



# CARDIOVASCULAR CARE OF THE ELDERLY

Edited by T. Strasser



World Health Organization  
Geneva

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## Preface

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Strategies for attaining WHO's goal of health for all by the year 2000 are evolving against a background of complex problems among which are the demographic trends. Between the years 1980 and 2000 the population aged 65 years and over is expected to rise by 100 million in the developing countries and by 38 million in the developed countries.<sup>1</sup> Obviously, measures must be taken to foster a better understanding of disease processes in the elderly, to ensure optimum use of the resources available to the health and social services, and to alleviate the conditions that cause older people to lose their self-sufficiency. A target of the WHO programme concerned with the health of the elderly is to produce technical guides on specific diseases. The present book, on cardiovascular care, is one such guide, intended for use by physicians providing primary care and by medical students.

Cardiovascular disease is one of the main factors affecting the quality of life of an elderly person. The previously rising trend in the overall mortality rates has fortunately reached a plateau in a number of developed countries and has been significantly reversed in others. However, the fact that the proportion of the aged among the population is growing steadily will increase the number of elderly people at any one time suffering from cardiovascular disease, and caring for them will place a considerable burden on the health services.

Although powerful and inexpensive methods are now available for communicating knowledge on a mass scale, many members of the general public and of the health professions are ignorant of the various risk factors for cardiovascular and cerebrovascular disease. During adulthood—even into old age—many of these factors can be favourably influenced by modifying the diet, controlling the weight and blood pressure, exercising, and not smoking. The physical, mental, and social wellbeing of elderly people would be much enhanced if the knowledge of those who care for them could be improved and applied more precisely. This book, which it is hoped will find its way on to the bookshelves of general practitioners and training institutions throughout the world, is a small contribution to that end.

The extent of knowledge relating to the diagnosis, treatment, and prevention of cardiovascular disease varies considerably from country to country, from generation to generation of physicians within the same area, and from individual to individual. Two types of information are, therefore, included in this book: *basic*, in normal print; and *advanced*, in small print.

The wide range of international experts who contributed to the book ensured the inclusion of all current schools of thought. The contributions were first reviewed by an international board of reviewers and in order to ensure uniformity the material was consolidated by an editorial board of experts in both

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<sup>1</sup> *Global strategy for health for all by the year 2000*. Geneva, World Health Organization, 1981, p. 28, ("Health for All" Series, No. 3).

cardiovascular diseases and health of the elderly. Consolidation could not be achieved without detracting to some extent from the originality of the various contributions: while it was not possible to reconcile all conflicting views, the editors hope that their efforts have resulted in a better book. Clinical experience, where it is quoted, is not supported by reference to controlled therapeutic trials or other rigorous proof. It is felt, however, that eclecticism has advantages over academic selectivity.

Gratitude is expressed to the 23 international experts, listed in Annex 2, who contributed to the manual and to the members of the editorial and review boards, listed in Annexes 3 and 4.

## Introduction

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In a number of countries, the achievements in public health since the late 1960s have been remarkable, and death rates from chronic heart disease, the prime cause of cardiovascular disease mortality, have declined. It is likely that improved preventive measures and management have contributed to the decline and there is reason to be optimistic that similar improvements will help to control this type of disease in the elderly. The largest falls in mortality have occurred in those countries that have adopted measures to reduce risk factors, mainly through the effective communication of information. Their example could be followed, as a preventive measure, by the governments of countries where the life-style of the population is being influenced by Western culture. The detection and control of hypertension in individual patients for the prevention of cerebrovascular disease has improved substantially but whether blood pressure control is effective in preventing stroke and cardiac failure in the elderly remains a key question for public health officials.

The characteristics and management of cardiovascular disease in the elderly are to a great extent the same as in younger patients. Yet there are many specific features that justify the preparation of this book.

In view of the environmental, genetic, social, and psychological determinants involved in the process of aging, called differential aging, a firm definition of old age cannot be given (21). It must be left to the physician to estimate the clinical age of each patient by taking into consideration his<sup>1</sup> physical, mental, and social state. A distinction must be made between *young old*, *old old*, and *very old* (78). Disparity between a *young old* and a *very old* person may be much greater than between a *young old* and a *middle aged* person. Thus, the term *elderly person* does not describe one homogeneous entity; the continuity of the aging process must always be kept in mind.

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<sup>1</sup> For the sake of convenience, throughout this book the masculine gender has been used for pronouns referring to "the elderly patient".

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## **Part 1 — Background**



## How specific are cardiovascular problems in the elderly?

In the elderly, cardiovascular diseases have certain special characteristics related to the aging and multiple morbidity of the heart, the blood vessels, and the patient as a whole. Interpretation of the clinical picture may be difficult, because of behavioural changes and alterations in homeostatic mechanisms. Treatment requires more prudence than in younger persons. Elderly patients should, nevertheless, be given the same opportunity as younger patients to benefit from cardiovascular diagnosis and therapy.

### Introduction

Generally speaking, the cardiovascular diseases that occur in old age are the same as those that occur in younger people. Both the diagnostic methods and, in principle, the treatment are the same. Nevertheless, in persons beyond 65 years of age cardiovascular diseases present particular traits and their treatment must comply with the general therapeutic measures laid down for elderly patients.

Three main factors affecting the body as a whole influence cardiovascular medicine in old age:

- (a) the “physiological” aging of the cardiovascular system;
- (b) the many pathological factors affecting the heart and the blood vessels;
- (c) the many pathological factors affecting other organ systems.

Cardiovascular function is also influenced, in various ways, by the deterioration with age of the general status of the body. In the presence of cardiovascular disease in an elderly person the physician may, therefore, face a situation that is very different from that encountered in a middle-aged person with the same disease.

### Aging of the cardiovascular system

There is no such anatomical or clinical entity as a senile heart (76). Death does not occur as a consequence of the physiological aging of the heart. Nevertheless, as a person ages the heart undergoes a number of changes, such as a decrease in the rigidity of the myocardial wall due to an increase in collagen, or calcification of the mitral ring and the mitral aortic and pulmonary valves. Simultaneously, the walls of the aorta and of other arteries gradually become more rigid. These processes evolve at various rates in different people, possibly for genetic reasons. They may not cause clinical disease but they induce slow, continuing haemodynamic changes. At the same time, systolic blood pressure tends to increase because of the progressive increase in peripheral resistance caused by the loss of elasticity in the arteries, while diastolic pressure remains at the same level or decreases (see Chapter 4, page 23). These consequences of the normal aging of the cardiovascular system produce a slow reduction in the functional reserve of the heart and this, to a great extent, is the cause of the decreasing cardiovascular

adjustment to physical effort characteristic of old age. The heart becomes less able to perform, disease processes have a greater effect on its performance, and heart failure, a common occurrence in elderly patients, may develop more easily. The aging of the cardiovascular system is discussed in more detail in Chapter 2.

The physiological aging of the body as a whole may indirectly affect the heart. An elderly person has less resistance to environmental stress, infections, or other noxious influences that may endanger the heart. In addition, the cellular mass of most vital organs diminishes with age. This phenomenon is of special consequence in the kidneys, since their capacity to excrete catabolites and drugs decreases as the mass of nephrons is reduced (see Chapter 5, pages 32–33).

### **The multiple pathology of the heart**

The number of disorders affecting the heart increases almost linearly with age (96). In decreasing order of importance they are:

- coronary atherosclerosis, ischaemic heart disease, and left ventricular hypertrophy (usually due to arterial hypertension);
- right ventricular hypertrophy (cor pulmonale);
- various lesions in the myocardium and conduction system caused by fibrosis, degenerative processes, or inflammatory processes sometimes of unknown origin (cardiomyopathies);
- lesions of the mitral and aortic valves.

Each morphological change may be slight in itself but if several types of lesion are present they combine to produce a clinically manifest disease, such as heart failure, angina, myocardial infarction, or rhythm and conduction disorders. Arteriosclerosis, since it often affects vessels supplying large areas of the body, further complicates cardiac disease and contributes to the gravity of the clinical status of an elderly patient.

### **The multiple general pathology of the elderly**

The number of disorders of body systems suffered by the elderly increases linearly with age. The disorder may be either chronic—arthrosis, or a disorder of the respiratory system, the gastrointestinal tract, or the kidneys—or a malady of short duration, but with more sequelae than in a younger person. This state of chronic multimorbidity is found in most elderly patients and can have serious repercussions on the cardiovascular system. The heart may be affected by toxic influences or by overload as, for example, in acute or chronic bronchopulmonary disease or renal failure. In addition, limitations may be imposed on the possibilities for treatment because of decreased tolerance to certain drugs. In children or younger adults, heart disease may be treated vigorously without too much concern for the patient's general status. In an aged person an accurate diagnosis is needed of all the diseases present, with an evaluation of the severity of each condition, so that priorities for treatment may be established. Cardiovascular therapy is therefore more difficult in the elderly because it needs a comprehensive approach to the patient by physicians with a broad training, primarily in internal



medicine. Cardiovascular disease cannot be treated in the elderly without a thorough knowledge of general medicine (25).

## **Special features of certain cardiovascular diseases of the aged**

The diminished functional reserve of the heart in old age and its multiple morbidity result in certain maladies assuming special features that will be described in more detail in subsequent chapters.

Underdiagnosis of heart failure seems to be as frequent as overdiagnosis, which results in unnecessary cardiotonic therapy. This is mostly because the symptoms are less clear than in younger patients (see Chapter 9, pages 63–64). Ischaemic heart disease may present a clinical picture in which angina, arrhythmias, and heart failure are all involved; silent myocardial infarction occurs frequently. In the case of arrhythmias, the most frequently seen cardiac manifestations in elderly patients, great progress in therapy has been achieved with the introduction of pacemaker techniques and antiarrhythmic drugs. The significance of aortic stenosis, the valvular disease of the old, is all too often underestimated; if it is detected soon enough, the valve can be replaced at relatively low risk. In old age, the clinical picture of infectious endocarditis is very often deceptive because of lack of symptoms or because the symptoms are atypical or attenuated.

## **Heart disease and the behaviour of the older patient**

Symptoms in the elderly may differ from those in younger patients and dyspnoea or oedema of the lower limbs are often not reported. The severity of angina may be muted and the situation further complicated by depression or dementia. The elderly are also more sensitive to changes in the social and physical environment. The death of a spouse, moving house, or even sudden changes in the weather can have adverse repercussions on their health, particularly on cardiac function. The physician should be able to assess the effects of different environmental factors and should take them into account in the management and treatment of the patient.

## **The diagnosis of heart disease in the elderly**

Accurate diagnosis is the basic requirement for successful treatment, and elderly patients should be allowed to benefit from recent advances in the management of cardiovascular diseases. As in younger subjects, non-invasive techniques are the diagnostic methods of choice, echocardiography in particular. Nevertheless, the elderly tolerate intensive diagnostic investigation much better than is usually assumed, provided the indications and contraindications are rigorously observed and the procedures adequately spaced. Catheterization, carried out at a centre with experienced staff, is well tolerated. If the preliminary examination is expertly performed the elderly patient can benefit fully from pharmacotherapeutic and surgical advances in cardiology.