REPORT 7 OF THE COUNCIL ON SCIENCE AND PUBLIC HEALTH (A-12)
Drug Shortages Update
(Reference Committee E)

EXECUTIVE SUMMARY

Objective. To evaluate and summarize existing data on national drug shortages and proposed remedies since the last Council report in November 2011.

Methods. English-language reports were selected from a PubMed and Google Scholar search from September 2011 to May 23, 2012 using the MeSH terms “pharmaceutical preparations,” or “generics/economics,” in combination with “supply/distribution,” and using the text term “drug shortages.” 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), the General Accounting Office, American Society of Anesthesiologists, the Generic Pharmaceutical Association, and from recent presentations on the topic at special organizational meetings at which the AMA was represented.

Results. Drug shortages continue to represent a national concern, with sterile injectables comprising the most common type of shortage. The ASHP Drug Shortage Resource Center reported more than 220 shortages as of May 23, 2012. The most prominent causes continue to be manufacturing difficulties and regulatory compliance issues; corporate decision leading to product discontinuation; consolidation of the pharmaceutical industry; and raw, bulk, or active pharmaceutical ingredient shortage. According to the FDA, they have been able to mitigate more than 125 potential drug shortages since October 2011 through a combination of early warnings from manufacturers and the creation of expedited solutions. Ongoing negotiations over the 2012 Prescription Drug User Fee Act have afforded a platform to create some legislative and regulatory solutions to the drug shortage problem.

Conclusion. National drug shortages continue to threaten patient care and safety. The existence of a shortage may compromise and delay treatment leading to progression of disease, adverse outcome, or therapeutic failure. The current situation requires a comprehensive solution, including expansion of notification requirements for all manufacturers, expedited review of new manufacturing capacity, and expansion of supply and maintenance of product quality in sectors with high capacity utilization. The AMA supports a requirement for the Secretary of HHS to establish a task force to enhance the FDA response to shortages, study the problem, and create a strategic plan to address shortages. The AMA is particularly supportive of provisions that require the FDA to consult and collaborate with impacted stakeholders. In the meantime, based on the demonstrated success of advance notification, FDA and the industry should continue to work on collaborative solutions to individual shortage problems until legislative solutions emerge.

Subject: Drug Shortages Update

Presented by: Lee R. Morisy, MD, Chair

Referred to: Reference Committee E
(Frederick R. Ridge, Jr., MD, Chair)

Council on Science and Public Health Report 2-I-11 reviewed the historical involvement of the American Medical Association (AMA) in the drug shortage issue, examined recent trends on drug shortages, the explanations for such shortages, and potential solutions that have been advanced to help address this critical problem. The report recommended that the AMA support a suite of 21 recommendations to address the drug shortage issue emanating from a 2010 drug shortages summit convened by the American Society of Health System Pharmacists (ASHP), American Society of Anesthesiologists, American Society of Clinical Oncologists, and the Institute for Safe Medication Practices. In addition, the House of Delegates directed CSAPH (Policy H-100.956, AMA Policy Database) to report back at the 2012 Annual Meeting on efforts to mitigate drug shortages, including the evaluation of potential economic and regulatory factors that may contribute to drug shortages, especially with respect to oncology drugs.

Because existing drug shortages created a public health emergency and legislative action may not take place until Congress considers the Prescription Drug User Fee Act Reauthorization (PDUFA) later this year, the Administration issued an executive order on October 31, 2011 that instructed the FDA to increase staff in its drug shortage program office, expand efforts to speed review of drug applications and approve replacement manufacturing sites, investigate and penalize price gouging for products in short supply, and urge manufacturers to voluntarily notify the agency of impending shortages. The Administration also released two new reports on the underlying causes of shortages and the FDA’s role in preventing them. Subsequently, both the General Accountability Office (GAO) and IMS released reports analyzing drug shortages. These various analyses reinforced the findings of CSAPH Report 2-I-11 on the general causes of drug shortages, citing manufacturing problems, business decisions, disruption in the supply of active ingredients, unexpected increases in demand, industry consolidation, unstable supply chains, manufacturing capacity constraints, and lean inventory systems as primary contributing variables.

Accordingly, this report reviews our current understanding of drug shortages and various regulatory initiatives and legislative proposals intended to prevent or mitigate drug shortages; most of the latter are part of the ongoing legislative process related to passage of PDUFA. The AMA has been extensively involved in this process. At the time of this writing, PDUFA negotiations remained ongoing. For further information on current federal regulations, comprehensive sources of information on existing drug shortages, and the general causes of drug shortages, see CSAPH Report 2-I-11.
CURRENT DRUG SHORTAGE INFORMATION

As of May 23, 2012, the Drug Shortages Management Resource Center maintained by ASHP identified 226 existing drug shortages. The Food and Drug Administration drug shortages website identified 122 existing shortages of “medically necessary drugs.” Existing and new drug shortages continue to be problematic. Manufacturing issues and the discontinuation or suspension of production are the most commonly cited reasons, followed by increased demand. Manufacturing problems may result from temporary shut down in order to maintain or upgrade a production line or the entire facility, or may be related to temporary manufacturing suspension of a specific drug to evaluate or resolve a manufacturing problem.

In April 2011, the ASA re-surveyed its members on drug shortages. More than 90% of respondents reported they are currently experiencing a shortage of at least one anesthesia drug. Virtually all respondents (>98%) reported they have experienced a shortage of at least one anesthesia drug in the last year, most commonly propofol (89%), succinylcholine (80%), and thiopental (60%). Because respondents had to use alternative drugs or change procedures in some way, nearly half of their patients reportedly experienced less optimal outcomes (e.g., post-operative nausea and vomiting) and longer operating room or recovery times. Additionally, some surgical cases were postponed or even cancelled.

On a positive note, the FDA reported that 42 new shortages of medically necessary drugs had been reported through April 2012 compared with 90 at the same time last year. This reduction has been attributed to more extensive early notification of potential problems by manufacturers and expedited solutions (see below).

ANALYSES OF THE DRUG SHORTAGE PROBLEM

Four new reviews and comprehensive analyses of drug shortages have been released since the previous Council report was drafted. The Office of Science and Data Policy within the Assistant Secretary for Planning and Evaluation (ASPE) conducted an analysis of the underlying factors leading to periods of shortages in the prescriptions drug market, particularly those that have contributed to the current shortages in the areas of sterile injectable oncology drugs. A companion report from the FDA reviewed the agency’s approach to medical product shortages. The GAO reviewed trends in drug shortages, described FDA’s response, and evaluated the FDA’s ability to protect public health; a detailed analysis of 15 selected drug shortages of anti-infective, oncologic, and anesthesia drugs was included in the GAO report. The IMS Institute for Healthcare Informatics also examined in some detail factors associated with products experiencing shortages, suppliers, and volume volatility. Although these reports took somewhat different approaches, several important facts and realities emerged. The next five sections are based on the findings in these reports. Specific findings and conclusions vary somewhat depending on the time period studied.

Overview of Demand Issues

As medically necessary products, few or no substitutes are available to physicians and hospitals that can buffer shifts in consumption over time. Services for consumers in the prescription drug market are accomplished through health insurance contracts that pre-establish payment rates and both consumers and hospital/physician demand for prescription medication are not very responsive to the average wholesale price paid to manufacturers for the drug. Thus, sterile injectable products used for acute, medically necessary indications are characterized by very low price responsiveness
on the demand (and supply) side. This condition increases the likelihood of a shortage in the presence of demand changes that are not anticipated by manufacturers.

Overview of Supply Issues

On the supply side, production line processes for sterile injectables are complex. Generic companies operate a limited number of facilities each containing multiple production lines. However, cytotoxic oncologic drugs (and certain antibiotics) require specific equipment and regulatory approvals limited to that class. These special containment controls can limit a manufacturer’s transfer of production of these drugs to other lines. Furthermore, these drugs have a limited shelf life so that holding excess inventory can be very expensive. Therefore, manufacturers of these products cannot respond simply to supply chain disruptions.

Purchasing and Pricing

Most sterile injectable drugs are purchased by hospitals (and in some cases physicians) through group purchasing organizations (GPOs), which negotiate prices with manufacturers. Drug delivery is accomplished by wholesalers who purchase inventory at the wholesale acquisition price with manufacturers issuing a “chargeback” if the acquisition price exceeds the GPO’s negotiated price. Hospitals also may source their products outside of this structure. GPO contracts typically have price adjustment clauses as well as “failure to supply” penalties. The latter usually do not apply when the product is not available, are otherwise of limited duration, and have been characterized by “erosion” of their impact. Pricing flexibility by suppliers may be constrained by long-term purchase contracts, although in many cases companies have multiple contracts staggered throughout the year, which provides some ability to adjust pricing to market conditions.

The Medicare Prescription Drug, Improvement, and Modernization Act, enacted in 2003, substantially reduced payment rates for chemotherapy drugs administered on an outpatient basis starting in January 2005. Currently, in Medicare, injectable drugs are covered under Part B, which pays physicians the average sale price (ASP) plus 6% to cover the cost of administering the drugs. Increases are limited to maximum of 6% every six months. Although some proposals have suggested that this formula contributes to drug shortages, no consensus exists that raising the ASP formula (or changing the metric to use average wholesale prices instead) would lessen drug shortages because of other complexities in the drug distribution chain. Reimbursement cost, whatever it may be, is not the price that is paid to the manufacturers. A disconnect exists between money paid to purchasers, GPOs, and manufacturers. The HHS report concluded that increased production capacity for generic sterile injectable drugs is the single most important solution to the drug shortage crisis while maintaining that payments to manufacturers are not the primary problem.

Some Relevant Drug Shortage Findings

- The number of drug shortages has increased each year from 2006-2011, and sterile injectables make up a disproportionate share of the drugs in shortage. Impacted patients therefore are mostly acute care and/or cancer patients being treated in hospitals and in out-patient facilities.
- About half of the sterile injectable market is branded and half is generic, but the latter fraction is increasing. Overall, current shortages (~75-80%) of sterile injectables are concentrated in the generics industry.
- Two-thirds of drugs on the shortage list are used in oncology, infectious diseases, cardiovascular diseases, pain management, and central nervous system disorders. Half were marketed before 1990 but 25% have been introduced since 2000; 6.5% were controlled
substances. For the oncology products, an estimated 550,000 cancer patients may be affected annually.

- Overall (brand and generic) production of sterile injectables has increased. From 2006-2011, the supply of sterile injectable oncology drugs increased 14% overall and 20% within Medicare, but generic volume increased disproportionately by 30%.

- Drugs that were in short supply sometime in 2008 or beyond experienced a declining volume of sales from 2006-2008; those that were not in short supply experienced an increase (11%) in sales volume over the entire period. Similarly, drugs that eventually experienced a shortage demonstrated a mean 27% drop in price, while prices of drugs that did not develop a shortage were steady or slightly increased.

- More than 80% of the market for generic sterile injectables is supported by seven manufacturers in the U.S.; for oncologic products, typically 3 or fewer companies comprise the market and more than 50% of the drugs have two or fewer suppliers.

- During 2006-2011, the number of new generic manufacturer-drug combinations in the sterile injectable market increased every year, outnumbering the number of exits from the market.

- After remaining relatively constant from 2000-2007 (varying between 62 to 79 annually except for 2003), the overall number of new generic injectable approvals surged in 2008 (135) and 2009 (103), creating a much larger portfolio of possible drugs for manufacturing sites.

- Among drug shortages occurring from 2009 through June 2011, 59% involved more than one manufacturer.

In summary, the volume of injectable chemotherapy drugs used has increased and the number of products available for generic manufacturing has increased dramatically. The process itself remains complex and subject to Good Manufacturing Practice regulations, precluding early entry into the marketplace, and financial incentives are lacking for investing in excess capacity. Contrary to some belief, consolidation of manufacturing among sterile injectable companies has not occurred, but current capacity is limited. A limited ability to benefit from failure-to-supply clauses and low price elasticity prompts manufacturers to limit reserve inventory.

**Supplies and Volume of Sales over Time**

Based on their proprietary drug supply chain data, IMS examined the problem of drug shortages (168 drugs) on the FDA list as of October 7, 2011 including supplies and volume and sales of these drugs over time. The overall supply of drugs experiencing shortages has increased or been stable over the past five years, but not in a uniform fashion. In aggregate, injectable volume has grown 4% over the past five years for drugs on the FDA shortage list, and dollar sales have trended upward. Although the supply has been stable, the contribution of individual suppliers may change from month-to-month. A “high volatility with unusually sharp swings in supply” has been especially pronounced in the past year. A segment of the drugs on the shortage list exhibits declining sales in 2010-2011 compared with the base period of 2006-2009; a smaller percentage is stable; and about 20% are experiencing growing volume sales (over 3-fold since 2006). For those in the declining category, monthly supply has fallen an average of 47% over the five-year period. The average annual price per standard unit varies significantly across these three segments but not in a consistent way.

Although a number of firms produce sterile injectables (~80), the production of any given molecule is commonly concentrated among a very small number of manufacturers. The top three generic injectable manufacturers account for 71% of the market by volume and most sterile injectables have one manufacturer that produces at least 90% of the drug; 60% of sterile injectables in 2010 were virtually sole sourced (90% or more of market share by one manufacturer). Two-thirds of the
drugs in short supply are produced by three or fewer companies. Fifty-six products were provided
by sole source manufacturers and 51% of products with shortages have two or fewer suppliers.
Only 1% of products have two of the top producers accounting for less than 50% market share by
volume. Substantial market concentration increases the vulnerability of the supply system to
shortages, and the number of companies supplying these products has fluctuated over the last five
years. Several current oncology shortages can be traced to just three cytotoxic lines operated by
two separate manufacturers.7

The IMS report recommended that FDA create an early warning system for drug shortages that
would include systematic risk identification, continuous long-term demand forecasting, creation of
a supply volatility index as signal for problems, and comprehensive predictive modeling.7

STAKEHOLDER RESPONSES

Food and Drug Administration

On December 19, 2011, the FDA issued an interim final rule modifying the definitions of
“discontinuance” and “sole manufacturer” {§ 314.81(b)(3)(iii)}.12 Under Section 506C of the
FD&C Act, a sole manufacturer of a prescription drug product that is “life-supporting, life
sustaining, or intended for use in the prevention of a debilitating disease or condition” is required
by statute to notify the Agency of a discontinuance of that drug product at least six months prior to
discontinuing manufacture of the product. The interim final rule modifies the term
“discontinuance” and clarifies the term “sole manufacturer” with respect to notification of
discontinuance requirements. The broader reporting resulting from these changes will enable FDA
to improve its collection and distribution of drug shortage information to physician and patient
organizations and to work with manufacturers and other stakeholders to respond to potential drug
shortages.

Under this interim final rule, the FDA is now defining “discontinuance” to “include both
permanent and temporary interruptions in the manufacturing of a drug product, if the interruption
could lead to a disruption in supply of the product.” For example, delays in acquiring active
pharmaceutical ingredients (APIs) or inactive ingredients that lead to an interruption in
manufacturing or a suspension in production for maintenance or other routine services that exceeds
expected durations would trigger a “discontinuance” reporting requirement under the new
definition. These types of temporary discontinuances must be reported only if the discontinuance
reasonably could be expected to lead to a disruption in supply of the product. A planned
maintenance period would not necessarily be reported to the FDA if it is not expected to impact
production and does not exceed scheduled downtime.

“Sole manufacturers” now include any companies who are the “only entity currently manufacturing
a drug product of a specific strength, dosage form, or route of administration for sale in the United
States, whether the product is manufactured by the applicant or for the applicant under contract
with one or more different entities.” A manufacturer will be considered a “sole manufacturer even
if other manufacturers hold an approved new drug application (NDA) or abbreviated new drug
application (ANDA) for the same product, if the other applicants are no longer manufacturing (or
have never manufactured) the product for sale in the United States.” The definition of sole
manufacturer is linked to the specific strength, dosage form, and route of administration, because
these characteristics may be critical for the targeted needs of particular patients. Manufacturers are
responsible for determining whether their particular situation falls within the mandatory reporting
requirement.
Guidance for Industry

The FDA subsequently published a Guidance for Industry in February 2012 reflecting the above amendments to the implementing regulations of the interim final rule. This document provides:

(1) guidance to industry on requirements for mandatory notification to the FDA of discontinuances;
(2) additional explanation of the voluntary notification processes; and, (3) advice on advance planning strategies that might be considered to prevent or mitigate product shortages.

FDA Actions to Mitigate or Prevent Drug Shortages

The FDA’s response to drug shortages is managed by the Drug Shortage Program within the Center for Drug Evaluation and Research. The FDA can take certain actions to help alleviate or prevent a shortage from occurring in the first place. Analysis of the Agency’s response to 127 shortages of medically necessary drugs that occurred in 2010-2011 revealed that the FDA asked other companies to boost production (31%), exercised regulatory discretion (28%), expedited review of other sources (26%), and occasionally exercised discretion on importation, or a sole source manufacturer to boost production.

The FDA may exercise regulatory discretion to allow the continued marketing of a product with labeling errors for misbranded products or quality issues, assuming an interim solution to the quality problem (e.g., filtering of impurities or particulates) can be identified. In some cases, the FDA may work to accomplish importation of drugs that are approved for use in foreign countries, but not the U.S. Two recent examples of regulatory discretion assisted in relieving two high profile drug shortages. The FDA approved the temporary importation of an unapproved liposomal doxorubicin drug product, and expedited the approval of a new manufacturer for preservative-free methotrexate and convinced other manufacturers to increase the supply of this product as well.

For these strategies to work, there must be enhanced communication between FDA and manufacturers, and the industry must give early notice of potential problems. FDA Commissioner Margaret Hamburg, MD recently revealed that since President Obama’s October 31, 2011 directive, the FDA had prevented 128 new drug shortages, prompted by a six-fold increase in voluntary reports from manufacturers. Shortages were prevented by expediting the review of new manufacturing sites, new suppliers and specification changes, exercising regulatory flexibility and discretion, and asking other firms to ramp up production. According to the GAO analysis, the FDA was able to mitigate 90% of potential shortages that it learned about in advance in the first half of 2011.

In addition to increased staffing, improved communication, voluntary reporting, and expedited action, the FDA has proposed implementing and maintaining a database that can analyze the characteristics of drug shortages. The GAO report noted that the Agency needs to implement a systematic approach to managing its complex workload and to maintain data in a manner that enhances its ability to understand trends in shortages and the effectiveness of interventions related to preventing or mitigating the effects of shortages.

Generic Manufacturers

Several generic manufacturers of sterile injectables (e.g., APP Pharmaceuticals, Hospira, Bedford Laboratories, Teva) are building new plants and expanding facilities to help them better respond when manufacturing lines are shut down.
The Generic Pharmaceutical Association (GPhA) also announced a proposal, known as the Accelerated Recovery Initiative (ARI) to address sterile injectable drug shortages, although not all prominent generic drug manufacturers have endorsed the plan. It would involve voluntary communication between an independent third party and stakeholders involved in the manufacturing and distribution of generic injectable medications currently in shortage and be designed to use real-time supply and distribution information to give stakeholders, especially manufacturers, wholesalers, distributors, GPOs and the FDA a clear picture of current conditions and a plan to expand the production and supply of critical drugs in short supply. Specific elements of this initiative include:

- Use of an independent third party to gather current and future supply information from stakeholders for products identified as meeting the critical criteria;
- That information be used to determine current and potential supply gaps, with a focus on those products where a shortage is expected to last longer than 90 days; and
- A high-level dedicated drug shortage management team be formed within the FDA with the ability to quickly respond to critical shortages and work with the current drug shortage staff.

Implementation of this voluntary initiative would require Federal Trade Commission and HHS approval. In April 2012, GPhA selected IMS Health to act as the proposed independent third party to collect production and release schedule information in a voluntary manner from manufacturers and work with industry and FDA to mitigate shortages.

LEGISLATIVE APPROACHES

The Council on Legislation (COL) recommended to the Board of Trustees (BOT) that our AMA support the “Preserving Access to Life-Saving Medications Act,” a bipartisan bill (H.R. 2245) to reduce shortages of drugs and biologicals introduced by Representatives Diana DeGette (D-CO) and Tom Rooney (R-FL). H.R. 2245 would establish an early warning system to help prevent sudden shortages of medication by requiring manufacturers of all prescriptions, including drugs and biologics, to notify FDA of any discontinuance or interruption in the product of a drug at least six months in advance, or in the event of unforeseen or unplanned circumstances, as soon as possible. Also, the bill would require the FDA to develop criteria for drugs vulnerable to a shortage. Thereafter, the AMA expressed support for a nearly identical Senate bill, S. 296, “Preserving Access to Life-Saving Medications Act” after concerns with that bill were addressed by the sponsor, Senator Amy Kloubacher (D-MN).

More recently, the COL recommended that the BOT not support H.R. 3839, the “Drug Shortage Prevention Act,” introduced by John Carney (D-DE) and Larry Bucshon (R-IN) until AMA concerns and questions about a key provision were resolved. This provision directs the FDA to provide advance notice to wholesale distributors prior to informing the public that there is a shortage without any specific obligation on the part of distributors to prevent hoarding or gray market stratagems.

None of these bills address possible changes to reimbursement or other financial incentives that have been mentioned in some quarters as contributing factors. Payment reforms have generally not been viewed as a key solution. Other economic incentives being discussed include tax credits for research and development or creating manufacturing redundancy.

Both the House and Senate are actively engaged in drafting legislative proposals related to drug shortages as part of the PDUFA authorizations. On the House side, many provisions of the Carney
and DeGette bills have been incorporated into legislative drafts that are being widely circulated, lacking controversial provisions including the requirement that the FDA provide wholesale distributors advance notice of actual shortages prior to public disclosure. The AMA strongly supports the efforts of the Senate to address the crisis of drug shortages and met with the Senate Health, Education, Labor, and Pensions (HELP) Committee majority staff to underscore the concern of AMA members and to emphasize our support for the requirement that manufacturers provide the FDA advance notice of anticipated or actual shortages. The Senate PDUFA bill (S. 3187) as amended provides that manufacturers of drugs that are: life-supporting; life-sustaining; intended for use in the prevention of a debilitating disease or condition; a sterile injectable product; or used in emergency medical care or during surgery, shall notify the FDA of permanent discontinuation or temporary interruption in manufacturing 6 months in advance or as soon as practicable. The Secretary also may include biological and biosimilar manufacturers in the reporting requirement through rule-making. The foregoing is a vast improvement over the status quo and the AMA believes that most prescription drugs would meet one of these criteria. The current version does not include any enforcement authority, such as civil monetary penalties, but it does direct the FDA to report when manufacturers fail to report as required by law. It also creates positive incentives for reporting because manufacturers will be eligible for expedited consideration.

The S. 3187 section on drug shortages also would authorize the Secretary of HHS to expedite facility inspections and review of supplements and applications that could help mitigate or prevent a “shortage,” as defined in this title. It also would require the Secretary to establish a task force to enhance the Secretary’s response to shortages and create a strategic plan to address stated aspects of shortages. The AMA is particularly supportive of provisions that require the FDA to consult and collaborate with impacted stakeholders. In addition, the AMA supports the preparation of a report studying market factors contributing to drug shortages and stockpiling.

DISCUSSION

Several solutions and approaches for addressing the drug shortage problem have been recently advanced by the FDA, GAO, IMS, and HHS (see Table). Just-in-time manufacturing and inventory practices leave little margin for error. The “current class-wide shortages in the sterile injectable drug industry appear to be a consequence of a substantial expansion in the scope and volume of products produced by the industry that has occurred over a short period of time without a corresponding expansion in manufacturing capacity.” However, lower profits available for the manufacture of generic drugs have led to lower levels of redundancy in manufacturing for these products.

The structure of the sterile injectable market, the recent expansion in volume and scope, and the consequent very high level of capacity utilization, means that small disruptions to supply – such as may occur because of quality problems – and which might otherwise be absorbed through diversion of capacity, can lead to cascading and persistent shortages. Quality problems are linked with a majority (more than 50%) of sterile injectable shortages.

The most robust solution is to expedite review of new manufacturing capacity and expand supply and maintenance of product quality in sectors with high capacity utilization. More extensive and complete analysis is required on the potential economic causes of drug shortages and what would constitute appropriate and effective incentives. In the meantime, based on the demonstrated success of early notification, FDA and the industry should continue to work on collaborative solutions to individual shortage problems until legislative solutions emerge.
RECOMMENDATIONS

The Council on Science and Public Health recommends that the following statements be adopted and the remainder of the report be filed.

That Policy H-100.956 National Drug Shortages be amended by insertion and deletion to read as follows:

1. Our AMA supports the recommendations of the 2010 Drug Shortage Summit convened by the American Society of Health System Pharmacists, American Society of Anesthesiologists, American Society of Clinical Oncology and the Institute for Safe Medication Practices and work in a collaborative fashion with these and other stakeholders to implement these recommendations in an urgent fashion.

2. Our AMA supports requiring all manufacturers of Food and Drug Administration approved drugs and, including FDA approved drugs with recognized off-label uses, to give the agency advance notice (within at least 6 months prior or otherwise as soon as practicable) of anticipated voluntary or involuntary, permanent or temporary, discontinuance of manufacture or marketing of such a product. Drug shortage legislation such as H.R. 2245 and S. 296 that would require manufacturers, including those who share the market with others, to notify the FDA of any discontinuance, interruption, or adjustment in the manufacture of a drug that may result in a shortage.

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

4. Our AMA will express appreciation to the President of the United States for issuing an Executive Order intended to assist in mitigating ongoing drug shortages supports the creation of a task force to enhance the HHS Secretary’s response to preventing and mitigating drug shortages and to create a strategic plan to: (a) enhance interagency coordination; (b) address drug shortage possibilities when initiating regulatory actions (including the removal of unapproved drug products from the market); (c) communicate with stakeholders; and (d) consider the impact of drug shortages on research and clinical trials, address ongoing aspects of drug shortages.

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

6. The Council on Science and Public Health will continue to evaluate the drug shortage issue and keep the HOD informed about AMA efforts to address this problem—report back on progress made in addressing drug shortages at the 2012 Interim Meeting of the House of Delegates, will report back report back at the 2012 Annual Meeting on efforts to mitigate drug shortages, including the evaluation of potential economic and regulatory factors that may contribute to drug shortages, especially with respect to oncologic drugs.
Our AMA publicly declares the problem of unsafe and unverifiable medicines and medicine shortages a national public health emergency. (CSAPH Rep. 2, I-11). Our AMA urges the development of a comprehensive federal independent report on the root causes of drug shortages. Such an analysis should consider federal actions, the number of manufacturers, economic factors, including federal reimbursement practices, as well as contracting practices by market participants on competition, access to drugs, and pricing.

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

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

Our AMA urges Congress to amend the 2003 Medicare Modernization Act to allow for more reasonable payment rates for prescription drugs.

Fiscal Note: $2,500
REFERENCES


5. ASPE Issue Brief. Economic analysis of the cause of drug shortages. Office of Science and Data Policy, Assistant Secretary for Planning and Evaluation.


### IMS Recommendations

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<th>Recommendations</th>
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<tr>
<td>Risk Identification</td>
<td>Systematically identify the high-risk sectors of the generics market. Identify all the low-cost, technically challenging and critical medicines – whether or not they are currently on shortage lists.</td>
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<td>Demand Forecasting:</td>
<td>Continuously forecast the long-term demand for low-cost, technically challenging and critical medicines. Adjust forecasts based on such factors as demand trends, new medications, changes in clinical guidelines, practice patterns, care delivery changes and needs of clinical trials.</td>
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<td>Volatility Index</td>
<td>A quantitative measure to systematically track and report month-to-month changes in the volume of drugs supplied to hospitals, clinics and retail pharmacies.</td>
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<td>Predictive Modeling:</td>
<td>With the wealth of data available, predictive modeling techniques could be applied to anticipate shortages or supply disruptions for critically important medications at the national and regional levels. As data accumulate and measures are improved, the model can tightly focus interventions on those specific parts of the market and supply chain genuinely needing attention.</td>
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### GAO Recommendations

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<td>Drug Shortage Program</td>
<td>Assess the resources allocated to the Drug Shortage Program to determine whether reallocation is needed to improve the agency’s response to drug shortages.</td>
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<td>Informatics</td>
<td>Develop an information system that will enable the Drug Shortage Program to manage its daily workload in a systematic manner, track data about drug shortages—including their causes and FDA’s response—and share information across FDA offices regarding drugs that are in short supply.</td>
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<td>Strategic Planning</td>
<td>Ensure that FDA’s strategic plan articulates goals and priorities for maintaining the availability of all medically necessary drugs—including generic drugs.</td>
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<td>Performance Metrics</td>
<td>Develop results-oriented performance metrics to assess and quantify the implementation of the agency’s goals and FDA’s response to drug shortages.</td>
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### FDA Recommendations

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<td>Manufacturer Communication</td>
<td>Write a letter to drug manufacturers reminding them of their current legal obligations to notify FDA in advance of the discontinuation of certain drugs and urging them to voluntarily notify FDA of other potential disruptions to the supply of drugs that are not currently required, as soon as they become aware of them.</td>
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<td>Guidance</td>
<td>Develop guidance and regulations that clarify and enhance the information on potential drug shortages that is submitted by industry.</td>
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<td>Staffing</td>
<td>Provide additional staffing resources for FDA’s efforts to prevent and mitigate shortages.</td>
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<td>Legislation</td>
<td>Support legislation that requires early notification by manufacturers for drug shortages and provides new authority to FDA to enforce these requirements.</td>
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<td>Informatics</td>
<td>Implement and maintain a database that can analyze the characteristics of drug shortages.</td>
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<td>Preventing Shortages</td>
<td>Identify factors that contribute to success or failure in preventing drug shortages and continue exploring new approaches to preventing drug shortages under existing authorities.</td>
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<td>Quality</td>
<td>Identify the quality issues in manufacturing practices that have contributed to severe drug shortages and develop approaches to addressing them.</td>
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<td>Manufacturing Redundancy</td>
<td>Encourage product manufacturers to develop and maintain a plan for back up manufacturing and sources of Active Pharmaceutical Ingredients and other essential product components.</td>
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<tr>
<td>Early Warning</td>
<td>Explore development of a sentinel reporting network (e.g., major healthcare systems, wholesalers, physician specialty societies) to facilitate early warning of drug shortages.</td>
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<tr>
<td>Wholesalers</td>
<td>Encourage wholesalers to develop and publicize their procedures for distributing medical products in shortage.</td>
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<tr>
<td>Public Notification</td>
<td>Continue to maximize public disclosure of information regarding medical product shortages in FDA’s possession, within the bounds of what must remain confidential.</td>
</tr>
<tr>
<td>Communication</td>
<td>Continue improving communication between FDA’s field investigators and the Center for Drug Evaluation and Research’s Office of Compliance and Drug Shortage Program staff.</td>
</tr>
<tr>
<td>Website</td>
<td>Improve the Drug Shortage Program’s web site as a communications tool for health-care providers and other members of the public.</td>
</tr>
<tr>
<td>Probability Forecasting</td>
<td>Explore the feasibility of developing a model based on available data on drug shortages, manufacturer characteristics, and market factors with the goal of assessing the probability of future shortages.</td>
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**ASPE Recommendations**

<table>
<thead>
<tr>
<th>Regulatory Responses</th>
<th>Policymakers must balance the short-run benefits of tailoring regulatory responses to specific situations against the risk of strategic behavior and consequent reductions in competition in the long run.</th>
</tr>
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<tbody>
<tr>
<td>Expedited Review</td>
<td>Steps that both expedite expansion of supply and maintain product quality in sectors with high capacity utilization could reduce the risk of shortages not only in the current situation, but in the future as well. To facilitate this, FDA can expedite review of new manufacturing capacity in this area and we understand that FDA is committed to doing this.</td>
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<tr>
<td>Purchase Agreements</td>
<td>Private organizations that purchase drugs and vaccines (including GPOs and insurers), can help to alleviate future shortages by strengthening the failure-to-supply requirements in their contracts in exchange for increases in price. Such contract changes are likely to lead manufacturers to invest in extra capacity of both production lines and API.</td>
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