



EIGHTH EDITION

Administering Medications

Pharmacology for Healthcare Professionals

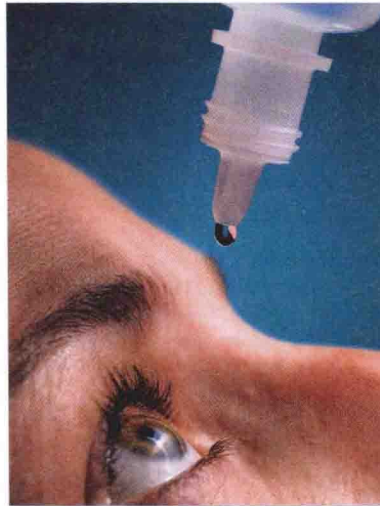


DONNA F. GAUWITZ

 **connect** 

Administering Medications

Pharmacology for Healthcare Professionals



eighth edition

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ADMINISTERING MEDICATIONS: PHARMACOLOGY FOR HEALTHCARE
PROFESSIONALS, EIGHTH EDITION

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Conversion Tables

The Household System

Weight (dry)	Volume (liquid)	Equivalents
ounce (oz)	drop (gt); drops (gtt)	16 ounces = 1 pound
pound (lb)	teaspoon (t, tsp)	3 teaspoons = 1 tablespoon = $\frac{1}{2}$ ounce
ton (t)	tablespoon (T, tbsp)	16 tablespoons = 1 cup = 8 fluid ounces
	teacup (6 oz)	2 cups = 1 pint
	cup (c) or glass (8 oz)	2 pints = 1 quart
	pint (pt)	4 quarts = 1 gallon
	quart (qt)	
	gallon (gal)	

Converting a Fahrenheit Temperature to the Celsius Scale

$$\frac{^{\circ}\text{F} - 32}{1.8} = ^{\circ}\text{C}$$

Converting a Celsius Temperature to the Fahrenheit Scale

$$1.8 \times ^{\circ}\text{C} + 32 = ^{\circ}\text{F}$$

Common Measurement System Equivalents

	Apothecary	Metric	Household
Liquid Volume	minim (m) 1	0.06 mL (or cc)	1 drop (gt)
	minims 15	1 mL	15 drops (gtt) ^a
	fluidram (f℥) 1	4–5 mL	1 teaspoon (60 gtt)
	fluidrams 4	15 mL	1 tablespoon
	1 fluid ounce (f℥)	30 mL	2 tablespoons (1 oz)
		180 mL	1 teacup (6 oz)
		240 mL	1 cup or glass (8 oz)
		500 mL	1 pint (16 oz)
Dry Weight		750 mL	1.5 pints (24 oz)
		1000 mL (1 L)	1 quart (32 oz)
	gr $\frac{1}{60}$	1 mg	
	gr 1	60 mg	
	gr $7\frac{1}{2}$	500 mg (0.5 g)	
	gr 15	1000 mg (1 g)	
	gr (1 dram) 60	4 g	
	1 oz	30 g	1 oz
		500 g	1.1 lb
		1000 g (1 kg)	2.2 lb

Approximate Conversions between the Metric and Apothecary Systems

	Metric Amount	Apothecary Amount
	2 g (2000 mg)	gr 30
	1 g (1000 mg)	gr 15
	600 mg (0.6 g)	gr 10
	100 mg (0.1 g)	gr $1\frac{1}{2}$
	60 mg (0.06 g)	gr 1
	30 mg (0.03 g)	gr $\frac{1}{2}$
	1 mg (0.001 g)	gr $\frac{1}{60}$
	0.1 mg (0.0001 g)	gr $\frac{1}{600}$
Approximation Formulas	grains \times 60 = milligrams	grams \times 15 = grains
	milligrams \div 60 = grains	grains \div 15 = grams

^aThis figure varies; number of drops per milliliter depends on the substance being measured.



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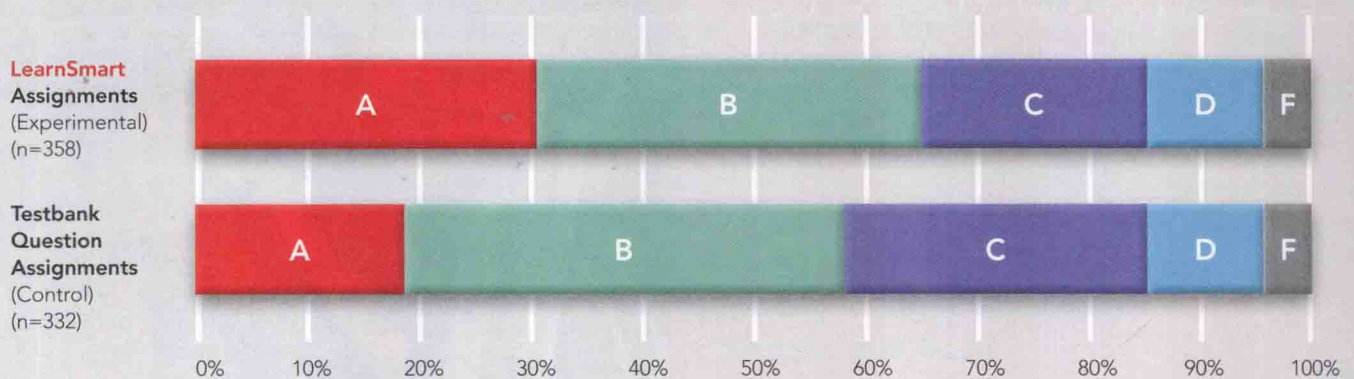
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Dedication

I want to thank my husband, William, who is my best friend, for his love and support through all of the phases of this edition. He is my rock and driving force.



About the Author

Donna Faye Gauwitz, MS, RN, received her diploma in nursing from St. Francis School of Nursing in Peoria, Illinois. After graduation, she worked on medical-surgical nursing units, specifically neurology, and on the psychiatric unit at St. Francis Hospital, a major acute care facility and trauma center in central Illinois. She obtained a bachelor of science degree from Bradley University in Peoria, Illinois. After graduating with a BSN, Donna began her career in nursing education as a staff development coordinator at St. Francis Medical Center, orienting new graduate nurses to the largest medical-surgical unit. She was also an adjunct faculty member at Illinois Central College in East Peoria, Illinois, and at Illinois Wesleyan University in Bloomington, Illinois, teaching medical-surgical and pediatric nursing. While at Illinois Central College, she developed a brand-new college course, Introduction to Eating Disorders, that she taught at the college.

Donna further developed her research and publication interest as a research assistant at the University of Illinois Department of Psychiatry and Behavioral Medicine in Peoria, Illinois, and at Northwestern University College of Nursing in Chicago, Illinois. She did the research and wrote the proposal for an Eating Disorders Clinic and became the director of the clinic at St. Francis Medical Center in Peoria. Her pursuit of advanced education took her to Northwestern University College of Nursing in Evanston, Illinois, to obtain her master's degree. After graduation from Northwestern University, Donna began her full-time teaching career at Methodist Medical Center in Peoria, followed by positions at Barry University in Miami Shores, Florida, and Broward Community College in Pembroke Pines, Florida, teaching medical-surgical, orthopedic, rehabilitation, women's health, and neurology nursing.

During her tenure in education, she had the opportunity to serve as an item writer eight times for the National Council of Licensure in the development of the NCLEX-RN. She published an article in *Insight*, a National Council of Licensure publication. She further pursued her interest in writing by publishing three articles in the *Nursing* journal and one article in the *American Journal of Nursing*. She is also currently the author of *Complete Review NCLEX-RN*, and *Practice Questions for NCLEX-RN*.

After relocating to Minnesota, she became a nursing education specialist for an acute care surgical unit at the Mayo Clinic in Rochester, Minnesota. Her love of nursing education then took her to the University of Minnesota as a senior teaching specialist and coordinator of the Nursing Skills Laboratory in Minneapolis, Minnesota.

Donna is a member of Sigma Theta Tau and has been listed in *Who's Who in American Nursing*.

Preface



Administering Medications: Pharmacology for Healthcare Professionals teaches safe medication administration to healthcare students entering nursing, medical assisting, and other allied healthcare professions. Because this textbook speaks directly to students, they can easily identify and apply the concepts they've learned.

The organization of the chapters allows students and instructors to build a knowledge base that starts with the fundamentals of medication administration and progresses through the drugs frequently used to treat most common diseases. Most chapters are organized around a body system to help students fully understand drug actions. For easy identification, the 50 most frequently prescribed drugs are boldfaced in the Representative Drug tables.

The Patient Education, Healthcare for Today and Tomorrow, and Legal and Ethical Issues boxes continue to be highlighted features in this edition. The Patient Education boxes contain important information for the healthcare professional to communicate to the patient. This feature also includes cultural diversity and pediatric and geriatric implications where appropriate. The Healthcare for Today and Tomorrow boxes alert the healthcare professional to issues or problems that may be encountered today or in the future. The Legal and Ethical Issues boxes illustrate the role of the healthcare professional in actual legal and ethical situations pertinent to the content of each chapter.

New to This Edition

The eighth edition of *Administering Medications* has been updated to reflect the most up-to-date information on the safety and education of medications. Revisions are based on updates needed for currency and accuracy, as well as feedback from instructors and students.

General revisions throughout the text include the following:

- Learning outcomes—reduced length and revised to improve clarity and conciseness
- Key terms list—condensed to include only the terms and definitions included in the end-of-book glossary
- Chapter openers—visually enhanced layout and updated photos
- Section headings—improved organization of heading hierarchy
- Icons added throughout to reference new technology offerings
- End-of-chapter summary points revised to be consistent with changes to learning outcomes
- End-of-chapter review assignments updated to be consistent with changes to learning outcomes

Chapter-by-chapter revisions are as follows:

Chapter 1 Orientation to Medications

- Added *new* Table 1.1 Five Top Generic versus Brand-Name Drugs
- Presented drug reference information in a table (Table 1.2) that includes nursing implications



Preface

- Updated Figure 1.1 sample drug card to include nursing implications
- Presented drug categories in a table (Table 1.5)
- Deleted Caution box on Darvon (drug was taken off the market)
- Added *new* Caution box on appropriate dose of acetaminophen in drugs

Chapter 2 Principles of Drug Action

- Added *new* Table 2.2, Common Food and Drug Interactions
- Added *new* Table 2.3, Drug Effects on Nutritional Disorders

Chapter 3 Measurement and Dosage Calculations

- Added metric abbreviations

Chapter 4 Administering Parenteral Medications

- Added *new* Pediatric Considerations and Older Adult Considerations boxes on intramuscular injections

Chapter 5 Medication Therapy

- Updated terminology for currency

Chapter 6 Vitamins, Minerals, and Herbs

- Updated USDA's MyPyramid to new title MyPlate
- Updated Figure 6.1 to MyPlate
- Updated Table 6.1, with vitamin D dosage changed from 400 IU to 600 IU

Chapter 7 Antibiotics, Antifungals, and Antivirals

- Updated Table 7.1 to include ceftaroline (*Teflaro*) under cephalosporins and rilpivirine (*Edurant*) under antivirals

Chapter 8 Drugs for the Eye and Ear

- Made only general revisions

Chapter 9 Drugs for the Skin

- Added new lice medication ivermectin (*Sklice*)

Chapter 10 Drugs for the Cardiovascular System

- Updated drugs under anticoagulants to include dabigatran (*Pradaxa*) and rivaroxaban (*Xarelto*)

Chapter 11 Drugs for the Respiratory System

- Presented symptoms of respiratory disorders in a table (Table 11.1)
- Updated treatment of emphysema to include roflumilast (*Daliresp*) as selective inhibitor of phosphodiesterase 4 (PDE4)
- Added mometasone and formoterol for patients not controlled by other medications or when more than one medication is needed for asthma

Preface



Chapter 12 Drugs for the Gastrointestinal System

- Deleted kaolin and pectin from discussion of antidiarrheals and changed to current ingredients bismuth subsalicylate
- Deleted casanthranol as an ingredient in *Peri-Colace* and changed to senna
- Added lorcasin (*Belviq*) as a new weight-loss drug to be used in conjunction with diet and exercise
- Added phentermine and topiramate (*Qsymia*) to be prescribed for weight-loss management
- Presented general principles for giving medications for the GI system in a table (Table 12.2)

Chapter 13 Drugs for the Urinary System and Fluid Balance

- Emphasized parts of the urinary system
- Emphasized abnormal alterations in the urine
- Changed pediatric concerns to pediatric dehydration
- Added that phenazopyridine (Pyridium) may now be purchased at a lower dose over the counter than the prescription Pyridium

Chapter 14 Drugs for the Reproductive System

- Added dienogest (Natazia) as a new progestin used with estradiol in a combination oral contraceptive formulation

Chapter 15 Drugs for the Endocrine System

- Added linagliptin (Trajenta) as an oral hypoglycemic known as a DPP4 inhibitor
- Presented instructions for giving insulin in a table (Table 15.5)

Chapter 16 Drugs for the Musculoskeletal System

- Added denosumab (Prolia) to the drugs for osteoporosis
- Added new drug tocilizumab (Actemra) as a biological agent or interleukin

Chapter 17 Drugs for the Nervous and Sensory Systems

- Added potassium blocker dalfampridine (*Ampyra*)
- Added pediatric seizure medication ezogabine (*Potiga*)
- Deleted Darvocet -N, which has been taken off the market

Chapter 18 Psychotropic Drugs

- Added duloxetine (*Cymbalta*), an antidepressant, and vilazodone (*Vibryd*)
- Added lurasidone (*Latuda*) to antipsychotics
- Presented guidelines that make sedatives more effective in a table (Table 18.1)



Preface

Chapter 19 Antineoplastic Drugs

- Presented characteristics of cancer in a table (Table 19.1)
- Changed drugs for chemotherapy to chemotherapy
- Added drugs for chemotherapy before discussion of alkylating agents
- Presented physical side effects of chemotherapy in a table (Table 19.2)

Chapter 20 Drugs for the Pediatric Patient

- Added methods of administration before discussion of oral administration

Chapter 21 Drugs for the Older Adult Patient

- Revised learning outcomes

Teaching Resources

Instructor's Manual

Prepared by Donna Gauwitz, each chapter of the Instructor's Manual includes chapter learning outcomes, a chapter outline, teaching strategies, a critical-thinking activity, and answers to the end-of-chapter review assignments. Also available are practice NCLEX questions. Correlation charts for the AAMA, AMT, SCANS, and National Health Care Skills Standards are also available.

Test Bank

The test bank includes over 1,500 multiple-choice, fill-in-the-blank, and essay problems to meet any instructor's testing needs. The computerized test bank allows instructors to create their own tests and measure students' knowledge of chapter content.

PowerPoint Presentation

PowerPoint slides allow instructors to illustrate key points from each chapter and include additional critical-thinking questions to prompt classroom discussion.

McGraw-Hill Connect Plus [Administering Medications]

McGraw-Hill *Connect Plus* [Administering Medications] is a web-based assignment and assessment platform that gives students the means to better connect with their coursework, with their instructors, and with the important concepts that they will need to know for success now and in the future. With *Connect Plus* [Administering Medications], instructors can deliver assignments, quizzes, and tests easily online. Students can practice important skills at their own pace and on their own schedule. With *Connect Plus* [Administering Medications], students also get 24/7 online access to an eBook—an online edition of the text—to aid them in successfully completing their work, wherever and whenever they choose.



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As a result of the adaptive reading experience found in SmartBook, students are more likely to retain knowledge, stay in class, and get better grades. This revolutionary technology is available only from McGraw-Hill Education and for hundreds of course areas as part of the LearnSmart Advantage series.

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