

Lifestyle Modifications

The Goal

The goal of prevention and management of hypertension is to reduce morbidity and mortality by the least intrusive means possible. This may be accomplished by achieving and maintaining SBP below 140 mm Hg and DBP below 90 mm Hg and lower if tolerated, while controlling other modifiable risk factors for cardiovascular disease. Treatment to lower levels may be useful, particularly to prevent stroke, to preserve renal function, and to prevent or slow heart failure progression. The goal may be achieved by lifestyle modification, alone or with pharmacologic treatment.

Lifestyle Modifications

Lifestyle modifications (Table 6) offer the potential for preventing hypertension, have been shown to be effective in lowering blood pressure, and can reduce other cardiovascular risk factors at little cost and with minimal risk. Patients should be strongly encouraged to adopt these lifestyle modifications, particularly if they have additional risk factors for premature cardiovascular disease, such as dyslipidemia or diabetes mellitus. Even when lifestyle modifications alone are not adequate in controlling hypertension, they may reduce the number of dosage of antihypertensive medications needed to manage the condition. Although the difficulty in achieving and maintaining lifestyle changes is recognized, a systematic team approach utilizing health care professionals and community resources when possible can assist in providing the necessary education, support and follow-up.

Table 6 Lifestyle Modifications for Hypertension Prevention and Management

- Lose weight if overweight
- Limit alcohol intake to no more than 1 oz (30ml) ethanol (e.g., 24oz beer, 10oz wine or 2 oz 100-proof whiskey) per day or 0.5 oz ethanol per day for women and lighter weight people.
- Increase aerobic physical activity (30 to 45 minutes most days of the week)
- Reduce sodium intake to no more than 100 mmol per day (2.4 g sodium or 6g sodium chloride)
- Maintain adequate intake of dietary potassium (approximately 90 mmol per day)
- Maintain adequate intake of dietary calcium and magnesium for general health
- Stop smoking and reduce intake of dietary saturated fat and cholesterol for overall cardiovascular health.

Weight Reduction

Excess body weight - body mass index (weight in kilograms divided by height in meters, squared) of 27 or greater - is correlated closely with increased blood pressure. The deposition of excess fat in the upper part of the body (visceral or abdominal), as evidenced by a waist circumference of 34 inches or greater in women or 39 inches or greater in men, also has been associated with the risk for hypertension, dyslipidemia, diabetes and coronary heart disease mortality.

Weight reduction, of as little as 10 pounds reduces blood pressure in a large proportion of overweight person with hypertension. In overweight patients with hypertension, weight reduction enhances the blood-pressure lowering effect of concurrent antihypertensive agents and can significantly reduce concomitant cardiovascular risk factors, such as diabetes and dyslipidemia.

Therefore, all patients with hypertension who are above their desirable weight should be placed on an individualized, monitored weight reduction program involving caloric restriction and increased physical activity. Recidivism is common and can be discouraging, but persistence may be rewarded by reduction of multiple cardiovascular risk factors and a step-down in antihypertensive drug therapy. Anorectic agents should be used with caution because many can raise blood pressure and some may increase the risk for valvular heart disease and pulmonary hypertension.

Moderation of Alcohol Intake

Excessive alcohol intake is an important risk factor for high blood pressure, can cause resistance to antihypertensive therapy, and is a risk factor for stroke. A detailed history of current alcohol consumption should be elicited from patients. Those who drink beverages containing alcohol should be counseled to limit their daily intake to no more than 1 ounce (30mL) of ethanol - for example, 24 ounces of beer, 10 ounces of wine or 2 ounces of 100-proof whiskey. Because women absorb more ethanol than men and lighter weight people are more susceptible than heavier people to the effects of alcohol, these groups should be counseled to limit their intake to no more than .5 ounces of ethanol per day. Such amounts do not raise blood pressure and have been associated with a lower risk for CHD. Significant hypertension may develop during abrupt withdrawal from heavy alcohol consumption but recedes a few days after alcohol consumption is reduced.

Physical Activity

Regular aerobic physical activity - adequate to achieve at least a moderate level of physical fitness - can enhance weight loss and functional health status and reduce the risk for cardiovascular disease and all-cause mortality. When compared with their more active and fit peers, sedentary individuals with normal blood pressure have a 20 to 50 percent increased risk of developing hypertension.

Blood pressure can be lowered with moderately intense physical activity (40 to 60 percent of maximum oxygen consumption), such as 30 to 45 minutes of brisk walking most days of the week. Most people can safely increase their level of physical activity without an extensive medical evaluation. Patients with cardiac or other serious health problems need a more thorough evaluation, often including a cardiac stress test, and may need referral to a specialist or medically supervised exercise program.

Moderation of Dietary Sodium

Sodium, in the form of sodium chloride or table salt, is linked to levels of blood pressure. Individual response of blood pressure to variation in sodium intake differs widely; as groups, African Americans, older people and patients with hypertension or diabetes are more sensitive to changes in dietary sodium chloride than are others in the general population.

Epidemiologic data demonstrate a positive association between sodium intake and level of blood pressure. Meta-analysis of clinical trials reveals that a reduction of 75 to 100 mmol in sodium intake lowers blood pressure over periods of several weeks to a few years. These effects are greater for older persons and those with elevated pressures. An analysis of 17 published randomized controlled trials involving patients age 45 or older with hypertension found an average decrease of 6.3/2.2 mm Hg with a urinary sodium reduction of 95 mmol per day. Although concern about severe sodium restriction has been raised in one observational study, there is no evidence that lower levels of sodium intake, as achieved in intervention trials, present any safety hazards.

Moreover, a variety of controlled and observational studies suggest that a diet with moderately reduced intake of sodium may be associated with other favorable effects on factors such as ability to reduce the need for antihypertensive medication, reduce diuretic-induced potassium wastage, possibly regress left ventricular hypertrophy, and protect from osteoporosis and renal stones through reduction in urinary calcium excretion.

Seventy-five percent of sodium intake is derived from processed food. Because the average American consumption of sodium is in excess of 150 mmol per day, moderate sodium reduction to a level of no more than 100 mmol per day (approximately 6 grams of sodium chloride or 2.4 grams of sodium per day) is recommended and achievable. With appropriate counseling, patients and their families can learn to read food labels and select foods lower in sodium. Such items are becoming more readily available in supermarkets and restaurants.

Potassium Intake

High dietary potassium intake may protect against developing hypertension and improve blood pressure control in patients with hypertension. Inadequate potassium intake may increase blood pressure. Therefore, an adequate intake of potassium (approximately 90 mmol per day), preferably from food sources such as fresh fruits and vegetables, should be maintained. If hypokalemia occurs during diuretic therapy, additional potassium may be needed from potassium-containing salt substitutes, potassium supplements, or potassium-sparing diuretics. These agents must be used with caution in patients susceptible to hyperkalemia, including those with renal insufficiency or those receiving angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers.

Calcium Intake

In most epidemiologic studies, low dietary calcium intake is associated with an increased prevalence of hypertension. An increased calcium intake may lower blood pressure in some patients with hypertension, but the overall effect is minimal. Although it is important to maintain an adequate intake of calcium for general health, there is currently no rationale for recommending calcium supplements to lower blood pressure.

Magnesium Intake

Although evidence suggests an association between lower dietary magnesium intake and higher blood pressure, no convincing data currently justify recommending an increased magnesium intake in an effort to lower blood pressure.

Other Dietary Factors

Dietary Fats. Dyslipidemia is a major independent risk factor for coronary artery disease; therefore, dietary therapy and, if necessary, drug therapy for dyslipidemia are an important adjunct to antihypertensive treatment. In randomized controlled studies, diets varying in total fat and proportions of saturated to unsaturated fats have had little, if any, effect on blood pressure. Large amount of omega-3 fatty acids may lower blood pressure; however, some patients experience abdominal discomfort. One study found no significant effect in preventing hypertension.

Caffeine. Caffeine may raise blood pressure acutely. Tolerance to this pressor effect develops rapidly, and no direct relationship between caffeine intake and elevated blood pressure has been found in most epidemiologic surveys.

Other Factors. Although recent epidemiologic studies have shown an inverse relationship between dietary protein to blood pressure, no consistent effects have been demonstrated. Further more, controlled trials of varying proportions of carbohydrate, garlic, or onion in the diet have demonstrated no consistent effects on blood pressure.

Relaxation and Biofeedback

Emotional stress can raise blood pressure acutely. The role of stress management techniques in treating patients with elevated blood pressure is uncertain. Relaxation therapies and biofeedback have been studied in multiple controlled trials with little effect beyond that seen in the control groups. A study in African Americans showed significant decreases in SBP and DBP at 3 months. However, the available literature does not support the use of relaxation therapies for definitive therapy or prevention of hypertension. One study found no effect of stress management or prevention of hypertension.

Tobacco avoidance for Overall Cardiovascular Risk Reduction

Cigarette smoking is a powerful risk factor for cardiovascular disease, and avoidance of tobacco in any form is essential. A significant rise in blood pressure accompanies the smoking of each cigarette. Those who continue to smoke may not receive the full degree of protection against cardiovascular disease from antihypertensive therapy. The cardiovascular benefits of discontinuing tobacco use can be seen within a year in all age groups. Smoking cessation information is available from voluntary health organizations and Federal agencies. Smokers must be told repeatedly and unambiguously to stop smoking. The lower amounts of nicotine contained in smoking cessation aids usually will not raise blood pressure; therefore, they may be used with appropriate counseling and behavior interventions. Actions to avoid or minimize weight gain after quitting smoking are often needed.

Implementation of lifestyle modifications should not delay the start of an effective antihypertensive drug regimen in those at higher risk.

Pharmacologic Treatment

The decision to initiate pharmacologic treatment requires consideration of several factors: the degree of blood pressure elevation, the presence of target organ damage, and the presence of clinical cardiovascular disease or other risk factors.

Efficacy

Reducing blood pressure with drugs clearly decreases cardiovascular morbidity and mortality. Protection has been demonstrated for stroke, coronary events, heart failure, progression of renal disease, progression to more severe hypertension, and all-cause mortality. Among older persons, treatment of hypertension has been associated with an even more significant reduction in CHD.