

# **Advances in Heart Disease Volume I**

*Edited by*

**Dean T. Mason, M.D.**

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## Preface

This volume presents a comprehensive analysis of the most recent advances in patient management in cardiovascular medicine. To most effectively accomplish this objective, the present monograph is organized within seven principal areas of important progress: (1) Afterload Reduction Therapy in Congestive Heart Failure; (2) The Sudden Death Problem; (3) Acute Myocardial Infarction; (4) Special Problems in Coronary Artery Disease; (5) Preventive and Population Cardiology; (6) Recent Advances in Echocardiography; and (7) Special Topics in Cardiovascular Medicine.

While each of the 31 chapters (including hundreds of illustrations and references) provides independent coverage of a specific topic, the chapters are carefully integrated to sequentially build upon a crucial body of information to afford a comprehensive overview of the subjects without unnecessary repetition. It should be pointed out that this book is an outgrowth of the recent Eighth Annual Symposium on Clinical Cardiology sponsored by our Section of Cardiovascular Medicine and The American College of Cardiology. The preparation of the present book was stimulated by the encouragement of the many attendees and participants desiring copies of the presentations at these postgraduate courses. The intent is that subsequent volumes will extend forthcoming symposia to a wide, clinically oriented audience of professionals in medicine, including medical students, physicians-in-training, generalists, internists, and cardiologists, as well as postgraduate students in the medical sciences and academic basic and clinical investigators.

Throughout this monograph, emphasis is placed on the elucidation of the relevant concepts and principles pertinent to each topic, so that

the clinician can approach a particular aspect of the problem logically and, as desired and motivated, may further proceed expeditiously into even greater detail of the matter of interest. In addition, a vigorous effort has been made to select major topics written by investigators well recognized in their fields to provide an authoritative textbook. To the 52 contributing authors who readily agreed to construct this comprehensive sourcebook, I am deeply grateful for their superb contributions. In summary, this volume presents an overall survey of recent basic and clinical progress in contemporary knowledge of cardiovascular disease important in the advancement of patient care.

Dean T. Mason, M.D.

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# Contents

<b>Contributors</b>	xiii
<b>Preface</b>	xix
<b>1. Introduction: Modern Clinical Cardiology</b> <i>Dean T. Mason, M.D.</i>	1
<b>Part I Afterload Reduction Therapy in Congestive Heart Failure</b>	
<b>2. The Concept of Afterload Reduction in Congestive Heart Failure: Clinical Application and Spectrum of Peripheral Vasodilator Drugs</b> <i>Richard R. Miller, M.D., Louis A. Vismara, M.D., David O. Williams, M.D., Ezra A. Amsterdam, M.D., Anthony N. DeMaria, M.D. and Dean T. Mason, M.D.</i>	25
<b>3. Combined Vasodilator and Inotropic Therapy: A New Approach in The Treatment of Heart Failure</b> <i>William W. Parmley, M.D. and Kanu Chatterjee, M.D.</i>	45
<b>4. Hemodynamic Effects of Sublingual and Oral Long-Acting Nitrates</b> <i>Charles E. Rackley, M.D., John A. Mantle, M.D., Rich- ard O. Russell, Jr., M.D. and William J. Rogers, M.D.</i>	59
<b>Part II The Sudden Death Problem—Inroads Achieved</b>	
<b>5. Some Pathophysiologic Phenomena Observed in Sub- jects Exhibiting Type A Behavior</b> <i>Meyer Friedman, M.D.</i>	73

6. Sudden Death: Evaluation of Ventricular Arrhythmias in Coronary Artery Disease	
<i>Louis A. Vismara, M.D., Anthony N. DeMaria, M.D., Ezra A. Amsterdam, M.D. and Dean T. Mason, M.D.</i>	85
<b>Part III Acute Myocardial Infarction—Recent Advances in Medical and Surgical Management</b>	
7. Limitation of Infarct Size: Methods of Reducing Myocardial Oxygen Demand and Extension of Experimental Approaches to Man	
<i>Peter R. Maroko, M.D., Derek Maclean, M.B., Ph.D. and Eugene Braunwald, M.D.</i>	111
8. Selection of Analgesics in Acute Myocardial Infarction Patients: Differential Hemodynamic Effects and Mechanisms of Action of Morphine, Demerol, and Related Agents	
<i>Garrett Lee, M.D., Anthony N. DeMaria, M.D., Ezra A. Amsterdam, M.D., Fidel Realvasquez, M.D., Juan Angel, M.D., Stephen J. Morrison, M.D., Gary L. Henderson, Ph.D. and Dean T. Mason, M.D.</i>	133
9. Protective Effect of Glucose-Insulin-Potassium in Acute Myocardial Infarction Patients	
<i>Charles E. Rackley, M.D., Richard O. Russell, Jr., M.D., John A. Mantle, M.D., William J. Rogers, M.D. and Huey R. McDaniel, M.D.</i>	147
10. Noninvasive Diagnosis of Acute Myocardial Infarction by Technetium 99m Pyrophosphate Scintigraphy	
<i>Daniel S. Berman, M.D., Antone F. Salel, M.D. and Dean T. Mason, M.D.</i>	159
11. Preinfarction Angina: Evaluation, Treatment, and Prognosis	
<i>Richard R. Miller, M.D., Ezra A. Amsterdam, M.D., Anthony N. DeMaria, M.D. and Dean T. Mason, M.D.</i>	169
12. Acute Myocardial Infarction Shock: Operative Intervention and Results	
<i>Ezra A. Amsterdam, M.D., Richard R. Miller, M.D., Edward J. Hurley, M.D., Anthony N. DeMaria, M.D., Louis A. Vismara, M.D., Garrett Lee, M.D., Melvin J. Tonkon, M.D., James E. Price, M.D. and Dean T. Mason, M.D.</i>	181

13. Internal Mechanical Circulatory Assistance: Methods, Indications, and Results  
*Ezra A. Amsterdam, M.D., Garrett Lee, M.D., Melvin J. Tonkon, M.D., Anthony N. DeMaria, M.D., Richard R. Miller, M.D., Edward J. Hurley, M.D., Todd Grehl, M.D., Arthur J. Lurie, M.D. and Dean T. Mason, M.D.* 193

14. Noninvasive Circulatory Assistance by External Counterpulsation  
*Ezra A. Amsterdam, M.D., Garrett Lee, M.D., Melvin J. Tonkon, M.D., Anthony N. DeMaria, M.D. and Dean T. Mason, M.D.* 209

#### Part IV Special Problems in Coronary Artery Disease

15. Rubidium 81 Imaging in Noninvasive Detection of Myocardial Ischemia  
*Antone F. Salel, M.D., Daniel S. Berman, M.D., Gerald L. DeNardo, M.D., Arthur J. Lurie, M.D. and Dean T. Mason, M.D.* 223

16. Prinzmetal Angina: Mechanisms, Evaluation, and Management  
*Albert A. Kattus, M.D.* 245

17. The Role of The Coronary Collateral Circulation in Acute and Chronic Coronary Artery Disease  
*David O. Williams, M.D., Ezra A. Amsterdam, M.D., Richard R. Miller, M.D. and Dean T. Mason, M.D.* 253

18. The Role of Elective Aortocoronary Bypass Surgery: Effects on Symptomatology and Longevity in Chronic Ischemic Heart Disease  
*Dean T. Mason, M.D., Richard R. Miller, M.D., Ezra A. Amsterdam, M.D., Anthony N. DeMaria, M.D. and Louis A. Vismara, M.D.* 269

#### Part V Preventive and Population Cardiology

19. Progress Report on Multicenter Cooperative Studies for Prevention of Cardiovascular Diseases  
*Nemat O. Borhani, M.D., James M. Foerster, M.D., Jess F. Kraus, Ph.D., James E. Price, M.D., Garrett Lee, M.D., Fred J. Harris, M.D., Melvin J. Tonkon, M.D., Najam A. Awan, M.D., James A. Joye, M.D., H. Singh Sodhi, M.D., Ph.D. and Dean T. Mason, M.D.* 285

20. **Advances in Lipoprotein Disorders: Coronary Risk Profile in Young Adults: Importance of Serum Triglycerides; and Polyunsaturated Meat and Dairy Products**  
*Antone F. Salel, M.D., Robert E. Hodges, M.D., Walter L. Dunkley, Ph.D., H. Singh Sodhi, M.D., Ph.D., Carolyn K. Clifford, Ph.D., Jess F. Kraus, Ph.D., Nemat O. Borhani, M.D. and Dean T. Mason, M.D.* 295

21. **Hypertension Update: Constellations of Subsets—The Importance of the Renin Axis for Understanding and Treatment**  
*John H. Laragh, M.D.* 309

## **Part VI Recent Advances in Echocardiography**

22. **Systematic Approach to Echographic Evaluation of Cardiomegaly of Unknown Cause**  
*Anthony N. DeMaria, M.D. and Dean T. Mason, M.D.* 347

23. **Applications of Echocardiography in Acute Myocardial Infarction: Development of a Prognostic Index and Estimation of Left Ventricular Filling Pressure**  
*Anthony N. DeMaria, M.D., Juan Angel, M.D., Ezra A. Amsterdam, M.D., Garrett Lee, M.D., Alexander Neumann, B.S., Lynn Weinnert, B.S. and Dean T. Mason, M.D.* 367

24. **Applications of the Pulmonary Valve Echogram in the Diagnosis of Congenital and Acquired Cardiac Disorders**  
*Anthony N. DeMaria, M.D., Alexander Neumann, B.S., Lynn Weinnert, B.S., Thomas Reimenschneider, M.D. and Dean T. Mason, M.D.* 377

25. **Pulse-Doppler Echocardiography: Localization of Murmurs and Spectrum of Clinical Applications**  
*Steve L. Johnson, M.D.* 389

## **Part VII Special Topics in Cardiovascular Medicine**

26. **The Mitral Valve Prolapse Syndrome: Present Knowledge of Spectrum of Abnormalities**  
*Anthony N. DeMaria, M.D., and Richard R. Miller, M.D., Garrett Lee, M.D. and Dean T. Mason, M.D.* 421

27. Evaluation and Management of Patients with Chronic Bifascicular Block	
<i>Zakauddin Vera, M.D., James M. Foerster, M.D., Najam A. Awan, M.D., Anthony N. DeMaria, M.D. and Dean T. Mason, M.D.</i>	441
28. Acute Aortic Dissections: Evaluation and Management	
<i>Arthur J. Lurie, M.D., Richard R. Miller, M.D., Edward J. Hurley, M.D. and Dean T. Mason, M.D.</i>	453
29. Pulmonary Embolism Update: Recent Advances in Detection and Medical Therapy	
<i>Louis A. Vismara, M.D., Hugo Bogren, M.D., Daniel S. Berman, M.D. and Dean T. Mason, M.D.</i>	463
30. Alcohol and the Heart	
<i>Leigh D. Segel, Ph.D. and Dean T. Mason, M.D.</i>	481
31. Mechanism of Decreased Contractility in Chronic Hemodynamic Overload	
<i>Joan Wikman-Coffelt, Ph.D., Teiko M. Kamiyama, M.D., P. James Stoll, Ph.D. and Dean T. Mason, M.D.</i>	491
<b>Index</b>	505



Dean T. Mason

## 1

## Introduction: Modern-Clinical Cardiology

Cardiovascular diseases are responsible for over one million deaths annually in the United States, thereby accounting for the majority of all mortality nationally. These alarming observations emphasize that the leading health problem among Americans is morbidity and mortality resulting from heart disease. Frustratingly, these facts are not well reflected in our federal policies for health research and training; for example, cancer, the second most common cause of death, results in less than one-third the loss of life that heart disease does, yet receives over three times the monetary support for investigation.

Nevertheless, progress in cardiology in the past two decades has been truly spectacular, more so than in any other discipline. The most important advance in cardiovascular medicine in the past quarter-century has been the development of catheterization of the human heart which can be performed with relative ease and patient safety. Application of this technique has enabled elucidation of pathophysiologic mechanisms in heart disease and has provided cardiovascular diagnosis on a scientific basis. The ability to identify and quantify even the most complex cardiac disorders has spearheaded remarkable innovations in medical and surgical therapy.

Recent cardiovascular discoveries have exerted a major impact on improving the health of the American people. Thus the coronary care

From The Section of Cardiovascular Medicine, Departments of Medicine and Physiology, University of California, School of Medicine, Davis and Sacramento, California.

unit has reduced the in-hospital death rate in acute myocardial infarction, treatment of streptococcal infections has decreased rheumatic heart disease incidence, new diuretics have enhanced management of congestive heart failure, cardiac catheterization has allowed for effective surgical therapy by accurate assessment of cardiovascular disorders, the extracorporeal heart-lung machine has made possible the correction of congenital heart defects, intracardiac prostheses and tissue grafts have made replacement of diseased valves possible, artificial pacemakers have prevented premature death from heart block, and advances in vascular surgery now permit replacement of aortic aneurysms and occluded major vessels.

The past decade has witnessed the carefully designed expansion of valuable new methodology in cardiovascular medicine which has clearly enhanced patient care management. No longer does the practice of cardiology simply consist of the stethoscope and electrocardiogram characteristic of the 1950 era. In contrast, modern cardiology has become a highly complex full-time science also requiring expertise in cardiac catheterization, coronary care unit, telemetry monitoring, temporary pacemakers, permanent pacemakers and their follow-up, treadmill stress testing, echocardiography, nuclear medicine, His bundle electrography, ambulatory electrocardiography, bedside balloon-flotating catheterization, counterpulsation techniques, improved myocardial serum enzyme analysis, lipidology, plasma renin and related analyses in hypertension, modern pharmacology and radioimmune assays, coronary risk factors, coronary arteriography, aortocoronary bypass operative intervention, porcine valve heterografts, and knowledge of cardiac rehabilitation procedures.

This improved evaluation and therapeutic armamentarium is not inexpensive, and progress is neither automatic nor cheap. However, today the cardiologist is able to offer every patient with any type of heart disease a better quality of life and extension of longevity. It is clear that future progress demands continued innovations in population cardiology and primary prevention coupled with improvements in the more traditional approach of managing symptomatic cardiovascular disorders.

In considering material for presentation in this volume, we decided that principal emphasis should be placed on the difficult challenges that lie ahead. The various complications of atherosclerosis account for over four-fifths of all cardiovascular deaths. Coronary arteriosclerosis represents the single largest cause of death and is responsible for over one-third of all deaths and two-thirds of cardiovascular mortality. Sustained or labile hypertension afflicts more