Preventive Aspects of Coronary Heart Disease

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Preface

Identification of *factors of risk*, as originally termed by Kannel and his colleagues in the Framingham Study[1] has taught us much about the pathogenesis and natural history of coronary artery disease and the means to reverse the major cause of disability and death in this country—the morbidity and mortality associated with the cardiovascular diseases. Indeed, since that publication, epidemiologists and clinical investigators concerned with other areas of disease have employed the concept of *risk factors* for other diseases, syndromes, and for the goals of mass public health treatment programs.

In this regard, we have learned of cardiovascular risk factors, coronary heart disease risk factors, hypertension risk factors, renal disease risk factors, risk factors predisposing the individual to neoplastic diseases, and so forth. But the one area with the most thorough and reproducible studies that has resulted in a precise elucidation of specific factors that confer increased risk of enhanced morbidity and mortality, has related to *coronary heart disease*. Other diseases have received less precise delineation of risk factors.

This book details the risk factors underlying coronary heart disease. Some of these factors were identified early on by the Framingham team, others were identified later; but each factor that is discussed here confers significant and independent risk to the morbidity and mortality that result from the atherosclerotic disease process that culminates in coronary heart disease.

Over the past four decades we have witnessed the emergence of amazingly sophisticated means for cardiovascular diagnosis and therapy. As a result of profound advances we have seen a dramatic reduction in cardiovascular morbidity and mortality. For the first time, cardiovascular deaths have been reduced to the extent that they no longer exceed the sum of deaths from all other causes in the United States.

The vast impact of this on the public health is comparable to that of the introduction of antibiotics and their effects on previously lethal diseases. With the advent of penicillin we have seen the amazing near-disappearance of rheumatic fever and its sequelae, rheumatic carditis and valvular heart disease, of luetic heart disease and aneurysms, and of the various forms of endocarditis, myocarditis, and pericarditis.

During this same span of years we have witnessed the remarkable development of an array of technological achievements that include the means for invasive diagnostic procedures such as cardiac catheterization, and noninvasive methods of echocardiography, Doppler studies, and magnetic, radioisotopic, and positron imagery that provides detailed diagnostic and even prognostic information. These innovations, along with extracorporeal means for perfusion, blood banking, and synthetic grafts also have permitted surgical interventions that would not have been conceived at the outset of this cardiovascular odyssey.

Another major advance has been the appearance of new pharmacological modalities: the diuretics, the beta-adrenergic receptor and angiotensin converting enzyme inhibitors, the calcium antagonists and other antihypertensive agents, a spectrum of antiarrhythmic compounds, anticoagulants and fibrinolytic therapy, and the promise of still more innovative and novel modes of therapy that will appear via genetic engineering and other wizardry of the pharmaceutical chemists and molecular biologists.

During these years of highly productive clinical investigation, there has been a parallel series of contributions from our colleagues in the area of cardiovascular epidemiology. These advances have included the demonstration of validity and efficacy of various therapeutic programs by the unique development of complex multicenter trials.

Underlying these areas of clinical achievements have been important long-term population-based studies. The crowning epidemiological achievement has been the Framingham Heart Study and its ability to identify the specific *factors of risk;* by the power of biostatistical analysis, specific risk factors that impart independent risk of premature cardiovascular morbidity and mortality were identified. Some of these factors clearly are not modifiable—advancing years, male gender, and black race. Others are at least partially modifiable—predisposition to diabetes mellitus, increasing body mass, and hyperuricemia. By virtue of the important aforementioned multicenter intervention trials, we have unimpeachable evidence that cigarette consumption, rising systolic and diastolic arterial pressures, hyperlipidemia, diabetes mellitus, and possibly even left ventricular hypertrophy are modifiable, and their correction should reduce morbidity and mortality associated with cardiovascular illnesses.

This is the message of the relatively new era of preventive cardiology—and of this monograph. However, rather than to repeat all of the exciting breakthroughs that have occurred over recent decades, we have chosen areas in which new concepts are being introduced. To be sure, some of these messages concern many of the established risk factors, but their lessons are abundantly clear: correction of each of these factors will improve cardiovascular and overall health. These are the concerns of preventive cardiology as it carries its discipline into the 1990s. Its teachings must certainly be transferred to the everyday practice of cardiovascular medicine for the public health to be improved. This is the challenge to today's cardiovascular physician.

Edward D. Frohlich, M.D.

1. Kannel, WB, Dawber, TR, Kagan, A, et al: Factors of risk in the development of coronary heart disease: Six years' follow-up experience. Ann Intern Med 55:33, 1961.

Editor's Commentary

No aspect of cardiology is more important than prevention. Of particular importance is prevention of atherosclerotic coronary disease, which is the leading cause of mortality in the Western world. Attention to contributory factors can curb the development of coronary disease, and, in addition, can benefit general health. This volume of CARDIOVASCULAR CLINICS not only explores the classic risk factors such as lipids, hypertension, and smoking, but also examines numerous other topics of special interest such as the reversibility of atherosclerosis, preventive cardiology in the young, prevention of sudden cardiac death, isolated systolic hypertension in the elderly, psychosocial factors in coronary disease, and the risk of left ventricular hypertrophy. Thus, this book should amply serve the interests of a broad audience. I am very grateful to Edward Frohlich for his guidance in the development of this material, and we are both deeply indebted to the contributing authors for their superb contributions.

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