor cost of drug shortages in 2011

In an attempt to prevent or avoid shortages in your facility, you should have personnel dedicated to staying up-to-date on drug shortages by visiting the ASHP Drug Shortage Resource Center website and/or the FDA Drug Shortages website. Your facility should have policies and procedures in place that identifying actions to take when a shortage occurs. Personnel needs to assure during times when changes need to be made, they are in line with Sterile Compounding standards and best practices as not to compromise patient care.

On July 12, 2018, FDA Commissioner Scott Gottlieb, M.D. announced the formation of a new Drug Shortages Task Force.

> "The charge to this new task force is to look for holistic solutions to addressing the underlying causes for these shortages (FDA Commissioner Scott Gottlieb, M.D.)

"I'm charging the shortages task force to delve more deeply into the reasons why some shortages remain a persistent challenge. The task force will expand upon the work of a group that was created by the Food and Drug Administration Safety and Innovation Act of 2012 (FDASIA). The charge to this new task force is to look for holistic solutions to addressing the underlying causes for these shortages. As it seeks new solutions, the task force will not be operating in a vacuum. Addressing shortages and devising new, practical solutions will require input from the pharmaceutical and healthcare industries, patient representatives, our federal partners and Congress. We intend to engage the public and hold a meeting with stakeholders in the next several months to provide an opportunity for everyone with a stake in addressing drug shortages to come to the table." [6]

We encourage you to investigate how you can contribute. Let us hope that this new task force will bring about further change to decrease the drug shortage problems through advocating for increased production, development of new dosage forms and propriety delivery systems and formulations and formulation of new drugs.

References

1. ASHP Drug Shortages List, https://www.ashp.org/Drug-Shortages/Current-Shortages/Drug-Shortages-List?page=CurrentShortages, Accessed July 31, 2018

2. C. Lee Ventola, MS. The Drug Shortage Crisis in the United States, Causes, Impact, and Management Strategies, 2011 Nov; 36(11): 740-742, 749-757
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3278171/

3. Report on Drug Shortages for Calendar Year 2017 Required by Section 506C-1 of the Federal Food, Drug, and Cosmetic Act Food and Drug Administration Department of Health and Human Services.
https://www.fda.gov/downloads/Drugs/DrugSafety/DrugShortages/UCM610662.pdf

4. Drug Shortages Continue to Compromise Patient Care, January 11, 2018
https://www.ismp.org/resources/drug-shortages-continue-compromise-patient-care

5. Jennifer Barrett, Associate Editor, June 05, 2018. Learning from IV Drug Shortages: Be Prepared and Proactive. https://www.pharmacytimes.com/conferences/ashp-summer-2018/learning-from-iv-drug-shortages-be-prepared-and-proactive

6. FDA U.S. FOOD & DRUG ADMINISTRATION: Drug Shortages:
https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm613346.htm