Drug shortages and labor costs

Measuring the hidden costs of drug shortages on U.S. hospitals

June 2019

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Introduction

The number of new drug shortages in the U.S. continues to rise,[1] and pharmacy teams within hospitals and health systems must deal with the impact of those shortages on a daily basis. Drug shortages make both access to needed therapies and delivery of patient care challenging. What's often not reported is the financial and operational toll drug shortages have on pharmacy staffing and budgets.

Between March 6 and April 4, 2019, the Vizient® Drug Shortages Task Force conducted its inaugural member survey, "2019 Drug Shortages and Labor Costs: Measuring the Hidden Costs of Drug Shortages on U.S. Hospitals," to identify and quantify the labor-related operational and financial impact of drug shortages on member health systems and hospitals. Survey respondents from the Vizient Pharmacy Program represented both acute and non-acute facilities, including health systems; academic medical centers; self-governed children's hospitals; small-, medium- and large-sized hospitals; critical access hospitals; behavioral facilities; long-term care facilities; specialty hospitals; and ambulatory care facilities. These responses confirmed that drug shortages are a **global issue** across **all types of care facilities,** and these shortages are taking a **significant toll** on the pharmacy resources, budgets, staffing and patient care.

[1] Drug shortages statistics. American Society of Health-System Pharmacists website. https://www.ashp.org/Drug-Shortages/Shortage-Resources/Drug-Shortages-Statistics. Accessed June 14, 2019.

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Key questions

- How many drug shortages are pharmacists managing on a regular basis?

- What are the key classes of drugs that impact facilities the most?

- What are the key considerations when balancing drug purchasing with drug shortages?

- What are the primary mitigation strategies that pharmacies are using to work around drug shortages?

- How are pharmacy budgets and staffing impacted by drug shortages?

- How are drug shortages impacting patient care?

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Survey respondents: 365

Most common roles

- Director of pharmacy
- Pharmacy buyer
- Pharmacy manager
- Clinical coordinator
- Clinical pharmacist/specialist
- Supply chain leader
- Vice president of pharmacy

16% Health system level

84% Individual facility level
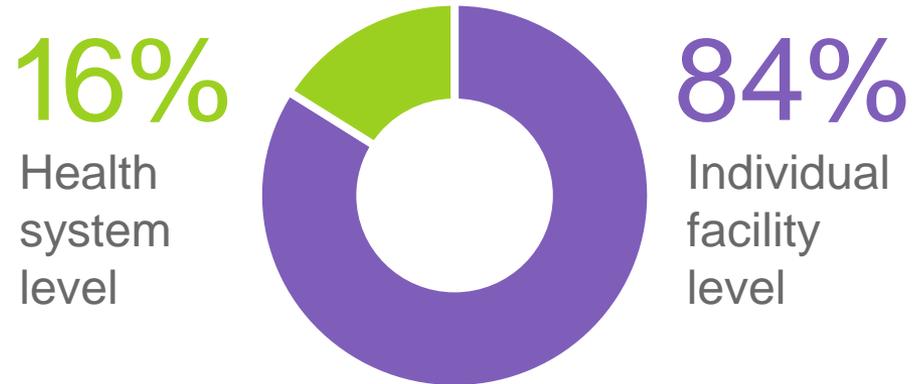
67% Pharmacy leadership

25% Pharmacy frontline staff

4% Health system leadership

Q1. Which of the following best represents your role?
Q2. Which of the following best describes your healthcare facility?

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Overall impact of drug shortages

The increased cost of labor is real.

Health system and hospital pharmacies are allocating significant time and money to seek ways to **gain product access, find strategies to work around** drug shortages and **prepare for continued impacts** in the future.

In addition to the quantifiable costs that are far beyond the pharmacies' budgets, there are **significant hidden costs** — **such as spend on additional staffing, loss of revenue due to delayed or cancelled procedures, staff overtime and updating technology.**

In review of more than 6,000 hospitals across the U.S., it's estimated that drug shortages are costing facilities at least **$359 million per year in additional spend on labor alone**.

Annualized cost across U.S. hospitals[a]

$359 million/year

Cost of labor needed to manage drug shortages

[a] Calculation does not include additional costs from direct purchases and other nontraditional distribution alternatives, and does not account for the impact of delays in patient care and other less quantifiable measures. *U.S. hospital* as defined by the American Hospital Association (https://www.aha.org/statistics/fast-facts-us-hospitals); definitive Healthcare "Hospitals and IDNs" database; Vizient pharmacy program participant data on file; hourly pay based on U.S. labor statistics (https://www.bls.gov); Vizient data on file.

b. The specific question asked was "Please enter the cumulative number of hours that each hospital staff type spends on a weekly basis to manage drug shortages. For example, if two pharmacists go to a drug shortage committee meeting that lasts for one hour, the cumulative amount of time spent is two hours. Time includes evaluating therapeutic substitutions, purchasing alternatives, redistributing stock, modifying electronic tools (e.g. EHR, IV pumps), participating in meetings, and discussing with clinicians and staff." This number was extrapolated to an annual number based on type of professional respondent and hospital type.

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The unintended impact of drug shortages

The time spent managing shortages continues to grow.

While quantifying the full impact of drug shortages on the delivery of patient care across the care continuum is challenging, daily factors contribute to the time spent on drug shortages, according to survey respondents. This includes time spent on redistribution of workload and time spent accessing therapies through nontraditional distribution channels.

This survey concluded that, across all clinical roles, it is estimated that hospitals in the U.S.[a] spend an additional 8.6 million personnel hours per year in managing the impact of drug shortages.

8.6 million
Additional personnel hours of labor

Annualized cost across U.S. hospitals[a]

[a] *U.S. hospital* as defined by the American Hospital Association (https://www.aha.org/statistics/fast-facts-us-hospitals); definitive Healthcare "Hospitals and IDNs" database; Vizient pharmacy program participant data on file; hourly pay based on U.S. labor statistics (https://www.bls.gov); Vizient data on file.

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Impact across all care facilities

No facility is immune to drug shortages or the associated impact on budget and resources.

The total number of annual new shortages has reached its highest number since 2012 (186 new shortages in 2018).[1] Of the more than 12 facility types included in this survey, 100% were impacted by drug shortages, making drug shortages a universal problem across the care continuum.
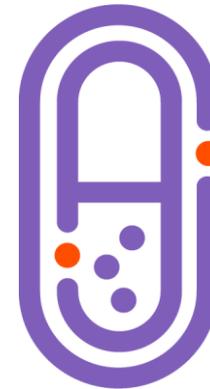
100%
of facilities surveyed were affected by drug shortages

More than half of members surveyed reported that they had managed at *least 20 shortages* during the six-month survey period.

Q1. Thinking about July 2018-December 2018, how many shortages of individual drugs (regardless of product presentation) did you have to manage based on the ASHP definition*?

[1] Drug shortages statistics. American Society of Health-System Pharmacists website. https://www.ashp.org/Drug-Shortages/Shortage-Resources/Drug-Shortages-Statistics. Accessed June 14, 2019.
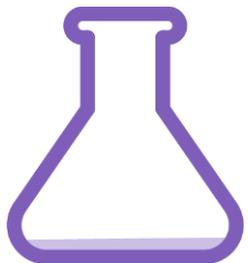
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The number of drug shortages affecting Vizient member hospitals

64%
> 21 shortages
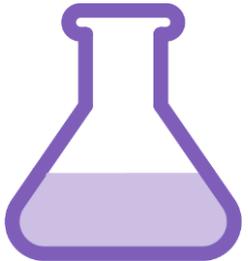
33%
6-20 shortages

3%
0-5 shortages

Top 5 drug categories that have had the most impact on a Vizient member facility as a result of drug shortages:

- Controlled substances
- Local anesthetics
- Crash cart drugs
- Antibiotics
- Electrolytes

Direct and indirect costs of drug shortages are high and include:

- Increases in drug budget
- Lost revenue from cancelled infusions and procedures
- Increased numbers of full-time pharmacy and technician employees
- Reallocation of pharmacy resources, which leads to lost productivity and impact in other areas
- Documented medication errors, potentially resulting in harm

Q1. Thinking about July 2018-December 2018, how many shortages of individual drugs (regardless of product presentation) did you have to manage based on the ASHP definition*?
Q2. As a result of drug shortages, which of these drug categories have had the most impact on your facility both in terms of cost and reallocation of resources including informatics changes and labor during July 2018 to December 2018?
Q3. Thinking about your most recent budgeting period, what percentage over budget was your facility as a result of drug shortages (from all causes)?

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Impact on staffing

Drug shortages create an unintentional burden on roles inside *and outside* of pharmacy.

On average, buyers, pharmacists and technicians are affected the most in terms of time spent on managing drug shortages, often spending **more than a day's work each week** dealing with drug shortages. Pharmacies are staffing for overtime and redistributing the workload to manage the burden of drug shortages.

Average number of hours spent weekly on managing drug shortages

- **12.0** Buyers/purchasing agents
- **9.3** Pharmacists
- **7.6** Pharmacy technicians
- **3.8** Informatics pharmacists
- **1.3** Financial/business office
- **1.7** Nurses
- **1.4** Physicians

Top strategies for managing additional demands related to drug shortages

Hire staff 10%

Staff overtime 44%

Redistribute workload 46%
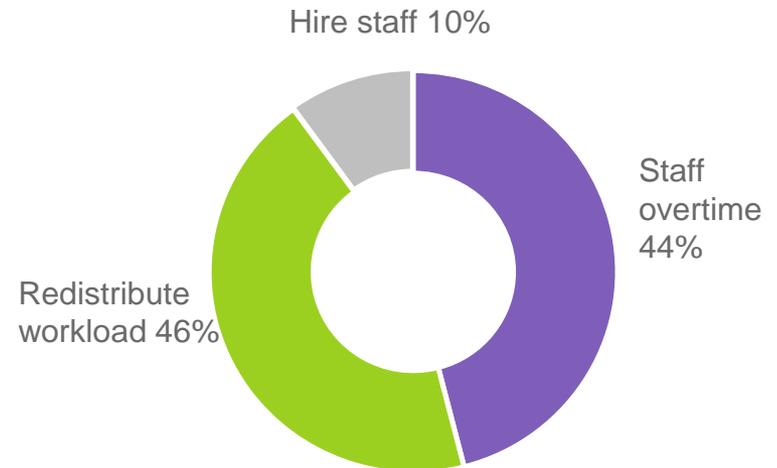
Q1. Please enter the cumulative number of hours that each hospital staff type spends on a weekly basis to manage drug shortages. For example, if two pharmacists go to a drug shortage committee meeting that lasts for one hour, the cumulative amount of time spent is two hours. Time includes evaluating therapeutic substitutions, purchasing alternatives, redistributing stock, modifying electronic tools (e.g. EHR, IV pumps), participating in meetings and discussing with clinicians and staff.

Q2. Which of the following statements applies to your institution or system as it pertains to drug shortage mitigation (pertains to operational items like staffing, redistribution of workload)

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Impact on patient care

Delays in treatment due to drug shortages impacts the quality of patient outcomes

Operational inefficiencies, such as delay of medication or cancellation of a procedure, are affecting the way care is delivered to patients, and can also affect the quality of patient care.

For example, hospitals are frequently forced to purchase expensive, unfamiliar alternative medications at different concentrations than their typical stock. This unfamiliarity can lead to over- or underdosing of patients. In addition, because of a lack of advance warning from drug manufacturers about shortages, poor patient outcomes result when treatment is delayed or when no treatment options are available at all.

Top 5 effects of drug shortages on patient care:

- Delay in medication in inpatient setting
- Delay in outpatient infusion
- Delay in one or more medical procedures
- Delay in immunization
- Cancellation of outpatient infusion

Q1. Which of the following have you experienced during July 2018-December 2018 as a result of drug shortages?
Q2. What percent of medication errors recorded during July 2018-December 2018 were related to a drug shortage?

38% One or more medication errors directly related to a drug shortage[a]

[a] During six-month period from July-Dec 2018.

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Implementation of mitigation strategies

Pharmacy staff spend significant time finding workarounds.

The intensity of drug shortages remains high, meaning the number of units not available has increased. Health care organizations have resorted to multiple strategies to manage these shortages, beginning with looking at past prescribing data and utilization trends to make decisions on order restrictions and usage criteria. These strategies are inconsistent across facility types.

Top 10 most helpful strategies used by Vizient members to mitigate the impact of drug shortages

- Implemented processes to restrict duration of therapy (e.g., for antibiotics)
- Implemented one or more task forces or committees dedicated to addressing drug shortages and allocations
- Adjusted electrolyte replacement guidelines (e.g., raised threshold for ordering)
- Purchased alternative presentations (e.g., syringe vs. vial, alternate concentration)
- Increased stock of medications that are anticipated to be limited in supply

- Utilized unit dosing to prevent waste
- Restricted use of short drugs to approved indications, populations deemed most in need
- Adjusted par levels
- Elected to use smallest appropriate volume IV product to prevent waste
- Increased "hang time" for continuous IV fluids or transitioned meds from intermittent/continuous infusion to IV push, where applicable

Q1. Which of the following strategies have you used at your institution to mitigate the impact of drug shortages? Select all that apply.
Q2. Based on our answers about strategies used to mitigate the impact of drug shortages, please rank the top three must helpful strategies, where 1=most helpful, 2=second most helpful and 3= third most helpful.

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Important resources for hospital pharmacies

Pharmacies rely on critical drug lists and outside resources to help with drug shortages.

Some respondents identify and maintain a list of drugs critical to patient care in their facilities.[a] Of the respondents that have such a list, **more than two-thirds** are dedicating daily or weekly resources to managing this list and assessing the drugs that are crucial to the functioning of their hospital.

Facilities with critical drug lists[a]

35%
of Vizient members manage a critical drug list

Other resources that facilities rely on the most to help manage drug shortages:

- Wholesaler
- ASHP drug shortage website
- Manufacturer
- FDA website
- Vizient[®] member resources
- Pharmacy professional organization list server/forum

[a] The American Journal of Health-system Pharmacy defines a critical drug list as "the 10 to 20 most commonly used, life-sustaining therapies deemed most critical to patient care."   [2018;75(11):816-820]

Q1. Do you have a critical drug list? How often is it updated?
Q2. Which of the following resources have you used for help with addressing drug shortages?

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Conclusions

1. **The cost and time related to the labor it takes for hospitals to manage drug shortages and maintain quality patient care is significant** and it's taking a toll on hospital pharmacies' resources, budgets, staffing and patient care.

   The cost of drug shortages: $359 million dollars per year in additional pharmacy labor costs **8.6 million per year** additional personnel hours

2. **Drug shortages are impacting all types of care facilities** and most clinicians are impacted as well — both inside *and* outside the pharmacy. In addition to buyers, pharmacists and pharmacy technicians, drug shortages are impacting nurses, physicians and even financial and business roles.

3. **Hidden costs are significant** as a result of the following activities related to the management of drug shortages: additional staffing; loss of revenue due to delayed or cancelled procedures; personnel overtime spent on updating technology, managing critical drug lists and accessing therapies through nontraditional distribution channels; and documented medication errors.

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Conclusions

4. Pharmacy staff are spending the majority of time on **finding workarounds and other mitigation strategies**, but these strategies are inconsistent across facilities.

5. While there have been reports in the past decade that address the financial cost of drug shortages on hospitals, **no other report quantifies the true impact of labor across this many roles** or the actual personnel hours it takes to manage these drug shortages.

6. **Vizient® is dedicated to supporting member hospitals in managing the cost of labor** and other unintended costs, as well as the operational impact of drug shortages.

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Vizient resources for drug shortage management

Participants in the Vizient Pharmacy Program have access to resources and expertise to help navigate drug shortages, including:

- Drug Shortages Task Force: Vizient® team focused on development of solutions and resources to support members with drug shortages.

- Novaplus® private label: Offers 190 drugs representing 768 NDCs. Vizient members that use Novaplus see the highest fill rates in the industry.

- Clinical member engagement: Members collaborate with Vizient to develop clinical pathways and innovative strategies that minimize the impact of shortages on the workflow.

- Drug shortages resources: Member webpage provides I.V. Shortages Resource Guide, drug shortage alerts and nine drug-specific mitigation strategies.

- Partnership with the University of Utah: Enables collaboration and provides daily alerts on the latest drug shortages.

- Advanced analytics: Algorithm identifies products at risk of going short, influences member engagement and drives sourcing strategies.

- Sourcing resources: Include our failure-to-supply program – which brought $38.3 million in value back to members in 2018; wholesale fill-rate monitoring and penalties; wholesale agreement support; and novel contracting strategies.

- Advocacy: Vizient supports legislative efforts to proactively address the systemic causes of the drug shortage crisis (e.g., by consulting with the FDA Drug Shortage Task Force and participating in congressional briefings.)

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Contributors

- Dan Kistner, PharmD, Senior Vice President, Pharmacy Solutions

- Kristi Kuper, PharmD, BCPS, Senior Clinical Manager, Infectious Diseases

- Doug Kucera, Senior Director, Pharmacy Contract Services

- Camille Ricci, Director, Contract Services

- Amanda Melton, PharmD, BCPS, Clinical Analytics Coordinator

- Christine Meyer, PharmD, Consultant/Guest Resident

- Bryan Shaw, Manager, PharmD, Pharmacy Analytics and Residency Program

- Jade Vitug, PharmD, PGY2 Informatics Resident

- Cassandra Johnson, Senior Director, Marketing, Pharmacy Solutions

- Bindu Alexander, Senior Marketing Manager, Pharmacy Solutions

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About Vizient

Vizient Pharmacy Solutions

The Vizient® member-focused Pharmacy Solutions support health systems and hospitals in transforming pharmacy from a cost center to a central point of integrated care through solutions that manage cost, improve quality outcomes and drive organizational performance. With an expansive portfolio of more than 12,000 contracted pharmaceutical products accessible across acute and non-acute care settings, Vizient leverages supply chain and clinical insights, experienced pharmacy consultants and therapeutic class-specific expertise to help members manage spend, optimize savings and prepare for market shifts. Serving as one united voice for members through both advocacy and action, Vizient is elevating the strategic role of pharmacy, from point of procurement to point of care.

Vizient, Inc.

Vizient, Inc. provides solutions and services that improve the delivery of high-value care by aligning cost, quality and market performance for more than 50% of the nation's acute care providers, which includes 95% of the nation's academic medical centers, and more than 20% of ambulatory providers. Vizient provides expertise, analytics and advisory services, as well as a contract portfolio that represents more than $100 billion in annual purchasing volume, to improve patient outcomes and lower costs. Vizient has earned a World's Most Ethical Company designation from the Ethisphere Institute every year since its inception. Headquartered in Irving, Texas, Vizient has offices throughout the United States. Learn more at vizientinc.com.

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For more information on drug shortage support or other pharmacy initiatives, visit: **enddrugshortages.com**
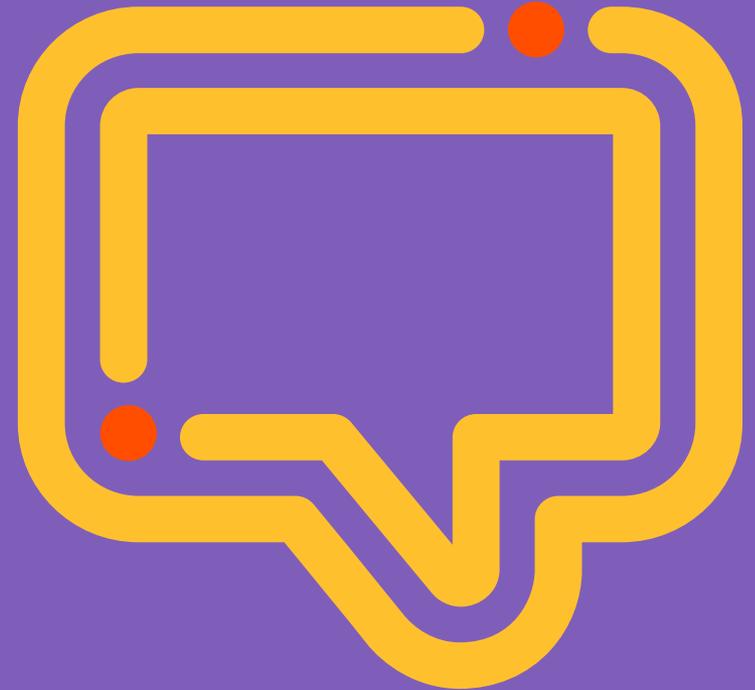
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Survey data by question

Vizient Drug Shortages Impact Report | June 2019 | Confidential Information

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Slide	Question	Methodology/Results
5,6,9	"Please enter the cumulative number of hours that each hospital staff type spends on a weekly basis to manage drug shortages. For example, if two pharmacists go to a drug shortage committee meeting that lasts for one hour, the cumulative amount of time spent is two hours. Time includes evaluating therapeutic substitutions, purchasing alternatives, redistributing stock, modifying electronic tools (e.g. EHR, IV pumps), participating in meetings, and discussing with clinicians and staff. "	**Total hours:** Vizient took responses from the individual facilities for each healthcare professional type (pharmacists, informatics pharmacists, pharmacy technicians, physicians, nurses, buyers/purchasing agents, financial/business office) and categorized them by hospital type. We then annualized this number to get a total number of hours for these facilities and extrapolated it to the total number of US hospitals for the same type. Additional details of methodology are provided in the footnotes of the slides. The average number of hours that are spent per professional type per week are listed on slide 9. **Total Costs:** These hours were then multiplied by the average hourly pay for each professional type. Average hourly pay was based on U.S. labor statistics (https://www.bls.gov). Calculation does not include additional costs from direct purchases and other nontraditional distribution alternatives, and does not account for the impact of delays in patient care and other less quantifiable measures. *U.S. hospital* as defined by the American Hospital Association (https://www.aha.org/statistics/fast-facts-us-hospitals); definitive Healthcare "Hospitals and IDNs" database; Vizient pharmacy program participant data on file; hourly pay; Vizient data on file.
7, 8 (left column)	Thinking about July 2018-December 2018, how many shortages of individual drugs (regardless of product presentation) did you have to manage based on the ASHP definition*?	Number of shortages percent of respondents who provided that answer (n=365) 0-5 3% 6-10 9% 11-20 24% 21-30 21% 31-40 10% 41-50 9% Greater than 50 24%

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Slide	Question	Methodology/Results
8 (middle column)	As a result of drug shortages, which of these drug categories have had the most impact on your facility both in terms of cost and reallocation of resources including informatics changes and labor during July 2018 - December 2018?	Antibiotics (e.g. ampicillin/sulbactam, cefazolin, vancomycin) 76% Controlled substances for pain management (e.g. buprenorphine, fentanyl, morphine) 80% Electrolytes (e.g. calcium chloride, potassium chloride, magnesium sulfate) 63% Emergency syringes (e.g. epinephrine, atropine) 77% Local anesthetics (e.g. bupivacaine, bupivacaine with epinephrine, lidocaine) 78%
8 (right column)	Thinking about your most recent budgeting period, what percentage over budget was your facility as a result of drug shortages (from all causes)?	75% of members reported an increase in drug budget. Specific numbers for the other points can be found on the other slide notes.

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Slide	Question	Methodology/Results
10a	Which of the following have you experienced as a result of drug shortages between July 2018 and December 2018?	We have had to delay one or more medical procedures (e.g. surgeries) 33% We have had to delay an outpatient infusion 41% We have had to delay an immunization administration 23% We have had to cancel an outpatient infusion 18% It has resulted in delays of medications in the inpatient setting 68%
10b	What percent of medication errors recorded during July 2018-December 2018 were related to a drug shortage?	Of the total number that responded to this question (n=332), 38% of respondents stated that one or more medication errors are directly related to a drug shortage.
11	Which of the following strategies have you used at your institution to mitigate the impact of drug shortages? Select all that apply. Based on your answers about strategies used to mitigate the impact of drug shortages, please rank the top three most helpful strategies, where 1 = Most helpful, 2 = Second most helpful and 3 = Third most helpful.	Note – the lower the average ranking the higher the impact. (Top 10 shown) See table below.

Note – the lower the average ranking the higher the impact.
(Top 10 shown)

Strategy	Mean Rating
Implemented processes to restrict duration of therapy (e.g. for antibiotics)	1.4
Implemented one or more task forces or committees dedicated to address drug shortages and allocation	1.47
Adjusted electrolyte replacement guidelines (e.g. raised threshold for ordering)	1.5
Increased stock of medications that are anticipated to be limited in supply	1.58
Utilized unit dosing to prevent waste	1.78
Restricted use of short drugs to approved indications, populations deemed most in need (e.g. neonates)	1.92
Purchased alternative presentations (e.g. syringe vs. vial, alternate concentration)	1.95
Adjusted par levels	1.95
Transitioned meds from intermittent /continuous infusion to IV push, where applicable	2
Elected to use smallest appropriate volume IV product to prevent waste	2
Increased "hang" time for continuous IV fluids	2

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Slide	Question	Methodology/Results
12	Do you have a critical drug list? How often is it updated?	35% of respondents stated that they have a critical drug list. Therefore 65% of respondents do not have a critical drug list. Of those that have a list (119 respondents), 6% update it daily, 30% weekly, 14% monthly, 3% quarterly, and 14% annually. Approximately 33% update it as needed/on demand.
12	Which of the following resources have you used for help with addressing drug shortages?	The most common external (to Vizient resources) used to help hospitals/health systems manage drug shortages was the pharmacy wholesaler (84%), the ASHP drug shortage website (www.ashp.org; 83%), the manufacturer (69%), and the FDA website (63%) and pharmacy professional organization list server/forum (50%).

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