

Office Management  
Medical and Surgical  
Heart Disease

A Concise Guide  
for  
Physicians

*Edited by*

*Lawrence I. Bonchek, M.D.*

*Harold L. Brooks, M.D.*



# Office Management of Medical and Surgical Heart Disease

A CONCISE GUIDE FOR PHYSICIANS

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Little, Brown and Company, Boston

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First Edition

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Library of Congress Catalog Card No. 80-84249

ISBN 0-316-10121-4

Printed in the United States of America

HAL

003420

R541

B697

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A CONCISE GUIDE FOR PHYSICIANS

To our parents, who pointed us toward our goals,  
and to our wives, who helped us attain them

THIS much-needed text fills a longstanding void in the literature of adult heart disease by providing a practical everyday management manual combined with an update on the state of the art for the major diseases and disorders of the heart. The unusual combination of a cardiac surgeon and a cardiologist joining forces to produce a book has the impact of providing a unified theme, and the wise decision of the authors to limit the number of contributors has given this book a sense of integration. Particularly appealing is that many of the practical aspects of management the clinician must face, or at least must be aware of, are brought together in this text. As examples: long-term office management of patients with ischemic, valvular, and other forms of heart disease, and thorough consideration of the immediate postoperative period as well as the complications seen during late follow-up; these aspects are all dealt with in separate chapters. All too often, in other texts the less dramatic but frequently more important areas of long-term care are covered in but a paragraph or two. Here the authors take the time to present what the practitioner must deal with in the months and years before and after different forms of cardiac surgery.

While an essentially practical note runs throughout this text, sufficient coverage has been given to the pathophysiology and mechanism of heart disease so that the reader looking for a specific practical point in management or diagnosis will be rewarded by having his or her question readily answered in addition to finding an adequate discussion of the overall disease process.

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**T**HIS practical, concise guide to management of adult patients with heart disease is designed for physicians in practice or in residency training who are not cardiac specialists but who have primary responsibility for patients with cardiovascular disease. Despite the recent dramatic changes in cardiac diagnosis and therapy, there has been no single concise source that provides an integrated medical and surgical approach to the daily management of patients with heart disease.

This book will enable the primary physician to make day-to-day management decisions, including timing of referral for specialized cardiologic evaluation when it is necessary. It will help the internist and family practitioner to participate intelligently in decisions for or against the new noninvasive means of cardiac evaluation as well as for or against catheterization and surgery.

While medical management of heart disease is described in detail, surgical management—including postoperative complications and long-term follow-up—is discussed more extensively than in standard cardiology texts and is integrated into the sections on the different types of heart disease. So many patients with heart disease now undergo cardiac surgery that familiarity with the field is essential to the primary physician, yet it is difficult to find the information in concise form.

*Office Management of Medical and Surgical Heart Disease* is composed of brief, practical chapters that allow the reader to survey any specific issue quickly. The highly selected references emphasize review articles, fundamental physiologic principles, and large clinical studies; citations of esoteric research reports are minimal. We present opposing opinions when major controversy exists, but make firm recommendations based on our own clinical practices. While most of the book was written by members of the Medical College of Wisconsin faculty at the Milwaukee County Medical Complex, we have included guest contributors from several other major academic centers because of their recognized clinical and didactic abilities. In doing so, we have edited the book rigorously to ensure that each chapter adheres to a basic format and theme. Throughout, we emphasize practical guidelines to management and provide flow charts to guide diagnostic evaluation and diagrams of schedules for long-term follow-up. We suggest the exact sequence in which diagnostic tests should be carried out in particular patients, based on reports of the most recent clinical developments. We hope this down-to-earth approach is useful to physicians on the front lines.

We acknowledge our sincere debt to our many referring physicians—generalists, internists, and cardiologists—as well as to our residents and students, whose interest, curiosity, and continuous intellectual provocation prompted us to write this book.

From a practical standpoint, a book of this nature could not have been produced without the support and dedication of the following perpetually efficient, cheerful, and willing members of our administrative, secretarial, and graphics staffs: Joyce Aasen, Roland Broberg, Mary Condie, Cecile Grunert, Pat Kinateder, John Kubowicz, and Donna Weitzer.

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*H.L.B.*



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# I. Coronary Artery Disease



# 1. Evaluation of Patients for Coronary Artery Disease

*Harold L. Brooks, Michael H. Keelan, Jr.,  
and Donald D. Tresch*

EVALUATION of the patient suspected of having coronary artery disease begins with an analysis of the patient's risk factors in the development of the disease and is followed by exploration of the specific complaint. The evaluation should proceed from the patient's history, which, in angina pectoris, is one of the most important diagnostic components, through the physical examination, to a carefully individualized battery of noninvasive and invasive laboratory studies.

## Coronary Risk Factors

Certain risk factors are associated with statistically higher levels of susceptibility to coronary artery disease [19]. The most important are abnormally elevated blood lipids, hypertension, increased age, male sex, glucose intolerance, and cigarette smoking. While some of these factors are not alterable, others can be modified substantially by a change in lifestyle. The relative risk associated with the more important modifiable factors varies considerably, as shown in Figure 1-1.

Ample evidence from extensive studies indicates that these characteristics individually add to the risk of early development of coronary artery disease and that they have a cumulative effect [19]. Several factors can be weighted statistically in predicting total risk from coronary artery disease. Although these factors are important epidemiologically in determining in *which groups of patients* coronary artery disease is likely to develop, they have somewhat limited applicability in pinpointing specific susceptibility of a *given individual* in whom a coronary event may develop. The epidemiologic concept is extremely helpful, however, in identifying patients at risk and in counseling them in risk-factor modification once the overall evaluation has been made.

## The Clinical Spectrum of Coronary Disease

The wide clinical spectrum of coronary atherosclerosis includes several well-defined syndromes. Angina pectoris and myocardial infarction are the most common manifestations, occurring in approximately 80 percent of patients of both sexes regardless of age. In males, angina and infarctions occur in about equal proportions (40 percent each), whereas

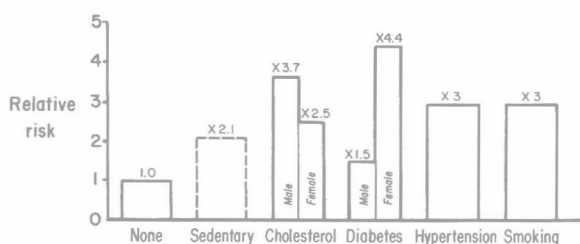


FIGURE 1-1

Relative influence of major modifiable risk factors in the development of coronary disease. Figures represent averages from several epidemiologic studies for 40-year-old subjects with single risk factor. Definitions: *None* = no identifiable risk factors. *Sedentary* = lack of vigorous exercise as evidenced by average oxygen consumption of less than 300 cc per minute (broken line indicates preliminary data). *Cholesterol* = serum cholesterol 335 mg per deciliter as compared to 185 mg per deciliter. *Diabetes* = medically treated adequately. *Hypertension* = systolic blood pressure over 195 mm Hg. *Smoking* = currently smoking more than 25 cigarettes per day. Note that cholesterol and diabetes have marked differences in relative risks between sexes and are so indicated.

in females the ratio of angina to infarctions is about 3:1 [22]. In some patients, chest pain may be atypical, but it still points to coronary disease. Myocardial ischemia may also lead to transient or persistent arrhythmias and conduction disturbances, and the first and only manifestation may be sudden death from ventricular fibrillation. Ischemia can also cause acute or chronic heart failure due to myocardial dysfunction or to mitral valve dysfunction from ischemia of papillary muscles. More severe forms of coronary disease include cardiogenic shock, widespread systemic embolization from left ventricular mural thrombi, large ventricular aneurysm, and cardiac rupture. Finally, there may be no clinical sequelae whatsoever.

### *Angina Pectoris*

Reduced to its simplest clinical definition, *angina pectoris* is chest pain of cardiac origin and results from an imbalance between the availability of oxygen to myocardial cells and the metabolic demands of those cells. The original description of angina pectoris, by Heberden in the eighteenth century, is as clear and concise a description as has ever been given. The key feature is a squeezing, substernal chest pain or feeling of pressure initiated by exertion and promptly relieved by rest; it is usually simple to recognize. The tendency of the pain to radiate to the left shoulder and ulnar side of the left arm and hand is also an important characteristic. One should be aware, however, that the pain may radiate from or originate in either shoulder or either arm or hand, in the back (especially the interscapular area), the neck, the mandible, the maxillary area, the teeth, the back of the neck, or the oropharynx—essentially



anywhere above the diaphragm. Relief by nitroglycerin is a key factor in the history, and a prompt response (within 2 to 3 minutes) is classic for angina pectoris. Not all patients will describe angina as pain, but simply as a vague “discomfort” or burning sensation.

Equally important are the dynamics of the discomfort: the relation to physical activities, cold, meals, sexual intercourse, and other specific exertional activities. Patients may be able to describe certain inciting activities, and they frequently learn to avoid anginal attacks by foregoing these activities. Consideration of emotional factors as precipitants or as an approach in the medical management of stable angina should not be overlooked. Some patients may describe morning angina, predominantly within the first hour after arising, yet none later in the day. Others may report the ability to “walk through” an episode of angina and to proceed to further effort without angina. Signals that the degree of ischemia may be increasing include the appearance of new precipitating activity, angina decubitis, paroxysmal nocturnal angina, or exertional angina of increasing frequency, severity, or duration.

The syndrome of chest pain associated with normal coronary arteriograms has long been recognized. Various clinical studies with long-term follow-up have defined certain features that differ from those in subjects with coronary atherosclerosis. Abnormalities in lipid or carbohydrate metabolism are less frequent than in age-matched subjects with coronary atherosclerosis and are similar to the incidence in the general population. Nonspecific resting ECG abnormalities are seen in approximately half these patients, but a diagnostic pattern of myocardial infarction is rare. While a typical “ischemic” response to exercise is seen in approximately one in five of these patients, the death rate is only 0.6 percent per year as compared to the average of 5 percent per year for patients with proven coronary atherosclerosis.

### *Unstable Angina*

Patients with coronary artery disease may have a chest pain syndrome that lies in an intermediate position between angina pectoris and classic myocardial infarction [12]. Several terms have appeared in the literature: pre-infarction angina, crescendo angina, intermediate syndrome, coronary insufficiency, and myocardial ischemia. In all these entities, the implication is the same; the diagnosis of coronary artery disease is relatively assured but the balance between energy supply and demand is unstable. The diagnosis is suggested by the onset of rather typical chest pain but with increasing severity or frequency, and sometimes occurring at rest. There may be precipitating factors such as severe emotional stress, fever, tachycardia, hemorrhage, or noncardiac shock, acute ST-segment elevation or depression, T-wave inversion, in the absence of either pathologic Q waves or a substantial rise in cardiac-specific enzyme levels. This intermediate syndrome may develop as a