

A Closer Look at the Drug Information PRN

Overview of the PRN

The Drug Information (DI) Practice and Research Network (PRN) was established in 2002 to provide high-quality educational, research, and service opportunities to members practicing in drug information or with a strong interest in developing and learning drug information skills. The DI PRN has around 300 members, of whom 70 are students, residents, or fellows. Most members practice in academia or health systems and are responsible for responding to drug information questions, precepting, supporting pharmacy and therapeutics committees, developing guidelines and policies, and lecturing.

Opportunities and Resources for Resident and Fellow PRN Members

Membership in the DI PRN allows for numerous involvement and learning opportunities for residents and fellows. Annually, the DI PRN offers a travel award of \$500 to a student, resident, or fellow to present a drug information–related poster or research at the ACCP Annual Meeting. Involvement opportunities exist with the PRN’s Membership Committee, which works toward continuous improvement of initiatives to enhance membership. The Membership Committee currently has four subgroups that always welcome new members: e-mail list optimization and membership, social media, awards and promotion, and value-added content. The scope of these subgroups consists of maintaining an e-mail list, establishing value-added drug information resources, developing membership-related materials, and supporting new members. The Membership Committee also hosts journal clubs and presentations through webinars, which are accessible to all DI PRN members. Some of the previously recorded presentations cover topics such as meta-analyses and systematic reviews, searching Google Scholar, copyright basics, Microsoft Excel – pivoting for successful medication use evaluations, and team-based approaches to teaching tertiary resources. Resident and fellow members of the DI PRN are always welcome to access these webinars or volunteer to present a journal club or topic of interest!

Current Issue Important to PRN Members: Management of Drug Shortages

In the United States, the number of new drug shortages per year has increased since 2007 and peaked in 2011.¹ Drug classes in shortage over the past few years include electrolytes, antibiotics, CNS agents, and cardiovascular agents. Reasons for drug shortages include generic manufacturers leaving the market because of competition, the slow approval process for new generics, manufacturing issues (e.g., supply chain problems, lack of compliance with manufacturing standards), and price increases on old generics after acquisition of marketing rights.^{1,2}

Drug shortages can have a harmful impact on healthcare organizations and patients.³ Shortages may lead to increased costs because of use of a more expensive alternative. Other implications may reach patient care – use of less efficacious alternatives and lack of access to lifesaving medications, leading to increased mortality. According to a 2017 survey by the Institute for Safe Medication Practices (ISMP), shortages led 71% of respondents not to provide patients with the recommended drug, and close to 47% of respondents believed that patients received a less effective drug.⁴ Respondents consisted of pharmacy directors, pharmacy managers, pharmacy purchasing agents, clinical pharmacists, pharmacy technicians, and others. Medication errors have also been reported as a result of drug shortages.⁵ The ISMP provides examples of medication errors that resulted from medication shortages.^{4,6} Examples include inappropriate dose selection of hydromorphone during a morphine shortage and incorrect compounding of bupivacaine/epinephrine solution during a shortage of premixed bupivacaine 0.5%/epinephrine 1:200,000.

Pharmacists with strong drug information skills play an important role in drug shortage management and decision-making regarding the use of short-supplied agents. Examples of pharmacists’ contributions include⁷:

- Identifying key uses of an agent on shortage and determining a possible alternative;
- Deciding on appropriate storage and access to an agent on shortage to providers and nursing staff;
- Creating guidelines and/or policies for providers on appropriate drug prescribing for an agent on shortage;
- Establishing an updated dispensing process to decrease waste (e.g., dispense smaller drug amounts, extend stability if possible); and
- Educating providers and administrators on current shortages and potential impacts on budgets and patient care.

Several resources are available for pharmacists who handle drug shortages. Resources that can serve as a starting point include:

- FDA database: option to subscribe to e-mail notifications and search database for drugs on shortage
 - Link: <https://www.fda.gov/Drugs/DrugSafety/DrugShortages/default.htm>
- ASHP drug shortages database: option to search database by drug name; provides information on potential alternative(s) or management of the shortage
 - Link: <https://www.ashp.org/drug-shortages/current-shortages>
- Resource for cardiovascular drug shortages:
 - Reed BN, Fox ER, Konig M, et al. The impact of drug shortages on patients with cardiovascular disease: causes, consequences, and a call to action. *Am Heart J* 2016;175:130-41.
- Resource for oncology/hematology drug shortages:
 - Beck JC, Chen B, Gordon BG. Physician approaches to drug shortages: results of a national survey of pediatric hematologist/oncologists. *World J Clin Oncol* 2017;8:336-42.
- Resources for saline shortages:
 - Mazer-Amirshahi M, Fox ER. Saline shortages – many causes, no simple solution. *N Engl J Med* 2018;378:1472-4.
 - Spencer S, Ipema H, Hartke P, et al. Intravenous push administration of antibiotics: literature and considerations. *Hosp Pharm* 2018;53:157-69.
- Resources for shortages of parenteral nutrition and electrolytes:
 - Product shortages from the American Society for Parenteral and Enteral Nutrition
 - Link: <https://www.nutritioncare.org/public-policy/product-shortages/>
 - Holcombe B, Mattox TW, Plogsted S. Drug shortages: effect on parenteral nutrition therapy. *Nutr Clin Pract* 2018;33:53-61.
 - Plogsted S, Adams SC, Allen K, et al. Parenteral nutrition electrolyte and mineral product shortage considerations. *Nutr Clin Pract* 2016;31:132-4.

References:

1. American Society of Health-System Pharmacists (ASHP). Drug Shortages Statistics. Available at <https://www.ashp.org/Drug-Shortages/Shortage-Resources/Drug-Shortages-Statistics>. Updated June 30, 2018. Accessed August 30, 2018.
2. Gabrielli A, Layon NT, Bones HL, et al. The tragedy of the commons – drug shortages and our patients’ health. *Am J Med* 2016;129:1237-8.
3. Wiggins BS, Nappi J, Fortier CR, et al. Cardiovascular drug shortages: predominant etiologies, clinical implications, and management strategies. *Ann Pharmacother* 2014;48:1177-86.

4. Institute for Safe Medication Practices (ISMP). Drug Shortages Continue to Compromise Patient Care. Available at <https://www.ismp.org/resources/drug-shortages-continue-compromise-patient-care>. Updated January 11, 2018. Accessed August 30, 2018.
5. Reed BN, Fox ER, Konig M, et al. The impact of drug shortages on patients with cardiovascular disease: causes, consequences, and a call to action. *Am Heart J* 2016;175:130-41.
6. Institute for Safe Medication Practices (ISMP). A Shortage of Everything Except Errors: Harm Associated with Drug Shortages. Available at <https://www.ismp.org/resources/shortage-everything-except-errors-harm-associated-drug-shortages?id=20>. Updated April 19, 2012. Accessed August 30, 2018.
7. Fox ER, Tyler LS. Potential association between drug shortages and high-cost medications. *Pharmacotherapy* 2017;37:36-42.

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