The goal of treatment in older patients should be the same as in younger patients (to below 140/90 mm Hg if at all possible), although an interim goal of SBP below 160 mm Hg may be necessary in those patients with marked systolic hypertension.[26Pr] Any reduction in blood pressure appears to confer benefit—the closer to normal, the greater the benefit. Drugs that exaggerate postural changes in blood pressure (peripheral adrenergic blockers, alpha-blockers, and high-dose diuretics) or drugs that can cause cognitive dysfunction (central alpha$_2$-agonists) should be used with caution. Additional recommendations about hypertension in older persons can be found in the report by the NHBPEP Working Group on Hypertension in the Elderly.[26Pr]

Patients With Hypertension and Coexisting Cardiovascular Diseases

Patients With Cerebrovascular Disease

Clinically evident cerebrovascular disease is an indication for antihypertensive treatment. However, immediately after the occurrence of an ischemic cerebral infarction, it is appropriate to withhold treatment (unless blood pressure is very high) until the situation has been stabilized. Even when treatment has been withheld temporarily, the eventual goal is to reduce blood pressure gradually while avoiding orthostatic hypotension. Patients with acute ischemic stroke who are treated with fibrinolytic agents require careful blood pressure monitoring, especially over the first 24 hours after starting treatment. SBP of 180 mm Hg or greater or DBP of 105 mm Hg or greater may be controlled with intravenous agents with careful monitoring for worsening of neurological status.[175C]

Patients With Coronary Artery Disease

Patients with coronary artery disease and hypertension are at particularly high risk for cardiovascular morbidity and mortality. The benefits and safety of antihypertensive therapy in such patients are well established.[176Pr,177Pr] Excessively rapid lowering of blood pressure, particularly when it causes reflex tachycardia and sympathetic activation, should be avoided. Blood pressure should be lowered to the usual target range (below 140/90 mm Hg), and even lower blood pressure is desirable if angina persists.

Beta-blockers or calcium antagonists may be specifically useful in patients with hypertension and angina pectoris; however, short-acting calcium antagonists should not be used.[125M,178Re179Re] After myocardial infarction, beta-blockers without intrinsic sympathomimetic activity should be given because they reduce the risk for subsequent myocardial infarction or sudden cardiac death. ACE inhibitors are also useful after myocardial infarction, especially with left ventricular systolic dysfunction, to prevent subsequent heart failure and mortality.[176Pr]

If beta-blockers are ineffective or contraindicated, verapamil hydrochloride or diltiazem hydrochloride may be used because they have been shown to reduce cardiac events and mortality modestly in two circumstances: (1) following non-Q-wave myocardial infarction, and (2) after myocardial infarction with preserved left ventricular function (LVH).[119Pr,180Pr,181Pr]

Some patients with hypertension, especially when accompanied by severe LVH, may experience angina without evidence of coronary atherosclerosis. This is thought to reflect an imbalance between myocardial oxygen supply and demand, due in part to changes in the coronary microcirculation. Treatment should be directed at blood pressure control, reversal of LVH, and avoidance of tachycardia, which may exacerbate the supply-demand mismatch.

Patients With Left Ventricular Hypertrophy

Development of LVH permits cardiac adaptation to the increased afterload imposed by elevated arterial pressure. However, LVH is a major independent risk factor for sudden cardiac death, myocardial infarction, stroke, and other cardiovascular morbid and mortal events.[182F,183F] Evidence shows that antihypertensive agents (except direct vasodilators such as hydralazine

and minoxidil), weight reduction, and decrease of excessive salt intake are capable of reducing increased left ventricular mass and wall thickness.[184Pr] In one study in men with hypertension, treatment with a diuretic and an ACE inhibitor was better than treatment with other drug classes tested for regressing LVH at 1 year.[185Ra] Observational data indicate that the regression of electrocardiographic evidence of LVH is associated with a reduction in the risk for cardiovascular events.[186F] However, no controlled studies demonstrate that such reversal of LVH offers additional benefits beyond that offered by reduction of blood pressure.[187Pr] The electrocardiogram remains valuable not only for detecting left atrial hypertrophy and LVH but also for identifying evidence of myocardial ischemia and arrhythmia.[188Pr] Echocardiography is more sensitive and specific for identifying LVH, but it is too expensive for routine use. Limited echocardiography will identify LVH at a cost that may justify its use in some patients (e.g., those with untreated stage 1 hypertension, no cardiovascular risk factors, no evidence of clinical cardiovascular disease, and no target organ damage).[189Pr]

Patients With Cardiac Failure

In patients with hypertension, structural alterations in the left ventricle (LVH or left ventricular remodeling with dilation) as well as myocardial ischemia from coronary artery atherosclerosis may contribute to the development of heart failure. Some patients with hypertension (current or past) develop heart failure with a normal ejection fraction, implying diastolic dysfunction. Reports from the Framingham Heart Study have demonstrated that hypertension continues to be the major cause of left ventricular failure in the United States.[190Pr] Control of elevated arterial pressure using lifestyle changes and drug therapy improves myocardial function and prevents and reduces heart failure and cardiovascular mortality.[119Pr] After myocardial infarction, therapy with ACE inhibitors prevents subsequent heart failure and reduces morbidity and mortality.[191Ra] In treating heart failure, ACE inhibitors, when used alone or in conjunction with digoxin or diuretics, are effective in reducing morbidity and mortality.[192M] When ACE inhibitors are contraindicated or not tolerated, the vasodilator combination of hydralazine hydrochloride and isosorbide dinitrate is also effective in these patients.[193Ra] The alpha-beta-blocker carvedilol added to ACE inhibitors has been shown to be beneficial,[194Ra,195Ra] and, in one trial, the angiotensin II receptor blocker losartan potassium was superior to captopril in reducing mortality.[196Ra] The dihydropyridine calcium antagonists amlodipine besylate and felodipine have been demonstrated to be safe in treating angina and hypertension in patients with advanced left ventricular dysfunction when used in addition to ACE inhibitors, diuretics, or digoxin;[197Ra,198Ra] other calcium antagonists are not recommended in these patients.

Patients With Peripheral Arterial Disease

Hypertension is one of the major risk factors for the development of carotid atherosclerosis and peripheral arterial disease with intermittent claudication and aneurysms. However, data are not available to determine whether antihypertensive therapy will alter the course of these processes. Early multicenter trials demonstrated a reduction in deaths from dissecting aortic aneurysms.[199Ra]

Patients With Hypertension and Other Coexisting Diseases

Patients With Renal Parenchymal Disease

Pathophysiology. Hypertension may result from any form of renal disease that reduces the number of functioning nephrons, leading to sodium and water retention.[200Pr] Hypertensive nephrosclerosis is among the most common causes of progressive renal disease, particularly in African Americans.[201X] Followup of large numbers of men screened for the Multiple Risk Factor Intervention Trial and of male veterans has provided the most conclusive and direct evidence of a relationship between blood pressure and end-stage renal disease.[202F,203F]