HANDBOOK OF DRUGS AND THE NURSING PROCESS

SECOND EDITION

AMY M. KARCH

J. B. LIPPINCOTT COMPANY

Handbook of DRUGS and the NURSING PROCESS

AMY M. KARCH, R.N., M.S.
Lecturer in Nursing and Biology
Nazareth College of Rochester
Rochester, New York

SECOND EDITION

J. B. LIPPINCOTT COMPANY Philadelphia
New York London Hagerstown

Acquisitions Editor: **Ellen M. Campbell**
Project Editor: **Molly E. Dickmeyer**
Designer: **William T. Donnelly**
Design Coordinator: **Christopher Laird**
Production Manager: **Caren Erlichman**
Compositor: **Bi-Comp, Inc.**
Printer/Binder: **R. R. Donnelley and Sons**

2nd Edition

6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data

Karch, Amy Morrison, 1949-
Handbook of drugs and the nursing process / Amy M. Karch.—2nd ed.
p. cm.
Includes bibliographical references and index.
ISBN 0-397-54907-5: $29.95
1. Chemotherapy—Handbooks, manuals, etc. 2. Drugs—Handbooks, manuals, etc. 3. Nursing—Handbooks, manuals, etc. I. Title.
[DNLM: 1. Drug Therapy—handbooks. 2. Drugs—handbooks. 3. Nursing Process—handbooks. QV 39 K18h]
RM263.K37 1992
615.5'8—dc20
DNLM/DLC
for Library of Congress 91-17316
CIP

How to use this handbook

The number of important drugs in the clinical setting increases every year, as does the nurse's responsibility for drug therapy. It is impossible to memorize all drug information required to provide safe and efficacious drug therapy. The second edition of the *Handbook of Drugs and the Nursing Process* supplies information about drugs commonly encountered by nurses and those requiring significant nursing intervention in a concise, ready-access format. It also presents nursing considerations related to drug therapy in the context of the nursing process, which provides a framework for applying basic pharmacological information to patient care. It is intended for the student nurse who is learning to apply pharmacological data in the clinical situation as well as for the busy practicing professional nurse who needs a quick, easy-to-use clinical drug reference. (Drugs used only as diagnostic agents or administered only by physicians have generally been considered beyond the scope of this handbook.)

Drug information is presented in monograph form; the monographs are arranged alphabetically by the drug's generic name. If the generic name of a drug is not known, the index can provide it for most brand names, common chemical names, and any common abbreviations (*e.g.*, "IDU" for idoxuridine). In addition, the index lists drugs by clinically important classes. Chlorpromazine, for example, is indexed by its generic name, brand names, and classes as an antipsychotic drug (a therapeutic classification), as a phenothiazine (a chemical classification), and as a dopaminergic blocking drug (a classification by postulated mechanism of action). A heading on each page and a letter tab on every right-hand page (much like a dictionary) makes it easier to find the monograph within the book itself.

Each drug monograph is complete in itself and includes all clinically important information that a nurse needs to administer the drug safely and effectively. Every monograph begins with the drug's generic (nonproprietary) name, an alphabetical list of its most common brand names, including common brand names found only in Canada (CAN), a notation indicating if the drug is available over the counter (OTC), and its schedule if it is a controlled substance. The inclusion of a given brand name is not to be interpreted as an endorsement of that particular brand, nor is the omission of a given brand name to be construed as indicating prejudice against that brand.

Commonly accepted pronunciations (from *USAN and the USP Dictionary of Drug Names, 1987*) are provided to help the nurse feel more comfortable discussing the drug with other members of the health care team. The clinically important classes of each drug are indicated to put the drug in appropriate context. The therapeutically useful actions of the drug are described, including, where known, the mechanism(s) by which these therapeutic effects are produced; no attempt is made to list all of the drug's known actions. The description of the therapeutically useful actions is followed by a list of the clinical indications for the drug, including important non-FDA-approved, or unlabeled, indications.

In this edition of the handbook, the adverse effects of each drug are listed by body systems; the most common of these appear in italics to make it easier to assess the patient for adverse effects and to teach the patient what to expect. Adverse effects that have been reported, but are rare or less common, are also listed to make the drug information as complete as possible.

Recommended dosage information, including adult, pediatric, and geriatric, are given, and dosages for different indications are listed when necessary. Details of drug administration that must not be overlooked for the safe administration of the drug (*e.g.*, "Dilute before infusing," or "Infuse *slowly* over 30 min") are included in the dosage section, but other aspects of drug administration (*e.g.*, directions for reconstituting a powder for injection) are presented as "Interventions" in the next section of the monograph.

The remainder of each monograph provides nursing considerations, which are presented in the format of the nursing process. The steps of the nursing process are given slightly different names by different authorities; this handbook considers the nursing process to consist of assessment, nursing diagnosis, intervention, and evaluation, as follows:

1. **Pre-drug-therapy assessment.** This section outlines the information that should be collected before administering the drug, and is divided into two subsections:
   - Patient history: this section includes lists of underlying conditions that constitute **contraindications and cautions** regarding use of each drug, including its **pregnancy category** (in bold type for easy access); a list of drugs that cause important documented **drug–drug interactions** with the drug described in the monograph (this edition lists only the clinically important drug to drug interactions and not all possible and theoretical interactions, again, to aid in the clinical usefulness of the book); and a list of **drug–laboratory test interactions**, which are artifactual changes in laboratory tests that may occur as a result of the administration of the drug and tests that may be difficult or impossible to interpret, and therefore should not be performed, in patients receiving the drug.
   - Physical assessment: a list, by organ system, of data that should be collected before beginning drug therapy, both to allow detection of conditions that are contraindications or cautions to the use of the drug and to provide baseline data to allow detection of adverse reactions to the drug.
2. **Potential drug-related nursing diagnoses.** This consists of a list of nursing diagnoses frequently made in patients as a result of receiving the drug and should therefore be considered when providing care to the patient. These diagnoses frequently relate to the more common adverse effects produced by the drug; nursing diagnoses related to any of the underlying disease states that are indications for the drug are considered beyond the scope of this handbook. The nursing diagnoses used in this edition are taken from the accepted list of NANDA nursing diagnoses which can be found inside the back cover.
3. **Interventions.** This section lists, in chronological order, those nursing activities required in the course of caring for a patient who is receiving the drug. This includes interventions related to drug preparation and administration, the provision of comfort and safety measures, and a list of specific **patient teaching points**, all of which can be transferred directly to the clinical situation.
4. **Evaluation.** Drug administration should be followed by careful evaluation of the patient's therapeutic response, as well as evaluation of possible adverse reactions and drug-drug or drug-laboratory test interactions. In addition, the efficacy of the nursing interventions and the adequacy of patient teaching must be evaluated. Evaluation is an intrinsically important aspect of the nursing process as applied to drug therapy. In the *Handbook of Drugs and the Nursing Process,* the parameters for evaluation are generally either listed in an earlier section of the monograph or follow obviously from material presented earlier. For example, most of the parameters relevant to evaluating the therapeutic response follow from the specific indication for the drug; the parameters relevant to evaluating adverse effects follow from the specific adverse effects attributable to the drug and are listed in the physical assessment section; and the parameters relevant to evaluating the efficacy of nursing interventions and patient teaching follow from the specific interventions and patient teaching provided. Thus, to avoid repetition, a specific evaluation section has been included only when new material must be introduced for evaluation, such as serum drug levels for drugs whose efficacy and safety are made more optimal by the monitoring of serum levels and appropriate adjustment of drug dosage.

To prevent the handbook from becoming unwieldy and less useful, a prototype drug has been chosen for drug classes that contain many similar drugs. The prototype drug monograph serves as a reference for the monographs of non-prototype drugs in the class, which are complete in themselves but provide nursing considerations in a space-saving format under only one heading, "**Basic Nursing Implications.**" This section still provides **Pregnancy Category** alerts, clinically important **Drug–drug** and **Drug–laboratory test interactions**, assessment and intervention measures, and a "**Teach patient**" section which, again, outlines the important teaching points in a format that is directly transferable to the clinical situation.

Appendix I contains information about fixed-combination drugs and gives the dosages of some fixed-combination drugs, especially those that have constituents that are not administered alone. This appendix is arranged alphabetically by therapeutic drug classes (*e.g.*, analgesics, antihypertensives) and is best accessed through the index. Fixed-combination drugs are, of necessity, listed in the Index by their brand names. Those few formulations that have nonproprietary names (*e.g.*, co-trimoxazole, carbapenem) are also indexed by their nonproprietary name. Each entry indicates the active drugs in the combination and a specific page reference to **Appendix I** if the dosage of the drug is included therein.

Appendix II contains pertinent information about common biologicals, vaccines, and globulins. This appendix gives the indication, dosage, contraindications, and the basic nursing implications for the safe and effective administration of these agents.

Appendix III presents information on the common topical corticosteroids. These frequently used preparations did not lend themselves to the mongraph format but are so common that pertinent information needed to be included.

Appendix IV gives commonly used equations for calculating pediatric dosage when adult dosage is known.

Appendix V provides brief bibliographic information.

Potentially unfamiliar abbreviations are defined when first used in a monograph or appendix; all abbreviations are defined in the front of the book for easy reference. The FDA Pregnancy Categories and the DEA Schedules of Controlled Substances are listed inside the front cover; the NANDA list of nursing diagnoses are inside the back cover.

It is hoped that the overall organization and concise, straightforward presentation of the material in this handbook will make it a readily used and clinically useful reference for the nurse who needs easily accessible information to facilitate the provision of drug therapy within the framework of the nursing process. It is further hoped that the changes made in this edition will facilitate the use of the handbook and make it a quick, concise clinical reference for the use of drugs in nursing practice.

Special acknowledgments

To the co-author of the first edition of this book for her creativity and inspiration in establishing its basic format and design.

Eleanor H. Boyd, PhD
Formerly Assistant Professor of Pharmacology and Toxicology and of Nursing
University of Rochester School of Medicine and Dentistry
University of Rochester School of Nursing
Rochester, New York

For sharing valuable clinical, pharmacological, and research information and expertise as well as for being available to answer numerous questions.

Fred E. Karch, MD
Fellow, American College of Clinical Pharmacology
Clinical Assistant Professor of Medicine
University of Rochester School of Medicine and Dentistry
Rochester, New York

Acknowledgments

I am grateful to the many people who have helped to make this book possible: my students and colleagues, past and present, who have helped me learn how to make pharmacology more accessible in different areas of nursing practice and who have so generously shared their experiences in using the first edition of this book to make the current edition even more clinically useful; my editor at J.B. Lippincott Company, Ellen Campbell, who provided encouragement, humor, and sanity when they were needed most and who mastered all of the minute details and kept things in order; Molly Dickmeyer, Chris Laird, Doug Smock, and Caren Erlichman, the production staff at Lippincott who contributed their skills and expertise to the preparation of this edition; my husband, Dr. Fred E. Karch, who was able to share his wonderful understanding and knowledge of pharmacology and medicine, offered support and encouragement, and tolerated the long nights and late dinners; Timothy, Mark, Courtney and Kathryn, for their boundless patience, enthusiasm, encouragment, and smiles; and Cider, who provided endless hours of company and listened patiently to all of my problems with a happily wagging tail.

Abbreviations

>	greater than
≥	greater than or equal to
<	less than
≤	less than or equal to
ACT	activated clotting time
ACTH	adrenocorticotrophic hormone
ADH	antidiuretic hormone
AIDS	acquired immunodeficiency syndrome
ALA	delta-aminolevulanic acid
ALL	acute lymphocytic leukemia
ALT	alanine transferase (formerly called SGPT—see below)
AML	acute myelogenous leukemia
ANA	anti-nuclear antibodies
APTT	activated partial thromboplastin time
ARC	AIDS-related complex
ARV	AIDS-related virus
AST	aspartate transferase (formerly called SGOT—see below)
AV	atrioventricular
bid	twice a day (*bis in die*)
BP	blood pressure
BSP	bromsulphalein
BUN	blood urea nitrogen
C	centigrade, Celsius
CAD	coronary artery disease
c-AMP	cyclic adenosine monophosphate
CBC	complete blood count
CCr	creatinine clearance
CDC	Centers for Disease Control
CGH	chorionic gonadotropic hormone
CHD	coronary heart disease
CHF	congestive heart failure
CNS	central nervous system
COPD	chronic obstructive pulmonary disease
CPK	creatine phosphokinase
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CTZ	chemoreceptor trigger zone
CVA	cerebrovascular accident
CVP	central venous pressure
CVS	cardiovascular system
DEA	Drug Enforcement Administration
DIC	disseminated intravascular coagulation
d	day(s)
dl	deciliter (100 ml)
DNA	deoxyribonucleic acid
DTP	diphtheria–tetanus–pertussis (vaccine)
DVT	deep vein thrombosis
ECG	electrocardiogram
ECT	electroconvulsive therapy
EEG	electroencephalogram
EENT	eye, ear, nose, and throat
F	Fahrenheit
FDA	Food and Drug Administration
FSH	follicle stimulating hormone
GABA	gamma-aminobutyric acid
GFR	glomerular filtration rate
GGTP	gamma-glutamyl transpeptidase
GI	gastrointestinal
g	gram
G-6-PD	glucose-6-phosphate dehydrogenase
GU	genitourinary
h	hour
HBIG	hepatitis B immune globulin
Hct	hematocrit

HDL	high-density lipoproteins
Hg	mercury
Hgb	hemoglobin
Hib	*Hemophilus influenzae* type b
HIV	human immunodeficiency virus
HPA	hypothalamic–pituitary–adrenal (axis)
HR	heart rate
hs	at bedtime (*hora somni*)
HTLVIII	human T-cell lymphotropic virus type III
IHSS	idiopathic hypertrophic subaortic stenosis
I & O	intake and output
IM	intramuscular
IOP	intraocular pressure
IPPB	intermittent (or inspiratory) positive pressure breathing
IV	intravenous
JVP	jugular venous pressure
kg	kilogram
L	liter(s)
lb	pound(s)
LDH	lactic dehydrogenase
LDL	low density lipoproteins
LE	lupus erythematosus
LH	luteinizing hormone
LH-RH	luteinizing hormone releasing hormone
LRI	lower respiratory (tract) infection
m	meter
MAO	monoamine oxidase
MAOI	monoamine oxidase inhibitor
mcg	microgram
mg	milligram
MI	myocardial infarction
min	minute(s)
ml	milliliter
mo	month(s)
ng	nanogram
NMS	neuroleptic malignant syndrome
NPO	nothing by mouth (*nihil per os*)
NSAID	nonsteroidal anti-inflammatory drug
OC	oral contraceptive
OTC	over-the-counter
P	pulse
PABA	para-aminobenzoic acid
PAT	paraoxysmal atrial tachycardia
PBG	porphobilinogen
PBI	protein-bound iodine
PCWP	pulmonary capillary wedge pressure
PDA	patent ductus arteriosus
PE	pulmonary emboli
PG	prostaglandin
pH	hydrogen ion concentration
PID	pelvic inflammatory disease
PMS	premenstrual syndrome
PO	orally, by mouth (*per os*)
PRN	when required (*pro re nata*)
PT	prothrombin time
PTT	partial thromboplastin time
PVCs	premature ventricular contractions
q	each, every (*quaque*)
qd	every day (*quaque die*)
qid	four times a day (*quater in die*)
R	rate, usually with reference to respiratory rate
RBC	red blood cell
RDA	recommended daily dietary allowance
REM	rapid eye movement
RNA	ribonucleic acid
RSV	respiratory syncytial virus
sec	second(s)
SBE	subacute bacterial endocarditis
SA	sinoatrial
SC	subcutaneous
SGOT	serum glutamic-oxaloacetic transaminase (now often called AST)
SGPT	serum glutamic-pyruvic transaminase (now often called ALT)
SIADH	syndrome of inappropriate antidiuretic hormone secretion
SLE	systemic lupus erythematosus
SMA-12	sequential multiple analysis-12

SRS-A	slow-reacting substance of anaphylaxis
T	temperature
T_3	triiodothyronine
T_4	thyroxine (tetraiodothyronine)
TB	tuberculosis
TCA	tricyclic antidepressant
TCID	tissue culture infectious doses
TIA	transient ischemic attack
tid	three times a day (*ter in die*)
U	units
UPG	uroporphyrinogen
URI	upper respiratory (tract) infection
UTI	urinary tract infection
VLDL	very low-density lipoproteins
WBC	white blood cell
WBCT	whole blood clotting time
wk	week(s)
y	year(s)

Contents

acebutolol hydrochloride (a se byoo' toe lole)

Sectral

DRUG CLASSES

Beta-adrenergic blocking agent (β_1-selective); antiarrhythmic drug; antihypertensive drug

THERAPEUTIC ACTIONS

- Competitively blocks beta-adrenergic receptors in the heart and juxtaglomerular apparatus, thereby reducing the influence of the sympathetic nervous system on these tissues and in turn decreasing the excitability of the heart and the release of renin and lowering cardiac output BP

INDICATIONS

- Hypertension—as a step 1 agent, alone or in combination with other drugs, especially diuretics
- Cardiac arrhythmias, especially supraventricular tachycardia and ventricular tachycardias induced by digitalis or catecholamines

ADVERSE EFFECTS

Although acebutolol mainly blocks β_1-receptors at low doses, it also blocks β_2-receptors at higher doses; many of the adverse effects are extensions of therapeutic actions at β_1-adrenergic receptors or are due to blockade of β_2-receptors

CVS: bradycardia, CHF, cardiac arrhythmias, SA or AV nodal block, tachycardia, peripheral vascular insufficiency, claudication, CVA, pulmonary edema, hypotension

CNS: dizziness, vertigo, tinnitus, fatigue, emotional depression, paresthesias, sleep disturbances, hallucinations, disorientation, memory loss, slurred speech (Because acebutolol is less lipid-soluble than propranolol, it is less likely to penetrate the blood–brain barrier and cause CNS effects.)

Respiratory: bronchospasm, dyspnea, cough, bronchial obstruction, nasal stuffiness, rhinitis, pharyngitis (less likely than with propranolol)

GI: gastric pain, flatulence, constipation, diarrhea, nausea, vomiting, anorexia, ischemic colitis, renal and mesenteric arterial thrombosis, retroperitoneal fibrosis, hepatomegaly, acute pancreatitis

GU: impotence, decreased libido, Peyronie's disease, dysuria, nocturia, frequent urination

Musculoskeletal: joint pain, arthralgia, muscle cramp

Dermatology: rash, pruritus, sweating, dry skin

Ophthalmologic: eye irritation, dry eyes, conjunctivitis, blurred vision

Allergic reactions: pharyngitis, erythematous rash, fever, sore throat, laryngospasm, respiratory distress

Other: decreased exercise tolerance; development of ANA; hyperglycemia or hypoglycemia; elevated serum transaminase, alkaline phosphatase, LDH

DOSAGE

ADULT

Hypertension: initially 400 mg/d in 1 or 2 doses PO; usual maintenance dosage range is 200–1200 mg/d

Ventricular arrhythmias: 200 mg bid PO; increase dosage gradually until optimal response is achieved (usually at 600–1200 mg/d)

PEDIATRIC

Safety and efficacy not established

GERIATRIC
Because bioavailability increases twofold, lower doses may be required; do not exceed 800 mg/d maintenance dosage

IMPAIRED RENAL FUNCTION
Reduce daily dose by 50% when CCr is <50 ml/min; reduce by 75% when CCr is <25 ml/min

BASIC NURSING IMPLICATIONS

- Assess patient for conditions that are contraindications: sinus bradycardia, second- or third-degree heart block, cardiogenic shock, CHF.
- Arrange for dosage reduction in renal failure (an active metabolite of acebutolol is excreted in the urine).
- Assess patient for conditions that require caution: diabetes or thyrotoxicosis—acebutolol can mask the usual cardiac signs of hypoglycemia and thyrotoxicosis; asthma, COPD, or impaired hepatic function.
- Do not administer to pregnant patients or nursing mothers; acebutolol is concentrated in breast milk, and belongs to **Pregnancy Category B** (adverse effects on neonates are possible).
- Assess and record the patient's baseline body weight, skin condition, neurologic status, P, BP, ECG, respiratory status, kidney and thyroid function, blood and urine glucose.
- Monitor for the following drug–drug interactions with acebutolol:
  - Increased effects of acebutolol with **catecholamine-depleting drugs, captopril, methimazole, propylthiouracil, chlorpromazine, cimetidine, oral contraceptives, furosemide, hydralazine, IV phenytoin, verapamil, nifedipine**
  - Decreased effects of acebutolol with **thyroid hormones, norepinephrine, isoproterenol, dopamine dobutamine, indomethacin, salicylates**
  - Increased effects of **succinylcholine, tubocurarine**
  - Prolonged hypoglycemic effects of **insulin**
  - Increased "first-dose response" to **prazosin**
  - Paradoxical hypertension when **clonidine** is given with beta-blockers; increased rebound hypertension when **clonidine** is discontinued in patients on beta-blockers
  - Decreased bronchodilator effects of **theophylline**, and decreased bronchial and cardiac effects of **sympathomimetics**.
- Monitor for the following drug–laboratory test interactions with acebutolol:
  - False-positive results with **glucose** or **insulin tolerance tests**.
- Do not discontinue drug abruptly after chronic therapy (hypersensitivity to catecholamines may have developed, causing exacerbation of angina, MI, and ventricular arrhythmias; taper drug gradually over 2 wk with monitoring).
- Consult with physician about withdrawing drug if patient is to undergo surgery (withdrawal is controversial).
- Provide safety precautions (*e.g.,* siderails, assisted ambulation) if CNS, vision changes occur.
- Position patient to decrease effects of edema.
- Provide small, frequent meals if GI effects occur.
- Provide appropriate comfort measures to deal with eye, GI, joint, dermatologic effects.
- Provide support and encouragement to help patient deal with drug effects and disease.
- Teach patient:
  - not to stop taking this drug unless instructed to do so by a health-care provider; • to avoid OTC medications; • to avoid driving or dangerous activities if CNS effects occur; • to report any of the following: difficulty breathing, night cough, swelling of extremities, slow P, confusion, depression, rash, fever, sore throat; • to keep this drug and all medications out of the reach of children.

See **propranolol**, the prototype beta-blocker, for detailed clinical information and application of the nursing process.

acetaminophen (a seat a mee' noe fen) OTC preparation

N-acetyl-P-aminophenol, APAP

Suppositories: ***Acephan, Neopap, Suppap***
Oral: ***Aceta, Ace-Tabs (CAN), Anacin-3, Atesol (CAN), Campain (CAN), Datril, Dolanex, Exdol (CAN), Genebs, Halenol, Liquiprin, Oraphen, Panadol, Panex, Paraphen (CAN), Phenaphen, Robigesic (CAN), Rounox (CAN), St. Joseph's Aspirin Free, Tempra, Tylenol***

DRUG CLASSES Antipyretic; analgesic (non-narcotic)

THERAPEUTIC ACTIONS
- Antipyretic: acts directly on the hypothalamic heat-regulating center to cause vasodilation and sweating; inhibits the actions of exogenous pyrogens on the hypothalamus, probably by inhibiting the synthesis of proglandins
- Analgesic: site and mechanism of action is unclear

INDICATIONS
- Analgesic-antipyretic in patients with aspirin allergy, hemostatic disturbances, bleeding diatheses, upper GI disease, gouty arthritis
- Arthritis and rheumatic disorders involving musculoskeletal pain (but lacks clinically significant antirheumatic and anti-inflammatory effects)
- Common cold, "flu," other viral and bacterial infections accompanied by pain and fever
- Prophylactic use for children receiving DPT vaccination to reduce incidence of fever and pain—unlabeled use.

ADVERSE EFFECTS (NEGLIGIBLE WITH RECOMMENDED DOSAGE)

GI: hepatic toxicity and failure, jaundice
Hematologic: methemoglobinemia—cyanosis; hemolytic anemia—hematuria, anuria; neutropenia, leukopenia, pancytopenia, thrombocytopenia; hypoglycemia
CNS: headache
GU: acute kidney failure, renal tubular necrosis
CVS: chest pain, dyspnea, myocardial damage when doses of 5–8 g/d are ingested daily for several weeks or when doses of 4 g/d are ingested for a year
Hypersensitivity: skin rash, fever

DOSAGE

ADULT

325 mg–650 mg q 4–6 h PO or by suppository; or 1000 mg 3–4 times/d; do not exceed 4 g/d

PEDIATRIC

Doses may be repeated 4–5 times/d; do not exceed 5 doses/24 h

Age	*Dose (mg)*	*Age*	*Dose (mg)*
0–3 mo	40	4–5 y	240
4–11 mo	80	6–8 y	320
1–2 y	120	9–10 y	400
2–3 y	160	11 y	480

THE NURSING PROCESS AND ACETAMINOPHEN THERAPY

Pre-Drug-Therapy Assessment

PATIENT HISTORY

Contraindications and cautions
- Allergy to acetaminophen
- Impaired hepatic function, chronic alcoholism—predispose to hepatotoxicity

- **Pregnancy Category C**: crosses the placenta; appears safe for short-term use at recommended dosage during all stages of pregnancy, but use should be minimized
- Lactation: secreted in breast milk in milk:plasma ratio of 0.81:1.42; safety not established, but no adverse effects in nursing infants have been reported

Drug–drug interactions

- Increased toxicity if taken with chronic, excessive **ethanol** ingestion
- Increased hypoprothrombinemia effect of **oral anticoagulants**
- Increased risk of hepatotoxicity and possible decreased therapeutic effects if taken with **barbiturates, carbamazepine, hydantoins, rifampin, sulfinpyrazone**

Drug–laboratory test interactions

- Interference with **Chemstrip G, Dextrostix,** and **Visidex II** home blood glucose measurement systems; effects vary

PHYSICAL ASSESSMENT
General: skin—color, lesions; T
GI: liver evaluation
Laboratory tests: CBC, liver and renal function tests

Potential Drug-Related Nursing Diagnoses

- Alteration in comfort related to dermatologic reactions
- High risk for injury related to hematologic effects
- Knowledge deficit regarding drug therapy

Interventions

- Do not exceed the recommended dosage.
- Consult physician if needed for children <3 years of age.
- Consult physican if needed for longer than 10 d.
- Consult physician if continued fever, severe or recurrent pain occurs—these may indicate serious illness.
- Provide additional comfort measures to alleviate pain or discomfort.
- Monitor environment (*e.g.,* temperature, noise, lights) for patient comfort.
- Administer drug with food if GI upset is noted.
- Discontinue drug if hypersensitivity reactions occur.
- Acetaminophen toxicity—if overdose occurs, monitor serum levels regularly; N-acetylcysteine should be available as a specific antidote; basic life-support measures may be necessary.
- Avoid the use of multiple preparations containing acetaminophen. Carefully check all OTC products.

Patient Teaching Points

- Name of drug
- Dosage of drug: do not exceed recommended dose; do not take longer than 10 d.
- Disease being treated: take the drug only for those complaints indicated, drug is not an anti-inflammatory agent.
- Avoid the use of other OTC preparations while you are taking this drug. Many of these drugs contain acetaminophen and serious overdosage can occur. If you feel that you need one of these preparations, consult with your nurse or physician.
- If taken in the recommended doses, there are few adverse effects.
- Tell any physician, nurse, or dentist who is caring for you that you are taking this drug.
- Report any of the following to your nurse or physician:
  • skin rash; • unusual bleeding or bruising; • yellowing of skin or eyes; • changes in voiding patterns.
- Keep this drug and all medications out of the reach of children.

acetazolamide (a set a zole' a mide) — Prototype carbonic anhydrase inhibitor

AK-Zol, Dazamide, Diamox, Diamox Sequels

DRUG CLASSES Carbonic anhydrase inhibitor; antiglaucoma agent; diuretic; antiepileptic drug; sulfonamide (nonbacteriostatic)

THERAPEUTIC ACTIONS
- Inhibits the enzyme carbonic anhydrase, thereby decreasing aqueous humor formation and hence decreasing IOP; decreasing hydrogen-ion secretion by renal tubule cells and hence increasing sodium, potassum, bicarbonate, and water excretion by the kidney

INDICATIONS
- Adjunctive treatment of chronic open-angle glaucoma, secondary glaucoma
- Preoperative use in acute angle-closure glaucoma where delay of surgery is desired to lower intraocular pressure
- Edema caused by CHF, drug-induced edema
- Centrencephalic epilepsy
- Prophylaxis and treatment of acute mountain sickness

ADVERSE EFFECTS

GI: anorexia, nausea, vomiting, constipation, melena, hepatic insufficiency
GU: hematuria, glycosuria, urinary frequency, renal colic, renal calculi, crystalluria, polyuria
CNS: weakness, fatigue, nervousness, sedation, drowsiness, dizziness, depression, tremor, ataxia, headache, paresthesias, convulsions, flaccid paralysis, transient myopia
Hematologic: bone marrow depression—*thrombocytopenia, hemolytic anemia,* pancytopenia, leukopenia
Dermatologic: urticaria, pruritus, rash, photosensitivity, erythema multiforme (Stevens–Johnson syndrome)
Sulfonamide-type adverse reactions: (see sulfisoxazole, the prototype sulfonamide)
Other: weight loss, fever, acidosis (rapid respirations, weakness, tachycardia)

DOSAGE

ADULT

Open-angle glaucoma: 250 mg–1 g/d PO, usually in divided doses; do not exceed 1 g/d
Secondary glaucoma and preoperatively: 250 mg q 4 h or 250 mg bid PO; or 500 mg followed by 125–250 mg q 4 h; may be given IV for rapid relief of increased IOP
Diuresis in CHF: 250–375 mg (5mg/kg) qd in the morning; most effective if given on alternate days or for 2 d alternating with a day of rest
Drug-induced edema: 250–375 mg qd or once daily for 1–2 d followed by a day of rest
Epilepsy: 8–30 mg/kg/d in divided doses; when given in combination with other antiepileptics, starting dose is 250 mg qd; the sustained-release preparation is not recommended for this use
Acute mountain sickness: 500–1000 mg/d, in divided doses of tablets or sustained-release capsules; for rapid ascent, the 1000 mg dose is recommended; when possible, begin dosing 24–48 h before ascent and continue for 48 h or longer as needed while at high altitude

PEDIATRIC

Secondary glaucoma and preoperatively: 5–10 mg/kg, IM or IV, q 6 h or 10–15 mg/kg/d PO in divided doses q 6–8 h
Epilepsy: 8–30 mg/kg/d in divided doses; when given with other antiepileptics, starting dose is 250 mg/qd

THE NURSING PROCESS AND ACETAZOLAMIDE THERAPY

Pre-Drug-Therapy Assessment

PATIENT HISTORY

Contraindications and cautions
- Allergy to acetazolamide, antibacterial sulfonamides, or thiazides
- Fluid or electrolyte imbalance—decreased Na^+, decreased K^+, hyperchloremic acidosis