

Smart Infusion Pumps: Implementation, Management and Drug Libraries, 2nd edition ***By Pamela K. Phelps***

[The Pharmaceutical Journal](#) 9 AUG 2017 By [Laurence A. Goldberg](#)

Over the past 20 years, the technology of parenteral drug administration has moved from devices that calculate infusion rates by counting the number of drops per minute, to ones that will read barcodes on the drug containers, calculate and programme the infusion rates on the devices and send usage data wirelessly. Infusion pumps have transformed accurate dosage delivery by reducing errors and improving patient safety. However, although many hospitals now use smart pump technology, compliance with the software and the use of the many safety attributes are variable.

This book takes the readers from justifying the need for smart pump technology, through choosing the appropriate pump, to the implementation of the new technology. In addition, several chapters outline the issues relating to setting up drug libraries. The book defines a drug library as a comprehensive list of medicines and fluids that are to be delivered using the infusion pump. The library includes details of any dose, volume or flow rate limitations that are programmed into the software. One chapter deals with the steps to be followed in building up a general drug library while others consider the development of specialist drug libraries such as those for patient-controlled analgesia and pediatrics. A dedicated paediatric library is required because of higher risk, weight-based dosing, different infusion concentrations, smaller volumes and different types of pumps.

Chapters new to this edition include the development of an epidural and intrathecal drug library, and an oncology drug library.

One of the most valuable features of an intelligent infusion system is the reports that are produced by the software. A wealth of valuable information on how the pumps have been used, which drugs have been administered most often and which doses have been overridden is generated. A brief chapter on monitoring quality and pump utilisation makes several recommendations, such as identifying a reports manager. Another chapter offers a series of 'go-live' checklists, such as a biomedical services checklist, sterile services checklist and supply chain/inventory checklist. Finally, smart pump integration with electronic health records through wireless connectivity is discussed.

A useful tool found at the end of each chapter is the practice tips. They are concise, practical and applicable to most settings.

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A large general drug library published with permission from Fairview Health Services, Minneapolis, Minnesota, is provided, as an appendix, for demonstration purposes. The list of drugs is divided into those that are to be administered by continuous intravenous infusion and those to be given by bolus injection.

The book is well written, in an easy-to-digest format, with helpful and practical information in each chapter. It is essential reading for any organisation that uses or hopes to introduce smart pump technology.



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Doody's Listings and Review | July 28, 2017

[REVIEWER'S EXPERT OPINION]

Lawrence P. Carey, Pharm.D., B.S. (Temple University School of Pharmacy)

****Description****

This book is unique in that it covers an area that is very important in patient safety -- infusion pumps. Whether in the inpatient or outpatient setting, the use of this equipment is critical to successfully infusing medications safely and effectively. The 18 chapters range from the justification for and choices of smart pumps to their various uses such as in oncology, pain management, pediatrics, and home infusion practice. The first edition was published in 2011.

****Purpose****

The purpose, while not specifically stated, is to educate clinicians and administrators on the use of pumps that use smart technology, which, according to the author "incorporates dose limiting software into the pump's hardware designed to prevent infusion-related programming errors." As pump-related errors have been documented in the pharmacy and medical literature over the years, this is a worthy objective. This book clearly delineates methodologies to improve patient safety in this regard.

****Audience****

It is written for a variety of audiences, first and foremost for clinicians who deal with these pumps on a daily basis. Since it is published by the American Society of Health-System Pharmacists (ASHP), the primary audience is pharmacists in inpatient and ambulatory care settings where pumps such as these are used. Those in other disciplines, such as nurses and administrators, also can benefit as the safety guidance certainly applies to nursing personnel who use these pumps much more than pharmacists do as part of their daily routine, and administrators to strengthen arguments for selection and purchase. As a director of pharmacy and a clinical faculty member, the author qualifies as an expert in this area.

****Features****

The book extensively covers many aspects of smart infusion pumps. The first quarter of the book ranges from justification for purchase, establishing a request for proposal and value, and implementation of pumps in an institution and the guiding principles. From that point the information gets more specific with information about specific therapies and building of pump libraries -- that is, how to develop a compendium of concentrations and doses that ensure safety during pump operation. This specific information is the best part of the book -- it serves as a how-to guide for any institution to set up a process to use and program these pieces of equipment. The last third of the book focuses on quality assurance and validation. There are two outstanding appendixes -- one with tables for drug libraries and one with definitions of terms related to infusion therapy. The many grids and tables are helpful, but the

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book could benefit from some color as well. I love the premise of the book and the information it provides, but more photos and some graphics would be helpful.

****Assessment****

This book is more than anything else a great instruction guide to alert clinicians to best practices regarding pump operation and use. It should be mandatory reading for any hospital pharmacy, health system, or home infusion practice that uses or is responsible for managing infusion pumps, as it succinctly describes how to implement and manage a smart pump program. To my knowledge, there is no other book like it in the field. As pump technology has improved, and capital expenditures are harder to come by in this tight economic environment, this second edition is necessary and it is a welcome addition in any environment that uses infusion pumps.

Weighted Numerical Score: 81 - 3 Stars