

Diet and Hypertension

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Food and Nutrition Series | Health

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What is Hypertension?

Hypertension, also known as high blood pressure, affects one in three adults in the United States, while only half are treated for this condition. An additional 25% of adults have blood pressure readings that are considered pre-hypertensive, placing them at risk for hypertension and cardiovascular disease. Hypertension can occur at any age, and the risk rises as one continues to age.

Blood pressure is the force exerted on artery walls from blood flowing through the body. A blood pressure reading provides two measures, systolic pressure and diastolic pressure, which are expressed as millimeters of mercury (mm Hg). Systolic pressure is measured as the heart pumps. Diastolic pressure is measured between beats, as blood flows back into the heart.

High blood pressure, or hypertension, has no symptoms, and is often called the “silent killer” because it can go undetected for years until a fatal heart attack or stroke occurs. Untreated hypertension causes damage to blood vessels over time. This can lead to other health complications such as stroke, kidney failure, impaired vision, heart attack, or heart failure. Blood pressure levels should be closely monitored and checked regularly. Table 1 shows how to classify blood pressure readings.

Types of Hypertension

- **Essential Hypertension or Primary Hypertension**—Hypertension of an unknown cause, which may be the result of a combination of poor lifestyle choices and genetics. Lifestyle factors that may play a role include poor diet (high sodium, low fruit and vegetable intake), tobacco use, limited physical activity, stress, and overweight/obesity.

- **Secondary Hypertension**—Hypertension that arises as a result of another disease, most often associated with the endocrine system (the body’s gland system, responsible for secreting hormones). Secondary hypertension may be resolved with treatment of the underlying condition.

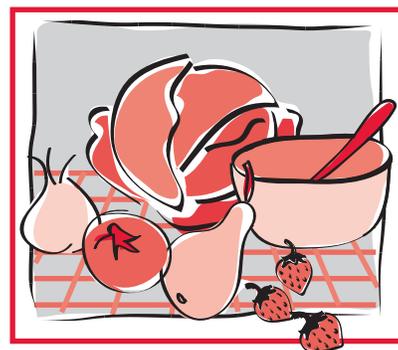
Hypertension Management and Prevention

Hypertension can be controlled through lifestyle changes and prescriptive medication. While medications to treat hypertension are available, research has shown that modest lifestyle and dietary changes can help treat and often delay or prevent high blood pressure.

In addition to healthy weight maintenance, avoiding tobacco, and limiting alcohol intake (no more than 2 drinks per day for men, and 1 drink per day for women), moderate physical activity for 30-45 minutes on most days is also recommended.

Hypertension Diet Plan- Five Dietary Recommendations

1. DASH dietary pattern—The DASH (Dietary Approaches to Stop Hypertension) dietary pattern is recommended by the American Heart Association, and the National Cancer Institute. The DASH diet is an overall eating plan that focuses on eating twice the average daily amount of fruits, vegetables, complex carbohydrates and low-fat dairy products (Table 2). The DASH dietary pattern is lower in fat, saturated fat, cholesterol, and sodium, and higher in potassium, magnesium, and calcium than the typical American diet. The high levels of potassium, magnesium, and calcium in the DASH diet are thought to be at least partially responsible for its results. Under the DASH 2 low sodium diet, people with



Quick Facts

- Hypertension, or high blood pressure, is called the “silent killer” because it can go undetected for years.
- Hypertension is associated with a high sodium intake and excess body fat.
- Maintaining a healthy diet can prevent or manage hypertension in many individuals.
- For healthy individuals, the Dietary Recommendations suggest consuming no more than 2,300 milligrams of sodium per day, while those with certain risk factors should consume no more than 1,500 milligrams of sodium per day.
- Healthy potassium, magnesium, and calcium intakes have important, protective roles in the risk for high blood pressure.
- The DASH dietary pattern (Dietary Approaches to Stop Hypertension) is highly recommended for hypertension prevention and management.

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Stage 1 hypertension were able to lower their blood pressure as much or more than any anti-hypertensive medication had been able to decrease it. For more information on the DASH diet, see fact sheet [DASHing to Lower Blood Pressure](#).

2. Regulation of caloric intake—A reduction in daily caloric intake is associated with a significant decrease in systolic and diastolic blood pressure levels. Following the DASH diet (see recommendation #1) may help one regulate daily calorie consumption, and may have a greater effect in reducing blood pressure than following a low-fat diet alone. Along with drug therapy, weight reduction should be a primary goal. Weight maintenance may reduce the time and number of drugs necessary to control blood pressure.

3. Low sodium diet—A decrease in sodium (a major component of salt) is associated with a decrease in blood pressure. The current Dietary Guidelines recommend consuming no more than 2,300 milligrams of sodium per day. Special recommendations for those with high blood pressure, who are African American, middle aged, or elderly, are advised to consume no more than 1,500 milligrams of sodium per day. Following the DASH dietary pattern, as well as consuming less than 1,500 milligrams of sodium per day, has been shown to lower and maintain a normal blood pressure.

Those looking to reduce salt consumption should choose minimally processed foods, examine food labels for sodium content, and use alternative seasonings to flavor foods. For more information on how sodium affects the diet, see fact sheet [Sodium in the Diet](#).

4. Potassium, calcium, and magnesium—Potassium works with sodium to regulate the body's water balance. Research shows that a high potassium-to-sodium ratio is associated with a greater likelihood that normal blood pressure will be maintained. The recommended intake of potassium for adults is 4.7 grams/day. However, evidence does not suggest that those with high blood pressure should take potassium supplements. Instead, potassium rich foods such as leafy green vegetables, root vegetables like potatoes and carrots, and fruit, should be eaten everyday (Table 3). For more information on how potassium affects the diet, see fact sheet [Potassium and the Diet](#).

An increased intake of calcium and magnesium may have blood pressure lowering benefits, especially if achieved through the DASH dietary pattern. However, research is not yet conclusive and there are no specific recommendations for calcium and magnesium at this time. Instead, general recommendations suggest meeting the Adequate Intake (AI) for calcium and the Recommended Dietary Allowance (RDA) for magnesium, through food sources instead of supplements (Table 3).

5. Dietary fat—Current recommendations for dietary fat include decreasing intake of saturated fat and trans fat as well as overall intake of dietary fat. These recommendations are geared towards healthy weight maintenance. Although research concerning the effects of omega-3 fatty acids has not shown any beneficial effect towards lowering blood pressure, it is still an essential fat to incorporate into one's diet. For more information on how dietary fat and cholesterol affect the diet, see fact sheet [Dietary Fat and Cholesterol](#).

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Summary

Hypertension has no symptoms, and over half of those with this condition are not currently treated.

Untreated hypertension may lead to many health problems, including damage to blood vessels that may lead to heart failure.

It is possible to control high blood pressure through a healthy diet and lifestyle that includes physical activity, avoiding tobacco, and limiting alcohol consumption.

An important dietary recommendation for prevention or management of hypertension is following the DASH dietary pattern.

Additional recommendations include following a low sodium diet, regulating caloric intake, reducing dietary fat, increasing potassium, calcium, and magnesium through a diet rich in fruits and vegetables.

Table 1. Blood Pressure Readings—Know Your Numbers.

	Systolic (mm HG)^a		Diastolic (mm HG)^a
Normal	<120	and	<80
Prehypertension	120 - 139	or	80 - 89
Hypertension			
Stage 1 ^c	140 - 159	or	90 - 99
Stage 2 ^d	≥160	or	≥100
Based on two readings taken 5 minutes apart with a confirmation reading in the contralateral arm.			
^a mm HG – How high the pressure of blood would raise a column of mercury.			
^b Prehypertension – At risk for developing hypertension and cardiovascular disease.			
^c Stage 1 – The most common level seen in adults, this group is most likely to have a heart attack or stroke.			
^d Stage 2 – A serious form of hypertension that requires immediate treatment.			

Table 2. The DASH (Dietary Approaches to Stop Hypertension) Dietary Pattern.

Food Group	Daily Servings	Important Components for Lowering Blood Pressure
Whole grains and grain products	7 - 8	Carbohydrates and fiber
Vegetables	4 - 5	Potassium, magnesium and fiber
Fruits	4 - 5	Potassium, magnesium and fiber
Low-fat or fat free milk or milk products	2 - 3	Calcium, protein, potassium and magnesium
Lean meats, poultry and fish	2 or less	Protein and magnesium
Nuts, seeds and beans	4 - 5 a week	Magnesium, potassium, protein and fiber
Source: "DASH Diet Eating Plan" www.dashdiet.org .		

Table 3: Follow the DASH dietary pattern. Choose a variety of foods that are low in sodium and dietary fat, and high in potassium and calcium.

Food Group	Levels (high or low) found in food groups			
	Dietary Fat	Sodium (Na)	Potassium (K) (>200 mg considered a high source)	Calcium (Ca) (> 50 mg considered a high source)
Dairy: Cheese, milk, and yogurt. Nearly all dairy contains high amounts of calcium and potassium. This food group also contains high amounts of sodium and dietary fat.	High (low fat options include non-fat dairy product such as milk, cheese, and yogurt).	High	High (low sources include some types of cheese).	High
Meat: Eggs, fish, red meat, pork, and poultry. These products vary widely in fat, sodium, and mineral content.	High (low fat options include skinless chicken, fish, eggs, and lean cuts of beef).	Low (high sources include canned meats, bacon, ham, and any salt-cured meats).	High (low sources include eggs, and bacon).	Low (high sources include salmon).
Fruit: Apples, avocado, bananas, strawberries, oranges, peaches, and watermelon. All raw fruits are naturally low in sodium, and contain high amounts of potassium.	Low	Low	High	Low (high sources include oranges).
Grain Products: Whole-wheat bread, oatmeal, macaroni, and rice. Most grains are low in dietary fat, potassium, and calcium. Some may contain high amounts of sodium, especially when more than one serving is consumed.	Low (high sources include pre-packaged baked items).	Low (high sources include bread, and pre-packaged baked items).	Low	Low
Legumes and Nuts: Almonds, black beans, garbanzo beans, tofu, peanut butter, pistachios, and walnuts. This group contains high amounts of dietary fat in the form of healthy mono and poly unsaturated fatty acids. Many foods in this group are also rich in potassium and calcium.	High in healthy mono and poly unsaturated fatty acids (low fat foods in this group include black beans, garbanzo beans, and tofu).	Low (high sources include canned and salted).	High (low sources include tofu and peanut butter).	Low (high sources include almonds, black beans, and garbanzo beans).
Vegetables: Broccoli, carrots, corn, mushrooms, potatoes, and spinach. Most raw vegetables are naturally low in fat and sodium, and high in potassium and calcium.	Low	Low (high sources include canned).	High	High (low sources include mushrooms, corn, potatoes, and tomato).
Desserts: Pastries, cookies, muffins, pie, and cake. Most baked goods are high in sodium and fat, and low in potassium and calcium. This group should be consumed in moderation.	High	High	Low	Low
Condiments, Fats, and Oils: Ketchup, pickles, mayonnaise, barbeque sauce, butter, and salad dressing. This group is mostly high in fat and sodium, and nutrient poor.	Low (high sources include mayonnaise, butter, margarine, and salad dressing).	High	Low (high sources include pickles).	Low