The American Way of Life Need Not Be Hazardous to Your Health

John W. Farquhar, M.D.

Jacket design and drawings on the cover and throughout the book are by Tom Lewis, The Design Quarter, San Diego, California.

This book was published originally as a part of THE PORTABLE STANFORD, a series of books published by the Stanford Alumni Association, Stanford, California. This edition first published by W. W. Norton & Company, Inc. in 1978 by arrangement with the Stanford Alumni Association.

Library of Congress Cataloging in Publication Data

Farquhar, John W
The American way of life need not be hazardous to your health.

Bibliography: p.
Includes index.
1. Health. 2. Cardiovascular system—Diseases—Prevention. 3. Behavior modification. [DNLM: 1. Hygiene. 2. Habits. 3. Life style. QT180.3 F238a]
I. Title.
RA776.5.F34 1978 613 78-12975
ISBN 0-393-06443-3

1 2 3 4 5 6 7 8 9 0

Acknowledgments

I AM INDEBTED to many of my colleagues in the interdisciplinary Stanford Heart Disease Prevention Program for their role in critiquing and commenting upon this manuscript in its various stages. Dr. Carl Thoresen was particularly influential in directing my approach to teaching methods for achieving self-directed change. I am also grateful to Drs. Stewart Agras, Brian Danaher, Stephen Fortmann, William Haskell, Stephen Hulley, Robert Jeffery, Alfred McAlister, Joyce Nash, Keith Taylor, and Peter Wood, all of whom generously gave their time and expertise, providing valuable appraisals of the manuscript. In addition, Janet Alexander, Prudence Breitrose, and Phyllis Ullman furnished helpful comment and suggestions for changes. Drs. Albert Bandura and Nathan Maccoby of Stanford University, Dr. Henry Blackburn of the University of Minnesota, and Dr. William Connor of the University of Oregon deserve special mention for their many formative influences in furthering my understanding of the subjects treated in this book. For their able and efficient secretarial support I also thank Jo Maddox, Julia Ball, and Samia Smith.

With my deepest gratitude and respect, I wish to thank my editor, Cynthia Fry Gunn, who encouraged me through many difficult hours with her imperturbable patience and good cheer. Her critical judgments and editorial skills took my inchoate ideas and greatly helped me form the finished manuscript. Finally, I wish to thank the many members and friends of the Stanford Heart Disease Prevention Program, too numerous to mention individually, for their interest, participation, and enthusiastic support which have made the program such a success.

I claim responsibility for all errors and omissions.

John W. Farquhar

Introduction

OFTEN WE ASSUME that our life-style is healthy, that everything is "normal," when in fact we are following a path inimical to our health. I hear people say "I really should lose weight" or "I ought to get more exercise" or "I know I should quit smoking." Yet, free to choose, we often continue along the same hazardous course, living as if our lives are charmed—"it won't happen to me." We are not charmed; rather than forfeit our birthright of good health, we should protect it.

Ill health is not an isolated event; it is the result of an accumulation of abuses, each seemingly inconsequential. Eventually they take their toll. I believe that the individual has to accept responsibility for maintaining his or her own health. No one else can—not a doctor, not a fleet of doctors. In the way we live our daily lives, we either enhance our health or diminish it.

The overwhelming majority of fatal and near-fatal episodes of premature heart attack and stroke are preventable, as are, in all probability, a large percentage of diet-related cancers. This book contains in one volume information on all health habits that are associated with increased heart attack and stroke risk and provides practical, self-directed methods to lower your risk level in each of these areas. As you read the chapters that follow—on heart disease, stress management, exercise, nutrition and food patterns, weight control, and smoking—you will see how one aspect of your health affects other aspects as well, and how the prevention of one disease is often the prevention of many diseases. To receive maximum benefit, I suggest that you read the chapters in sequence.

Much of medicine needs to be demystified; for this to happen, high-quality health education is vital. It is my deepest hope that someday the quality of public health education will be so excellent, and our society so supportive of healthful life-styles, that we will find it simple to retain our natural birthright of good health. Until that time, this book is one man's attempt to work toward that goal. I undertake here to discuss not only what I believe you should know about preventable heart disease, stroke, and cancer risk factors but also what you can do to bring about permanent life-enhancing changes that will reduce these risks.

John W. Farquhar, M.D.

Stanford, California
March 22, 1978

Table of Contents

CHAPTER ONE

The American Way of Life

I LOST A FRIEND YESTERDAY. Death set upon him like a monster, gripping him with pain and fear, overwhelming him with fatigue, and finally shaking him loose, lifeless. Gone is a husband, gone a father, gone a brother. In my grief, I am angry. Death came early, uninvited; it was not a welcome release at the end of a fulfilled life. It came as an interloper, seizing a man at the center of his time.

On a Sunday five months ago at around bedtime, Roger complained of indigestion to his wife, Ellen. He had eaten nothing out of the ordinary for dinner—meat, potatoes, vegetables, some cheesecake left over from a party the night before. He lay down, tried to concentrate on the 10 o'clock news on television, asked his wife to get him a bicarbonate of soda. They switched on a late movie and she fell asleep. At two in the morning Roger telephoned me.

What impressed me immediately, and what I remember so clearly now, were not his words but his voice. It was small, fearful, astonished. He clearly knew what was happening to him. He said the pain was now in his lower chest; he was sweating heavily; he felt very weak. Then he passed the telephone to Ellen. I told her I would call for an ambulance and meet them at the hospital. I dressed and rushed over to the coronary care unit at Stanford Hospital.

Roger was wheeled into the hospital in shock. Ellen, behind him, was extraordinarily calm. Diagnosis confirmed that a major coronary thrombosis had occurred.

At this point, high technology took over. All vital functions were continuously monitored and Roger's wounded heart muscle was gently prodded and shaped into a force that could just barely sustain life. Roger was not fully alert or aware of the drama and tension around him. He did not know that the many highly trained health professionals working swiftly about him were processing yet another common entrant into a tunnel from which it can be predicted that only one in four, given his state of shock on entry, would emerge alive at the end of a week.

The initial fear Roger felt, along with his paroxysm of pain, became the fear of his friends, his family, and those of us who were caring for him. We watched him return to awareness 48 hours after the attack. At this point, Roger had, statistically speaking, passed his first hurdle and thus increased his chances for surviving a week to one in two.

Three weeks after his attack, tubes for intravenous feeding were removed and continuous monitoring ended. Roger was transferred from the fury and precarious balance in the coronary care unit to a quiet ward. His wife's fears eased. In another two weeks, still with a fragile hold on life, Roger was allowed to go home.

To Roger, home meant the comfort and security of his family and his own surroundings. To his family, having Roger home meant adjusting to his needs, watching him regain some of his strength, seeing him occasionally cry. His children had not quite realized how near death he had been. He was still profoundly exhausted and had recurrent sensations of irregular heart poundings. He was bewildered and depressed. He relied on his wife to assist with his frequent medications.

In the three months following his heart attack, Roger reentered the hospital twice for brief treatments for shortness of breath due to a weakened heart. He also entered a new statistical group: He was now one in two to survive three months. Over the next four weeks his condition stabilized slightly. Even though he was virtually bedridden, Roger and his family maintained their constant hope and belief that life would eventually return to normal.

One afternoon a few weeks later, Ellen came home from grocery shopping and found Roger in immense pain. She drove him directly to the hospital. The chest pain continued for hours, then suddenly it was over. Roger died.

From the time of his initial heart attack until his death, Roger suf-

fered greatly. Even the simplest exertion, such as walking to the bathroom, caused shortness of breath. His ankles were so swollen that he had to wear support bandages. He ate little. He lost interest in sex. Depression was a continuing problem. He frequently awoke in the night and sat on the edge of the bed gasping for air. These episodes, along with the strange poundings in his chest, created an atmosphere of unspoken anxiety and uncertainty in the family.

Heart Disease Today

Medical records tell us when Roger experienced his first myocardial infarction (the medical term for a serious heart attack in which an already narrowed artery is blocked and damage to a part of the heart muscle then occurs), and they tell us when he died. But they do not tell us when in Roger's 48 years of life he embarked on a path that led him to premature death.

When was the first hint that he had slipped across the line into a special group of about 153,000 Americans under age 65 who each year die prematurely from heart attacks? Had Roger been luckier, he might have belonged to another group of 500,000 who suffer heart attacks that are not fatal. (These survivors, however, have a high risk of future fatal heart attacks.) Every year an additional 100,000 Americans under age 65 have strokes, 30,000 of which are fatal. Both heart attacks and strokes are due almost entirely to a process called *atherosclerosis* in which arteries to the brain, heart, and other organs become progressively narrowed by deposits of cholesterol and fibrous tissue.

The dream of an abundant, full life dissolves for all, like Roger, who die prematurely. If we use 65 as the age before which death is defined as premature, heart attack is the largest single cause of premature death in the United States. In view of this large toll of death and disability, and in view of a rapid rise of heart attacks (about 40 percent from 1940 to 1965), cardiovascular researchers widely acknowledge that we are in the midst of a modern epidemic of heart disease. At least 90 percent of the fatal and near-fatal episodes of premature strokes and heart attacks are preventable. This is truly a staggering percentage, and it carries a vital message to virtually everyone. By the way you live, you greatly determine not only the length of your life but also the quality of your life.

We often live *as if our habits don't matter.* They do. And medical scientists have learned much to help people enhance their health and well-being by teaching them how to change habits that are harmful. These changes, including a 42 percent drop in cigarette smoking

among adult males in the past 13 years, are very likely responsible for the surprising fact that the heart attack rate has been *decreasing* recently—down 20 percent since the peak of the epidemic in 1965. Much can be done to accelerate this reduction; the best estimate is that we can further reduce the heart attack rate to one-tenth or less of its 1965 peak. The journey will be long and slow for the nation at large; the arrival time will depend on the rate of adoption of healthier life-styles by each of us as individuals.

Habits and Life-Style

What this book discusses applies to all aspects of our lives—what we eat, how we exercise, how we deal with daily stresses. How we handle these aspects to a large degree dictates our physical and mental well-being. What we are today is the aggregate of genetic factors, the influences of early experiences and learning, and personal habits concerning diet, exercise, smoking, and stress that constitute our life-style.

What is the impact of our life-patterns on our national health? To the annual total in 1976 of 183,000 premature deaths from heart attacks and strokes, we must add the total impact of cigarette smoking on health in the under-65 age group: This includes 39,000 fatalities from lung cancer, about 6,000 fatalities from other types of cancer, 10,000 deaths from emphysema and other chronic lung problems. In addition, we must include about one million individuals who currently suffer from significant degrees of pulmonary crippling. There is also impressive and growing evidence that the incidence of cancer of the breast, colon, and rectum is increased by certain longstanding dietary practices (to be discussed in a later chapter). Therefore, another group of cancers can be added to the list of health problems partly preventable through modified dietary habits.

One Man's Life-Shortening Path

Early Eating Habits and Cholesterol

From this larger perspective, let us return to Roger's particular case. The shortening of Roger's life began long before his initial heart attack. At birth, Roger was a perfectly healthy baby—well-formed, strong, and vigorous. His parents were determined to give him the best. In 1929 the modern innovation was bottle feeding, which was highly recommended by many pediatricians as being superior to breast feeding; accordingly, Roger was bottle-fed. Today, we know that cows' milk raises cholesterol levels of an infant to levels higher than does mothers' milk. (Medical science learned this fact only ten years

ago.) The first preventable assault on Roger's arteries began with bottle feeding.

Roger's mother was concerned that the family's diet be a good one. As Roger was growing up, there was great emphasis on providing adequate protein and calcium. Thus, Roger's early childhood diet included a large representation of eggs, cheese, whole milk, meat, ice cream, and butter—believed to be healthful and high in needed protein and calcium for a growing child. This is also a high-cholesterol and high-saturated-fat diet, full of foods that tend to increase deposits of fat in the arteries.

The importance of early childhood diet on blood cholesterol—one of the three major risk factors in heart disease, along with smoking and the level of blood pressure—is demonstrated by Figure I-1. The levels of blood cholesterol in a group of schoolchildren in Wisconsin were compared to the levels in a group of healthy schoolchildren living in a rural mountain village in Mexico. The Wisconsin children had an average blood cholesterol level of 187, whereas the Mexican children had an average blood cholesterol level of 100—about half that of the Wisconsin children. It is important to note that each group showed a wide range of cholesterol levels (due largely to hereditary

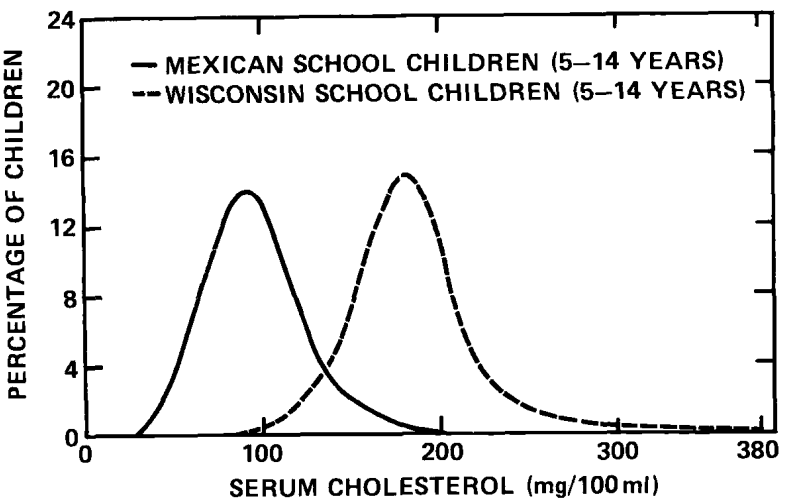


Figure I-1: Graph showing wide differences in blood cholesterol levels of Mexican and Wisconsin children.

Source: Redrawn from R. Golubjatnikov, T. Paskey, and S.L. Inhorn, "Serum cholesterol levels of Mexican and Wisconsin school children," *American Journal of Epidemiology*, vol. 96, 1972, p. 38.

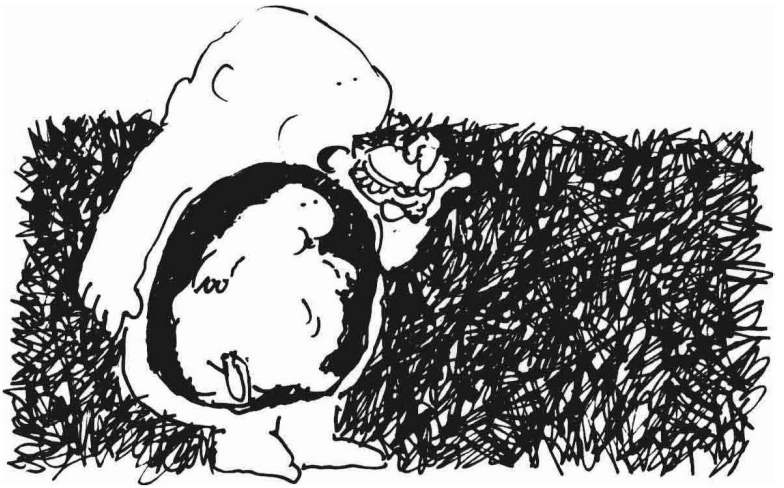
factors). However, what is more important is that the blood cholesterol levels of the Mexican children were so much lower that very little overlap existed between the two groups, despite the wide range of levels. This separation between the groups indicates that *between* cultures environmental factors are more important determinants of blood cholesterol levels than are genetic factors; however, *within* any one culture genetic factors are the dominant influence.

The difference in blood cholesterol levels between the Mexican and Wisconsin children was attributed largely to the higher intake of dietary cholesterol and dietary saturated fat from eggs, meat, milk, and cheese by the Wisconsin children. In addition to eating foods low in saturated fat, the Mexican children exercised more, which made them leaner and may also have contributed to the difference in cholesterol levels. Similarly, the Mexican children consumed greater amounts of dietary fiber. This fiber intake or perhaps other dietary factors that we do not yet understand may have helped, too, in keeping the Mexican children's cholesterol levels low.

Studies such as these lead us to believe that the risk factors for atherosclerosis begin in early childhood and develop over many years. These facts also suggest that public health efforts should be directed at the entire population (rather than merely to those in the highest risk categories) in order to lower risk-factor levels in all people and at all ages. Were we to treat only the most risk-prone group—those having special genetic factors that separate them from the majority—we would be ignoring countless individuals who pursue habits that subject them to needless risk. We would be overlooking that body weight, blood cholesterol, and blood pressure tend to increase with age among the so-called normal population in the United States; we would therefore miss our opportunity to prevent problems before they develop. Cardiovascular risk increases in concert with blood cholesterol over a wide range of levels; therefore, at almost all cholesterol levels found in the U.S. population, needless risk is present. In short, the lower the blood cholesterol level the better. The sooner the cholesterol is lowered and the longer it remains low, the more beneficial will be the results.

Roger's "Normal" Childhood

Let's return to Roger again. As he grew up, he ate meat generally twice and frequently three times a day. Like many other Americans, his evening meal often included beef. Roger loved ice cream and at least five times a week enjoyed it as dessert or snack. His mother felt she had not done her job unless a meal contained some form of meat.



The entire family frequently ate bacon, frankfurters, luncheon meat, sausage, and ham—all relatively high in salt as well as saturated fat. As in many other American homes, pickles and potato chips frequently graced the table or were used in lunch bags and for snacks. These, too, are very high in salt. (Everything else being equal, the higher the salt intake the higher the blood pressure. Again, as with levels of blood cholesterol and the intake of cholesterol and saturated fat, so it is with blood pressure and salt intake: Genetically determined susceptibility affects the response to the dietary factors. Hence, while virtually all people will have a blood pressure rise with increased salt intake, those who are genetically more susceptible will have greater blood pressure increases.)

Not only was Roger a plump baby (which Roger's parents regarded as fine—just "baby fat"), he was also a chubby child. Snacks were provided as pacifiers and as rewards for good behavior. His family environment included easy access to the cookie jar, candy treats, and open bowls of snack foods. Such ready access to sugary snacks created habits that contributed to Roger's weight gain. The habits were difficult to reverse in adult life. Roger was not considered obese, but throughout his childhood he was in the top third of his age group in terms of weight.

According to numerous studies Americans lead the world in their average degree of overweight. Figure I-2 (next page) shows the percent of a sample of Americans (males 40-59) considered to be overweight on the basis of their skinfold thickness (which measures the depth of the fat layer) compared to samples of males from six other countries.

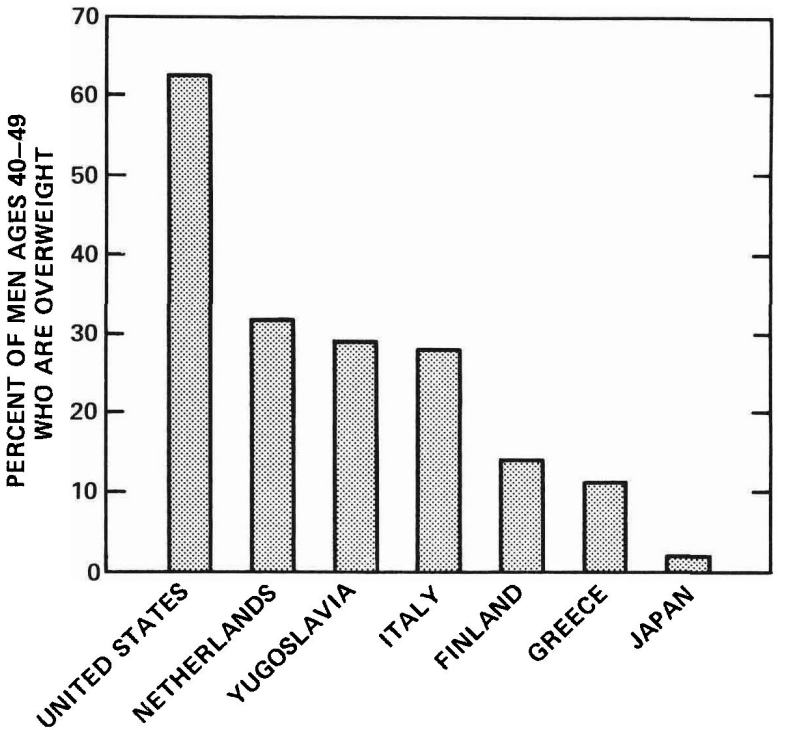


Figure I-2: Comparison of degree of overweight in males aged 40-59 in population samples of seven countries.

Source: Redrawn from Fig. 56, *Coronary Heart Disease in Seven Countries,* Ancel Keys, ed. American Heart Association Monograph No. 29, p. 191.

Again, everything else being equal, the heavier one is, the higher the blood pressure and the higher the amount of cholesterol in the blood. The influence of weight gain or loss is, however, stronger on blood pressure level than it is on cholesterol level.

Now we can understand that Roger's "normal" weight of a few extra pounds and his "normal" diet, which was rich in calories, sugar, salt, cholesterol, and saturated fat, worked together over time to raise his body weight and his blood pressure and blood cholesterol levels to unhealthy heights.

The Slow Road to Cardiovascular Disease

In much of the modern Western world, including the United States, a gradual increase in blood pressure and blood cholesterol is accepted

as a "normal" accompaniment of age. These increases typically do not occur in primitive societies. However, after primitive societies come into contact with modern civilization, such increases often do occur. A recent study of five tribes in the Solomon Islands by Dr. Lot Page of Harvard and his associates showed that the degree of increase in blood pressure was correlated with the degree of acculturation, that is, adoption of dietary and occupational practices of Western man. It was significant that introduction of "tinned meat" (high in salt) was accompanied by a rise in blood pressure. The investigators also noticed an increase in body weight that occurred in conjunction with changes in eating and exercise habits, and this was associated with additional increases in blood pressure.

Coronary arteries are the first to be choked off by cholesterol deposits (probably because of the greater turbulence of blood flow that makes the inner lining of these arteries more sensitive to the injurious effects of high blood cholesterol and blood pressure). They are the only source of blood to the heart, which cannot tolerate as much arterial narrowing and the resulting reduction in oxygen as can, for example, the legs or abdominal organs.

Evidence that damage to the coronary arteries is present even in early adulthood is illustrated most strikingly by a study of American soldiers killed in action during the Korean War. It was discovered that 35 percent of these American soldiers (whose average age was 22 years) had greater than 15 percent narrowing of their coronary arteries due to abnormal collections of cholesterol. These deposits are almost never found in young Koreans or in young adults of other countries whose populations share similarly low blood cholesterol levels. (The average cholesterol level of adults in Japan—where the diet is low in saturated fat and cholesterol and similar to that of Korea—is about 140 milligrams per deciliter, 40 percent lower than that of adults in the United States.)

Figure I-3 (next page) compares the cholesterol levels found among men aged 40 to 59 in two areas of southern Japan and an area of eastern Finland. Finland has a higher heart attack rate than any other country in the world. Finns also have the highest cholesterol levels, even higher than Americans. Dr. Ancel Keys, a cardiovascular disease epidemiologist, and his co-workers attribute the Finnish cholesterol levels to intakes of cheese, butter, and milk believed to be among the highest in the world. This high butterfat intake is added to the so-called normal level of meat and egg intake characteristic of the rest of the Western world.

Work done by Dr. Keys and his co-workers has shown a surpris-

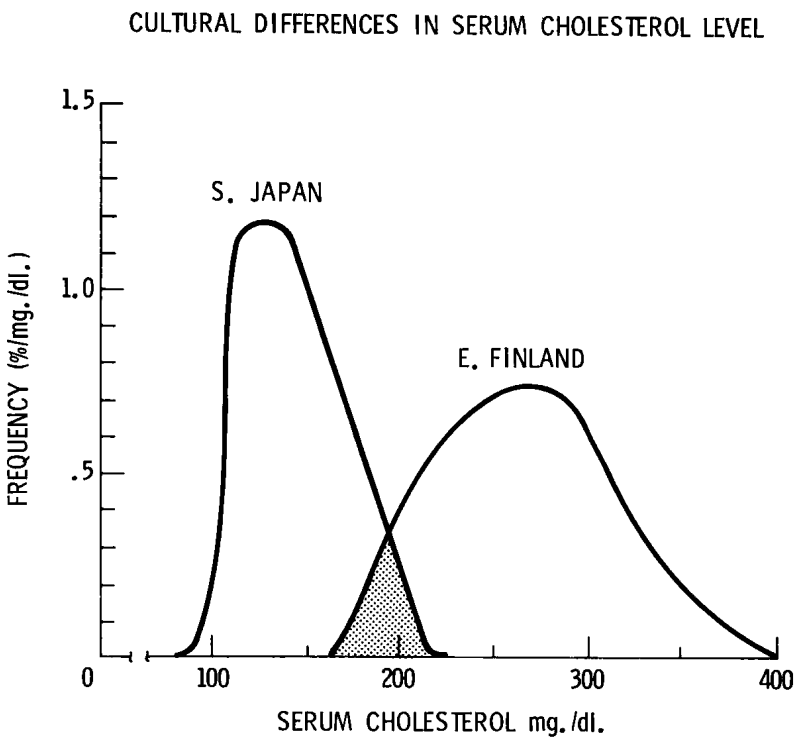


Figure I-3: Distribution frequency of serum cholesterol of men aged 40-59 in southern Japan and eastern Finland.

Source: Henry Blackburn, "Coronary Risk Factors: How to Evaluate and Manage Them," *European Journal of Cardiology*, 1975, 2/3, p. 251.

ingly strong correlation of heart attack rates with the cholesterol levels in seven countries selected for study. They also found that an exceedingly high correlation existed between the average level of saturated fat consumed and the average cholesterol level within each country.

Data like these are among the best evidences of the preventability of coronary heart disease. If young and middle-aged people do not have heart disease in some other countries, then why do young and middle-aged Americans? These differences cannot be attributed to ethnic factors; we know that migrating populations change their coronary risks to the extent that they acquire the health habits and risk factors of their adopted country. This has been shown for British, Norwegian, Irish, and Japanese immigrants in the United States, where all have developed higher heart attack rates than were present in their homelands.

The U.S. soldiers killed in Korea who had a 15 percent narrowing of coronary arteries were in no immediate danger of suffering premature coronary death. It takes another 15 to 30 years for atherosclerosis to take its toll. Fortunately, arteries can take a great deal of abuse. The vessels must close to a third of their original size (a 66 percent narrowing) before a clot (coronary thrombosis) can form that causes a true heart attack or that can lead to angina pectoris (chest pain upon effort, exposure to cold, or excitement).

The narrowing of Roger's arteries which began in his youth begins similarly at an early age in the lives of millions of otherwise healthy people. Table I-1 shows that after age 25, the number of deaths from heart disease and stroke increases in each age group until age 84 (after which the number drops because the pool of survivors is smaller).

Table I-1: Number of Deaths from Heart Attacks and Strokes in the U.S. for Different Age Groups During 1975*

Age Decade	*Number of Deaths*		
	Heart attacks	Strokes	Total
25 - 34	1,000	1,000	2,000
35 - 44	10,000	3,000	13,000
45 - 54	42,000	8,000	50,000
55 - 64	100,000	18,000	118,000
65 - 74	166,000	42,000	208,000
75 - 84	199,000	72,000	271,000
Above 84	124,000	50,000	174,000
Total	642,000	194,000	836,000

*Figures to the nearest 1,000.

Source: The National Center for Health Statistics, Washington, D.C.

It is important to make clear that the goal of preventive medicine is not (and cannot be) to extend the normal life span—it is to allow us to reach it. People do have to die sometime. My opinion is that life expectancy will continue to be between the ages of 70 and 79 for the majority (perhaps 70 percent) of all who survive to age 65. For many very elderly people heart attacks and strokes will likely participate as causes of death.

Legendary pockets of healthy, active octagenarians have received notoriety in recent years. In the *National Geographic* (January 1973) Dr. Alexander Leaf described three pockets of long-lived peoples in mountainous regions of the Soviet Caucasus, the Himalayas, and the Ecuadorian Andes. These three groups tend to remain physically active through life and they eat foods consistently low in saturated fat and cholesterol. One problem with reports from these regions is that birth records are often nonexistent, and those who can claim to have