

Health Promotion: Principles and Clinical Applications

EDITOR

ROBERT B. TAYLOR, M.D.

ASSOCIATE EDITORS

JOHN R. UREDA, DR. P. H.

and

JOHN W. DENHAM, M.D.

*Department of Family and Community Medicine
Bowman Gray School of Medicine
of Wake Forest University
Winston-Salem, North Carolina*



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Health Promotion: Principles and Clinical Applications

Contributors

Frederick Bass, M.D., D.Sc.
Director, Health Promotion
Vancouver Health Department
Vancouver, British Columbia, Canada

John W. Beasley, M.D.
Associate Professor (CHS)
Department of Family Medicine and Practice
University of Wisconsin Medical School
Madison, Wisconsin

Ronald G. Blankenbaker, M.D.
State Health Commissioner
Indiana State Board of Health
Clinical Professor of Family Medicine
Indiana University School of Medicine
Indianapolis, Indiana

Alan Blum, M.D.
Founder, DOC (Doctors Ought To Care)
Editor, The Medical Journal of Australia
Glebe, New South Wales, Australia

Bruce F. Currie, Ph.D.
Regional Family Practice Residency and
National Research and Development Center
Saint Mary's Hospital
Kansas City, Missouri

John W. Denham, M.D.
Assistant Professor
Department of Family and Community
Medicine
Bowman Gray School of Medicine
of Wake Forest University
Winston-Salem, North Carolina

Elaine B. Feldman, M.D.
Professor of Medicine
Department of Medicine
Section on Nutrition
Medical College of Georgia
Augusta, Georgia

James M. Ferguson, M.D.
Assistant Professor
Department of Psychiatry

University of California, San Diego, School of
Medicine
San Diego, California

J. G. Fodor, M.D., Ph.D.
Professor of Clinical Epidemiology
Department of Community Medicine
Memorial University of Newfoundland
St. John's, Newfoundland, Canada

Jane M. Greene, M.S., R.D.
Research Scientist
Medical College of Georgia
Augusta, Georgia

Peter G. Hanson, M.D.
Associate Professor of Medicine
University of Wisconsin Medical School
Clinical Director of Cardiac Rehabilitation
Programs
University Hospital
Madison, Wisconsin

Nelson Howard Hendler, M.D., M.S.
Assistant Professor of Psychiatry
The Johns Hopkins University School of
Medicine
Baltimore, Maryland
Clinical Director, Mensana Clinic
Stevenson, Maryland

Siegfried Heyden, M.D., Ph.D.
Professor
Department of Community and Family
Medicine
Duke University Medical Center
Durham, North Carolina

Anthony Kales, M.D.
Professor and Chairman
Department of Psychiatry
The Pennsylvania State University College of
Medicine
Director, Sleep Research and Treatment
Center
The Milton S. Hershey Medical Center
Hershey, Pennsylvania

Joyce D. Kales, M.D.

Associate Professor
Department of Psychiatry
The Pennsylvania State University College of
Medicine
Associate Director, Sleep Research and
Treatment Center
The Milton S. Hershey Medical Center
Hershey, Pennsylvania

Ardine Kirchhofer, M.C.H., R.D.

Assistant Professor
Community Health Nutrition
Georgia State University
Atlanta, Georgia

James Michael McGinnis, M.D.

Adjunct Professor in Public Policy
Duke University
Durham, North Carolina
Deputy Assistant Secretary for Health and
Assistant Surgeon General
United States Department of Health and
Human Services
Washington, D.C.

C. Patrick McGraw, Ph.D.

Professor
Department of Surgery
University of Louisville School of Medicine
Louisville, Kentucky

Al J. Mooney III, M.D.

Clinical Instructor
Department of Family Medicine
University of North Carolina School of
Medicine
Chapel Hill, North Carolina
Willingway Hospital
Statesboro, Georgia

Lewis C. Robbins, M.D.

Executive Vice President
Health Hazard Appraisal, Inc.
Indianapolis, Indiana

Paul J. Rosch, M.D.

Clinical Professor
Division of Behavioral Medicine
New York Medical College
Valhalla, New York

President, The American Institute of Stress,
Inc.

Yonkers, New York

Penny C. Sharp, B.S.

Clinical Studies Coordinator
Department of Family and Community
Medicine
Bowman Gray School of Medicine of Wake
Forest University
Winston-Salem, North Carolina

Anita D. Taylor, A.B.

Assistant in Instructional Design
Department of Family and Community
Medicine
Bowman Gray School of Medicine of Wake
Forest University
Winston-Salem, North Carolina

Robert B. Taylor, M.D.

Associate Professor
Department of Family and Community
Medicine
Bowman Gray School of Medicine of
Wake Forest University
Winston-Salem, North Carolina

John R. Ureda, Dr. P.H.

Assistant Professor
Department of Family and Community
Medicine
Bowman Gray School of Medicine of
Wake Forest University
Winston-Salem, North Carolina

Henry L. Whitworth, M.D.

Assistant Professor of Psychiatry
Department of Psychiatry and Neurology
Tulane University School of Medicine
New Orleans, Louisiana

Daniel K. Winstead, M.D.

Associate Professor of Psychiatry
Department of Psychiatry and Neurology
Tulane University School of Medicine
New Orleans, Louisiana

Robert M. Veatch, Ph.D.

Professor of Medical Ethics
Kennedy Institute of Ethics
Georgetown University
Washington, D.C.

Preface

There is increasing evidence that health status, longevity, and performance are profoundly influenced by the lifestyle of the individual and family—how they work, play, eat, sleep, exercise, and care for their bodies.¹⁻⁷ Yet, medicine has failed to fully apply these findings in clinical practice. Why? Several reasons have been proposed:⁸ a problem-oriented medical model based upon a diagnose-and-treat paradigm, a value system which rewards therapeutic cures rather than prevention or health enhancement, and a general paucity of knowledge regarding the clinical applications of health promotion. (How *does* one calculate an exercise prescription?) In fact, until now there has been no comprehensive medical textbook devoted to the attainment of optimum health.

This book is intended to be an integrated and timely source of information regarding health promotion. Leading authorities in each separate discipline present the data base, the theories, and the practices by which health promotion can be implemented in primary care. The book has been written for the primary health care provider, including physician and physician extenders; it should also be useful to the health educator, public health worker, and student.

The volume has been prepared with specific goals in mind. Through use of this book, the health care practitioner should be able to:

1. Understand the epidemiologic, biomedical, statistical, behavioral, and educational principles of health promotion.
2. Determine the health promotion needs of the individual and family.
3. Prescribe specific health practices appropriate for each individual's age, sex, health status, and belief systems.
4. Maintain continuing supervision in accord with up-to-date scientific data.

The health practices described in this book have been carefully selected, based upon current medical information and opinion.^{1-7, 9-12} The editors decided to exclude definitive coverage of immunizations, high blood pressure control, occupational safety and health, accidental injury and toxic agent control, and other health protection and prevention health services as outlined in *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*.¹² Instead, this book emphasizes those areas categorized by the Surgeon General's report as representing health promotion—nutrition, exercise and fitness, alcohol, drugs, smoking, and stress—all confirmed by epidemiologic studies as important to physical and emotional well-being and optimum function.

There has also been a "hidden motive" in the preparation of this volume. This book represents an interdisciplinary effort to move health promotion into the mainstream of medical education and practice. Health promotion has received less than its share of medical school and continuing medical education curriculum time, perhaps because it does not fall readily within the domain of any of the traditional medical specialties. In addition, there are significant social, economic, and ethical issues involved, as dis-

cussed in Part III of the book. In the next decade, the clinical applications of health promotion may be championed by a coalition of family physicians and other primary care practitioners, specialists in preventive medicine and community health, and the new generation of allied health providers and educators.

This book should help the practitioner participate fully in the health promotion movement; it is not an attempt to "medicalize" health promotion, to usurp the prerogatives and responsibilities of government, community, and the individual. Nevertheless, as medicine continues to reexamine its models, its value system, and its outcomes, there will be an inevitable shift of emphasis to the tenets of health promotion, and the provider must be prepared to play a greater role than in the past.

The editor gratefully acknowledges the contributions of associate editors John W. Denham, M.D., and John R. Ureda, Dr.P.H., who shared in the labor and the joy of preparing this volume. The illustrations were prepared by Mr. George Lynch and his colleagues in the Department of Audio-Visual Resources at our institution. Special thanks are due to Barbara Tuttle, Joni Charles, Lindy Holloman, and Georgia Hines for their typing and administrative efforts. Finally, the editor and associate editors express appreciation to our colleagues and staff in the Department of Family and Community Medicine, Bowman Gray School of Medicine of Wake Forest University, for affording us the time, support, and encouragement to complete this work.

ROBERT B. TAYLOR, M.D.

WINSTON-SALEM, NORTH CAROLINA

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PART ONE: PRINCIPLES

1. Health Promotion: A Perspective

ROBERT B. TAYLOR JOHN W. DENHAM
JOHN R. UREDA

Health represents a positive state of physical and mental well-being and a high level of function, not merely the absence of disease. If providers of the future are to offer health care consistent with this concept, they must recognize that therapy rendered after disease begins is only part of their responsibility and that preventive medicine can only help patients avoid specific diseases. Even when optimally applied in medical practice, disease treatment and prevention fall short of promoting the full health potential of the individual.

In the United States, primary health care providers no longer spend most of their time managing episodic diseases such as diphtheria or scarlet fever. Smallpox has been controlled, as have the other major infectious diseases that so often shaped the course of history. But the great epidemics of infectious disease that are now history have been replaced by contemporary epidemics of degenerative, neoplastic, and stress-related disease. It appears that much of the morbidity and mortality of these new epidemics is self-inflicted. Yet rising health care expenditures continue to go largely to disease treatment. Immunizations, pasteurization, public sanitation, and antibiotics have succeeded in changing the nature of illnesses that physicians face. The microbe is in retreat. Now new agents of disease challenge American medicine and demand new approaches to health care.

Appropriately immunized, regularly examined, and sometimes treated, the average American seems to expect good health as a

natural occurrence. In fact, his confidence in healers has been reflected in an astonishing disregard for prudent health measures. The past generation of men and women have consumed nutritionally deficient foods, accepted increasing weight as a natural consequence of aging, used tobacco despite well-documented hazards, ingested unnecessary and sometimes dangerous drugs, failed to get necessary rest and sleep, exercised infrequently, and accepted prolonged stress as though immune to its damaging sequelae.

In 1961 Dubos wrote, "Men as a rule find it easier to depend on healers than to attempt the more difficult task of living wisely."¹ Today change is beginning to occur. Arising from a national need to begin living wisely, without undue dependence on healers, health promotion is evolving as a social force that promises to have a major influence on medical care of the 21st century. The concepts involved have particularly important implications for providers of health care, including physicians, nurses, physician extenders, and public health workers.²

American medicine has been slow to implement the concepts of health promotion.³ Advising the patient in proper nutrition and exercise lacks the professional self-fulfillment of managing an asthmatic attack or excising an inflamed appendix. Health promotion does not seem to fit the physician's concept of his role as healer. However, because of a rising public desire for health information, the chief obstacle to integrating health promotion into

medical care has not been resistant patients, but physicians who continue to follow a health care recipe of “diagnose and treat,” with a pinch of prevention.

Health promotion has the potential to augment the quality and length of life. Its benefits to humanity may, in time, rival the great advances of medical history. The pages that follow will trace the historic development of the movement, examine specific health practices, and show how the physician can implement health promotion in clinical practice.

ORIGINS

Concept

The term *health promotion* evokes different images in different individuals. The theorist may envision the epidemiologic model first proposed by Leavell and Clark,⁴ in which health promotion is the first phase of primary prevention—a prepathogenic level of intervention directed at enhancing the general well-being and performance of the individual. In this model health promotion differs from disease prevention in that a specific disease agent or process is not singled out and targeted for intervention. In disease prevention, known agents and host or environmental factors are manipulated in a manner expected to reduce the occurrence of a specific disease.

On the other hand, the practitioner is likely to think of activities designed at seeking an optimal state of physical, mental, and social well-being, a definition proposed in the constitution of the World Health Organization. The range of these activities might be broad, as signified by the recent definition proposed by the Office of Health Information, Health Promotion and Physical Fitness and Sports Medicine: “Any combination of health education and related organizational, political and economic interventions designed to facilitate behavioral and environmental adaptations that will improve or protect health.”⁵ Then it might be quite specific, as exemplified in *Healthy People: The Surgeon General’s Report on Health Promotion and Disease Prevention*, in which environ-

mentally-oriented activities are considered as “health protection activities” and individual-oriented activities (i.e., behaviors) are considered as “health promotion activities.”²

Regardless of how defined, health promotion begins with the axiom that each of us inherits a different potential for physical and emotional well-being. The individual’s continually changing state of health is at any time the result of three forces: heredity, environment, and behavior (see Fig. 1.1). Unlike environment and behavior, one’s genetic endowment is beyond personal control. The person with a family history of sickle cell disease or Huntington’s chorea undeniably has an high risk of developing these genetic disorders. For some diseases, however, an individual can compensate for a genetic susceptibility by protective behavior or a less taxing environment, shifting his risk back toward the average (see Chap. 4). On the plus side, the person born with a genetic predisposition to long life is likely to outlive his peers, assuming all practice the same health habits and experience the same environmental hazards.

Environment is also an important health determinant, and includes such diverse elements as clean or polluted air, affluence or poverty, peace or war. Another important en-

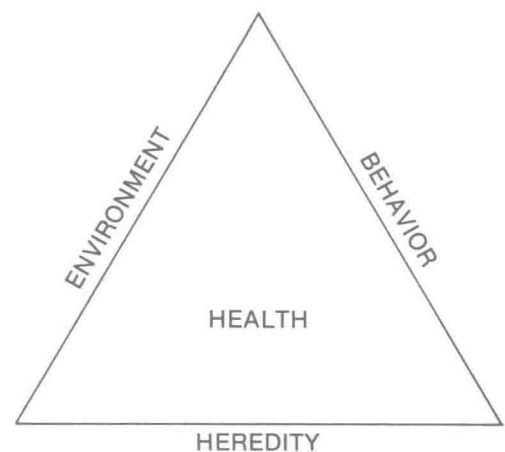


Figure 1.1. Determinants of health: heredity, environment, behavior.

vironmental factor is the quality and availability of health care. The family environment, whether supportive or repressive of healthful activities, can have an important influence on individual well-being.

The third arm of the triangle—individual behavior—is where the physician can do the most to promote health. Life insurance company data have confirmed that excess mortality rises with increasing weight for both men and women.⁶ The *Ten State Nutrition Survey* reported a number of previously unsuspected dietary deficiencies and their consequences.⁷ The Inter-Society Commission for Heart Disease Resources identified lifestyle factors implicated in coronary heart disease.⁸ The stage for government involvement in health promotion was set by the 1964 report *Smoking and Health*.⁹ The ongoing *Framingham Study* has not only identified specific risk factors in cardiovascular disease, but has also taken the lead in determining the epidemiologic consequences of various health practices.¹⁰ The physician, as the medical expert, is in a position to influence individual behavior by providing information, motivating, documenting change, and rewarding success. The physician must play a key role if individuals are to be persuaded to change their health practices.

Health practices are those activities intended to enhance the health status of the individual. They include all activities which might reasonably be expected to improve one's physical or emotional well-being. This book will consider eight core health practices:

1. Nutrition
2. Weight control
3. Exercise
4. Appropriate use of alcohol
5. Avoidance of tobacco
6. Appropriate use of drugs
7. Rest and sleep
8. Stress management

Health practices are important for all age groups, from pediatric to geriatric. Promoting these practices entails applying the principles of the biomedical sciences implemented by using techniques of the behavioral sciences—including contracting, contingency management, and the use of compliance incentives—while considering the social context surrounding each practice.

Historic Perspective

Health promotion, like other movements which promise to have profound influence on the lives of many, can be best understood in the historic context. The current focus on fitness represents the third of three eras in health care.

Treatment. The earliest healers 35 centuries before the birth of Christ focused on the cure of illness, beginning the *era of disease treatment*. Evil spirits were exorcised from afflicted individuals. War-wounded limbs were cauterized or amputated. Various minerals, plants, and animal parts were utilized for their therapeutic value. In 2000 B.C. Chinese healers used herbal medicines and acupuncture, and 1000 years later the Egyptians had their own formulary.

During the golden age of Greece in 500 B.C. students at the medical school in Athens learned the healing values of nutrition, massage, and rest. Physicians of this time also posed the question: How should a healthy man live in order to remain healthy? They concluded that only the man who does not need to be concerned with anything except his health can live in a perfectly correct manner.¹¹ Early Greek advances in health promotion were to be superseded in later civilizations by the more urgent need to treat war wounds and infectious diseases.

The ancient Romans adopted and further developed the medical innovations from Greece. The fall of the Western Roman Empire in 476 A.D. plunged Europe into a dark age of superstition, when disease was again attributed to tormenting demons; medical care reverted to the eviction of evil intruders.

Beginning in the 7th century, the migrations of Mohammed's followers spread smallpox and leprosy across North Africa, and subsequently these diseases entered Europe through the crusades and the Moorish conquest of Spain. Therapy consisted of medication, fumigation, purgation, and bloodletting—interventions that, in retrospect, seem more likely to have augmented illness than health.

The 14th century epidemic of bubonic plague, the infamous black death, claimed some 60 million lives, threatening the very existence of humanity. All methods of therapy proved fruitless, but resourceful Venetians made a memorable contribution to disease prevention by detaining travelers from infected areas for 40 days (*quaranta giorni*)—hence the origin of quarantine. During the 16th century Ambrose Paré developed new surgical techniques, including the operative therapy of gunshot wounds and rapid methods of amputation. Cinchona bark was first used to treat malaria in Peru during the 17th century. At the same time Thomas Sydenham recommended fresh air in sickrooms, horseback riding for consumptives, and cooling draughts for patients with smallpox.

Prevention. The 18th century brought several events which marked a shift of thinking from treatment to prevention. In 1779 James Lind discovered that eating citrus fruit could prevent scurvy on long sea voyages, and in 1796 Edward Jenner developed the technique of vaccination.

The second age in medical history—the *era of preventive medicine*—came into full flower after 1800. Widespread implementation of smallpox vaccination was followed by Pasteur's discovery that attenuated chicken cholera organisms could bring protection against virulent bacteria, setting the stage for the many vaccines later developed. In 1901, Walter Reed in Havana confirmed that the *Aedes aegypti* mosquito was the vector of yellow fever; subsequent public health measures confirmed that malaria could be prevented by mosquito control. In 1914 Dr. Joseph Goldberger dis-

covered that pellagra was caused by a dietary deficiency and that it could be prevented by consuming foods containing a "pellagra-preventive" factor, which we now know as niacin. Public health efforts to ensure safe water and milk supplies reduced morbidity and mortality due to typhoid fever. Diphtheria, pertussis, and tetanus vaccines were developed during the 1930s and 1940s. Then came the Salk polio vaccine in 1952 and the Sabin oral polio vaccine in 1960. Measles, mumps, and rubella vaccines were introduced in 1958, 1967, and 1969, respectively. Efforts to develop safe, effective vaccines for a broad variety of diseases continue in laboratories across the country.

Enormous health gains have established the value of disease prevention. In fact, Americans enjoy relative freedom from a host of diseases for which physicians still have no sure cure: smallpox, plague, malaria, yellow fever, schistosomiasis, poliomyelitis, tetanus, diphtheria, measles, mumps, and rubella.

Since the turn of the century, there has been a dramatic shift in the causes of death in the United States (see Table 1.1). In 1900 the three leading killers were all infectious diseases. Heart disease, stroke, and cancer together accounted for fewer deaths yearly at the turn of the century than does heart disease alone today. Today these three diseases together cause approximately 70% of American deaths. The U.S. death rate has dropped from 17 per 1000 persons yearly in 1900 to less than 9 per 1000 annually, owing chiefly to a reduction in deaths from communicable diseases.² The death rate from tuberculosis is currently only 5 per 100,000. Gastroenteritis and diphtheria—once feared killers of children—are now rarely causes of death. The medical advances in prevention have altered the spectrum of illness in America.

Health Promotion. The changing pattern of disease has been accompanied by changes in social values. The events of the past two decades have shaken popular faith in the ability of science and government to solve human problems. Millions of dollars were spent on the space program to explore the moon and

TABLE 1.1 DEATH RATES* FROM TEN LEADING CAUSES OF DEATH, 1900 AND 1979

1900*		1979*	
1. Influenza and pneumonia	(202.2)	1. Heart disease	(331.3)
2. Tuberculosis, all forms	(194.4)	2. Cancer	(183.5)
3. Gastroenteritis	(142.7)	3. Cerebrovascular disease	(76.9)
4. Heart disease	(137.4)	4. Accidents and adverse effects	(47.9)
5. Cerebrovascular disease	(106.9)	5. Chronic obstructive pulmonary diseases	(22.7)
6. Nephritis	(81.0)	6. Pneumonia and influenza	(20.0)
7. Accidents	(72.3)	7. Diabetes mellitus	(15.0)
8. Cancer	(64.0)	8. Chronic liver disease and cirrhosis	(13.6)
9. Certain diseases of infancy	(62.6)	9. Atherosclerosis	(13.0)
10. Diphtheria	(40.3)	10. Suicide	(12.6)

* per 100,000

Sources: *Statistical Abstract of the United States*: 1958, 79th ed. Washington, DC, US Government Printing Office, 1958; *Vital Statistics of the United States*. Washington, DC, US Government Printing Office, 1979.

planets; but many questioned the morality of spending huge sums on space exploration when on earth millions of persons die each year of malnutrition. The decline of the space program coincided with a rising skepticism as to the value of science in American life. The destruction and waste of the Viet Nam war brought an erosion of public confidence in the wisdom of political authority and a reemergence of individual self-determination. Rising shortages have demonstrated that resources are finite; more and more, Americans are beginning to assume personal responsibility for frugal use of limited resources, including health care. The conclusions of the 1960s and 70s experience seem to be that science is potentially fallible, human values must take precedence over economic and political issues, and individual well-being in the years to come will necessitate informed self-reliance—attempting to live wisely with less dependence on “providers” of all types.

The growing concern with the quality of life and the changing patterns of morbidity

and mortality have ushered in the third age of health care: an *era of health promotion*. The surgeon general has called it no less than “a second public health revolution in the history of the United States.”² More than the other two eras, the era of health promotion has been ushered in as a social movement, and much of its impetus has arisen from persons and institutions outside the medical mainstream: joggers, weight control groups, Alcoholics Anonymous, tobacco opponents, and others. Yet there is a growing scientific data base to support medical involvement.

The health damaging potential of certain host behaviors and characteristics was early suggested by their association with disease and death.³⁻⁷ Other studies suggested the potential health benefits of specific host behaviors and characteristics. The Human Population Laboratory of the State Department of Health in Berkeley, California has reported longitudinal studies of residents of Alameda County, demonstrating that particular health practices have a favorable correlation with health status and

longevity.^{12,13} A 1979 report by the American Cancer Society describing a 20-year study of 1 million Americans indicated the beneficial effect of health practices upon death rates.¹⁴ The evidence from these studies, however, is presumptive. The fundamental hypothesis of health promotion is that *modification* of behavior to better fit practices associated with health and longevity will in fact increase health and longevity. Definitive evidence for this hypothesis pends the results of prospective controlled trials. Two large studies in progress are the Multiple Risk Factor Intervention Trial (MRFIT)¹⁵ and the Stanford Three Community Project.¹⁶ Although these studies were designed to assess the primary prevention of atherosclerotic heart disease, a successful demonstration will have major health promotion implications.

The 1979 *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention* offers ample evidence of government concern over the health consequences of American lifestyle. A quote from the *Report's* foreword, written by Joseph A. Califano, Jr., indicates the government's position: "And let us make no mistake about the significance of this document. It represents an emerging consensus among scientists and the health community that the nation's health strategy must be dramatically recast. . . ."¹⁷ The *Report* proposes three types of actions for health (see Table 1.2): Preventive health services focus on specific diseases and health problems; health protection activities concern environmental issues.

The third group of proposed actions, and those most pertinent to this book, concern the promotion of healthy lifestyles. In the epidemiologic model, the focus is on the host. Action is proposed in five areas: cessation of smoking, reduction of alcohol and drug misuse, improved nutrition, increased exercise and fitness, and stress control. The *Surgeon General's Report* points out that medical care, disease prevention, and health promotion are complementary and that any effective national health strategy must encompass and give due emphasis to all of them.

TABLE 1.2 ACTIONS FOR HEALTH*

Preventive Health Services

- High blood pressure control
- Family planning
- Pregnancy and infant care
- Immunizations
- Sexually transmissible diseases

Health Protection

- Toxic agent control
- Occupational safety and health
- Accidental injury control
- Fluoridation of community water supplies
- Infectious agent control

Health Promotion

- Smoking cessation
- Reducing misuse of alcohol and drugs
- Improved nutrition
- Exercise and fitness
- Stress control

* These priority actions are believed by experts to be critical to achievement of national health goals.

Source: Ref. 2.

AREAS OF CLINICAL CONCERN

Although evidence for the benefit of health promotion is derived from objective epidemiologic studies, individual compliance is subject to the influence of personal values, beliefs, and habits. Exchange of a real comfort for a statistical gain can be difficult. Both physicians and patients from time to time express skepticism as to the personal value of exercising, achieving ideal weight, or even reducing life stresses. The selection of health practices for discussion in this book has been guided by current evidence concerning their salutary effect. The material is intended as a guide to implementing the principles of health promotion in daily patient care.

Nutrition

There are many areas of ignorance in nutrition, and hence patients suffer diseases of malnutrition in an affluent society: obesity, atherosclerosis, maturity onset diabetes, dental caries, diverticular disease, and constipation. Since the early 1960s the proportion of Ameri-