

HYPERTENSION IN OLDER PERSONS

Hypertension is extremely common in older Americans. Among Americans age 60 and older examined in the NHANES III, elevated blood pressure was found in 60 percent of non-Hispanic whites, 71 percent of non-Hispanic African Americans, and 61 percent of Mexican Americans.^{24X} **Especially among older persons, SBP is a better predictor of events (coronary heart disease, cardiovascular disease, heart failure, stroke, end-stage renal disease, and all-cause mortality) than is DBP.**^{26Pr} Recently, it has become clear that an elevated pulse pressure (SBP minus DBP), which indicates reduced vascular compliance in large arteries, may be an even better marker of increased cardiovascular risk than either SBP or DBP alone.^{139F} This is particularly relevant to older individuals who frequently have an isolated elevation of SBP (140 mm Hg or greater with a DBP below 90 mm Hg) (table 2). Those with stage 1 isolated systolic hypertension are at significantly increased cardiovascular risk, but the benefits of treatment in those individuals have not yet been demonstrated in a controlled trial.^{167F}

Primary hypertension is by far the most common form of hypertension in older persons. However, clinicians must recognize that certain identifiable causes of hypertension (e.g., atherosclerotic renovascular hypertension, primary aldosteronism) may occur more frequently in older persons, especially in those whose hypertension first presented after age 60 or is resistant to treatment.^{145Pr}

Blood pressure must be measured in older persons with special care because some older persons have pseudohypertension (falsely high sphygmomanometer readings) due to excessive vascular stiffness.¹⁶⁸ In addition, more older persons with hypertension, especially women, may have “white-coat hypertension” and excessive variability in SBP.^{169X} In the absence of target organ damage, clinicians should consider pseudohypertension or “white-coat hypertension” and should

obtain readings outside the office (see chapter 2). In addition, older patients are more likely than younger patients to exhibit an orthostatic fall in blood pressure and hypotension; thus, in older patients, blood pressure should always be measured in the standing as well as seated or supine positions.^{170X}

Treatment of hypertension in older persons has demonstrated major benefits (figure 7). Large trials of patients older than age 60 have shown that antihypertensive drug therapy reduces stroke, CHD, cardiovascular disease, heart failure, and mortality.^{140Ra,171Ra,172Ra,173Ra,174Ra}

Hypertension therapy in older persons, as in younger persons, should begin with lifestyle modifications.^{26Pr} Older patients will respond to modest salt reduction and weight loss.^{80Ra} If goal blood pressure is not achieved, then pharmacologic treatment is indicated. The starting dose in older patients should be about half of that used in younger patients. Thiazide diuretics or beta-blockers in combination with thiazide diuretics are recommended because they are effective in reducing mortality and morbidity in older persons with hypertension as shown in multiple randomized controlled trials.^{120M,171Ra} When compared to each other, diuretics (hydrochlorothiazide with amiloride hydrochloride) are superior to the beta-blocker atenolol.^{172Ra} In older patients with isolated systolic hypertension, diuretics are preferred because they have significantly reduced multiple endpoint events.^{171Ra} **In addition, an RCT in such patients taking the dihydropyridine nitrendipine showed a 42-percent reduction in fatal and nonfatal stroke over an average 2-year interval.**^{140Ra} **The concomitant reductions in coronary events and heart failure did not reach statistical significance although a favorable trend was reported and all cardiovascular disease mortality was significantly reduced. Because nitrendipine is not available in the United States, other long-acting dihydropyridine calcium antagonists are considered to be appropriate alternatives in these patients.**

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 alpha₂-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, particu-

larly 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,178Re,179Re} 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.^{182E,183F}

Evidence shows that antihypertensive agents (except direct vasodilators such as hydralazine