THIRD EDITION

CLINICAL DRUG THERAPY

RATIONALES

FOR

NURSING

PRACTICE

ANNE COLLINS ABRAMS

J. B. LIPPINCOTT COMPANY

CLINICAL DRUG THERAPY

Rationales for Nursing Practice

THIRD EDITION

ANNE COLLINS ABRAMS, R.N., B.S.N., M.S.N.

Associate Professor Department of Baccalaureate Nursing College of Allied Health and Nursing Eastern Kentucky University Richmond, Kentucky

CONSULTANT

TRACEY L. GOLDSMITH, Pharm. D.

Coordinator of Clinical Services Department of Pharmaceutical Services Hermann Hospital Houston, Texas



J. B. Lippincott Company

Philadelphia

New York • St. Louis • London • Sydney • Tokyo

Acquisitions Editor: Ellen Campbell

Coordinating Editorial Assistant: Amy Stonehouse

Project Editor: Tracy Resnik/Tom Gibbons

Indexer: Helene Taylor Cover Design: Anita Curry

Design Coordinator: Kathy Kelley-Luedtke

Production Manager: Helen Ewan

Production Coordinator: Pamela Milcos/William F. Hallman

Compositor: Tapsco, Inc.

Printer/Binder: Courier Westford

Third Edition

Copyright © 1991, by J. B. Lippincott Company
Copyright © 1987, 1983, by J. B. Lippincott Company. All rights
reserved. No part of this book may be used or reproduced in any
manner whatsoever without written permission except for brief
quotations embodied in critical articles and reviews. Printed in the
United States of America. For information write J. B. Lippincott
Company, East Washington Square, Philadelphia, Pennsylvania
19105.

6 5 4

Library of Congress Cataloging-in-Publication Data

Abrams, Anne Collins.

Clinical drug therapy: rationales for nursing practice/Anne Collins Abrams; consultant, Tracey L. Goldsmith.—3rd ed.

p. cm.

Includes bibliographical references.

Includes index.

ISBN 0-397-54801-X

1. Chemotherapy. 2. Nursing. I. Goldsmith, Tracey L.

II. Title.

[DNLM: 1. Drug Therapy—nurses' instruction. 2. Drugs—nurses' instruction. 3. Nursing Process. QV 55 A161c]

RM262.A27 1991

615.5′8—dc20

DNLM/DLC

for Library of Congress

90-6577

CH

Any procedure or practice described in this book should be applied by the health-care practitioner under appropriate supervision in accordance with professional standards of care used with regard to the unique circumstances that apply in each practice situation. Care has been taken to confirm the accuracy of information presented and to describe generally accepted practices. However, the authors, editors, and publisher cannot accept any responsibility for errors or omissions or for any consequences from application of the information in this book and make no warranty, express or implied, with respect to the contents of the book.

Every effort has been made to ensure drug selections and dosages are in accordance with current recommendations and practice. Because of ongoing research, changes in government regulations and the constant flow of information on drug therapy, reactions and interactions, the reader is cautioned to check the package insert for each drug for indications, dosages, warnings and precautions, particularly if the drug is new or infrequently used.

1

CLINICAL DRUG THERAPY

Rationales for Nursing Practice

To my husband, Bob, and my son, Steve, with much appreciation for their encouragement and support

To nursing faculty and students, who continue to struggle with an ever-expanding knowledge base in their efforts to provide high-quality nursing care

PREFACE

The overall purpose of this edition of *Clinical Drug Therapy: Rationales for Nursing Practice*, as with the previous editions, is to promote rational, safe, and effective drug therapy. The author strongly believes that the study of drugs is important to nurses primarily in relation to drug effects on people. Thus, safe and effective drug therapy requires knowledge about both the drug and the person receiving it. Other beliefs and assumptions include the following:

- Knowledge and understanding of drug effects on people allow the nurse to predict both therapeutic and adverse effects of drug therapy.
- Therapeutic effects can be enhanced by nursing interventions.
- Adverse effects may be prevented or minimized by nursing interventions.
- If effective, non-drug-related interventions are generally safer than drug therapy.
- All drugs may cause adverse effects.
- Nursing responsibility includes observation of client responses to drug therapy and teaching clients about drug therapy, as well as accurate administration of drugs.

With these beliefs in mind, all chapters have been thoroughly reviewed and most have been extensively revised to reflect newer drugs and current usage of older drugs. In addition, nursing process content has been greatly expanded and reorganized to emphasize the importance of the nursing process in drug therapy as in other aspects of nursing practice. Other important changes are additional guidelines for using drugs in children and older adults and revision of Chapter 67 to provide a comprehensive view of drug effects during pregnancy and lactation. Features especially liked by reviewers have been retained. These include the chapters of physiology review and the Principles of Therapy and Nursing Actions/Rationale portions of most chapters.

As in the previous editions, the book has ten sections. The first

section provides an overview of the basic knowledge and skills needed for safe and effective drug therapy. Topics include drug effects on body tissues, methods of drug administration, and the nursing process in relation to drug therapy. In subsequent sections, drugs are categorized mainly according to their therapeutic effects on particular body systems. Also, separate sections discuss nutritional products, drugs used in prevention and treatment of infections, and drugs used in specific situations such as neoplastic disease, ophthalmic, and dermatologic disorders. Most sections begin with a brief chapter that reviews the physiology of a body system; other chapters discuss drugs used to treat various disorders of that body system.

Individual chapters begin with a description of a condition for which a drug group is used. This is followed by a general description of a drug group, including mechanisms of action, indications for use, and contraindications. Next, monographs of individual drugs are listed, with dosages for adults and children and routes of administration. Additional clinically relevant information is presented under the headings of Nursing Process, Principles of Therapy, and Nursing Actions. Nursing Process includes assessment of the client's condition in relation to the drug group, nursing diagnoses, expected outcomes in terms of client characteristics, interventions and teaching indicated, and evaluation of the client's progress toward expected outcomes. Principles of Therapy provide guidelines for rational choices of drugs, dosages, and routes of administration as well as using the drugs in specific populations. Once a drug has been ordered, Nursing Actions state specific nursing responsibilbilities within the following five general categories: Administer Drugs Accurately, Observe for Therapeutic Effects, Observe for Adverse Effects, Observe for Drug Interactions, and Teach Clients. A unique feature of Clinical Drug Therapy remains the inclusion of rationales for nursing actions, the purpose of which is to provide a strong knowledge base and scientific foundation.

> Anne Collins Abrams, R.N., B.S.N., M.S.N.

ACKNOWLEDGMENTS

Sincere appreciation is expressed to the following people who assisted in the preparation of this book:

Tracey Goldsmith, Pharm. D., who reviewed all chapters and made helpful suggestions

Ellen Campbell and Nancy Mullins, editors at J. B. Lippincott Company

Users of the second edition who took time to write their opinions and suggestions and return these to the publisher

CLINICAL DRUG THERAPY

Rationales for Nursing Practice

CONTENTS

SECTION ONE	
INTRODUCTION TO DRUG THERAPY	
1 Introduction to Pharmacology	, Š
Sources of Drugs	į
Drug Nomenclature	
Sources of Drug Information	.4
Drug Laws and Standards	4
Mechanisms of Drug Movement	4
Pharmacodynamics	
Pharmacokinetics	4
Variables that Affect Drug Actions	
Adverse Effects of Drugs	1
Tolerance and Cross-tolerance	11
2 Administering Medications	11
Medication Systems	1
Medication Orders	1.
Drug Preparations and Dosage Forms	14
Calculating Drug Dosages	1
Routes of Administration	1
3 Nursing Process in Drug Therapy	20
A Rational Approach to Pharmacology	2
Legal Responsibilities of the Nurse	2
General Principles of Drug Therapy	30
SECTION TWO	
DRUGS AFFECTING THE CENTRAL NERVOUS SYSTEM	3
4 Physiology of the Central Nervous System	39
Characteristics and Functions of the CNS	3
Classification of CNS Drugs	4

5	Narcotic Analgesics and Narcotic Antagonists	43
	Description	43
	Mechanism of Action	43
	Indications for Use	43
	Contraindications for Use	44
	Classifications and Individual Drugs	44
	Agonists-Antagonists	47
	Principles of Therapy: Narcotic Analgesics	49
6	Analgesic-Antipyretic-Anti-Inflammatory and Related	
	Drugs	55
	Description	55
	Mechanism of Action	56
	Indications for Use	56
	Contraindications for Use	58
	Individual Drugs	58
	Principles of Therapy: Analgesic–Antipyretic–Anti-	63
	Inflammatory and Related Drugs	03
7	Sedative-Hypnotics	71
	Description	71
	Mechanism of Action	72
	Indications for Use	72
	Contraindications for Use	72
	Individual Sedative-Hypnotic Drugs	72
	Principles of Therapy: Sedative-Hypnotic Drugs	75
8	Antianxiety Drugs	79
	Anxiety	79 70
	Benzodiazepines	79
	Individual Antianxiety Drugs	82
	Principles of Therapy: Antianxiety Drugs	84
9	Antipsychotic Drugs	89
	Description	89
	Mechanism of Action	90
	Indications for Use	90
	Contraindications for Use	90
	Individual Antipsychotic Drugs	90
	Principles of Therapy: Antipsychotic Drugs	96
10	Antidepressants	103
	Depression	103
	Types of Antidepressants	104
	Mechanisms of Action	105
	Indications for Use	106
	Contraindications for Use	106
	Individual Antidepressants	106
	Principles of Therapy: Antidepressants	108
11	Anticonvulsants	114
	Seizure Disorders	114
	Types of Anticonvulsants	115
	Mechanism of Action	115

Indications for Use	115
Contraindications for Use	115
Individual Anticonvulsant Drugs	115
Principles of Therapy: Anticonvulsant Drugs	120
12 Antiparkinson Drugs	125
Description	125
Mechanisms of Action	125
Indications for Use	126
Contraindications for Use	126
Individual Antiparkinson Drugs	126
Principles of Therapy: Antiparkinson Drugs	128
13 Skeletal Muscle Relaxants	133
Description	133
Mechanism of Action	133
Indications for Use	133
Contraindications for Use	134
Principles of Therapy: Skeletal Muscle Relaxants	134
14 Anesthetics	138
General Anesthesia	138
Regional Anesthesia	139
Adjuncts to Anesthesia	139
Individual Anesthetic Agents	140
Principles of Therapy: Anesthetic Drugs	141
15 Alcohol and Other Drug Abuse	153
Types of Drug Dependence	154
Selected Individual Drugs of Abuse	156
Principles of Therapy: Alcohol and Other Drug Abuse	161
16 Central Nervous System Stimulants	166
Uses	166
Types of Stimulants	166
Indications for Use	167
Contraindications for Use	167
Individual CNS Stimulants	167
Principles of Therapy: CNS Stimulants	168
SECTION THREE	
DRUGS AFFECTING THE AUTONOMIC NERVOUS SYSTEM	173
17 Physiology of the Autonomic Nervous System	175
The Sympathetic Nervous System	175
The Parasympathetic Nervous System	176
Characteristics of Autonomic Drugs	177
18 Adrenergic Drugs	178
Description and Uses	178
Mechanism of Action	178
Indications for Use	178
Contraindications for Use	179
Individual Adrenergic Drugs	179
Principles of Therapy: Adrenergic Drugs	182
rinciples of therapy. Adichergic brugs	102

10	A -ti-dronorgic Drugs	188
	Antiadrenergic Drugs Description	188
	Mechanism of Action	188
	Indications for Use	189
	Contraindications for Use	190
	Individual Antiadrenergic Drugs	190
	Principles of Therapy: Antiadrenergic Drugs	193
	Timespies of incrupy. Annuaremental 2 rags	
20	Cholinergic Drugs	199
	Description	199
	Mechanisms of Action and Effects	199
	Indications for Use	200
	Contraindications for Use	200
	Individual Cholinergic Drugs	200
	Principles of Therapy: Cholinergic Drugs	202
21	And A. P. Comp.	205
21	Anticholinergic Drugs	205
	Description Make the second Action and Effects	205
	Mechanism of Action and Effects	206
	Indications for Use	206
	Contraindications for Use	207
	Individual Anticholinergic Drugs Principles of Therapy: Anticholinergic Drugs	210
	Principles of Therapy. Afteriornicing brugs	2.0
CECTI	ON FOUR	
	SS AFFECTING THE ENDOCRINE SYSTEM	215
DRUC	ATTESTING THE END COMME CONTRACT	
22	Physiology of the Endocrine System	217
	General Characteristics of Hormonal Drugs	218
23	Hypothalamic and Pituitary Hormones	220
	Description	220
	Therapeutic Limitations	221
	Individual Hormonal Agents	222
	Principles of Therapy: Pituitary Hormones	224
2/	Corticosteroids	228
24		228
	Endogenous Corticosteroids Exogenous Corticosteroids	231
	Mechanisms of Action and Other Characteristics of	
	Glucocorticoid Drugs	231
	Indications for Use	232
	Contraindications for Use	233
	Principles of Therapy: Corticosteroid Drugs	238
	rinciples of frictapy. Corneosterola Brago	
25	Thyroid and Antithyroid Drugs	246
	Description and Uses	246
	Thyroid Disorders	247
	Individual Drugs	249
	Principles of Therapy: Thyroid and Antithyroid Drugs	253
20		
20	Hormones That Regulate Calcium and Phosphorus	259
	Metabolism	259
	Description	262
	Hypocalcemia	_0_

пуретсысенна	200
Principles of Therapy: Drugs Used in Hypercalcemia	269
97 And Habrida Borras	272
27 Antidiabetic Drugs	272272
Description Hymoglysomic Drugs	276
Hypoglycemic Drugs Principles of Therapy: Insulin and Oral Hypoglycemic	270
* *** * *** * *** * *** * *** * *** * *** *	284
Drugs	204
28 Estrogens, Progestins, and Oral Contraceptives	294
Description	294
Estrogens and Progestins Used as Drugs	295
Mechanism of Action	296
Indications for Use	296
Contraindications for Use	296
Individual Estrogens, Progestins, and Oral Contraceptives	297
Principles of Therapy: Estrogens, Progestins, and Oral	
Contraceptives	301
29 Androgens and Anabolic Steroids	306
Description	306
Characteristics of Androgenic and Anabolic Steroid Drugs	307
Mechanism of Action	307
Indications for Use	310
Contraindications for Use	310
Principles of Therapy: Androgens and Anabolic Steroids	311
SECTION FIVE	
NUTRIENTS, FLUIDS, AND ELECTROLYTES	315
20	215
30 Nutritional Products, Anorexiants, and Digestants	317
Description and Uses	317
Individual Nutritional Products for Oral or Tube Feeding	321
Intravenous Fluids	323
Pancreatic Enzymes	324
Principles of Therapy: Nutritional Agents and	225
Anorexiants	325
31 Vitamins	332
Description and Uses	332
Principles of Therapy: Vitamins	337
Timespies of Therapy. Training	,
32 Minerals and Electrolytes	346
Description and Uses	346
Individual Agents Used in Mineral-Electrolyte and	
Acid-Base Imbalances	348
Principles of Therapy: Mineral-Electrolyte and Acid-	
Base Disorders	358
SECTION SIX	
DRUGS USED TO TREAT AND PREVENT INFECTIONS	369
DRUGS USED TO TREAT AND PREVENT INFECTIONS	369
	369 371
33 General Characteristics of Anti-Infective Drugs	371

Characteristics of Anti-Infective Drugs	373
Principles of Therapy: Anti-Infective Drugs	375
34 Penicillins	381
Description	381
Mechanism of Action	381
Indications for Use	382
Contraindications for Use	382
Subgroups and Individual Penicillins	382
Principles of Therapy: Penicillins	386
35 Cephalosporins	389
Description	389
Mechanism of Action	390
Indications for Use	390
Contraindications for Use	390
Individual Cephalosporins	390
Principles of Therapy: Cephalosporins	390
20	200
36 Aminoglycosides	398
Description	398
Mechanism of Action	398
Indications for Use	398
Contraindications for Use	399
Individual Aminoglycosides	399
Principles of Therapy: Aminoglycosides	401
27 Terramelines	405
37 Tetracyclines	405
Description Machanian of Action	405
Mechanism of Action	405
Indications for Use	407
Contraindications for Use	407
Principles of Therapy: Tetracyclines	407
38 Macrolides and Lincosamides	410
Description	410
Mechanism of Action	410
Indications for Use	410
Contraindications for Use	411
Individual Macrolides and Lincosamides	411
Principles of Therapy: Erythromycin and Clindamycin	412
Timeliples of Therapy. 21 times and the same of	
39 Miscellaneous Anti-Infectives	415
Beta Lactams	415
Quinolones	416
Polymyxins	416
Principles of Therapy: Miscellaneous Anti-Infectives	417
40 Sulfonamides and Urinary Antiseptics	420
Description	420
Mechanism of Action	420
Indications for Use	420
Contraindications for Use	421
Individual Drugs	421
Principles of Therapy: Sulfonamides and Urinary	
Antiseptics	425

41	Antitubercular Drugs	429
	Description	429
	Mechanisms of Action	429
	Indications for Use	430
	Contraindications for Use	430
	Individual Antitubercular Drugs	430
	Principles of Therapy: Antitubercular Drugs	432
42	Antiviral Drugs	436
	Description	436
	Mechanism of Action	437
	Individual Antiviral Drugs	437
	Principles of Therapy: Antiviral Drugs	439
43	Antifungal Drugs	443
	Description	443
	Mechanism of Action	444
	Individual Drugs	444
	Principles of Therapy: Antifungal Drugs	444
44	Antiparasitics	449
	Protozoal Infections	449
	Helminthiasis	450
	Scabies and Pediculosis	451 451
	Individual Antiparasitic Drugs	451
	Principles of Therapy: Antiparasitics	476
45	Immunizing Agents	462
	Immune Responses	462
	Types of Immunity	463
	Immunization	463
	Principles of Therapy: Immunizing Agents	475
	ION SEVEN GS AFFECTING THE RESPIRATORY SYSTEM	479
46	Physiology of the Respiratory System	481
47	Bronchodilating and Antiasthmatic Drugs	484
~ /	Description	484
	Mechanisms of Action	484
	Indications for Use	485
	Contraindications for Use	485
	Individual Bronchodilating and Antiasthmatic Drugs	485
	Principles of Therapy: Bronchodilating and	
	Antiasthmatic Drugs	490
48	Antihistamines	495
	Description	495
	Mechanism of Action	496
	Indications for Use	496
	Contraindications for Use	496
	Individual Antihistamines	496
	Principles of Therapy: Antihistamines	501

49	Nasal Decongestants, Antitussives, Mucolytics, and Cold Remedies	504
	Description	504
	Individual Drugs	505
	Principles of Therapy: Nasal Decongestants, Antitussives, Mucolytics, and Cold Remedies	510
	ION EIGHT SS AFFECTING THE CARDIOVASCULAR SYSTEM	515
50	Physiology of the Cardiovascular System	517
	Heart	517
	Blood Vessels	518
	Blood	518
	Drug Therapy in Cardiovascular Disorders	519
51	Cardiotonic–Inotropic Agents Used in Congestive Heart	5 20
	Failure	520
	Congestive Heart Failure	520
	Digitalis Glycosides	521
	Mechanisms of Action	521 522
	Indications for Use	522
	Contraindications for Use Individual Cardiotonic-Inotropic Agents	522
	Principles of Therapy: Cardiotonic-Inotropic Agents	525
	Principles of Therapy, Cardiotome-motropic Agents	141
52	Antiarrhythmic Drugs	532
_	Description	532
	Cardiac Electrophysiology	532
	Cardiac Arrhythmias	533
	Antiarrhythmic Drugs	534
	Indications for Use	534
	Mechanisms of Action	535
	Classifications and Individual Drugs	535
	Principles of Therapy: Antiarrhythmic Drugs	539
53	Antianginal Drugs	544
	Description	544
	Antianginal Drugs	544
	Individual Antianginal Drugs	546
	Principles of Therapy: Antianginal Drugs	549
54	Drugs Used in Hypotension and Shock	553
	Description	553
	Types of Shock	553
	Antishock Drugs	553
	Individual Drugs Used in Hypotension and Shock	554
	Principles of Therapy: Drugs Used in Hypotension and Shock	556
55	Antihypertensive Drugs	559
	Description	559
	Antihypertensive Drugs	560
	Individual Drugs	561
	Principles of Therapy: Antihypertensive Drugs	566