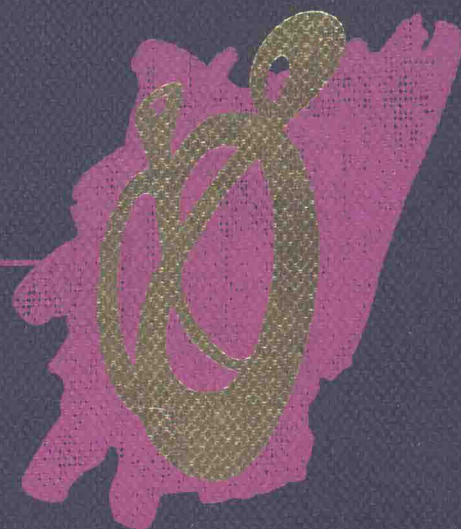


BRAUNWALD

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# HEART DISEASE

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*A Textbook of Cardiovascular Medicine*

5<sup>TH</sup> EDITION

VOLUME 1

5<sup>TH</sup> EDITION

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## *A Textbook of Cardiovascular Medicine*

VOLUME 1

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*Dedicated to*

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As I complete the preparations of this new edition of *Heart Disease*, I am awed by the continued growth and progress in cardiovascular medicine. During my professional lifetime I have been privileged to observe the field's advance to a point at which the safe and accurate diagnosis and the effective treatment of most forms of heart disease is now feasible. While the overall population is aging and the total prevalence of heart disease rising, the age-adjusted mortality rate for cardiovascular disease in the United States has declined by approximately 1 per cent per year for the last 40 years, and this decline appears to be continuing.

The enormous advances in the field in the five years since the publication of the fourth edition have required the most extensive changes yet made in any revision of this text. Despite the need to include an enormous amount of new information, it was possible to retain the basic format of the previous edition of *Heart Disease*. The book is divided into five parts: Part I deals with the examination of the patient in the broadest sense, including clinical findings and the theory and application of modern noninvasive and invasive techniques to elicit information about the heart and circulation. Part II is concerned with the pathophysiology, diagnosis, and treatment of the principal abnormalities of circulatory function, including heart failure, arrhythmias, and abnormalities of arterial pressure. Part III, the longest in the book, consists of descriptions of the principal congenital and acquired diseases affecting the heart, pericardium, aorta, and pulmonary vascular bed in adults and children. Part IV deals with the interfaces between cardiology and broad fields such as genetics, aging, management of the postoperative cardiac patient, and the economics of cardiac care. Part V details the relationship between diseases of other organ systems and the circulation and vice versa.

Twenty-one new chapters—the most for any revision to date—have been added or substituted. Many other important new areas are covered in radically revised chapters.

A number of important areas are covered in this edition: The chapter on Physical Examination prepared with Perloff has been expanded and revised because the intelligent contemporary practice of cardiology requires careful integration of findings obtained from the clinical examination with those from the growing number of diagnostic modalities now available. The chapter on the Relative Merits of Imaging Techniques by Skorton and colleagues provides a rational approach to the intelligent selection among the several techniques now available to image the heart.

A new, and I believe unique, aspect of the fifth edition of *Heart Disease* is Lee's comprehensive chapter on Practice Guidelines in Cardiovascular Medicine. Increasingly, practice guidelines are influencing diagnosis and therapy and are rapidly becoming the basis for reimbursement of health care services. This new chapter provides a summary of the most important guidelines put together by authoritative groups—mostly key committees of the American Heart Association and the American College of Cardiology. In addition to a summary of the guidelines, Lee places them into the perspective of modern patient care. The chapter on Cost-Effective Strategies in Cardiology by Goldman explains how cost-conscious practice need not impair the quality of care.

Also of note is a new chapter on a subject that is attracting a great deal of interest—Coronary Artery Disease in Women—by Douglas, which comple-



ments the chapter on Aging in Cardiac Disease. This pair of chapters deals with two large groups of patients with special needs, problems, and issues, who together constitute an enormous percentage of the total population. Advances in interventional cardiology represent one of the most dramatic developments in the field and they are covered in an excellent new chapter by Lincoff and Topol. Cardiologists increasingly need an understanding of hemostasis, thrombosis, and fibrinolysis in their daily practice. Fuster and Verstraete have teamed up to provide a superb new chapter on this subject.

Because it is now clear that abnormalities of molecular processes may be the basis of many cardiovascular diseases and that genetic influences play critical roles in the development of these abnormalities, three new chapters have been included. Opie describes the basic mechanisms of cardiac contraction and relaxation. Chien and Grace present the impact of cell and molecular biology, while Pyeritz summarizes the genetics of cardiovascular disease. The important role played by genetics in cardiovascular disease is underscored by Figure 49-1, on pages 1652 and 1653, specially prepared for this book by Pyeritz, which shows the chromosomal location of 137 human genes whose mutations have been shown to produce deleterious effects on the cardiovascular system. This field is moving very swiftly indeed; undoubtedly many other genes will be identified and their chromosomal locations determined by the time the sixth edition of *Heart Disease* is published.

An important responsibility of an editor is to establish the boundaries of a book. In approaching this task, I have deliberately taken a broad approach—in the line with this book's subtitle "A Textbook of Cardiovascular Medicine." I believe that modern cardiologists will best serve their patients by being first broadly based physicians and second accomplished technical specialists. Cardiologists must remain the masters—not become the slaves—of the powerful new diagnostic and therapeutic tools now available. They must also understand the enormous influence that heart disease can exert on the function of other organ systems, as well as the equally important effect that disordered function of other organ systems can have on the circulation. Cardiologists must also be able to function effectively as consultants to generalists, surgeons, and other specialists. The chapter on Pulmonary Embolism, and all of Part V (Heart Disease and Disorders of Other Organ Systems) explore the important interfaces between cardiology and other branches of medicine. The chapter by Antman on the medical management of the patient undergoing cardiac surgery should be helpful to the cardiologist and internist in what is a growing responsibility. Its companion chapter on noncardiac surgery in the patient with heart disease by Goldman provides an approach to an increasing challenge posed to the modern cardiologist and internist.

Considerable revisions have been made in both galley proofs and page proofs to include information about the most recent advances in the field. Particular emphasis has been placed on ensuring a comprehensive and up-to-date bibliography of more than 18,000 pertinent references, including hundreds to publications that appeared in 1996. Many of the 1,436 figures and 444 tables are new to this edition. The fifth edition of *Heart Disease* is approximately 15 per cent longer than the fourth. This has been accomplished with only a modest increase in the number of pages and bulk in the book through a more efficient page layout, the use of somewhat smaller illustrations, and the more liberal use of a special type face.

In order to allow the reader to keep pace with the enormous expansion of cardiovascular knowledge, the fifth edition is supplemented by a number of companion volumes. First, W.B. Saunders has just published the second edition of *Marcus Cardiac Imaging: A Companion to Braunwald's Heart Disease*, edited by Skorton, Schelbert, Wolf and Brundage, which provides an elegant analysis of the most important cardiovascular diagnostic imaging techniques now available. This companion book is especially useful given the profound advances in cardiovascular diagnosis made possible by modern imaging techniques. No area of cardiology has advanced more rapidly than therapeutics, and therefore it seems logical for the second companion to *Heart Disease* to be *Cardiovascular Therapeutics*. The editorial effort was ably led by my col-

league at the Brigham, Thomas W. Smith, who enlisted the cooperation of a team of outstanding associate editors and authors.

Two other companions to *Heart Disease* are now in advanced stages of preparation—*Molecular Basis of Heart Disease*, edited by Chien, and *Clinical Trials in Cardiovascular Disease*, edited by Hennekens. In addition, a *Review and Assessment* book, prepared by Mendelsohn, will again accompany this edition of *Heart Disease*. It consists of 600 questions based on material discussed in the textbook and provides the answers as well as detailed explanations. This multipronged educational effort—*Heart Disease*, the growing number of companion volumes, as well as the *Review and Assessment* book, all appearing in print and electronic (CD-ROM) form—is designed to assist the reader with the awesome task of learning and remaining current in this dynamic field.

It is hoped that this textbook will prove useful to those who wish to broaden their knowledge of cardiovascular medicine. To the extent that it achieves this goal and thereby aids in the care of patients afflicted with heart disease, credit must be given to the many talented and dedicated persons involved in its preparation. My deepest appreciation goes to my fellow contributors for their professional expertise, knowledge and devoted scholarship, which are at the very “heart” of this book. At the W.B. Saunders Company, my editor, Richard Zorab, and the production team—Frank Polizzano, Edna Dick, Lorraine Kilmer, and Hazel Hacker—were enormously helpful. My editorial associate, Ms. Kathryn Saxon, rendered invaluable and devoted assistance.

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