

SEVERITY AND IMPACT OF STERILE INJECTABLE DRUG SHORTAGES



ASHP surveyed a sample of its members to learn the severity and impact of select ongoing shortages of sterile injectable drugs. The survey was designed to assess the status of select medications, clinical and operational strategies to mitigate the impact of the shortages, and whether any medication events causing at least temporary harm are attributable to these shortages.

The survey results include responses from 345 participants who answered at least part of the 10-question assessment. The survey was fielded from March 8-16, 2022.

KEY FINDINGS

- More than 99% of respondents reported being affected by shortages of critical drugs.
- More than 50% of respondents categorized the following drug shortages as severely impactful:
 - Prefilled 50% dextrose syringes
 - Sterile water for injection vials
 - 0.9% saline syringes or vials
 - Local anesthetic vials (with or without epinephrine)
 - Prefilled epinephrine syringes
 - Concentrated electrolyte injections
- Seven percent of respondents reported at least one drug-shortage-related medication safety event causing at least temporary patient harm ([NECC MERP Category E through I](#)).
 - Medication safety events most often involved the following drugs in short supply:
 - » Prefilled 50% dextrose syringes or other dextrose solutions (7)
 - » Heparin (7)
 - » Opioids (3)
 - » Antibiotics (3)
- The most common clinical changes implemented within the past six months to manage these shortages were switching to therapeutic alternatives, converting from intravenous to oral dosage forms, and changing clinical order sets or protocols.
- The most common operational changes implemented within the past six months to manage these shortages were changing products stocked in various areas, purchasing vial sizes or concentrations not routinely stocked, centralizing inventory, and increasing on-site compounding of products.

SURVEY PARTICIPANTS

- There were 345 total respondents
- Respondents work primarily in hospital settings:
 - Community hospital (54%)
 - Academic or university medical center (21%)
 - For-profit hospital (8%)
 - Critical access hospital (5%)
 - Other settings represented include ambulatory facilities, home infusion pharmacies, and community pharmacies

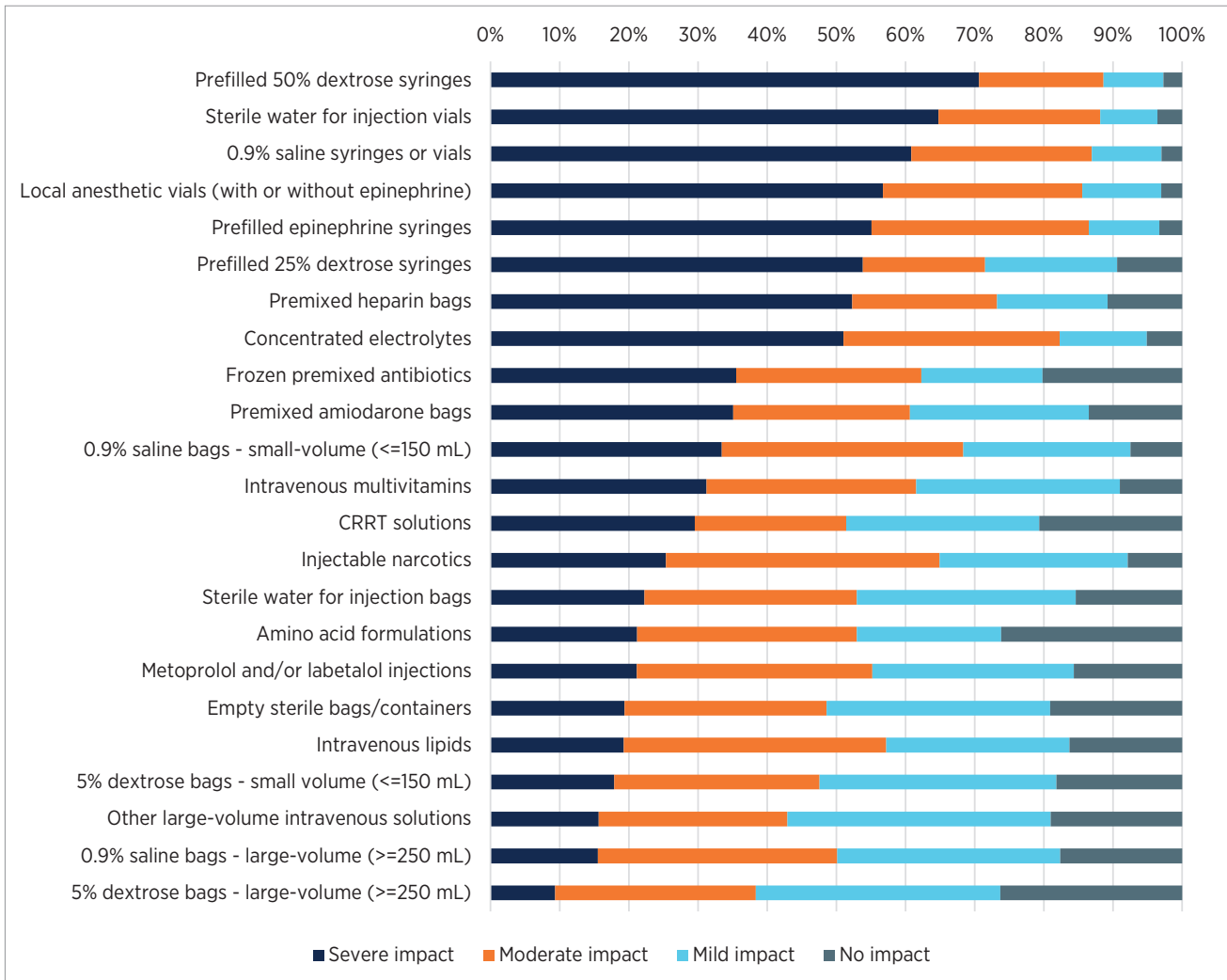
- Respondents represented a balance of hospital sizes
 - Small hospitals (below 200 beds): 27%
 - Medium hospitals (200-500 beds): 37%
 - Large hospitals (greater than 500 beds): 33%
 - Other (not applicable to practice setting): 3%

SURVEY RESULTS

Severity of Shortages

- Of the 345 respondents, 344 (99.7%) reported that their institution has been affected by national shortages of intravenous solutions, emergency syringes, and other critical medications.
- Respondents were asked to rate the severity of shortages of select critical medications: no impact, mild impact, moderate impact, or severe impact. Responses indicating that the drug is not used at the respondent’s institution were excluded from graphs and tables.

REPORTED SEVERITY OF SELECT CRITICAL DRUG SHORTAGES



- The impact score was converted to a numerical representation to calculate an average and standard deviation. A lower standard deviation indicates higher agreement among respondents about the severity of the shortage. The number of respondents (*n*) excludes responses that the medication is not used at the respondent’s institution.

Medication	Average Severity (Range 0 to 3)	Standard Deviation
Prefilled 50% dextrose syringes (n = 334)	2.57	0.76
Sterile water for injection vials (n = 338)	2.49	0.79
0.9% saline syringes or vials (n = 337)	2.45	0.79
Local anesthetic vials (with or without epinephrine) (n = 333)	2.39	0.80
Prefilled epinephrine syringes (n = 334)	2.38	0.80
Concentrated electrolytes (n = 333)	2.28	0.87
Prefilled 25% dextrose syringes (n = 288)	2.16	1.04
Premixed heparin bags (n = 325)	2.15	1.05
0.9% saline bags - small-volume (<=150 mL) (n = 335)	1.94	0.93
Intravenous multivitamins (n = 333)	1.84	0.97
Injectable narcotics (n = 331)	1.82	0.90
Premixed amiodarone bags (n = 282)	1.82	1.06
Frozen premixed antibiotics (n = 228)	1.78	1.13
Metoprolol and/or labetalol injections (n = 326)	1.61	0.99
CRRT solutions (n = 247)	1.60	1.12
Intravenous lipids (n = 332)	1.60	0.97
Sterile water for injection bags (n = 319)	1.60	1.00
Empty sterile bags/containers (n = 325)	1.49	1.01
0.9% saline bags - large-volume (>=250 mL) (n = 335)	1.48	0.96
Amino acid formulations (n = 302)	1.48	1.09
5% dextrose bags - small volume (<=150 mL) (n = 330)	1.47	0.99
Other large-volume intravenous solutions (n = 326)	1.40	0.97
5% dextrose bags - large-volume (>=250 mL) (n = 331)	1.21	0.94

Medication Events Causing Harm

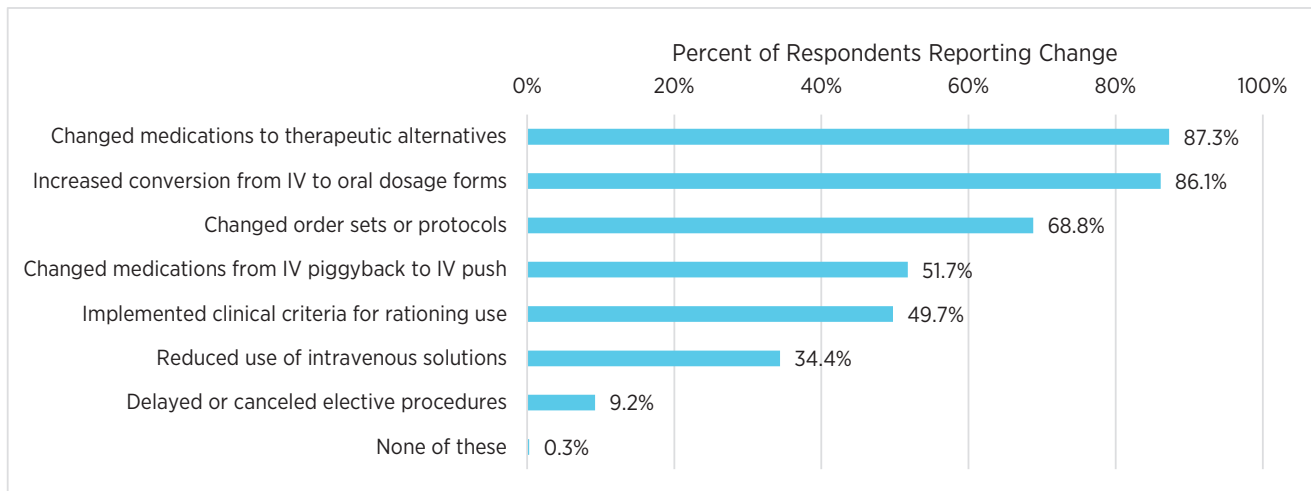
- Survey participants were asked whether their institution received reports of any drug shortage-related medication safety events causing at least temporary patient harm (i.e., [NCC MERP Category E through I](#)).
 - A total of 324 respondents answered the question:
 - » 23 (7.1%) responded that a medication safety event was reported
 - » 138 (42.6%) responded they were unsure
 - » 163 (50.3%) responded that none had been reported
 - The most common drugs involved with the medication safety events are below (note that more than one event may have occurred at an institution, or more than one medication may have been involved in an event).

<ul style="list-style-type: none"> » Dextrose (50% injection or unspecified) (7 events) » Heparin (7 events) » Injectable opioids (3 events) » Antibiotics (3 events) » Epinephrine (2 events) 	<ul style="list-style-type: none"> » Local anesthetics (2 events) » Beta blockers (2 events) » Other (unspecified, hypotonic intravenous fluids, potassium chloride) (4 events)
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Managing Shortages

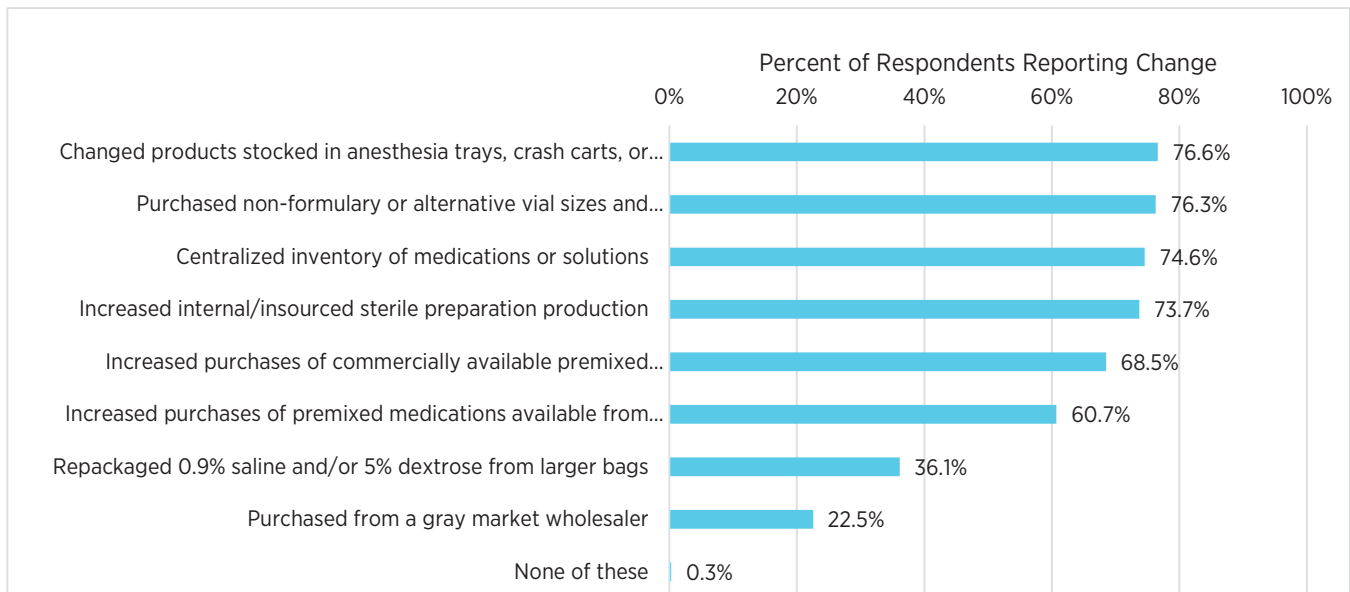
- Survey participants were asked which clinical and operational changes have been made within the past six months to manage drug shortages.
 - Clinical changes include those that directly affect how a patient receives a treatment, such as changing to a therapeutic alternative or to a different route of administration.

CLINICAL CHANGES IMPLEMENTED TO MANAGE DRUG SHORTAGES



- Operational changes include those that are generally made within the pharmacy department and affect how a drug is purchased or prepared.

OPERATIONAL CHANGES IMPLEMENTED TO MANAGE DRUG SHORTAGES



Respondent Demographics

PRIMARY WORK SETTING

Community (not for-profit) hospital	54%
Academic/university medical center	21%
For-profit hospital	8%
Critical access hospital	5%
Corporate office of health system	4%
Ambulatory facility/clinic/medical center	2%
Government agency	2%
Home infusion pharmacy	2%
Community pharmacy	1%

Settings representing less than 1% of responses are not reported.

PRIMARY POSITION

Pharmacy leader (Associate/Assistant Director or Supervisor/Manager)	30%
Chief Pharmacy Officer/Director of Pharmacy	27%
Clinical/Staff Pharmacist	23%
Clinical Coordinator	10%
Chief Pharmacy Officer/VP of Pharmacy Services of a Multi-Hospital Health System	4%
Medication Safety Officer/Coordinator/Specialist	2%

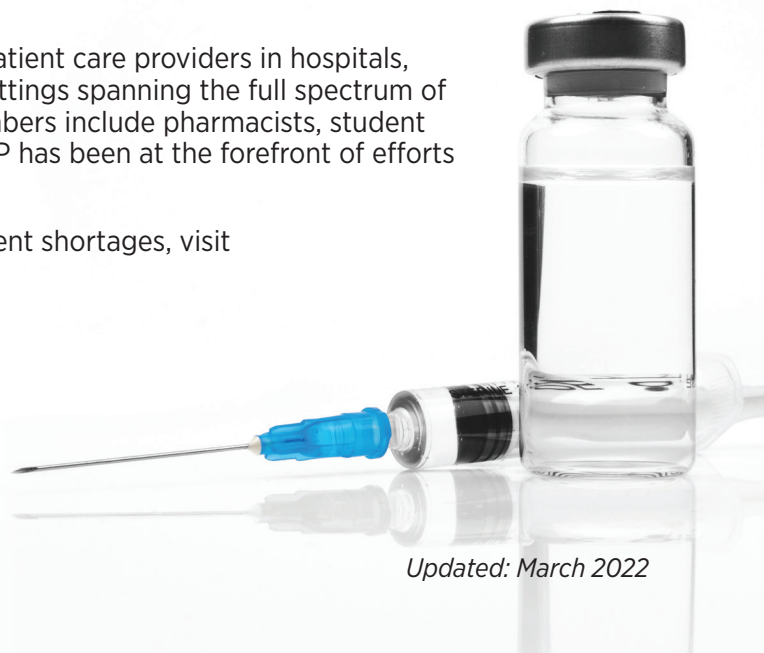
Positions representing 1% or less of responses are not reported.

ABOUT ASHP

ASHP is the collective voice of pharmacists who serve as patient care providers in hospitals, health systems, ambulatory clinics, and other healthcare settings spanning the full spectrum of medication use. The organization's more than 60,000 members include pharmacists, student pharmacists, and pharmacy technicians. For 80 years, ASHP has been at the forefront of efforts to improve medication use and enhance patient safety.

For more information about drug shortages, including current shortages, visit

[ASHP.org/Drug-Shortages](https://www.ashp.org/Drug-Shortages)



Updated: March 2022