The problem of ischemic heart disease is one of the most important public health problems in the world today. With more effective treatment for acute coronary syndromes and the aging of the population, more people are now living with coronary artery disease and advanced ischemic heart disease is becoming increasingly prevalent. Heart failure is the final endpoint for patients who survive myocardial infarctions and sudden cardiac death, and now ischemic heart disease accounts for greater than 60% of heart failure cases. The toll in death and suffering of ischemic heart failure is enormous with cardiovascular disease as the number one killer and a lifetime risk of developing heart failure of one in five in both men and women. Chronic heart failure and coronary disease is a cost that is fast becoming overwhelming for the health care system in the United States and other countries and costs are only increasing. It is because of these facts that we have sought to create a text that will specifically address the problem of advanced ischemic heart disease.

Many believe that advanced ischemic heart disease will soon become the most challenging clinical problem facing the cardiovascular physician. It is ironic that this problem is the result of the successes of medicine to date in lengthening lifespan and treating acute myocardial infarction. There has been a tremendous improvement in survival from heart attack and with this has come more heart failure. In addition, heart failure patients are living longer due to advances in medical therapy, adding to the problem. Certainly, understanding of risk factors and their modification has decreased the incidence of stroke and heart attack but as those patients survive, many develop heart failure due to the inexorable progression of coronary artery disease.

Rather than focusing on a specific disease state such as coronary artery disease or heart failure in this text, we sought to focus on the concept of the patient with advanced ischemic heart disease as embodied in the discussion above. As such we define advanced ischemic heart disease for the purposes of this text as disease of the heart caused by coronary atherosclerosis which results in significant heart failure signs and symptoms or intractable angina and thus severely limits lifestyle or longevity. There have been volumes written on the diagnosis and treatment of coronary artery disease and heart failure. The treatment of these has now been standardized to the point that there are very well established guidelines...
promulgated by the American Heart Association and The American College of
Cardiology. This text will strive to pick up where the guidelines leave off and
address the real challenge of patients with advanced ischemic heart disease.
Many have the bias that once severe heart failure has occurred due to coronary
artery disease that there is little to offer in the therapeutic realm. Though therapy
is clearly challenging, new advances are making effective therapy of these
patients truly possible. This text embodies that notion. Finally, there is much
still to learn about the basic mechanisms of the progression of heart failure due to
coronary artery disease and how best to assess these therapeutic options. The text
will address these with a focus on treatment so that it may be a practical reference
for the practicing clinician and well as the basic or clinical researcher and student.

The text will begin with a discussion of the problem and its effect on society
and the practicing cardiovascular physician. It will then explore the basic
mechanisms by which advanced ischemic heart disease develops after initial
myocardial infarction. This is an area which is of profound importance if this
growing problem is to be adequately addressed. Prevention of heart failure after
initial heart attack is also very important and will be addressed next, followed by
a critical discussion of the controversy and methods of determining viability
in making decisions about revascularization. Heart failure due to ischemic
heart disease then will be studied followed by its treatment. In these sections,
we explore those things perhaps not easily found in the guidelines with these
complicated patients with multiple comorbid conditions. Angina, though less
common with modern medical therapy and revascularization techniques is
still a major limitation to a quality lifestyle in these patients and will be
discussed. Sudden cardiac death is still the most common mode of death and
modern implantable defibrillator therapy holds the potential for great benefit
and will be discussed in Chapter 8. Cardiac resynchronization therapy is an
important new technology which is currently being refined and will be
discussed next.

Much study has gone into the two major modes of revascularization, percu-
taneous and surgical and this has historically focused on the patient with pre-
served systolic function, we will address this in light of the patient with heart
failure, a complex topic and one of timely importance with advances in stent
technology and surgical technique. Mitral valve and left ventricular remodeling
surgery have been sources of great interest and controversy and will be addressed
next. Following this, we will explore mechanical assist and replacement device
therapy which is of great interest as it is clear that this, in its various forms will
play a dominant role in the future. The possibility of device therapy to supplant
need for transplant now and in the future will then be discussed. Transplant is
still an outstanding therapy for eligible patients but is severely limited by donor
shortage. Finally, the future is bright and new technologies such as a completely
implanted total artificial heart and cellular implantation therapies exemplify this.
Beyond this, new advances in understanding genomics and proteinomics are
leading to scientific advances which hold great promise. These and other exciting
new therapies will be explored in the final chapter.

Advanced ischemic heart disease is fast becoming one of the most challenging
problems facing the modern cardiovascular physician and current established
therapies often fail to adequately address this population of patients. As therapy
of heart disease evolves, we need to address the challenging questions posed by
this clinical problem. We hope that *Interventional Treatment of Advanced Ischemic Heart Disease* will aid you in the study and treatment of these patients who deserve the best that modern medicine can provide them.

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