

REPORT 2 OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH (I-15)
National Drug Shortages: Update
(Reference Committee K)

EXECUTIVE SUMMARY

Objective. To provide an update on the current status and trends among drug shortages in the United States, evaluate any recent developments intended to prevent new drug shortages and resolve existing ones, and revise AMA policy as necessary.

Methods. English-language reports were selected from a PubMed and Google Scholar search from March 2014 to August 2015, using the text term “drug shortages” combined with “impact,” “crisis,” “oncology,” “chemotherapy,” “antibacterial,” “pediatric(s),” “nutrition,” and “parenteral.” Additional articles were identified by manual review of the references cited in these publications. Further information was obtained from the Internet sites of the U.S. Food and Drug Administration (FDA), American Society of Health-System Pharmacists (ASHP), PEW Charitable Trusts, Generic Pharmaceutical Association, International Society for Pharmaceutical Engineering (ISPE), the Pharmaceutical and Research Manufacturers of America (PhRMA) and by direct contact with key FDA and ASHP staff who manage drug shortage issues on a daily basis. In addition, the salient findings of previous Council reports on this subject were summarized.

Results. The number of new drug shortages has decreased significantly in the last year, presumably related to earlier voluntary notifications by manufacturers of expected manufacturing difficulties. However, the number of unresolved/existing drug shortages remains high and continues to cause many problems for patients and the health care system in general. The most common causes of supply disruptions leading to drug shortages continue to be quality problems coupled with manufacturing delays and limited production capacity (especially in the generic sterile injectable industry), and product discontinuations. These account for more than 80% of drug shortages. The FDA has implemented a revised database management approach. Some new recommendations to develop better long term solutions have been offered by various stakeholders.

Conclusion. Easy solutions to the drug shortage problem remain elusive. Manufacturers are notifying the FDA about potential disruptions in supply or shortages earlier than in the past and new shortages are being prevented. Long term shortages, however, persist, and continue to impact clinical decision-making and patient care. Only five major companies are now producing sterile injectable products, and concurrent remediation efforts are in place to upgrade facilities among them. The AMA remains committed to supporting appropriate long term solutions to the drug shortage problem.

REPORT OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH

CSAPH Report 2 -I-15

Subject: National Drug Shortages: Update

Presented by: Louis J. Kraus, MD, Chair

Referred to: Reference Committee K
(Hillary Johnson-Jahangir, MD, Chair)

1 INTRODUCTION

2
3 Policy H-100.956, “National Drug Shortages,” directs the Council on Science and Public Health
4 (CSAPH) to continue to evaluate the drug shortage issue and report back at least annually to the
5 House of Delegates (HOD) on progress made in addressing drug shortages in the U.S. This report
6 provides an update on continuing trends in national drug shortages and ongoing efforts to further
7 evaluate and address this critical public health issue and recommends amending current AMA
8 policy. Several amendments are based on the fact that some previous sections of policy have been
9 implemented or accomplished.

10 METHODS

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12 English-language reports were selected from a PubMed and Google Scholar search from March
13 2014 to August 2015, using the text term “drug shortages” combined with “impact,” “crisis,”
14 “oncology,” “chemotherapy,” “antibacterial,” “pediatric(s),” “nutrition,” and “parenteral.”
15 Additional articles were identified by manual review of the references cited in these publications.
16 Further information was obtained from the Internet sites of the U.S. Food and Drug Administration
17 (FDA), American Society of Health-System Pharmacists (ASHP), PEW Charitable Trusts, Generic
18 Pharmaceutical Association, International Society for Pharmaceutical Engineering (ISPE) the
19 Pharmaceutical and Research Manufacturers of America, and by direct contact with key FDA and
20 ASHP staff who manage drug shortage issues on a daily basis.
21
22

23 BACKGROUND

24
25 The Council has issued five previous reports on drug shortages.¹⁻⁵ The primary findings and
26 conclusion from these reports can be summarized as follows:
27

- 28 • AMA activities to address the drug shortage issue started nearly 15 years ago with the
29 convening of a special meeting of key FDA officials and representatives of the
30 pharmaceutical industry, drug distributors, group purchasing organizations, the American
31 Hospital Association, the Institute of Medicine, and the Department of Veteran Affairs (see
32 CSAPH Report 2-I-11).
- 33
34 • Two primary sites have evolved that monitor and provide information on drug shortages--
35 one maintained by the FDA and one maintained by ASHP. They differ in their criteria for
36 inclusion of drug shortage information (see below).

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Action of the AMA House of Delegates 2015 Interim Meeting: Council on Science and Public Health Report 2 Recommendations Adopted, and Remainder of Report Filed.

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- The FDA (federal government) cannot force or require any pharmaceutical manufacturer to produce a specific drug product.
 - Although drug shortages have existed since 2000, the number and extent of drug shortages began worsening appreciably around 2007 and continued to worsen through 2011-2012, but recently signs of overall improvement are evident (see below). The most common drug shortage involves a generic sterile injectable product. Class-wide shortages in the sterile injectable drug industry are largely explained by an expansion in the scope and volume of products available for production without a corresponding increase in manufacturing capacity or redundancy.
 - Quality problems are linked with a majority of sterile injectable shortages, in part, because production line processes for sterile injectables are complex. Generic companies operate a limited number of facilities, each containing multiple production lines, a portion of which are in need of upgrades. Cytotoxic drugs and certain antibiotics require specific equipment and regulatory approvals for their production lines. These special containment controls limit manufacturers' ability to transfer production of these types of drugs to other lines (see CSAPH Report 7-A-12).
 - Many causes of drug shortages exist, virtually all of which are remote from AMA influence. These include:
 - industry consolidation reducing the number of pharmaceutical manufacturers, in particular, companies manufacturing sterile injectable drug products. Consolidation also has resulted in fewer suppliers and the migration of manufacturing facilities to foreign sites;
 - corporate decisions leading to product discontinuation or decreased production in the free marketplace;
 - manufacturing difficulties and regulatory compliance issues; and
 - raw bulk material or active pharmaceutical ingredient shortages.
 - Drug shortages have contributed to:
 - lack of treatment options and increased patient morbidity and mortality;
 - patient safety issues;
 - delays and cancellations in procedures;
 - the use of less efficacious and more expensive substitute treatments;
 - increased reliance on some compounded medications;
 - increased hospital costs and resource utilization; and
 - rationing of drugs in short supply.
 - Multi-stakeholder meetings have been held to discuss potential solutions to the drug shortage problem considering regulatory and legislative factors, raw materials sourcing and manufacturing, business, market, and distribution factors (see CSAPH Reports 2-I-11 and 7-A-12).
 - Reviews and comprehensive analyses of drug shortages have been released by the Office of Science and Data Policy (HHS), FDA, Government Accountability Office (GAO), and the IMS Institute for Healthcare Informatics. These reports have examined demand, supply, purchasing/pricing, and supplies and volume of sales over time. The GAO report identified multiple underlying causes of drug shortages, all of which were related to the

1 economics of the generic sterile injectable market. Although the GAO attempted to probe
 2 stakeholders’ views on the economic drivers of drug shortages, no consensus existed (see
 3 CSAPH Reports 2-A-12 and 3-A-14).

- 4
- 5 • Purchasing and pricing practices have come under increased scrutiny. Most sterile
 6 injectable drugs are purchased by hospitals (and in some cases physicians) through group
 7 purchasing organizations (GPOs), which negotiate prices with manufacturers. Drug
 8 delivery is accomplished by wholesalers who purchase inventory at the wholesale
 9 acquisition price with manufacturers issuing a “chargeback” if the acquisition price
 10 exceeds the GPO’s negotiated price. GPO contracts typically have price adjustment clauses
 11 as well as “failure to supply” penalties. The latter usually do not apply when the product is
 12 not available. Pricing flexibility by suppliers may be constrained by long-term purchase
 13 contracts.
- 14
- 15 • Legislative and regulatory changes have increased the reporting responsibilities of drug
 16 manufacturers when a temporary or permanent disruption in drug supply is expected and
 17 required the FDA to develop a strategic plan to address drug shortages. In addition, the
 18 agency gained new responsibilities and tools for tracking drug shortages and attempting to
 19 mitigate them, including the use of expedited reviews (see CSAPH Reports 2-I-12 and 8-
 20 A-13).
- 21

22 Readers are referred to previous Council reports for further specific information on these and other
 23 topics.¹⁻⁵ While the attention of U.S. physicians has been focused on domestic supply problems, it
 24 is important to note that drug shortages are increasingly impacting health care on a global basis.^{6,7}
 25 The remainder of this report will update current trends and findings on drug shortages since the last
 26 Council report was developed in 2014 (CSAPH Report 5-A-14).

27
 28 **CURRENT TRENDS IN DRUG SHORTAGES**

29
 30 The two main data sources for information about trends in drug shortages in the United States
 31 continue to be the Drug Shortage Resource Center maintained by ASHP in cooperation with the
 32 University of Utah Drug Information Service and the Drug Shortage Program at the FDA. For a
 33 reminder on how the ASHP and FDA information and statistics on drug shortages are developed,
 34 see Table 1. Because their criteria differ (the main distinction being the FDA’s definition of a
 35 “medically necessary drug”), the ASHP site lists more drug shortages than the FDA site.
 36 Physicians can directly report a drug shortage via the ASHP drug shortage website. The FDA also
 37 has developed apps for both the iPhone and Android operating systems that provide access to drug
 38 shortage information as well as notifications about new and resolved drug shortages.

39
 40 *American Society of Health-System Pharmacists*

41
 42 The ASHP’s Drug Shortage Resource Center has been redesigned somewhat, containing categories
 43 reflecting current shortages, specific commercial preparations that are not currently available, drugs
 44 that are not being manufactured at all and are no longer available, resolved shortages, and as
 45 previously featured, guidelines and resources for managing shortages, as well as a mechanism to
 46 report a shortage.⁸

47
 48 As of June 30, 2015, ASHP’s Drug Shortage Resource Center identified 219 drugs in shortage,
 49 down from 310 at the end of the 3rd quarter in 2014. This number was further decreased to 180 drug
 50 shortages as of July 31, 2015; an additional 19 products were not commercially available.⁸ Fifty-
 51 eight manufactured drugs have been discontinued since 2010. The top active shortages by drug

1 class are central nervous system agents, electrolytes and nutritional components, antimicrobials,
2 cardiovascular drugs, and chemotherapeutic agents.

3
4 *Food and Drug Administration*

5
6 In June 2014, the FDA launched a drug shortage website to feature current/resolved shortages,
7 discontinuations, the option of sorting by therapeutic category, and other resource information.⁹ As
8 of July 31, 2015, the FDA reported that 67 drugs were currently in shortage (compared with 73 as
9 of September 14, 2014), and 29 had been resolved. The latter are closely monitored because they
10 may be at risk for falling back into shortage. The number of ongoing or active shortages has
11 decreased by about 30% since 2013 (personal communication, Valerie Jensen, FDA).

12
13 Based on the passage of the Food and Drug Administration Safety and Innovation Act (FDASIA)
14 in 2012, companies are required to notify FDA of a permanent discontinuance or an interruption in
15 manufacturing of certain drug products six months in advance, or if that is not possible, as soon as
16 practicable. The shortage notification requirement has apparently reduced the number of new
17 shortages by allowing FDA additional time to work with manufacturers to prevent shortages. The
18 FDA's drug shortages website lists drugs that meet these criteria, reflecting shortage information
19 supplied by manufacturers.¹⁰ A Final Rule published on July 27, 2015 provides further guidance on
20 the notification process and adds biologic products to the requirements for notification about
21 potential supply disruptions.¹¹

22
23 Drug Shortage Data System. In response to the GAO report on drug shortages, the FDA
24 implemented a new system for data tracking to help ensure that "data are accurate and complete for
25 analysis." The new system also centralizes various databases currently used by staff to assess the
26 potential impact of shortages.¹² This database is not yet fully integrated with other data systems
27 within the Center for Drug Evaluation and Research (CDER) and cannot be used at this time to
28 reliably predict whether a manufacturer or product is at risk for shortage.

29
30 Drug Shortages Metrics Reported by FDA. The FDA's second annual report on drug shortages for
31 calendar year 2014 (required by FDASIA) noted the following metrics during the first three
32 quarters of calendar year 2014:¹²

- 33
34
- 35 • FDA was notified of 125 potential shortage situations by 52 different manufacturers.
 - 36 • 78 new drug shortages were prevented.^a
 - 37 • 100 generic abbreviated new drug or supplemental applications had expedited review.
 - 38 • 10 inspections were prioritized to address a drug shortage.
 - 39 • 5 fewer new drug shortages occurred in the first three quarters of 2014 (33) compared with
40 the same period in 2013 (38).^b
 - 41 • FDA exercised regulatory flexibility and discretion in 30 instances affecting 31 medically
42 necessary products. Most of these involved measures to mitigate risks such as removing
43 particulate matter, extra testing for quality, third-party oversight of production, provision
44 of special instructions to prescribers and/or patients, or approval of foreign sources. With
45 respect to the latter mitigation strategy, the FDA now conducts regular virtual meetings
46 with their international regulatory counterparts to share information on drug shortages and
mitigation strategies impacting patients in other countries.

^aThe final total of new drug shortages prevented during 2014 was 101

^bThe number of new drug shortages remained constant in 2013 and 2014 at 44, down from 117 in 2012.

1 An infographic developed by the FDA summarizes some of the recent pertinent findings and
2 activities related to drug shortages.^c The most common reasons for drug shortages are
3 quality/manufacturing issues (37%), manufacturing delays related to capacity (27%), raw materials
4 (27%), increased demand (5%), loss of manufacturing site (2%), and product discontinuation (2%).

5
6 *Shortages of Controlled Substances*

7
8 In September 2014, CDER revised its Manual of Policies and Procedures, or MaPP, to clarify
9 FDA's process for addressing shortages of controlled substances. The revised MaPP provides a
10 framework for facilitating interaction between the FDA and DEA to mitigate drug shortages of
11 controlled substances, as the DEA establishes annual production quotas for the manufacture of
12 controlled substances. When FDA staff determines that a potential or actual shortage of a
13 controlled substance may involve a request by the manufacturer to adjust production quotas (either
14 for an active pharmaceutical ingredient or final dosage form of a Schedule II controlled substance),
15 the FDA determines whether the DEA has been notified of a request to increase production. The
16 FDA further requests clarification from the manufacturer on when they officially submitted their
17 quota request to DEA, the outcome of that request, and other information on the expected shortage.
18 FDA then may work with DEA to enable a manufacturer to increase its allotted quota if this step
19 would help avoid a shortage of the product.

20
21 **CLINICAL IMPLICATIONS**

22
23 Despite some success in preventing or mitigating drug shortages and an overall decrease in the
24 number of new drug shortages, critical and perplexing shortages continue to occur, including sterile
25 normal saline.

26
27 *Shortages of Normal Saline*

28
29 Although three large-volume infusion manufacturers exist in the U.S. and a fourth supplies dialysis
30 centers, the demand for saline is very high. To meet demand and sell saline at a reasonable price,
31 all four firms generally run production at peak capacity. Accordingly, in some cases a facility's
32 capacity to ensure quality can be exceeded. For example, particulates, including hair fibers,
33 appeared in one firm's saline, and in late 2013, all four firms simultaneously had quality issues that
34 compromised production during the same period. Two of these issues precipitated recalls. Another
35 manufacturer had a planned shutdown for routine maintenance, greatly reducing overall production
36 capacity. The company that solely manufactures saline used in U.S. dialysis centers experienced
37 import delays at its facility and temporarily could not supply its customers, forcing them to search
38 for product elsewhere. For reasons that are not entirely clear, there also was a spike in saline
39 demand at the end of 2013, which has not abated. The FDA worked with two of the four domestic
40 saline manufacturers and one foreign firm that agreed to import saline from Spain, Norway, and
41 Germany for U.S. use. The foreign firm is evaluating whether to join the U.S. market. Other firms
42 are in the process of correcting their issues and adding capacity. See the FDA webpage on IV fluid
43 shortages for further information on these workarounds based on foreign supply.^d

44
45 Recent case reports and analyses have continued to detail clinical consequences of drug shortages
46 involving parenteral nutrition, emergency medicine, cardiovascular diseases/conditions, and
47 oncology. As these shortages persist, cross-institutional collaboration efforts have been extended

^c <http://www.fda.gov/downloads/Drugs/DrugSafety/DrugShortages/UCM441583.pdf>.

^d <http://www.fda.gov/Drugs/DrugSafety/ucm382255.htm>.

1 and institutional level guidelines for patient selection and management, including ethical
2 constructs, have emerged.¹³⁻²⁰ Information about the clinical impact of drug shortages has largely
3 been limited to broad-based surveys and case studies or case series in local and/or regional practice
4 sites.

5 6 SOLUTIONS

7
8 A survey conducted by the International Society for Pharmaceutical Engineering (ISPE) regarding
9 specific drug shortage issues that can lead to supply interruptions confirmed that problems were
10 typically related to *quality* (or oversight that ensures compliance with current good manufacturing
11 practices and quality control), *production* (activities and metrics that ensure performance of
12 approved manufacturing procedures), and *facilities/equipment* (maintaining appropriate resources
13 and physical environment for drug production).²¹ Production equipment used for aseptic production
14 and particulate matter in end stage products continue to cause ongoing problems.²² An important
15 barrier to facility maintenance or modernization is the length of time it takes, including the
16 necessary regulatory approvals, to implement equipment upgrades.²² In developing a plan to
17 prevent drug shortages, ISPE identified several key but interrelated categories for action, including
18 developing a corporate culture that supports and advances quality, the need for a robust quality
19 system and quality metrics, business continuity planning and capacity, transparent communication
20 with authorities, and building sustained organizational capabilities to support these goals.²³

21
22 With respect to quality metrics, the FDA issued draft guidance on July 27, 2015 in an effort to
23 begin collecting quality data to help assess facilities and their production processes with the
24 intention to prioritize inspections based on the risk for quality problems. This approach is based on
25 the premise that focusing on facilities that are at highest risk for quality problems will help mitigate
26 drug shortages, given the fact that shortages are often the result of manufacturing issues.²⁴ FDA has
27 expanded staffing in its drug shortage center and continues to explore long term strategies to
28 prevent shortages as outlined in its 2013 strategic plan for preventing and mitigating drug
29 shortages.²⁵

30
31 A Drug Shortages Summit was held on August 1, 2014 in Washington DC. The purpose of this
32 summit was to examine in-depth the manufacturing, economic, and regulatory factors that
33 contribute to drug shortages and consider possible solutions. Organizers included the American
34 Hospital Association, American Society of Anesthesiologists, American Society of Clinical
35 Oncology, ASHP, the Institute for Safe Medication Practices, and the PEW Charitable Trusts. The
36 AMA was one of several stakeholders from the public and private sector that participated. Broad
37 issues addressed by the summit included potential manufacturing, production capacity and
38 regulatory contributors to drug shortages; economic factors in drug shortages, including “health” of
39 the marketplace; assessing the need for incentives (e.g., tax incentives, government support of the
40 market, exclusivity, reimbursement-related issues); contracting and purchasing strategies to address
41 drug shortages; and increasing the availability of unit-of-use packaging. See the Appendix for a
42 summary of potential “solutions” addressing drug shortages that emerged from this Summit.

43 44 CONCLUSION

45
46 Drug shortages continue to exist and easy solutions remain elusive. Manufacturers are notifying the
47 FDA about potential disruptions in supply or shortages earlier than in the past and new shortages
48 are being prevented. This has led to significant reduction in the total number of new drug
49 shortages, but some long term shortages persist and continue to impact clinical decision-making
50 and patient care. Only five major companies are now producing sterile injectable products, and
51 concurrent remediation efforts are in place to upgrade facilities among them.

1 Most drug shortages continue to be related to lack of manufacturing capacity coupled with quality
2 problems, either at the manufacturing facility or that become apparent in the final product itself,
3 such as contamination with glass, metal, mold, or bacteria. Although manufacturers are building
4 new facilities, upgrading equipment and increasing capacity for generic sterile injectable products,
5 this will take several years to complete and secure the necessary approvals from global regulators.
6 Compared with brand name manufacturers that typically devote a single production line to a
7 product, companies that manufacture sterile injectables typically make multiple products on a
8 single production line, except where this practice is restricted or prohibited because of the product
9 itself (e.g., antibiotics, chemotherapeutic agents).

10
11 A number of existing efforts are directed toward addressing quality, regulatory, and economic
12 issues underlying drug shortages and a number of potential measures to address shortages also have
13 been advanced. The AMA remains committed to supporting appropriate long term solutions to the
14 drug shortage problem.

15 16 RECOMMENDATIONS

17
18 The Council on Science and Public Health recommends that Policy H-100.956 be amended by
19 addition and deletion to read as follows:

20 21 H-100.956 National Drug Shortages

22
23 1. Our AMA supports ~~the~~ recommendations that have been developed by multiple stakeholders
24 to improve manufacturing quality systems, identify efficiencies in regulatory review that can
25 mitigate drug shortages, and explore measures designed to drive greater investment in
26 production capacity for products that experience drug shortages of the 2010 Drug Shortage
27 Summit convened by the American Society of Health System Pharmacists, American Society
28 of Anesthesiologists, American Society of Clinical Oncology and the Institute for Safe
29 Medication Practices and will work in a collaborative fashion with these and other stakeholders
30 to implement these recommendations in an urgent fashion.

31
32 ~~2. Our AMA supports requiring all manufacturers of Food and Drug Administration approved~~
33 ~~drugs and, including FDA approved drugs with recognized off label uses, to give the agency~~
34 ~~advance notice (at least 6 months prior or otherwise as soon as practicable) of anticipated~~
35 ~~voluntary or involuntary, permanent or temporary, discontinuance of the manufacture or~~
36 ~~marketing of such a product.~~

37
38 ~~3. Our AMA supports authorizing the Secretary of Health and Human Services to expedite~~
39 ~~facility inspections and the review of manufacturing changes, drug applications and~~
40 ~~supplements that would help mitigate or prevent a drug shortage.~~

41
42 ~~4. Our AMA supports the creation of a task force to enhance the HHS Secretary's response to~~
43 ~~preventing and mitigating drug shortages and to create a strategic plan to: (a) enhance~~
44 ~~interagency coordination; (b) address drug shortage possibilities when initiating regulatory~~
45 ~~actions (including the removal of unapproved drug products from the market); (c) improve~~
46 ~~FDA's ability to track and analyze drug shortage data in an effort to develop strategies to better~~
47 ~~prevent drug shortages (d) provide further information on expedited solutions that have worked~~
48 ~~to prevent or mitigate drug shortages; (e) communicate with stakeholders; and (f) consider the~~
49 ~~impact of drug shortages on research and clinical trials.~~

1 53. Our AMA will advocate that the U.S. Food and Drug Administration and/or Congress
2 require drug manufacturers to establish a plan for continuity of supply of vital and life-
3 sustaining medications and vaccines to avoid production shortages whenever possible. This
4 plan should include establishing the necessary resiliency and redundancy in manufacturing
5 capability to minimize disruptions of supplies in foreseeable circumstances including the
6 possibility of a disaster affecting a plant.

7
8 64. The Council on Science and Public Health shall continue to evaluate the drug shortage
9 issue and report back at least annually to the House of Delegates on progress made in
10 addressing drug shortages.

11
12 75. Our AMA urges the development of a comprehensive independent report on the root causes
13 of drug shortages. Such an analysis should consider federal actions, the number of
14 manufacturers, economic factors including federal reimbursement practices, as well as
15 contracting practices by market participants on competition, access to drugs, and pricing. In
16 particular, further transparent analysis of economic drivers is warranted. The Centers for
17 Medicare & Medicaid Services should review and evaluate its 2003 Medicare reimbursement
18 formula of average sales price plus 6% for unintended consequences including serving as a root
19 cause of drug shortages.

20
21 ~~8. Our AMA urges that procedures be put in place: (1) for the FDA to monitor the availability~~
22 ~~of Schedule II controlled substances; (2) for the FDA to identify the existence of a shortage~~
23 ~~that is caused or exacerbated by existing production quotas; and, (3) for expedited DEA review~~
24 ~~of requests to increase aggregate and individual production quotas for such substances.~~

25
26 96. Our AMA urges regulatory relief designed to improve the availability of prescription drugs
27 by ensuring that such products are not removed from the market due to compliance issues
28 unless such removal is clearly required for significant and obvious safety reasons.

29
30 ~~107. Our AMA supports the view that wholesalers should routinely institute an allocation~~
31 ~~system that attempts to fairly distribute drugs in short supply based on remaining inventory and~~
32 ~~considering the customer's purchase history.~~

33
34 ~~118. Our AMA will collaborate with medical specialty partners in identifying and supporting~~
35 ~~legislative remedies to allow for more reasonable and sustainable payment rates for~~
36 ~~prescription drugs. (CSAPH Rep. 2, I-11; Modified: CSAPH Rep. 7, A-12; Modified: CSAPH~~
37 ~~Rep. 2, I-12; Modified: CSAPH Rep. 8, A-13; Modified in lieu of Res. 912, I-13; Modified:~~
38 ~~CSAPH Rep. 3, A-14) (Amend HOD Policy)~~

Fiscal Note: Less than \$500

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Table 1. Contrasting the FDA (CDER) and ASHP Drug Shortage Websites

	FDA	ASHP
Purpose	Provides information obtained from manufacturers about current shortages, estimated duration, and discontinuations and provides information about FDA’s and other stakeholders’ roles in addressing and preventing shortages	Notification of new shortages and status of ongoing shortages; drug shortage management resources
Audience	Public	Healthcare practitioners
Scope of shortage list	All drugs are listed that are confirmed to be a national shortage by FDA. A shortage is considered to be the period of time when the demand for the drug within the United States exceeds the supply of the drug. ^e	All drug and biologic shortages reported and confirmed with manufacturer that are national in impact.
Source of shortage report	Manufacturers notify FDA of production disruption and voluntarily provide updates. Reports are also received from ASHP and from public via drugshortages@cder.fda.gov Note: Manufacturer-provided information represents shortage status at drug firm level.	Voluntary reports from practitioners, patients, pharmaceutical industry representatives and others Note 1: Information is updated based on release dates from manufacturers. Note 2: Reports reflect status at healthcare provider level.
Criteria for inclusion on list	Manufacturers cannot meet current market demand for the drug based on information provided by manufacturers and market sales research. Drug listed are defined as “medically necessary.”	(1) Shortage is verified with manufacturers and (2) affects how pharmacy prepares or dispenses a product, or (3) requires use of alternative drugs, which may affect patient care.
Criteria for resolving shortage	One or more manufacturers are in production and able to meet full market demand.	All manufacturers of the drug restore all formulations and dosage sizes to full availability. Note: Products are listed despite partial or restricted availability as supply chain disruptions can result in intermittent shortages at the provider or patient level.
Reason for shortage	Provided by manufacturers using reasons required by legislation. ^f FDA encourages firms to provide additional information about reasons and other information which, if proprietary, is nondisclosable without the firm’s permission.	Provided by manufacturer, if willing to disclose. Note: May differ from FDA’s due to different sources of information and legislation requiring FDA to use specified reasons
Other information	Estimated duration, links to regulatory information such as recalls and Dear Healthcare Provider Letters	Estimated duration, list of available products, implications for patient care and safety, shortage management strategies, therapeutic alternatives

^e Note: A separate shortage webpage for vaccines and some biologics is maintained by the Center for Biologics Evaluation and Research.

^f Categories include (a) requirement related to complying with good manufacturing practices; (b) regulatory delay; (c) shortage of an active ingredient

Appendix²²

Potential Measures to Address Drug Shortages	Specific Measures
Improved quality systems to better prevent production problems that can lead to shortages, with a focus on well-functioning aseptic equipment and facilities	<ul style="list-style-type: none"> • Work to implement ISPE recommendations • Evaluate value of FDA “Request for Quality Metrics” Guidance
Identification of efficiencies in the regulatory review of plant upgrades and fixed to address production issues that can cause shortages	<ul style="list-style-type: none"> • Greater harmonization and synchronization of regulatory reviews by different global agencies • Allow commercialization of trial batches of drugs that meet quality specifications during plant or production line upgrades • Closer collaboration between FDA and industry on developing and implementing effective corrective actions when remediation is required
Exploration of measures to drive greater investment in production capacity for products that experience shortages	<ul style="list-style-type: none"> • More in-depth exploration of barriers in injectable and intravenous drug markets • Incentive capacity and reliability through contracts • Support the production market through better guarantees of demand whether by a GPO or through a government program • Grant limited exclusivity to incentivize market entry of needed products where there are no active manufacturers • Standardize commonly used doses and concentrations