

Understanding Pharmacology *for* Pharmacy Technicians

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Dedication

To my husband, Rick Stuhan, whose love, support, and encouragement have been central to all of my endeavors, and to my parents, Don and Mary Ann Cipriano, who knew even before I did that I would love pharmacy.

Mary Ann Stuhan

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Sandy Earle, who not only offered her expertise, but helped in identifying expert authors for a number of subject areas; Jonathan Roach, who made sure the tables were complete and updated, in addition to being a sounding board for ideas and concepts; Jeff Rubin, who contributed and consulted in the cardiovascular pharmacology section; Mate Soric, who wrote so much and so well; the ASHP publishing staff (including former members Dana Battaglia and Rebecca Olson) for their encouragement, skill, and wisdom, as well as their patience with a newcomer to their world; and the students, faculty, and administration of Cuyahoga Community College, who generously shared their questions, their answers, and their opinions, along with a tremendous offering of support for this undertaking.

Mary Ann Stuhan

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Preface

As our population ages and our healthcare system changes, more is being asked of the pharmacy technician. Once limited to “lick-stick-pour” duties, pharmacy technicians are now becoming a part of the modern healthcare team. In most states, pharmacy practice acts limit certain roles and responsibilities to technicians who have demonstrated their knowledge of pharmacy; some even require specific training or examinations for them. To prepare for a future that demands more of them, pharmacy technicians must have an understanding of the medications they are handling. New pharmacy practice models—some already initiated, others designed as targets for pharmacies of the future—have technicians playing integral roles in assisting the pharmacist not only in dispensing medications, but also in medication therapy management and patient safety. Only individuals with a fundamental knowledge of medications can be effective in these positions.

Pharmacology is the science of drugs, including their actions, doses, routes of administration, and interactions, and technicians must be familiar with this science in order to function in modern pharmacy. Pharmacists learn pharmacology in the context of patient care, from textbooks and articles authored by healthcare professionals with specific expertise in the areas in which they are writing. Since these materials are based on a background in physical and life sciences much broader than that required for technicians (and they explore clinical decision-making on a level usually reserved for physicians and pharmacists), they are not appropriate for technicians. That should not mean, however, that pharmacy technician education should be limited to paraphrased editions from less authoritative sources.

This text has been written by professionals who specialize in the types of treatment they are covering (in some cases, the same respected authors who have contributed to prominent pharmacy school books). The material contained here has been written specifically for pharmacy technicians, with their backgrounds and duties as guides for both breadth and depth, and with full respect for its importance to them, their careers, and the patients they serve.

How This Book Is Organized

The Introduction presents the rationale for the study of pharmacology by pharmacy technicians, as explained by an experienced technician, and is followed by a lesson in basic pharmacokinetics, giving a basis for the medication information delivered in subsequent chapters. The medication chapters are organized around body systems and disease states, presented in an order similar to that of pharmacists’ textbooks, with sections on the nervous, endocrine, musculoskeletal, cardiovascular and renal, respiratory, gastrointestinal, and hematologic systems, followed by treatments for infectious diseases, cancer, and conditions of the skin, eye, ear, nose, and throat.

How Each Chapter Is Organized

Each chapter begins with clearly defined learning objectives and highlights key terms with their definitions. Each chapter also includes the following:

- An introduction reviewing the body system and conditions covered, giving a context for subsequent material
- Discussion of medications, divided, as appropriate, into subclasses and groups and detailing their mechanisms of action, routes of administration, and side effects
- Medication tables summarizing important information for each medication including generic and brand names, dosage forms and products, and doses and indications
- A chapter summary relating the material to the learning objectives and stressing key points
- References list resources used in compiling the chapter.
- Review questions to help students summarize the concepts of the chapters and give them the opportunity to test their own learning

Learning Features in This Book

A variety of pedagogical or learning features are found throughout the book to assist the student:

- *Case studies*—Case studies describe the kinds of patients pharmacy technicians encounter in various practice settings, which helps them relate the abstract knowledge conveyed in each chapter to real people and real-life scenarios. Discussion questions based on these cases are distributed throughout the chapter, giving students examples of how the concepts being developed may apply to their work.
- *Alerts*—Key points relevant to patient or occupational safety are emphasized in marginal notes highlighted

ALERT! These include look-alike/sound-alike issues, allergy precautions, and contraindications.

- *Practice points*—Practical advice and real-world applications related to technician work with the medications being discussed are highlighted throughout each chapter, giving immediate emphasis and impact to the material.
- *Illustrations*—Anatomy and drug action are illustrated with figures throughout the text, giving visual representation to the concepts presented.
- *Pronunciations*—Generic drug names are accompanied by phonetic pronunciations using common spellings and capitals for accented syllables, requiring no knowledge of diacritical markings or symbols. (Pronunciations have been adapted with permission from USP's *Pronunciation Guide for Drug Names*, © 2009, The United States Pharmacopeial Convention. All rights reserved.)

Additional Student and Instructor Resources

For the Student

- A companion workbook with additional multiple-choice and true/false questions to test your knowledge
- Online flash cards of the most frequently prescribed drugs to test your knowledge

For the Instructor

- A test bank with 500 additional multiple-choice and true/false questions
- PowerPoint slides to enhance your presentation on each chapter

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August 2012

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