



# Diet and High Blood Pressure

## EXTENSION

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High blood pressure is a serious health problem. High blood pressure increases your risk of heart attacks, strokes, and kidney failure. Because high blood pressure can progress silently and without symptoms many people do not know they have high blood pressure until they have a heart attack or stroke. If high blood pressure is not detected and controlled, it can do damage to the heart, brain, and kidneys. Fortunately, with detection and proper treatment high blood pressure can be controlled.

### What is Blood Pressure

Blood pressure is the pressure on the blood vessel walls. A blood pressure reading consists of two numbers, for example 120/80 or 120 over 80. The first number is called systolic pressure. The systolic pressure is the pressure on the blood vessels when your heart contracts, or pumps blood out. The second number is called diastolic pressure. The diastolic pressure is the pressure on the blood vessels when your heart is resting between contractions. Normal blood pressure is systolic less than 120 and diastolic less than 80. Elevated blood pressure is systolic 120 to 129 and diastolic less than 80. High blood pressure stage 1 is systolic 130 to 139 or diastolic 80 to 89. High blood pressure stage 2 is systolic 140 or greater or diastolic 90 or greater. You need to keep track of your blood pressure and have it checked regularly.

High blood pressure means you have higher than normal pressure on the blood vessel walls. High blood pressure can occur when there is an increase in blood volume, when blood vessels are narrowed by atherosclerosis, or when blood vessels become rigid and do not expand with an increase in blood volume. High blood pressure causes the heart to work harder, and over time may damage the blood vessels. Damage to blood vessels in the heart may cause a heart attack; damage to blood vessels in the brain may cause a stroke. High blood pressure is not the same as stress, although stress may raise blood pressure temporarily. If you have high blood pressure it usually can be controlled with a combination of diet, lifestyle changes, and medication.

Even children should have their blood pressure checked as part of their regular physical exams. High blood pressure in children may signal an underlying disease or the early onset of high blood pressure. Like high blood cholesterol, high blood pressure may develop early in life.

### Risk Factors for High Blood Pressure

High blood pressure is a very complex condition. For most cases of high blood pressure, the exact cause is unknown. Only a small number of high blood pressure cases can be

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related to a known cause, such as kidney disease. However, there are factors that may affect your high blood pressure. Some of these factors include a family history of high blood pressure, being overweight, increasing age, physical inactivity, smoking, diabetes, high sodium intake (for sodium sensitive individuals), high alcohol intake, and a high saturated fat and trans fat intake.

- **Family history.** High blood pressure tends to run in families. People may inherit a tendency for high blood pressure. People in the same family may also have similar lifestyle and dietary habits that increase their risk of developing high blood pressure.
- **Overweight.** Being overweight increases your risk of high blood pressure. Where your body stores excess weight also makes a difference. People who carry excess weight around their abdomen have a greater risk of high blood pressure than those who carry excess weight in their hips and thighs. For some people bringing their weight down may be all they need to do to keep their blood pressure in control.
- **Age.** Blood pressure tends to increase with age. Men typically begin having an increase in blood pressure by age 45 to 50. Women usually do not start having an increase in blood pressure until after menopause. The age at which menopause occurs varies, but the average age of onset is 50 years. However, just because you get older does not mean you will develop high blood pressure.
- **Physical activity.** Participation in regular physical activities can lower your resting blood pressure. Regular physical activity can help you lose weight and thus

lower the risk of high blood pressure and diabetes. In addition, regular physical activity can lower total blood cholesterol, LDL-cholesterol, and triglycerides, and increase HDL-cholesterol, all of which can lower the risk of atherosclerosis. As a result, regular physical activity may lower your risk of many diseases including high blood pressure, obesity, heart disease, and diabetes.

- **Smoking.** Smoking increases your risk of high blood pressure. Smoking seems to raise blood pressure levels and heart rate. Smoking also lowers HDL-cholesterol. Smoking may increase the tendency of blood to clot and thus lead to a heart attack. In addition, smoking is a key factor in sudden death from cardiovascular disease.
- **Diabetes.** High blood pressure is two to three times more common in people with diabetes, especially uncontrolled diabetes. Insulin resistance, most commonly associated with obesity, signals the pancreas to produce more insulin. High blood insulin signals the kidneys to retain sodium and thus may increase the risk of developing high blood pressure. Lowering your risk of developing high blood pressure is another reason to keep diabetes in control.
- **Sodium intake.** Your kidneys regulate the sodium level in your body. Most people are not affected by excess dietary sodium because their bodies just get rid of excess sodium in the urine. However, some people are sodium-sensitive. For sodium-sensitive individuals, too much sodium in the diet can increase blood pressure. For someone who is sodium-sensitive, lowering sodium intake may help lower blood pressure. Unfortunately, there is no way to know who may be a sodium-sensitive individual. As a result, the Dietary Guidelines recommend consuming less than 2,300 mg sodium a day, and even less for children younger than 14 years old. This advice of moderation is given to all healthy people because there is no way to know if someone is sodium-sensitive. In addition, people do not need extra sodium.

Processed foods have the most sodium, while unprocessed foods have the least. As much as 75 percent of the sodium in your diet comes from salt added to foods by manufacturers. About 15 percent comes from salt added during cooking and at the table, and only 10 percent comes from the natural content in foods.

- **Alcohol intake.** Heavy drinking may increase the risk for high blood pressure. Health experts advise not more than one alcoholic drink a day for women, and not more than two a day for men. Alcohol also contributes extra calories, which may increase body weight.
- **High fat, saturated fat and trans fat intake.** Diets high in fat, saturated fat and trans fat can increase LDL-cholesterol and triglycerides, which contribute to both atherosclerosis and high blood pressure. Atherosclerosis narrows the blood vessels and thus decreases blood flow to the kidneys. The kidneys try to increase blood pressure by expanding blood volume and constricting smaller blood vessels. However, the pressure increases not only in the kidneys, but also all over the body. The resulting increase

in blood pressure can further damage blood vessel walls and intensify atherosclerosis.

A diet low in total fat, saturated fat and trans fat helps lower blood cholesterol and triglycerides, which may decrease your risk of developing atherosclerosis. Reducing fat intake can also help with weight loss, which may lower blood pressure. The Dietary Reference Intakes recommend a diet low in saturated fat and trans fat and one which provides 20% to 35% of daily calories intake from fat. Diets with up to 35% of calories from fat can be compatible with good health if calorie intake is reasonable, most fats come from unsaturated sources, and saturated and trans fat intakes are low. The Dietary Guidelines recommend that starting at age two, saturated fat intake be less than 10% of calories daily.

- **Intake of other nutrients.** Too little of some other nutrients including potassium, calcium, and magnesium, may have an important link to high blood pressure. Adequate intakes of these minerals may actually have a protective effect against high blood pressure. Potassium is found in a wide variety of foods, but especially fruits and vegetables. Milk and dairy products are a good source of all three nutrients, calcium, magnesium, and potassium. The best recommendation is to consume the recommended amounts of food from the USDA MyPlate food groups. Recommended amounts from each USDA MyPlate food group each day for a reference 2,000 calorie diet are:
  - 6 oz. of grains
  - 2 1/2 cups of vegetables
  - 2 cups of fruit
  - 3 cups of dairy
  - 5 1/2 oz. of protein foods
  - 6 teaspoons of oil
- **Emotional stress.** For some people, stress may be a factor for high blood pressure. Although the evidence is not clear, learn how to relieve stress for the overall quality of your life.

## Lowering Your Risk of High Blood Pressure

You can take some preventive measures to lower your risk of developing high blood pressure. Some things you can do to lower your risk are to maintain a healthy weight, be physically active, and if you smoke, quit. Some other recommendations are to use sodium and alcohol in moderation and to eat following the USDA MyPlate Plan to make sure you get enough calcium, potassium and magnesium.

### References

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