



FIGURE 5-1 The American College of Cardiology Foundation and American Heart Association staging system. ACEI, Angiotensin-converting enzyme inhibitor; AF, atrial fibrillation; ARB, angiotensin receptor blocker; CAD, coronary artery disease; CRT, cardiac resynchronization therapy; DM, diabetes mellitus; EF, ejection fraction; GDMT, guideline-directed medical therapy; HF, heart failure; HRQOL, health-related quality of life; HTN, hypertension; ICD, implantable cardiac defibrillator; LV, left ventricular; LVH, left ventricular hypertrophy; MCS, mechanical circulatory support.

of ischemic heart disease. Ventricular dysfunction can result from excessive pressure overload, as in long-standing hypertension or aortic stenosis, or from volume overload, as in aortic insufficiency or mitral regurgitation. Diseases that result in infiltration and replacement of normal myocardial tissue, such as amyloidosis, are rare causes of HF. Hemochromatosis can cause a dilated cardiomyopathy that is thought to result from iron-mediated mitochondrial damage. Diseases of the pericardium, such as chronic pericarditis or pericardial tamponade, can impair cardiac function without directly affecting the myocardial tissue. Long-standing tachyarrhythmias have been associated with myocardial dysfunction that is often reversible.

High-output failure is an uncommon disorder characterized by an elevated resting cardiac index of greater than 2.5 to 4.0 L/min/m² and low systemic vascular resistance. Causes of high-output failure are severe anemia, vascular shunting, hyperthyroidism, and vitamin B₁ deficiency. It results from ineffective blood volume and pressure, which stimulate the sympathetic nervous system and renin-angiotensin-aldosterone system (RAAS), causing release of antidiuretic hormone (ADH), which results in ventricular enlargement, negative remodeling, and HF. Treatment targets the specific cause.

Low-output failure is much more common than high-output failure. It is characterized by insufficient forward cardiac output,