

10th
edition

handbook of
CLINICAL
Drug Data

PHILIP O. ANDERSON

JAMES E. KNOBEN

WILLIAM G. TROUTMAN

handbook of **Clinical Drug Data**

tenth edition

EDITORS

Philip O. Anderson, PharmD, FASHP, FCSHP

Director, Drug Information Service, Department of Pharmacy
University of California Medical Center, San Diego, California
Clinical Professor of Pharmacy
University of California, San Francisco
San Diego Program, San Diego, California

James E. Knoben, PharmD, MPH

Drug Information Officer
Special Assistant to Associate Director for Specialized Information Services
National Library of Medicine
National Institutes of Health
Bethesda, Maryland

William G. Troutman, PharmD, FASHP

Regents' Professor of Pharmacy, College of Pharmacy
University of New Mexico, Albuquerque, New Mexico

McGraw-Hill

Medical Publishing Division

New York Chicago San Francisco Lisbon London Madrid
Mexico City Milan New Delhi San Juan Seoul Singapore Sydney
Toronto



HANDBOOK OF CLINICAL DRUG DATA, 10TH EDITION

Copyright © 2002 by The **McGraw-Hill Companies**, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a data base or retrieval system, without the prior written permission of the publisher.

5 6 7 8 9 0 DOC DOC 0 9 8 7 6

ISBN 0-07-136362-9

This book was set in Times Roman at Pine Tree Composition, Inc.
The editors were Stephen Zollo and Nicky Panton.
The production supervisor was Richard Ruzicka.
The cover designer was Janice Bielawa.
The index was prepared by Jerry Ralya.

R.R. Donnelley and Sons Company was printer and binder.

This book is printed on acid-free paper.

Library of Congress Cataloging-in-Publication Data

Handbook of clinical drug data.—10th ed. / [edited by] Philip Anderson, James Knoben, William Troutman.

p.; cm.

Includes index.

ISBN 0-07-136362-9

1. Pharmacology—Handbooks, manuals, etc. 2. Drugs—Handbooks, manuals, etc. I. Title: Handbook of Clinical drug data. II. Anderson, Philip O. III. Knoben, James E. IV. Troutman, William G.

[DNLM: 1. Pharmaceutical Preparations—Handbooks. 2. Pharmacology, Clinical—Handbooks. QV 39 H2358 2001]

RM301.12.H36 2001

615'.1—dc21

00-054887

INTERNATIONAL EDITION ISBN 112445-4

Copyright © 2002. Exclusive rights by the McGraw-Hill Companies, Inc., for manufacture and export. This book cannot be reexported from the country to which it is consigned by McGraw-Hill. The International Edition is not available in North America.

handbook of

Clinical Drug Data

Notice

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The authors and the publisher of this work have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication. However, in view of the possibility of human error or changes in medical sciences, neither the authors nor the publisher nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they disclaim all responsibility for any errors or omissions or for the results obtained from use of such information. Readers are encouraged to confirm the information contained in this work. For example and in particular, readers are advised to check the product information sheet included in the package of each drug they plan to administer to be certain that the information contained in this work is accurate and that changes have not been made in the recommended dose or in the contraindications for administration. This recommendation is of particular importance in connection with new or infrequently used drugs.

NOTICE: The editors, Philip O. Anderson, PharmD, James E. Knoben, PharmD, and William G. Troutman, PharmD, and the contributors have written this book in our private capacities. No official support or endorsement by any university, hospital, federal agency, or pharmaceutical company is intended or should be inferred.

Contributors

Brian K. Alldredge, PharmD

Professor of Clinical Pharmacy; Clinical Professor of Neurology, UCSF Department of Clinical Pharmacy, University of California, San Francisco, California

Philip O. Anderson, PharmD, FASHP, FCSHP

Director, Drug Information Service, Department of Pharmacy, University of California San Diego Medical Center; Clinical Professor of Pharmacy, University of California, San Francisco, San Diego Program, San Diego, California

Danial E. Baker, PharmD, FASHP, FASCP

Professor of Pharmacy Practice; Director, Drug Information Center; Director, Continuing Education Program, College of Pharmacy, Washington State University at Spokane, Spokane, Washington

Craig R. Ballard, PharmD, FCSHP

HIV Pharmacotherapy Specialist, University of California Medical Center, San Diego, California; Assistant Clinical Professor of Pharmacy, University of California, San Francisco, San Diego Program, San Diego, California

Jerry L. Bauman, PharmD, FACC, FCCP

Professor and Head, Department of Pharmacy Practice, University of Illinois at Chicago, Chicago, Illinois

Blaine E. Benson, PharmD, DABAT

Assistant Professor of Pharmacy, College of Pharmacy; Director, New Mexico Poison and Drug Information Center, University of New Mexico, Albuquerque, New Mexico

Toy S. Biederman, PharmD

Clinical Research Fellow in Neurology, The Ohio State University College of Pharmacy, Columbus, Ohio

R. Keith Campbell, BSPharm, MBA, CDE, FASHP

Associate Dean and Professor of Pharmacy Practice, College of Pharmacy, Washington State University, Pullman, Washington

Juliana Chan, PharmD

Research Assistant Professor of Pharmacy Practice, Department of Pharmacy Practice, University of Illinois at Chicago, Chicago, Illinois

Paul G. Cuddy, PharmD

Associate Professor, School of Medicine, University of Missouri-Kansas City, Kansas City, Missouri

Robert J. DiDomenico, PharmD

Clinical Assistant Professor, Department of Pharmacy Practice, University of Illinois at Chicago; Cardiovascular Pharmacotherapist, University of Illinois at Chicago Medical Center, Chicago, Illinois

Betty J. Dong, PharmD

Professor of Clinical Pharmacy and Family and Community Medicine, Department of Clinical Pharmacy, University of California School of Pharmacy, San Francisco; Clinical Pharmacist, Thyroid Clinic, University of California, San Francisco, California

Robert T. Dorr, PhD

Professor of Pharmacology, Pharmacology Department, College of Medicine, Arizona Cancer Center, University of Arizona, Tucson, Arizona

David G. Dunlop, PharmD, MPA

Inpatient Pharmacy Flight Commander, Wilford Hall Medical Center, Lackland AFB, San Antonio, Texas

Allison E. Einhorn, PharmD

Clinical Associate, Department of Pharmacy Practice, University of Illinois at Chicago, Chicago, Illinois

Raymond W. Hammond, PharmD, FCCP, BCPS

Associate Dean for Practice Programs and Clinical Associate Professor of Pharmacy, University of Houston, College of Pharmacy, Houston, Texas

Philip D. Hansten, PharmD

Professor of Pharmacy, School of Pharmacy, University of Washington, Seattle Washington

Mark T. Holdsworth, PharmD, BCPS, BCOP

Associate Professor of Pharmacy and Pediatrics, College of Pharmacy, University of New Mexico, Albuquerque, New Mexico

Polly E. Kintzel, PharmD, BCPS, BCOP

Clinical Pharmacist Specialist, Barbara Ann Karmanos Cancer Institute, Harper University Hospital, Detroit, Michigan

James E. Knoben, PharmD, MPH

Drug Information Officer, Special Assistant to Associate Director for Specialized Information Services, National Library of Medicine, National Institutes of Health, Bethesda, Maryland

James R. Lane, Jr., PharmD

Pharmacist Specialist, Coordinator of Applied Pharmacokinetics, Department of Pharmacy, University of California San Diego Medical Center; Assistant Clinical Professor of Pharmacy, University of California, San Francisco, San Diego Program, San Diego, California

Patricia L. Marshik, PharmD

Assistant Professor of Pharmacy, College of Pharmacy, University of New Mexico Health Sciences Center, Albuquerque, New Mexico

Gary R. Matzke, PharmD, FCP, FCCP

Professor of Pharmaceutical Sciences and Medicine, Department of Pharmaceutical Sciences and Medicine, School of Pharmacy, University of Pittsburgh, Pittsburgh, Pennsylvania

Renée-Claude Mercier, PharmD, BCPS

Assistant Professor of Pharmacy, College of Pharmacy, University of New Mexico, Albuquerque, New Mexico

William E. Murray, PharmD

Pharmacokinetics Service Coordinator, Pharmacy Department, Children's Hospital, San Diego, California; Assistant Clinical Professor of Pharmacy, University of California, San Francisco, San Diego Program, San Diego, California

James J. Nawarskas, PharmD, BCPS

Assistant Professor of Pharmacy, College of Pharmacy, University of New Mexico, Albuquerque, New Mexico

Robert E. Pachorek, PharmD, BCPS

Clinical Pharmacist, Mercy Hospital, San Diego, California; Adjunct Assistant Professor of Pharmacy Practice, University of Southern California, Los Angeles, California; Assistant Clinical Professor of Pharmacy, University of California, San Francisco, San Diego Program, San Diego, California

Stephen M. Setter, PharmD, CGP, DVM

Assistant Professor of Pharmacy Practice, College of Pharmacy, Washington State University, Spokane, Washington

Fred Shatsky, BSPharm, BCNSP

Nutrition Support Pharmacist, Department of Pharmacy, University of California Medical Center, San Diego, California; Assistant Clinical Professor of Pharmacy, University of California, San Francisco, San Diego Program, San Diego, California

Glen L. Stimmel, PharmD, BCPP

Professor of Clinical Pharmacy and Psychiatry, Schools of Pharmacy and Medicine, University of Southern California, Los Angeles, California

Anna Taddio, BPharm, MS, PhD

Clinical Specialist, Neonatal Intensive Care and Associate Scientist, Research Institute, The Hospital for Sick Children; Assistant Professor, Faculty of Pharmacy, University of Toronto, Toronto, Ontario, Canada

Dianne E. Tobias, PharmD

President, Tobias Consulting Services, Davis, California

William G. Troutman, PharmD, FASHP

Regents' Professor of Pharmacy, College of Pharmacy, University of New Mexico, Albuquerque, New Mexico

John R. White, Jr., PA-C, PharmD

Associate Professor of Pharmacy Practice, Washington State University, Spokane, Washington; Director, Washington State University/Sacred Heart Medical Center Drug Studies Unit, Spokane, Washington

James M. Wooten, PharmD

Assistant Professor, School of Medicine, Section of Clinical Pharmacology, University of Missouri-Kansas City; Adjunct Assistant Professor, School of Pharmacy, University of Missouri-Kansas City, Kansas City, Missouri

Preface

The Tenth Edition of the *Handbook of Clinical Drug Data* continues a long tradition of providing clinically relevant, well-referenced drug information compiled by expert clinicians and presented in a compact format. The formats of all sections should be familiar to users of the ninth edition. As with recent editions, information in the *Handbook* is divided into three parts.

Drug Monographs in Part I have been updated to include numerous newly marketed and promising investigational drugs. Areas with extensive revisions include the Antivirals reflecting the many new agents for HIV infection, Immunosuppressants, Anticonvulsants, and the Hematologic Drugs. Three new subsections have been added to reflect the growing number of agents for rheumatoid arthritis, glaucoma and osteoporosis: Antiarthritic Drugs in the Analgesic and Anti-inflammatory Drugs section, Ophthalmic Drugs for Glaucoma in the Central Nervous System section, and Bisphosphonates in the Renal and Electrolytes section.

Clinical Drug Information in Part II continues to provide clinically useful information that helps the reader to decide which drug(s) are most likely to have caused adverse reactions or which are the best choices for patients in special populations. All drug-induced diseases sections have been extensively updated, as have the Cytochrome P450 Interactions, Pregnancy, Breastfeeding, Renal Disease, Immunization, and Cardiac Arrest sections. **Drug-Laboratory Test Interferences in Part III** has also been updated.

In this edition, we welcome several new authors: Dan Baker, Jess Benson, Toy Biederman, Juliana Chan, Paul Cuddy, Rob DiDomenico, Allison Einhorn, Ray Hammond, Patty Marshik, Gary Matzke (a returning author), Renée Mercier, and Anna Taddio (our first "international" author). We would also like to thank the previous authors whose work in most cases served as the basis for revisions of the chapters that appear in this edition by new authors: Andrea Anderson (Drugs and Pregnancy), Lisa Ashton (Respiratory Drugs), Arasb Ateshkadi (Renal and Electrolytes), Rosemary Berardi (Gastrointestinal Drugs), Larry Borgsdorf (anaphylaxis) Larry Davis (NSAIDs and Hematologic Drugs), John Flaherty (Aminoglycosides and β -Lactams), John Gambertoglio (Renal Disease), Millie Gottwald (Antimigraine Drugs and Neurodegenerative Diseases), Amy Guenette (Inotropic Drugs and Nitrates), Brian Kearney (Renal Disease), and Carolyn Zaleon (Gastrointestinal Drugs). We are saddened to report the deaths of Drs. Ateshkadi and Gambertoglio since our last edition. Both will be remembered for their professional dedication and the quality of their work. John Gambertoglio had long-time personal and professional ties to the editors and will be particularly missed.

This edition also marks another major change, being the first edition produced with our new publisher, McGraw-Hill and new editors, Stephen Zollo and

Nicky Panton. We thank them for their efforts to maintain the high quality of the *Handbook* that we desire and our readers have come to expect.

Philip O. Anderson

James E. Knoben

William G. Troutman

August 2001

How to Use This Book

Part I of this book is organized around 10 major drug categories, which have been subdivided into common therapeutic groups. Within these therapeutic groups, drug information is alphabetically presented in three formats: **Monographs**, **Minimonographs**, and **Comparison Charts**. Monographs and Comparison Charts are *grouped together* to ensure that related drugs are easy to *compare* and *contrast*. Charts are located after the monographs to which they relate. Drug antagonists are grouped together with agonists to simplify organization and accessibility.

Monographs are used for drugs of major importance and prototype agents.

Minimonographs are used for drugs similar to prototype drugs, those of lesser importance within a therapeutic class, and promising investigational agents. Minimonographs contain only selected subheadings of information rather than all subheadings contained in the full monographs.

Comparison Charts are used to present clinically useful information on members of the same pharmacologic class and different drugs with a similar therapeutic use, as well as to present clinically relevant information on certain other topics.

The preferred method to gain access to complete information on a *particular brand* or *generic drug* is to use the index at the end of the book. The index may also direct the user to *other pertinent information* on the drug.

MONOGRAPH FORMAT

CLASS INSTRUCTIONS

This is an optional heading at the beginning of each drug class. It consists of patient instructions that apply to more than one of the drug monographs in this subcategory. If all drugs are not identical in their instructions, only the common information is found here. The Patient Instructions section of each monograph that is affected states, “*See Class Instructions*” as the opening phrase.

GENERIC DRUG NAME

Brand Name(s)

The *nonproprietary* (*generic*) name is listed on the left, followed by common brand names listed on the right. Brand-name products listed are not necessarily superior or preferable to other brand-name or generic products; “Various” indicates the availability of additional brand and/or generic products.

Pharmacology. A description of the chemistry, major mechanisms of action, and human pharmacology of the drug in clinical application.

Administration and Adult Dosage. Route of administration, indications, and usual adult dosage range are given for the most common labeled uses. Dosages correspond

to those in the product labeling or in standard reference sources. “Dose” refers to a single administration and “dosage” to a cumulative amount (eg, daily dosage).

Special Populations. Dosages in patient populations other than the typical adult are listed:

Pediatric Dosage (given by age or weight range)

Geriatric Dosage (given by age range)

Other Conditions (renal failure, hepatic disease, obesity, etc.)

Dosage Forms. The most commonly used dosage forms and available strengths are listed, as well as popular combination product dosage forms. Prediluted IV piggyback or large-volume parenteral containers are not listed unless this is the only commercially available product.

Patient Instructions. Key information that should be provided to the patient when prescribing or dispensing medication is presented. When introductions apply to an entire drug category, see “Class Instructions” at the beginning of that subcategory.

Missed Doses. What the patient should do if one or more doses are missed.

Pharmacokinetics. Data are presented as the mean \pm the standard deviation. Occasionally the standard error of the mean (SE) is the only information available on variability, and it is identified as such.

Onset and Duration (time course of the pharmacologic or therapeutic effect)

Serum Levels (therapeutic and toxic plasma concentrations are given)

Fate (The course of the drug in the body is traced. Pharmacokinetic parameters are generally provided as total body weight normalized values. The volume of distribution is either a V_d in a one-compartment system or V_c and $V_{d\beta}$ or V_{dss} in a two-compartment system.)

$t_{1/2}$ (terminal half-life is presented)

Adverse Reactions. Reactions known to be dose related are usually given first, then other reactions in decreasing order of frequency. Reaction frequency is classified into three ranges. However, percentages of reactions may be provided for reactions that occur more frequently than 1%.

frequent	(>1/100 patients)
occasional	(1/100 to 1/10,000 patients)
rare	(<1/10,000 patients)

Contraindications. Those listed in product labeling are given. “Hypersensitivity” is not listed as a contraindication because it is understood that patients should usually not be given a drug to which they are allergic or hypersensitive—exceptions are noted.

Precautions. Warnings for use of the drug in certain disease states and/or patient populations, together with any cross-sensitivity with other drugs. Part II, Chapter 3, “Drug Use in Special Populations,” should be consulted for more information, particularly regarding pregnancy and breastfeeding.

Drug Interactions. The most important drug interactions are listed.

Parameters to Monitor. Important clinical signs and/or laboratory tests to monitor to ensure safe and effective use are presented. The frequency of monitoring may also be given; however, for many drugs the optimal frequency has not been determined.

Notes. Distinguishing characteristics, therapeutic usefulness, or relative efficacy of the drug are presented, as well as unique or noteworthy physicochemical properties, handling, storage, or relative cost.

Contents

<i>Preface</i>	xiii
<i>How to Use This Book</i>	xv
PART I DRUG MONOGRAPHS	1
Principal Editor: Philip O. Anderson, PharmD	
Analgesic and Anti-inflammatory Drugs	3
Antimigraine Drugs, <i>Toy S. Biederman, PharmD</i>	3
Antirheumatic Drugs, <i>Stephen M. Setter, PharmD, DVM,</i> <i>Danial E. Baker, PharmD</i>	10
Nonsteroidal Anti-inflammatory Drugs, <i>Stephen M. Setter,</i> <i>PharmD, DVM, Danial E. Baker, PharmD</i>	16
Opioids, <i>Mark T. Holdsworth, PharmD</i>	31
Antimicrobial Drugs	55
Aminoglycosides, <i>Renée-Claude Mercier, PharmD</i>	55
Antifungal Drugs, <i>Polly E. Kintzel, PharmD, Philip O. Anderson,</i> <i>PharmD</i>	62
Antimycobacterial Drugs, <i>Craig R. Ballard, PharmD</i>	82
Antiparasitic Drugs, <i>Philip O. Anderson, PharmD</i>	93
Antiviral Drugs, <i>Craig R. Ballard, PharmD</i>	98
β -Lactams, <i>Renée-Claude Mercier, PharmD</i>	126
Macrolides, <i>Craig R. Ballard, PharmD</i>	159
Quinolones, <i>Renée-Claude Mercier, PharmD</i>	166
Sulfonamides, <i>Craig R. Ballard, PharmD</i>	173
Tetracyclines, <i>Philip O. Anderson, PharmD</i>	175
Miscellaneous Antimicrobials, <i>Renée-Claude Mercier,</i> <i>PharmD</i>	181
Antineoplastics, Chemoprotectants, and Immunosuppressants	204
Antineoplastics, <i>Robert T. Dorr, PhD</i>	204
Alkylating Agents, <i>Robert T. Dorr, PhD</i>	205
Antimetabolites, <i>Robert T. Dorr, PhD</i>	221
Cytokines, <i>Robert T. Dorr, PhD</i>	233
DNA Intercalating Drugs, <i>Robert T. Dorr, PhD</i>	237

Hormonal Drugs and Antagonists, <i>Robert T. Dorr, PhD</i>	245
Mitotic Inhibitors, <i>Robert T. Dorr, PhD</i>	253
Monoclonal Antibodies, <i>Robert T. Dorr, PhD</i>	260
Miscellaneous Antineoplastics, <i>Robert T. Dorr, PhD</i>	263
Chemoprotectants, <i>Robert T. Dorr, PhD</i>	267
Immunosuppressants, <i>Polly E. Kintzel, PharmD</i>	270
Cardiovascular Drugs	297
Antiarrhythmic Drugs, <i>Jerry L. Bauman, PharmD</i>	297
Antihypertensive Drugs, <i>James J. Nawarskas, PharmD</i>	324
β -Adrenergic Blocking Drugs, <i>Jerry L. Bauman, PharmD</i>	354
Calcium-Channel Blocking Drugs, <i>Jerry L. Bauman, PharmD</i>	361
Hypolipidemic Drugs, <i>James Wooten, PharmD</i>	368
Inotropic Drugs, <i>Robert J. DiDomenico, PharmD</i>	386
Nitrates, <i>Robert J. DiDomenico, PharmD</i>	397
Central Nervous System Drugs	415
Anticonvulsants, <i>Brian K. Alldredge, PharmD</i>	415
Antidepressants, <i>Glen L. Stimmel, PharmD</i>	444
Antipsychotic Drugs, <i>Glen L. Stimmel, PharmD</i>	460
Anxiolytics, Sedatives, and Hypnotics, <i>Glen L. Stimmel, PharmD</i>	470
Lithium, <i>Glen L. Stimmel, PharmD</i>	480
Neurodegenerative Disease Drugs, <i>Toy S. Biederman, PharmD</i>	481
Ophthalmic Drugs for Glaucoma, <i>Raymond W. Hammond, PharmD</i>	501
Gastrointestinal Drugs	528
Acid-Peptic Therapy, <i>Juliana Chan, PharmD</i>	528
Antiemetics, <i>Mark T. Holdsworth, PharmD</i>	553
Gastrointestinal Motility, <i>Robert E. Pachorek, PharmD, Juliana Chan, PharmD</i>	563
Miscellaneous Gastrointestinal Drugs, <i>Juliana Chan, PharmD</i>	574
Hematologic Drugs	595
Coagulants and Anticoagulants, <i>Robert J. DiDomenico, PharmD</i>	595
Hematopoietics, <i>Robert J. DiDomenico, PharmD</i>	617

Hormonal Drugs	631
Adrenal Hormones, <i>Robert E. Pachorek, PharmD</i>	631
Antidiabetic Drugs, <i>Stephen M. Setter, PharmD, DVM,</i> <i>John R. White, Jr., PA-C, PharmD, R. Keith Campbell,</i> <i>BSP Pharm, MBA</i>	642
Contraceptives, <i>Betty J. Dong, PharmD</i>	661
Female Sex Hormones, <i>Betty J. Dong, PharmD</i>	679
Thyroid and Antithyroid Drugs, <i>Betty J. Dong, PharmD</i>	697
Renal and Electrolytes	716
Diuretics, <i>Paul G. Cuddy, PharmD</i>	716
Electrolytes, <i>Paul G. Cuddy, PharmD</i>	734
Bisphosphonates, <i>Paul G. Cuddy, PharmD</i>	752
Gout Therapy, <i>Robert E. Pachorek, PharmD</i>	757
Respiratory Drugs	769
Antiasthmatics, <i>Patricia L. Marshik, PharmD</i>	769
Antihistamines, <i>Patricia L. Marshik, PharmD</i>	790
Corticosteroids, <i>Patricia L. Marshik, PharmD</i>	804
Cough and Cold, <i>Robert E. Pachorek, PharmD</i>	809
PART II CLINICAL INFORMATION	815
Principal Editor: William G. Troutman, PharmD	
Chapter 1 Drug-Induced Diseases	817
Blood Dyscrasias, <i>William G. Troutman, PharmD</i>	817
Hepatotoxicity, <i>William G. Troutman, PharmD</i>	830
Nephrotoxicity, <i>William G. Troutman, PharmD</i>	841
Oculotoxicity, <i>William G. Troutman, PharmD</i>	850
Ototoxicity, <i>William G. Troutman, PharmD</i>	859
Pancreatitis, <i>William G. Troutman, PharmD</i>	863
Sexual Dysfunction, <i>William G. Troutman, PharmD</i>	867
Skin Disorders, <i>William G. Troutman, PharmD</i>	873
Chapter 2 Drug Use in Special Populations	877
Drugs and Pregnancy, <i>Anna Taddio, BSP Pharm, MSc, PhD</i>	877
Drugs and Breastfeeding, <i>Philip O. Anderson, PharmD</i>	914
Pediatric Drug Therapy, <i>William E. Murray, PharmD</i>	943
Geriatric Drug Therapy, <i>Dianne E. Tobias, PharmD</i>	948
Renal Disease, <i>Gary R. Matzke, PharmD</i>	954
Chapter 3 Immunization	979