

***Current* Medical Diagnosis & Treatment 1988**

Edited By

STEVEN A. SCHROEDER, MD

MARCUS A. KRUPP, MD

LAWRENCE M. TIERNEY, JR., MD

Current Medical Diagnosis & Treatment 1988

Edited By

STEVEN A. SCHROEDER, MD

Professor of Medicine and Chief
Division of General Internal Medicine
University of California, San Francisco

MARCUS A. KRUPP, MD

Clinical Professor of Medicine Emeritus
Stanford University School of Medicine, Stanford
Director (Emeritus) of Research Institute
Palo Alto Medical Foundation, Palo Alto

LAWRENCE M. TIERNEY, JR., MD

Professor of Medicine
University of California, San Francisco
Assistant Chief of Medical Services
Veterans Administration Medical Center, San Francisco

with Associate Authors



一九八八年八月二二日



Prentice-Hall International Inc.

0-8385-1421-9

This edition may be sold only in those countries to which it is consigned by Prentice-Hall International. It is not to be re-exported and it is not for sale in the U.S.A., Mexico, or Canada.

Notice: Our knowledge in clinical sciences is constantly changing. As new information becomes available, changes in treatment and in the use of drugs become necessary. The author(s) and the publisher of this volume have taken care to make certain that the doses of drugs and schedules of treatment are correct and compatible with the standards generally accepted at the time of publication. The reader is advised to consult carefully the instruction and information material included in the package insert of each drug or therapeutic agent before administration. This advice is especially important when using new or infrequently used drugs.

Copyright © 1988 by Appleton & Lange

A. Publishing Division of Prentice-Hall

Copyright © 1962 through 1986 by Lange Medical Publications; © 1987 by Appleton & Lange

Spanish Edition: Editorial El Manual Moderno, S.A. de C.V.,

Av. Sonora 206, Col. Hipodromo, 06100-Mexico, D.F.

Italian Edition: Piccin Nuova Libreria, S.p.A., Via Altinate, 107,

35121 Padua, Italy

German Edition: Springer-Verlag GmbH & Co. KG, Postfach 10 52 80,

6900 Heidelberg 1, West Germany

Serbo-Croatian Edition: Savremena Administracija, Cmotravska 7-9,

11100 Belgrade, Yugoslavia

Portuguese Edition: Atheneu Editora São Paulo Ltda.,

Rua Marconi, 131 - 2.º andar, 01047 São Paulo, Brazil

Greek Edition: Gregory Parisianos, 20, Navarinou Street,

GR-106 80 Athens, Greece

Dutch Edition: Kooyker Scientific Publications B.V., Postbus 24,

2300 AA Leiden, The Netherlands

All rights reserved. This book, or any parts thereof, may not be used or reproduced in any manner without written permission. For information, address Appleton & Lange, 25 Van Zant Street, East Norwalk, Connecticut 06855.

88 / 5 4 3 2 1

Prentice-Hall of Australia, Pty. Ltd., Sydney

Prentice-Hall Canada, Inc.

Prentice-Hall Hispanoamericana, S.A., Mexico

Prentice-Hall of India Private Limited, New Delhi

Prentice-Hall International (UK) Limited, London

Prentice-Hall of Japan, Inc., Tokyo

Prentice-Hall of Southeast Asia (Pte.) Ltd., Singapore

Whitehall Books Ltd., Wellington, New Zealand

Editora Prentice-Hall do Brasil Ltda., Rio de Janeiro

ISSN (PHI): 0-8385-1421-9

ISBN (A&L): 0-8385-1344-1

ISSN: 0092-8682

Cover: M. Chandler Martylewski

PRINTED IN THE UNITED STATES OF AMERICA



The Authors

Michael J. Aminoff, MD, FRCP

Professor of Neurology, University of California, San Francisco.

Robert B. Baron, MD

Assistant Clinical Professor of Medicine, University of California, San Francisco.

R. Laurence Berkowitz, MD

Clinical Assistant Professor of Plastic & Reconstructive Surgery, Stanford University School of Medicine, Stanford, California.

James J. Brophy, MD

Associate Clinical Professor of Psychiatry, University of California School of Medicine, San Diego, California.

Carlos A. Camargo, MD

Associate Clinical Professor of Medicine, Stanford University School of Medicine, Stanford, California.

Milton J. Chatton, MD

Clinical Professor of Medicine Emeritus, Stanford University School of Medicine, Stanford, California; and Senior Attending Physician, Santa Clara Valley Medicine Center, San Jose, California.

Richard Cohen, MD, MPH

Assistant Clinical Professor, Division of Occupational Medicine, University of California, San Francisco.

Robert H. Dreisbach, MD, PhD

Clinical Professor of Environmental Health, School of Public Health and Community Medicine, University of Washington, Seattle.

Lawrence Z. Feigenbaum, MD

Clinical Professor of Medicine, University of California, San Francisco; and Director of Professional Services and Medical Education and Director of Institute on Aging, Mount Zion Hospital and Medical Center, San Francisco.

Armando E. Giuliano, MD

Associate Professor of Surgery, University of California, Los Angeles.

Robert S. Goldsmith, MD, MPH, DTM&H

Professor of Tropical Medicine and Epidemiology, University of California, San Francisco.

Sadja Greenwood, MD, MPH

Assistant Clinical Professor of Obstetrics, Gynecology, and Reproductive Sciences, University of California, San Francisco.

Moses Grossman, MD

Professor of Pediatrics, University of California, San Francisco; and Chief of Pediatrics, San Francisco General Hospital.

Carlyn Halde, PhD

Professor of Microbiology and Immunology and Professor of Dermatology, University of California (San Francisco).

Richard A. Jacobs, MD, PhD

Assistant Clinical Professor of Medicine and Co-Director, Outpatient Infectious Disease Service, University of California (San Francisco).

Robert K. Jackler, MD

Assistant Professor of Otolaryngology, University of California (San Francisco).

Ernest Jawetz, MD, PhD

Professor of Microbiology and Medicine Emeritus, University of California, San Francisco.

Michael J. Kaplan, MD

Assistant Professor, Department of Otolaryngology-Head and Neck Surgery, University of California (San Francisco); and Chief, Otolaryngology-Head and Neck Surgery, San Francisco Veterans Administration Medical Center.

C. Michael Knauer, MD

Chief of Division of Gastroenterology, Santa Clara Valley Medical Center, San Jose, California; and Clinical Professor of Medicine, Stanford University School of Medicine, Stanford, California.

Felix O. Kolb, MD

Clinical Professor of Medicine, University of California, San Francisco.

Margaret S. Kosek, MD

Staff Physician, Palo Alto Medical Foundation, Palo Alto, California.

Marcus A. Krupp, MD

Clinical Professor of Medicine Emeritus, Stanford University School of Medicine, Stanford, California; and Director (Emeritus) of Research Institute, Palo Alto Medical Foundation, Palo Alto, California.

Joseph LaDou, MD

Associate Clinical Professor of Medicine and Acting Chief, Division of Occupational Medicine, University of California, San Francisco.

Charles A. Linker, MD

Associate Clinical Professor of Medicine, University of California (San Francisco).

Alan J. Margolis, MD

Professor of Obstetrics, Gynecology, and Reproductive Sciences, University of California, San Francisco.

Barry Massie, MD

Associate Professor of Medicine, University of California (San Francisco); Associate Staff Member, Cardiovascular Research Institute; and Chief, Hypertension Unit, and Director, Coronary Care Unit, San Francisco Veterans Administration Medical Center.

Richard B. Odom, MD

Clinical Professor of Dermatology, University of California (San Francisco).

Kent R. Olson, MD

Assistant Clinical Professor of Medicine and Adjunct Lecturer in Pharmacy, University of California, San Francisco; and Director of San Francisco Bay Area Regional Poison Control Center.

Rees B. Rees, Jr., MD

Clinical Professor of Dermatology Emeritus, University of California, San Francisco.

Sydney E. Salmon, MD

Professor of Internal Medicine and of Hematology and Oncology, University of Arizona College of Medicine, Tucson, Arizona; and Director of Arizona Cancer Center, Tucson.

Steven A. Schroeder, MD

Professor of Medicine and Chief, Division of General Internal Medicine, University of California, San Francisco.

Martin A. Shearn, MD

Clinical Professor of Medicine, University of California, San Francisco.

Sol Silverman, Jr., DDS

Professor of Oral Medicine and Chairman of the Division, University of California, San Francisco.

Maurice Sokolow, MD

Professor of Medicine Emeritus and Senior Staff Member, Cardiovascular Research Institute, University of California, San Francisco.

John L. Stauffer, MD

Associate Professor of Medicine, Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, Pennsylvania.

Daniel P. Stites, MD

Professor of Laboratory Medicine and Director of Section on Immunology and Blood Banking, University of California (San Francisco).

Lawrence M. Tierney, Jr., MD

Professor of Medicine, University of California, San Francisco; and Assistant Chief of Medical Services, San Francisco Veterans Administration Medical Center.

Daniel Vaughan, MD

Clinical Professor of Ophthalmology, University of California, San Francisco; and Member, Francis I. Proctor Foundation for Research in Ophthalmology, San Francisco.

Susan D. Wall, MD

Assistant Professor of Radiology, University of California (San Francisco); and Assistant Chief of Radiology, San Francisco Veterans Administration Medical Center.

Ralph O. Wallerstein, MD

Clinical Professor of Medicine, University of California, San Francisco.

Preface

Current Medical Diagnosis & Treatment 1988 is the twenty-seventh annual revision of a general medical text designed to function as the complete physician's single most useful source of information about adult medicine. The practical features of patient management are emphasized. Appropriate background information is provided as necessary to facilitate understanding of concepts.

OUTSTANDING FEATURES

- Reissued annually in Jan/Feb to incorporate current advances.
- Over 1000 diseases and disorders.
- All aspects of internal medicine *plus* obstetrics/gynecology, dermatology, ophthalmology, neurology, and other topics of concern to the office practitioner.
- Consistent readable format, permitting efficient use in various practice settings.
- Selected references.

INTENDED AUDIENCE

House officers and students will find the concise descriptions of diagnostic and therapeutic procedures, with access to the current literature, of daily usefulness in the immediate management of patients.

Internists, family physicians, and other specialists will find *CMDT* useful as a ready reference and refresher text.

Physicians in other specialties, surgeons, and dentists will find the book useful as a basic treatise on internal medicine.

Nurses and other health practitioners will find that the concise format and broad scope of the book facilitate their understanding of diagnostic principles and therapeutic procedures.

ORGANIZATION

CMDT is developed chiefly by organ system. Chapters 1–3 present general information on patient care,

including disease prevention, pain management, special problems of the elderly patient, and fluid/electrolyte therapy. Chapters 4–19 describe diseases and disorders and their treatment. Chapter 20 sets forth the basic concepts of nutrition in modern medical practice. Chapters 21–28 cover infectious diseases and antimicrobial therapy. Chapters 29–33 cover special topics: physical agents, poisoning, genetics, malignant disorders, and immunologic disorders. The appendix provides data on normal values of daily relevance to medical practice as well as sections on MRI, CPR, and the emergency treatment of airway obstruction.

NEW TO THIS EDITION

- Revised, expanded, and updated section on AIDS.
- Complete revision of chapters on Blood, ENT, and the Heart and Great Vessels.
- Extensive revision of the chapters on Pulmonary Diseases, Nutrition, and Poisoning.
- Drug information and bibliographies updated through July 1987.
- New section in Appendix on MRI.
- Increased emphasis on costs of medical care and on prevention.

ACKNOWLEDGEMENTS

We wish to thank our associate authors for participating once again in the annual effort of updating this important book. Many students and physicians have contributed useful suggestions to this and previous editions, and we are grateful. We continue to solicit comments and recommendations for future editions. Please address correspondence to us at Lange Medical Publications, 2755 Campus Drive, Suite 205, San Mateo, CA 94403.

Steven A. Schroeder
Marcus A. Krupp
Lawrence M. Tierney, Jr.

January, 1988

Table of Contents

Authors	xiii
Preface	xv
1. General Care—Symptoms & Disease Prevention	1
<i>Steven A. Schroeder, MD, & Milton J. Chatton, MD</i>	
Disease Prevention 1	
The Physician-Patient Relationship 3	
Pain 3	
Fever & Hyperthermia 7	
Weight Loss 8	
Fatigue 9	
Shock Syndrome 9	
Systemic Allergic Reactions 13	
2. Geriatric Medicine & the Elderly Patient	17
<i>Lawrence Z. Feigenbaum, MD</i>	
History Taking With Elderly Patients 18	
Physical Examination 18	
Mental Status Examination 19	
Evaluation of Functional Capacity in the Elderly 19	
Laboratory Examinations 19	
Special Clinical Considerations 19	
The Frail Elderly & the Five I's 20	
Summary 25	
3. Fluid & Electrolyte Disorders	27
<i>Marcus A. Krupp, MD</i>	
Basic Facts & Terms 27	
Physiology of Water & Electrolyte & Treatment of Abnormal States 28	
Electrolytes Associated with Physiologic Effects 32	
The Approach to Diagnosis & Treatment of Water, Electrolyte, & Acid-Base Disturbances 41	
4. Skin & Appendages	47
<i>Rees B. Rees, Jr., MD, & Richard B. Odom, MD</i>	
Pruritus 48	
Common Dermatoses 49	
Viral Infections of the Skin 70	
Bacterial Infections of the Skin 74	
Fungal Infections of the Skin 77	
Parasitic Infestations of the Skin 83	
Tumors of the Skin 87	
Miscellaneous Skin, Hair, & Nail Disorders 89	
5. Eye	94
<i>Daniel Vaughan, MD</i>	
Nonspecific Manifestations of Eye Diseases 94	
Ocular Emergencies 95	
Common Ocular Disorders 99	



6. Ear, Nose, & Throat	110
<i>Robert K. Jackler, MD, & Michael J. Kaplan, MD</i>	
Diseases of the Ear	110
Diseases of the Nose & Paranasal Sinuses	118
Diseases of the Oral Cavity & Pharynx	123
Diseases of the Salivary Glands	125
Diseases of the Larynx	126
Tracheostomy & Cricothyrotomy	128
Foreign Bodies in the Upper Aerodigestive Tract	129
Diseases Presenting as Neck Masses	129
Otolaryngologic Manifestations of AIDS	131
7. Pulmonary Diseases	132
<i>John L. Stauffer, MD</i>	
Diagnostic Methods	132
Developmental Disorders	134
Disorders of the Airways	135
Pleuropulmonary Infections	147
Neoplastic & Related Diseases	155
Interstitial Lung Diseases	160
Miscellaneous Infiltrative Lung Diseases	164
Disorders of the Pulmonary Circulation	165
Disorders Due to Chemical & Physical Agents	171
Disorders of Ventilation	177
Acute Respiratory Failure	179
Adult Respiratory Distress Syndrome (ARDS)	182
Pleural Diseases	183
8. Heart & Great Vessels	189
<i>Maurice Sokolow, MD, & Barry Massie, MD</i>	
Common Symptoms	189
Functional Classification of Heart Disease	190
Congenital Heart Diseases	193
Acute Rheumatic Fever and Rheumatic Heart Disease	196
Valvular Heart Disease	198
Systemic Hypertension	209
Coronary Heart Disease	219
Disturbances of Rate & Rhythm	234
Conduction Disturbances	242
Evaluation of Syncope & Survivors of Sudden Death	244
Cardiac Failure	245
Diseases of the Pericardium	253
Diseases of the Myocardium	257
The Cardiac Patient & Surgery	263
The Cardiac Patient & Pregnancy	264
9. Blood Vessels & Lymphatics	266
<i>Lawrence M. Tierney, Jr., MD, & John M. Erskine, MD</i>	
Arterial Diseases	266
Diseases of the Aorta	266
Atherosclerotic Occlusive Disease	270
Vasomotor Disorders	280
Venous Diseases	283
Diseases of the Lymphatic Channels	292
10. Blood	294
<i>Charles Linker, MD</i>	
Anemias	294
Neutropenia	311

Leukemias & Other Myeloproliferative Disorders 312
 Lymphomas 321
 Coagulation Disorders 325
 Blood Transfusions 338

11. Alimentary Tract & Liver 342

C. Michael Knauer, MD, & Sol Silverman, Jr., DDS

Diseases of the Mouth 350
 Diseases of the Esophagus 355
 Diseases of the Stomach 362
 Diseases of the Intestines 373
 Diseases of the Colon & Rectum 384
 Anorectal Diseases 393
 Diseases of the Liver & Biliary Tract 396
 Diseases of the Pancreas 422
 Acute Peritonitis 426

12. Breast 429

Armando E. Giuliano, MD

Carcinoma of the Female Breast 429
 Carcinoma of the Male Breast 443
 Mammary Dysplasia 444
 Fibroadenoma of the Breast 445
 Differential Diagnosis of Nipple Discharge 445
 Fat Necrosis 446
 Breast Abscess 446
 Gynecomastia 446

13. Gynecology & Obstetrics 447

Alan J. Margolis, MD, & Sadjia Greenwood, MD, MPH

14. Arthritis & Musculoskeletal Disorders 496

Martin A. Shearn, MD

Autoimmune Diseases (Collagen Diseases; Connective Tissue Diseases) 497
 Vasculitic Syndromes 506
 Seronegative Arthropathies 509
 Degenerative Joint Disease 512
 Neurogenic Arthropathy 513
 Acute Bacterial (Septic) Arthritis 513
 Other Infectious Arthropathies 514
 Infections of Bones 515
 Pain Syndromes 518
 Tumors & Tumorlike Lesions of Bone 529
 Other Disorders of Bones & Joints 530
 General Principles in the Physical Management of Arthritic Joints 530
 Total Joint Arthroplasty 532

15. Genitourinary Tract 533

Marcus A. Krupp, MD

Disorders of the Kidneys 535
 Infections of the Urinary Tract (by Ernest Jawetz, MD, PhD) 554
 Urinary Stones 560
 Tumors of the Genitourinary Tract 566

16. Nervous System 571

Michael J. Aminoff, MD, FRCP

Headache 571
 Facial Pain 574
 Epilepsy 576
 Transient Ischemic Attacks 580

Stroke	582
Intracranial & Spinal Space-Occupying Lesions	589
Selected Neurocutaneous Diseases	594
Movement Disorders	594
Dementia	600
Vertigo	601
Multiple Sclerosis	601
Spasticity	603
Subacute Combined Degeneration of the Spinal Cord	603
Wernicke's Encephalopathy	603
Stupor & Coma	603
Head Injury	606
Spinal Trauma	607
Syringomyelia	608
Motor Neuron Diseases	608
Peripheral Neuropathies	609
Neck & Back Pain	615
Brachial Plexus Lesions	617
Disorders of Neuromuscular Transmission	617
Myopathic Disorders	619
Periodic Paralysis Syndrome	620
17. Psychiatric Disorders	621
<i>James J. Brophy, MD</i>	
Psychiatric Assessment	622
Treatment Approaches	623
Common Psychiatric Disorders	639
Substance Use Disorders	660
Organic Mental Disorders	667
Geriatric Psychiatric Disorders	669
Death & Dying	671
Psychiatric Problems Associated With Medical & Surgical Disorders	672
18. Endocrine Disorders	676
<i>Carlos A. Camargo, MD, & Felix O. Kolb, MD</i>	
Common Presenting Complaints	677
Diseases of the Hypothalamus & of the Pituitary Gland	683
Diseases of the Thyroid Gland	691
The Parathyroids	708
Diseases of the Adrenal Cortex	723
Diseases of the Adrenal Medulla	733
Diseases of the Pancreatic Islet Cells	735
Diseases of the Testes	736
Diseases of the Ovaries	739
Disorders of Pluriglandular Involvement	745
Clinical Use of Corticotropin (ACTH) & the Corticosteroids	746
19. Diabetes Mellitus, Hypoglycemia, & Lipoprotein Disorders	749
<i>John H. Karam, MD</i>	
20. Nutrition	784
<i>Robert B. Baron, MD</i>	
Nutritional Requirements	784
Assessment of Nutritional Status	793
Nutritional Disorders	796
Obesity	799
Eating Disorders	801
Disorders of Vitamin Metabolism (by Milton J. Chatton, MD)	803
Diet Therapy	807
Nutritional Support	810
21. Introduction to Infectious Diseases	81
<i>Ernest Jawetz, MD, PhD, & Moses Grossman, MD</i>	

22. Infectious Diseases: Viral & Rickettsial	834
<i>Moses Grossman, MD. & Ernest Jawetz, MD, PhD</i>	
23. Infectious Diseases: Bacterial	858
<i>Moses Grossman, MD. & Ernest Jawetz, MD, PhD</i>	
24. Infectious Diseases: Spirochetal	885
<i>Moses Grossman, MD. & Ernest Jawetz, MD, PhD</i>	
25. Infectious Diseases: Protozoal	896
<i>Robert S. Goldsmith, MD, MPH, DTM&H</i>	
26. Infectious Diseases: Helminthic	924
<i>Robert S. Goldsmith, MD, MPH, DTM&H</i>	
27. Infectious Diseases: Mycotic	955
<i>Carlyn Halde, PhD</i>	
28. Anti-infective Chemotherapeutic & Antibiotic Agents	964
<i>Ernest Jawetz, MD, PhD. & Richard A. Jacobs, MD, PhD</i>	
Penicillins 967	
Cephalosporins 971	
New Beta-lactam Drugs 974	
Erythromycin Group 975	
Tetracycline Group 975	
Chloramphenicol 976	
Aminoglycosides 977	
Polymyxins 979	
Antituberculosis Drugs 980	
Sulfonamides & Antifolate Drugs 982	
Sulfones Used in the Treatment of Leprosy 984	
Specialized Drugs Against Bacteria 984	
Urinary Antiseptics 985	
Systemically Active Drugs in Urinary Tract Infections 986	
Antifungal Drugs 986	
Antimicrobial Drugs Used in Combination 988	
Antimicrobial Chemoprophylaxis 989	
Antiviral Chemotherapy 991	
29. Disorders Due to Physical Agents	994
<i>Joseph LaDou, MD, Richard Cohen, MD, MPH, & Milton J. Chatton, MD</i>	
Disorders Due to Cold 994	
Disorders Due to Heat 997	
Burns (by R. Laurence Berkowitz, MD) 999	
Electric Shock 1004	
Ionizing Radiation Reactions 1005	
Drowning 1007	
30. Poisoning	1013
<i>Kent R. Olson, MD, & Robert H. Dreisbach, MD, PhD</i>	
Diagnosis of Poisoning 1013	
Principles of Treatment of Poisoning 1015	
Treatment of Common Specific Poisonings 1019	
Air Pollution & Smoking 1034	
Environmental Hazards 1034	
31. Medical Genetics	1035
<i>Margaret S. Kosek, MD</i>	

32. Malignant Disorders 1060
Sydney E. Salmon, MD

The Paraneoplastic Syndromes 1060
Management of Emergencies & Complications of Malignant Disease 1060
Primary Cancer Treatment: The Role of Surgery & Radiation Therapy 1065
Systemic Cancer Therapy 1066

33. Immunologic Disorders 1076
Daniel P. Stites, MD, Samuel Strober, MD, & F. Carl Grumet, MD

Immunoglobulins & Antibodies 1076
Cellular Immunity 1079
Immunologic Deficiency Diseases 1082
Autoimmunity 1085
Immunogenetics & Transplantation 1087

Appendix 1091

Chemical Constituents of Blood & Body Fluids 1091
Normal Laboratory Values 1104
Cardiopulmonary Resuscitation 1108
Schedules of Controlled Drugs 1119
Emergency Treatment of Food Choking 1120
Nomograms for Determination of Body Surface Area 1120
Mortality Table 1121
Conversion Tables 1122
Height-Weight Tables 1123

Index 1125

General Care—Symptoms & Disease Prevention

1

Steven A. Schroeder, MD, & Milton J. Chatton, MD

DISEASE PREVENTION

Preventing disease is more important than treating it. Preventive medicine is categorized as primary, secondary, or tertiary. Examples in the case of cancer are giving up or not starting smoking, thereby reducing the incidence of lung carcinoma (primary prevention); routine periodic surveillance by cervical Papanicolaou smear (secondary prevention); and mastectomy to remove localized breast cancer (tertiary prevention). Primary prevention is by far the most effective and economical of all methods of disease control.

INFECTIOUS DISEASES

Immunization remains the best means of preventing many infectious diseases, including tetanus, diphtheria, poliomyelitis, measles, mumps, hepatitis B, yellow fever, influenza, and pneumococcal pneumonia. Recommended immunization schedules for children and adults are set forth in Chapter 21.

Skin testing for tuberculosis and then treating selected skin-positive patients with prophylactic isoniazid reduces the risk of reactivation tuberculosis. Treatment is recommended for high-risk reactors regardless of age. These patients include recent tuberculin converters, postgastrectomy patients, persons taking immunosuppressive drugs, and patients with silicosis. For tuberculin-positive patients without these risk factors, treatment with isoniazid is recommended only for those under the age of 35 in order to minimize the risk of hepatitis. It now appears that prophylaxis for only 6 months (300 mg daily) is as effective as 12 months. BCG vaccine should be reserved for use in selected cases, such as protection of health workers in areas where tuberculosis is endemic.

The impressive 20th century accomplishments in immunization and antibiotic therapy notwithstanding, much of the decline in the incidence and fatality rates of infectious diseases is attributable to public health measures—especially improved sanitation, better nutrition, and greater prosperity.

AIDS is now the major infectious disease problem in the Western world. Until a vaccine or cure is found,

prevention will be the only weapon against this disease. Since sexual contact is the usual mode of transmission, prevention must rely on safe sexual practices. These include abstinence, prudent selection of partners, avoidance of promiscuity, the use of condoms, and the limiting or avoidance of anal and oral sex except with partners known to be uninfected.

CARDIOVASCULAR & CEREBROVASCULAR DISEASES

Impressive declines in age-specific mortality rates from heart disease and stroke have been achieved in all age groups in North America during the past 2 decades. The chief reason for this favorable trend appears to be a reduction in risk factors, especially cigarette smoking, hypercholesterolemia, and hypertension.

Cigarette Smoking

Cigarette smoking remains the most important cause of preventable morbidity and early demise in developed countries. Smokers die 5–8 years earlier than nonsmokers; have twice the risk of fatal heart disease; 10 times the risk of lung cancer; several times the risk of cancers of the mouth, throat, esophagus, pancreas, kidney, bladder, and cervix; a 2- to 3-fold greater incidence of peptic ulcers (which heal less well than in nonsmokers); and about a 2- to 4-fold greater risk of fractures of the hip, wrist, and vertebrae.

The children of parents who smoke have lower birth weights, more frequent respiratory infections, less efficient pulmonary function, and a higher incidence of chronic ear infections than the children of nonsmokers and are more likely to become smokers themselves.

Recently there has been an encouraging national trend in North America away from smoking, so that now less than a third of all Americans smoke. To the clinician, the established smoker is a vexing problem, since many people who stop smoking do so without a doctor's help, leaving the clinician to deal with the recalcitrant heavily addicted smokers who need help but won't accept it.

The clinician should adopt a 3-step smoking cessation strategy with smoking patients: (1) Ask the patient

about smoking and interest in quitting. (2) Motivate the patient to stop smoking. (3) Set a date to stop entirely, and follow up to find out what happens.

Pharmacologic aids have not been effective. Nicotine gum may be useful for some patients, but it is expensive and maintains the addiction. Clinicians should avoid appearing to disapprove of patients who are unable to stop smoking. Concerned exhortation, family or social pressures, or the opportunity presented by an intercurrent illness may eventually enable even the most addicted chronic smoker to give up the habit.

Hypercholesterolemia

A National Institutes of Health Consensus Panel has recently concluded that lowering definitely elevated LDL cholesterol concentrations will reduce the risk from coronary heart disease. It is estimated that each 1% reduction in blood cholesterol yields about a 2% reduction in coronary heart disease. The data in Table 1-1 can be used as a guide to when dietary and other measures to lower blood cholesterol should be instituted. A recent model for assessing the benefits of lowering blood cholesterol levels, however, indicates that the calculated gain in life expectancy is low, especially in patients without other risk factors such as cigarette smoking and hypertension. Surprisingly, treatment of hypercholesterolemia conveys more benefit in women than in men.

Specific methods of therapy, which include diet, weight reduction, exercise, and drugs, are discussed in Chapter 19.

Hypertension

Over 60 million adults in the USA have hypertension. It is well recognized that hypertension is a continuous and not a dichotomous risk factor. In every adult age group, higher values of systolic and diastolic blood pressure carry greater risks of stroke and congestive heart failure. Even so, clinicians must be able to apply specific blood pressure criteria as a means of deciding at what levels treatment should be considered in individual cases. Table 1-2 presents a classification of hypertension based on blood pressures that was developed in 1984 by the United States National High Blood Pressure Coordinating Committee of the National Institutes of Health. During the past 15 years, there have been great improvements in detection and control of hypertension, so that now about 65% of hypertensive patients in the United States are adequately controlled, compared with only 16% in 1972.

Table 1-1. NIH guidelines for treatment of hypercholesterolemia.

Age (years)	Moderate Risk (mg/dL)	High Risk (mg/dL)
20-29	>200	>220
30-39	>220	>240
>40	>240	>260

Table 1-2. Classification of blood pressure in individuals aged 18 years or older.

	Category
Diastolic blood pressure (DBP) (mm Hg)	
<85	Normal blood pressure
85-89	High normal blood pressure
90-104	Mild hypertension
105-114	Moderate hypertension
≥115	Severe hypertension
Systolic blood pressure (SBP) (mm Hg) when DBP <90 mm Hg	
<140	Normal blood pressure
140-159	Borderline isolated systolic hypertension
≥160	Isolated systolic hypertension

A classification of borderline isolated systolic hypertension (SBP 140-159 mm Hg) or isolated systolic hypertension (SBP ≥160 mm Hg) takes precedence over a classification of high normal blood pressure (DBP 85-89 mm Hg) when both occur in the same individual. A classification of high normal blood pressure (DBP 85-89 mm Hg) takes precedence over a classification of normal blood pressure (SBP <140 mm Hg) when both occur in the same person.

A. Indications for Starting Treatment: Before specific therapy is recommended, the diagnosis of hypertension should be confirmed on at least 2 additional office visits. Controversy continues over at just what blood pressure level treatment should be started. All agree that treatment is indicated for sustained diastolic blood pressure readings over 100 mm Hg and not indicated for diastolic pressures under 90 mm Hg. In the case of patients with diastolic readings between 90 and 100 mm Hg and those with isolated high systolic readings, clinicians must decide on an individual basis whether to begin treatment or continue to observe the patient.

B. Treatment: Treatment strategies include non-pharmacologic interventions (most effective for mild hypertension) such as dietary salt and alcohol restriction, weight reduction, exercise programs, and relaxation techniques as well as specific antihypertensive drug therapy as set forth in detail in Chapter 8.

CANCER

Primary Prevention

Cigarette smoking is the most important preventable cause of cancer. Primary prevention of skin cancer consists of restricting exposure to ultraviolet light by wearing appropriate clothing and use of sunscreens. Prevention of occupationally induced cancers involves minimizing exposure to carcinogenic substances such as asbestos, ionizing radiation, and benzene compounds.

Secondary Prevention

Generally recognized and used techniques exist for secondary prevention of cancers of the breast, colon, and cervix through cancer screening procedures (Table 1-3). Screening for other cancers in normal asymptomatic or even high-risk segments of the population is not generally recommended. There is even some controversy about the cost effectiveness, frequency, and age categories flagged for screening in Table 1-3.

ACCIDENTS & VIOLENCE

Accidents remain the most important cause of loss of potential years of life before age 65, followed by cancer, heart disease, and suicide and homicide. De-

spite incontrovertible evidence that seat belt use protects against serious injury and death in motor vehicle accidents, fewer than 30% of all adults use seat belts routinely. As part of routine medical care, physicians should try to educate their patients about seat belts, drinking and driving, and gun safety in the home. Males age 16-35 are at especially high risk for serious injury and death from accidents and violence.

THE PHYSICIAN-PATIENT RELATIONSHIP

One of the most effective therapeutic tools available to the clinician is a confident and trusting relationship with the patient. Good communication is essential to maximize the effects of therapy by ensuring patient compliance, helping patients to understand and choose among therapeutic options, and enabling them to bear the burden of serious illness and death. The old French folk saying, "To cure sometimes, to relieve often, to comfort always" is as apt today as it was 5 centuries ago.

American Cancer Society: 1985 *Cancer Facts and Figures*. American Cancer Society, 1985.

Centers for Disease Control: Advancements in meeting the 1990 hypertensive objectives. *MMWR* (March 20) 1987; 36:144.

Centers for Disease Control: General recommendations on immunization. *Ann Intern Med* 1983;98:615.

Consensus Conference: Lower blood cholesterol to prevent heart disease. *JAMA* 1985;253:2080.

Fielding JE: Smoking: Health effects and control. (2 parts.) *N Engl J Med* 1985;313:491, 555.

National Committee on Detection, Evaluation, and Treatment of High Blood Pressure: The 1984 Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. *Arch Intern Med* 1984;144:1045.

Taylor WC et al: Cholesterol reduction and life expectancy: A model incorporating multiple risk factors. *Ann Intern Med* 1987;106:605.

Table 1-3. American Cancer Society (1983) guidelines for the early detection of cancer in people without symptoms.

Test or Procedure	Sex	Age	Frequency
Sigmoidoscopy	M&F	Over 50	Every 3-5 years after 2 negative examinations 1 year apart.
Stool guaiac slide test	M&F	Over 50	Every year.
Digital rectal examination	M&F	Over 40	Every year.
Papanicolaou test	F	20-65; under 20 if sexually active.	At least every 3 years after 2 negative examinations 1 year apart.
Pelvic examination	F	20-40	Every 3 years.
		Over 40	Every year.
Endometrial tissue sample	F	At menopause; women at high risk.	At menopause.
Breast self-examination	F	Over 20	Every month.
Breast physical examination	F	20-40	Every 3 years.
		Over 40	Every year.
Mammography	F	35-39	Baseline.
		40-49	Every 1-2 years.
		50+	Every year.
Chest x-ray			Not recommended.
Sputum cytologic examination			Not recommended.
Health counseling and cancer checkup [†]	M&F	Over 20	Every 3 years.
		Over 40	Every year.

^{*} History of infertility, obesity, failure of ovulation, abnormal uterine bleeding, or estrogen therapy.

[†] To include examination for cancers of the thyroid, testicles, prostate, ovaries, lymph nodes, oral region, and skin.

GENERAL SYMPTOMS

PAIN

Approach to the Patient

Pain is the most common symptom causing patients to seek medical attention. It can provide the clinician with important diagnostic information. Because pain is a highly subjective phenomenon, the patient's description may be difficult to interpret. Information about the timing, nature, location, and radiation is

crucial for proper treatment; the same is true for aggravating or alleviating factors.

Many emotional and cultural factors influence the perception of pain. The primary cause (eg, trauma, infection), pathogenesis (eg, inflammation, ischemia), and contributory factors (eg, recent changes in life situation, symbolic attributes of pain) must all be sought for.

Administration of a systemic analgesic is the usual method of pain management, but many other nonpharmacologic methods are useful. Examples include graded physical activity, simple reassurance, support groups, biofeedback training, and transcutaneous electrical nerve stimulation.

1. DRUGS FOR SEVERE PAIN

The addicting analgesics—narcotics, opioids—are indicated for severe pain that cannot be relieved with less effective agents. Examples are the pain of severe trauma, myocardial infarction, ureteral stone, and postoperative pain. Table 1-4 lists the addicting analgesics with some of their characteristics.

These drugs have pharmacologic similarities to opium. They are employed principally for the control of severe pain, but they also act to suppress severe cough and gastrointestinal motility. All can produce **physical dependence**, but to varying degrees and after varying periods of use. The risk of addiction or habituation should not prevent their appropriate use, especially in the management of terminal illness.

A common error in management of pain from can-

cer is to prescribe insufficient doses "prn" rather than adequate doses around-the-clock at stated intervals. In such cases, the major goal of management should be patient comfort.

The "Brompton cocktail," a mixture of heroin or morphine, cocaine, a phenothiazine, alcohol, and chloroform water for oral administration, was widely publicized as an effective analgesic in British hospices. Subsequent studies have shown that morphine alone is just as effective. The effects of all narcotics are reversed by naloxone. Continued use produces tolerance, so that increasing doses are needed to produce the same analgesic effect.

Contraindications

The narcotic drugs are contraindicated in some acute illnesses. In acute abdomen, for example, the pattern of pain may provide important diagnostic clues; and in acute head injuries these drugs interfere with clinical interpretation of neurologic changes.

Adverse Effects

The drugs in this category have the potential adverse effects listed below. Patients with hypothyroidism, adrenal insufficiency, hypopituitarism, reduced blood volume, and severe debility are particularly apt to suffer adverse effects from the addicting analgesics.

(1) Opioid narcotics should be given with great caution to patients with pulmonary insufficiency, because of dose-dependent respiratory depression.

(2) Central nervous system effects include sedation, euphoria, nausea, and vomiting. Antidepress-

Table 1-4. Useful narcotic analgesics.*

	Approximate Equivalent Dose (mg)	Oral:Parenteral Potency Ratio	Duration of Analgesia (hours)	Maximum Efficacy	Addiction/Abuse Liability
Morphine	10	Low	4-5	High	High
Hydromorphone (Dilaudid)	1.5	Low	4-5	High	High
Oxymorphone (Numorphan)	1.5	Low	3-4	High	High
Methadone (Dolophine)	10	High	4-6	High	High
Meperidine (Demerol)	60-100	Low	2-4	High	High
Codeine	30-60†	High	3-4	Low	Medium
Oxycodone‡ (Percodan)	4.5†	Medium	3-4	Moderate	Medium
Propoxyphene (Darvon)	60-120†	Oral use only	4-5	Very low	Low/medium
Pentazocine (Talwin)	30-50†	Medium	3-4	Moderate	Low/medium

* Modified and reproduced, with permission, from Katzung BG (editor): *Basic & Clinical Pharmacology*, 3rd ed. Appleton-Lange, 1987.

† Analgesic efficacy at this dose not equivalent to 10 mg of morphine. See text for explanation.

‡ Available only in tablets containing aspirin (Percodan) or acetaminophen (Percocet).

sants, antihistamines, phenothiazines, and hypnotics can potentiate these effects.

(3) Cardiovascular effects of particular importance are hypotension and circulatory collapse, though this is less common than hypoventilation.

(4) Gastrointestinal effects are chiefly decreased bowel motility and consequent constipation.

(5) Genitourinary effects include bladder spasm and urinary retention.

(6) Enhanced sensitivity to the drugs occurs in patients with hepatic insufficiency; biliary spasm may cause severe biliary colic.

(7) Allergic manifestations also occur, but rarely.

Frequently Used Addictive Analgesics

A. Morphine sulfate, 8–15 mg subcutaneously or intramuscularly, is the most effective drug for control of severe pain. The effects last 4–5 hours. In acute anterior myocardial infarction or in acute pulmonary edema due to left ventricular failure, 2–6 mg may be injected slowly intravenously in 5 mL of saline solution.

B. Morphine congeners give effects equivalent to 10 mg of morphine sulfate but have no specific advantages—eg, hydromorphone or oxymorphone, 2–4 mg of either orally every 4 hours, or 1–3 mg of either subcutaneously every 4 hours.

C. Meperidine (Demerol), 50–150 mg orally or intramuscularly every 3–4 hours, provides analgesia similar to that achieved with morphine. Its indications and side effects are similar to those of morphine. Some clinicians prefer its use in inferior wall myocardial infarction, as it is less vagotonic.

D. Methadone, 10 mg orally, is most often used for treatment of addiction. Its side effects are similar to those of morphine, but tolerance and physical dependence are slower to develop.

E. Codeine (sulfate or phosphate), 15–65 mg orally or subcutaneously every 4–6 hours, is somewhat less effective than morphine but also less habit-forming. It is often given together with aspirin or acetaminophen for enhanced analgesic effect. Codeine is a powerful cough suppressant in a dose of 15–30 mg orally every 4 hours but is constipating.

F. Oxycodone is given orally and prescribed with another analgesic. The dosage is 5 mg every 4–6 hours in tablets that contain aspirin (Percodan) or acetaminophen (Percocet).

G. Propoxyphene (Darvon), 65 mg orally every 4–6 hours, has an analgesic effect little better than that of aspirin, but the side effects are minimal. When the drug is combined with aspirin or acetaminophen, the analgesic action is enhanced but is still similar to optimal doses of aspirin. Compared with other drugs in this category, it has a low potential for addiction.

H. Pentazocine (Talwin), 50 mg orally or 30 mg intramuscularly every 3–4 hours, is one of a group of agonist-antagonist opioids—ie, it can induce withdrawal symptoms in addicts while also having

a morphinelike action. It has moderate analgesic action. Pentazocine offers little advantage, can cause addiction, and is less effective than morphine.

2. DRUGS FOR MODERATE OR MILD PAIN

Most people can manage their minor aches and pains with OTC analgesics available at the drug store or food store. Drugs such as codeine, oxycodone, and pentazocine, listed above as “addictive narcotics,” are sometimes used for moderate pain, but salicylates or acetaminophen in higher doses or the highly visible class of NSAIDs are often better for this purpose. (See Table 1–5.)

The activity—both anti-inflammatory and analgesic—of aspirin and other NSAIDs is mediated through inhibition of the biosynthesis of prostaglandins. All of these drugs to varying degrees inhibit prothrombin synthesis and platelet aggregation and may cause gastric irritation and kidney damage. All NSAIDs are analgesic, antipyretic, and anti-inflammatory in dose-dependent fashion. Their principal uses are in the control of moderate pain of arthritis (rheumatoid, degenerative, etc), other musculoskeletal disorders, menstrual cramps, and other—mainly self-limited—conditions, including moderate postoperative discomfort. Suicide attempts with overdoses of NSAIDs are less serious and less often successful than attempts with aspirin.

Table 1–5 lists the most commonly used NSAIDs along with dosages and pertinent comments.

The ability to tolerate minor degrees of discomfort varies greatly in different individuals. The most widely used agents for these purposes are aspirin and acetaminophen.

Aspirin is the drug of first choice for management of mild to moderate pain and is an effective antipyretic and anti-inflammatory agent. Analgesia is achieved with much lower doses and blood levels than are needed for anti-inflammatory action. Aspirin is available in many forms for oral administration in a single 325-mg unit dose, as well as smaller (eg, 60 mg) and larger (eg, 500 mg) doses. The usual dose is 2 tablets (650 mg) every 4 hours as needed, taken with fluid. Gastrointestinal irritation can be reduced by ingestion with food or with an antacid. Enteric-coated aspirin, which is more expensive (Ecotrin; many others), can be used to avoid gastric irritation, but absorption is delayed.

The main untoward effect of aspirin—especially in large doses or when taken chronically—is gastric irritation and microscopic blood loss from the gut. Rarely, there may be massive gastrointestinal hemorrhage, most commonly in heavy drinkers or patients with a history of peptic ulcer disease.

Aspirin allergy occurs infrequently and may be manifested as rhinorrhea, the growth of nasal polyps, asthma attacks, and—very rarely—anaphylactic shock. The incidence of true aspirin allergy is less than 0.1% in the general population.