

Health Brief

High Blood Pressure



The more you know about health issues—and your own health in particular—the better you can take care of yourself. This *Health Brief* provides basic health information. To learn more about this topic, please consult your doctor or pharmacist.



High blood pressure—also called hypertension—is a serious condition affecting more than 50 million Americans.¹ Left uncontrolled, high blood pressure can significantly damage the heart, kidneys, eyes, and brain. Many people have high blood pressure for years without knowing it. Unfortunately, many of those unsuspecting people do not discover they have high blood pressure until it has already caused damage in their body.

That's why it is essential to understand what blood pressure is, what causes high blood pressure, and how it can be prevented or controlled. Preventing and controlling high blood pressure with healthier lifestyle choices and medication may reduce the risk of developing future health problems and may add years to a person's life.

The “Silent Killer”

Because there are no symptoms associated with high blood pressure, it is often referred to as “the silent killer.” According to the American

Heart Association, more than 30 percent of those with high blood pressure are unaware they are hypertensive; 11 percent of those diagnosed are not receiving treatment; and greater than 25 percent who are treated do not have their blood pressure controlled.²

Compared to the general population, people with high blood pressure are:

- three times more likely to have a heart attack.³
- two to three times more likely to develop heart failure.
- four times more likely to have a stroke.²

Fortunately, treatment with blood pressure-lowering medications reduces the risks of heart attack by 20 percent to 25 percent, heart failure by 50 percent, and stroke by 35 percent to 40 percent.¹

A Costly Disease

High blood pressure poses an enormous personal, financial, and social burden, accounting for \$55.5 billion in direct and indirect costs (for example, lost productivity, absenteeism, etc.). However, these costs increase to \$368.4 billion when the complications associated with high blood pressure—including heart disease, stroke, and congestive heart failure—are included into cost statistics.²



Blood Pressure Defined

Each time your heart beats, your arteries carry blood from your heart to your tissues and organs. Blood pressure is the force of the blood pushing against the walls of your arteries. If your blood pressure rises, your heart has to work harder to get blood throughout your body. In time, this may cause damage to your heart, as well as to other organs in your body.

Your blood pressure is measured in two numbers (for example, 120/80). The top number (systolic blood pressure) is the pressure in the arteries when your heart contracts to pump blood to your body. The bottom number (diastolic blood pressure) is the pressure in the arteries when your heart is at rest, in between beats.

If you run to catch a bus, your blood pressure increases. When you sleep at night, your blood pressure decreases. These changes in blood pressure are normal.

The Effects of High Blood Pressure

Some people's blood pressure is consistently high. Their blood pushes against the walls of their arteries with greater-than-normal force. If untreated, high blood pressure can lead to serious medical problems, including the following:

- **Arteriosclerosis or “hardening of the arteries”:** High blood pressure causes the artery walls to become thick and stiff. When this occurs, cholesterol and fats build up in the blood vessels, hindering blood from flowing easily through the body. In time, this can lead to a heart attack or stroke.
- **Heart attack:** Blood carries oxygen throughout the body. When the blood vessels that carry blood back to the heart become blocked, the heart cannot get enough oxygen. This reduced blood flow to the heart can cause chest pain, known as angina. Eventually, the blood flow may be stopped completely, causing a heart attack.
- **Congestive heart failure:** High blood pressure causes the heart to work harder. Over time, this causes the heart to stretch and weaken. Eventually, the heart fails to function normally, leading to heart failure, also known as congestive heart failure.
- **Kidney damage:** The kidney acts as a filter to rid the body of wastes. Over a number of years, high blood pressure can narrow and thicken the blood vessels of the kidney. When this happens, the kidney filters less fluid, and waste builds up in the blood. Eventually, the kidneys may fail altogether, and medical treatment, dialysis (a process that mechanically filters waste out of the blood), or a kidney transplant may be needed.
- **Stroke:** High blood pressure harms the arteries by causing them to narrow, which results in less blood getting to the brain. If a blood clot blocks one of the narrowed arteries, a stroke (thrombotic stroke) may occur. A stroke may also occur when high blood pressure causes a break in a weakened blood vessel in the brain (hemorrhagic stroke).⁴

Measuring Blood Pressure

Normal blood pressure is considered to be less than 120/80, but blood pressure greater than 120/80 and less than 140/90 is considered to be “prehypertension.” People whose blood pressure readings range anywhere from 130/80 to 139/89 have a higher risk of developing hypertension than those with lower readings.¹ Hypertension is defined as blood pressure that is 140/90 or higher, and is usually diagnosed after two or more readings at multiple doctor visits. For your reference, Table 1 classifies blood pressure for adults who are not taking medications to lower blood pressure.

Table 1: Classification of Blood Pressure for Adults Age 18 and Older*

Classification	Systolic Blood Pressure (mm/Hg)	Diastolic Blood Pressure (mm/Hg)
Normal	under 120	under 80
Prehypertension	120 to 139	80 to 89
Hypertension		
Stage 1	140 to 159	90 to 99
Stage 2	160 or above	100 or above

*For those not taking medicine for high blood pressure and who do not have a short-term serious illness. These categories are from the National High Blood Pressure Education Program.

Detecting High Blood Pressure

Since high blood pressure rarely causes symptoms in the early stages, routine doctor visits are essential. Screening for elevated blood pressure can occur in a variety of settings, including home monitoring, community health fairs, at a community pharmacy, or during routine visits to your doctor. Follow-up visits and evaluation should be based on initial blood pressure measurements. Even people with normal blood pressure readings should have their blood pressure checked by their doctor every two years.

Note: If you use a home blood pressure monitor, be sure to bring it to your doctor’s office—when you first get it and as often as your doctor recommends—to make sure it is calibrated correctly and gives accurate readings.

The Causes of High Blood Pressure

In 90 percent to 95 percent of cases, the actual cause of high blood pressure is unknown, and it is referred to as primary or essential hypertension.⁵ In secondary hypertension, elevated blood pressure is related to another condition, such as a disorder of the kidneys or abnormal levels of certain hormones or chemicals in the blood. In these situations, if the underlying cause is corrected, blood pressure often returns to normal. Regardless of the cause, blood pressure must be controlled to prevent serious damage to body organs.

Certain factors are associated with the development of essential hypertension:

- Genetics (those who have a family history of high blood pressure are at an increased risk)
- Race (African-Americans of both genders have an increased risk)
- Older age
- Obesity
- High-salt diet
- Smoking
- Sedentary lifestyle (lack of exercise)
- Excessive consumption of alcohol
- Diabetes, gout, or kidney disease
- Pregnancy
- Use of oral contraceptives and certain other medications⁶

Preventing High Blood Pressure

There are a number of ways you can prevent developing high blood pressure and its possible complications. Anyone—regardless of race, age, sex, or heredity—can lower their chance of developing high blood pressure and work toward maintaining a healthy heart. These tips can help:

- Quit smoking or using tobacco of any kind.
- Maintain a healthy weight.

- Adopt the DASH (Dietary Approaches to Stop Hypertension) diet:
 - Reduce your salt and sodium intake.
 - Reduce your saturated fat, total fat, and cholesterol intake.
 - Maintain a diet rich in whole grains, fruits, vegetables, and low-fat dairy foods to ensure an adequate intake of fiber, potassium, calcium, and magnesium.
 - Eat more poultry, nuts, and fish for protein.
 - Reduce your intake of red meats.⁷
- Increase physical activity (engage in light to moderate exercise 30 minutes, most days of the week).
- Most men should avoid or limit their alcohol consumption to no more than two servings of alcoholic beverages daily (one serving equals 12 oz of beer, 5 oz of wine, or 1.5 oz of 80 proof whiskey).¹
 - Women and lighter-weight men should avoid or consider a limit of one serving of alcohol per day.
- Have your blood pressure checked regularly to detect any problems early.

Reduce Salt and Sodium Intake

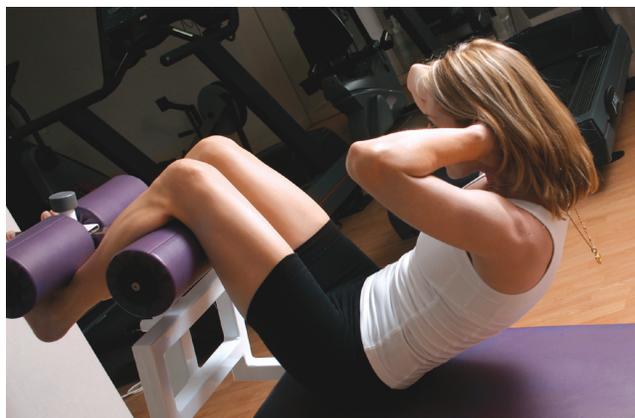
The American Heart Association recommends that all Americans, especially people with high blood pressure, eat no more than 6 grams of salt per day, which equals about 2.4 grams of sodium. That's equivalent to one teaspoon of table salt per day. Try these tips to limit your salt and/or sodium intake:

- Avoid adding table salt when cooking foods such as pasta, rice, or hot cereals.
- Choose fresh foods or frozen foods with “no salt added” on the label.
- Choose low- or reduced-sodium or “no salt added” versions of canned foods.
- Avoid processed or cured meats when possible.
- When eating out, request that your food be prepared without salt.
- Season foods with spices, herbs, or lemon juice instead of salt.
- Check food labels so you know how much sodium is in foods you purchase.

How to Control High Blood Pressure

High blood pressure cannot be cured, but it *can* be controlled. The two ways high blood pressure is treated include lifestyle changes and medication. Depending on the level of blood pressure, the presence of hypertension-related organ damage, and the presence of other risk factors for heart disease, medication may be used in conjunction with changes in lifestyle.

If you've been diagnosed with high blood pressure, adopting a healthy lifestyle is a vital part of controlling this condition. Key lifestyle changes to control blood pressure are similar to those used to prevent high blood pressure—stop smoking, lose weight, limit sodium intake, exercise regularly, and avoid or limit alcohol intake to a moderate amount. Modifying your lifestyle habits may reduce the number and amount of medications needed to control blood pressure. An added plus is that medication costs and the incidence of side effects also may be reduced.



Many medications are available to reduce blood pressure in different ways. Table 2 describes the various classes of blood pressure-reducing medications. Not all people reach their goal blood pressure levels using only one blood pressure-lowering medication. In fact, it is not uncommon to take two or more blood pressure medications. Your doctor may prescribe two separate medications or a combination product derived from the classes of blood pressure medications in Table 2.

Table 2: Blood Pressure-Lowering

Medication Class	Effect on the Body
Angiotensin Converting Enzyme (ACE) inhibitors	ACE inhibitors prevent the body from producing a substance called angiotensin II, which normally causes blood vessels to constrict (squeeze) tightly. By blocking production of this substance, blood vessels relax, causing blood pressure to fall.
Alpha blockers	Alpha blockers block the effect of certain substances in the blood that cause blood vessels to constrict. As a result, the blood vessels relax and blood pressure decreases.
Angiotensin II receptor blockers (ARBs)	ARBs do not prevent the production of angiotensin II, but rather block it from binding in the body, allowing the blood vessels to relax. This also prevents retention of water and sodium (salt), which can raise blood pressure.
Beta blockers	Beta blockers block the effects of certain substances on the heart and blood vessels, causing a reduction in blood pressure and heart rate.
Calcium-channel blockers	Calcium-channel blockers prevent too much calcium from getting into the muscle cells. This results in the relaxation of the heart muscles and blood vessels, causing blood pressure to decrease.
Central-acting agents	Central-acting agents act in the brain to reduce the release of certain chemicals into the bloodstream, resulting in the relaxation of blood vessels and a reduction in blood pressure.
Diuretics	Diuretics cause the kidneys to remove extra salt and water from the body. This reduces the volume of blood and lowers blood pressure.
Peripheral-acting agents	Peripheral-acting agents reduce the amount of certain chemicals in the bloodstream responsible for causing blood vessels to constrict. As a result, blood vessels relax and blood pressure decreases.
Vasodilators	Vasodilators act directly on the blood vessel linings, causing the muscles to relax. As a result, blood vessels relax and blood pressure decreases.

If you are currently taking high blood pressure medication, talk with your doctor or pharmacist to make sure you know the name of the medication(s) you are taking, how the medication(s) work, and what potential side effects may occur. While not everyone experiences side effects, it is important to be aware of any that may develop. If bothersome symptoms develop while taking medications, do not hesitate to discuss them with your doctor and pharmacist. Your doctor needs to evaluate your symptoms to determine if the medication should be changed. It is important that you continue taking the medication until you talk with your doctor.

Taking Your Medication as Prescribed

It is important to take your medications exactly as prescribed to get their benefit. Even though your blood pressure may return to normal, you must continue to take your medication every day. If you stop taking the medication, it is likely that your blood pressure will rise again, putting you at risk for a heart attack, stroke, or heart failure. If you have any questions about the proper use of your medication, ask your pharmacist or doctor.

Conclusion

High blood pressure affects millions of Americans, and, if uncontrolled, can lead to serious health complications, reduced quality of life, and enormous healthcare expenses. It is important to realize that high blood pressure rarely causes symptoms in its early stages, so routinely having your blood pressure checked is crucial for early detection and treatment. Lifestyle modifications play a vital role both in preventing and treating high blood pressure, and maintaining a healthier life. However, if lifestyle changes are not enough to control your blood pressure, numerous medications are available. By following these recommendations and taking your medication as prescribed, you can help reduce or prevent high blood pressure for life and, in turn, significantly lower your risk for heart disease and stroke.

Resources

Additional information can be obtained from the following organizations:

- **American Heart Association**

1-800-AHA-USA1

www.americanheart.org.

- **National Heart, Lung, and Blood Institute**

1-800-575-WELL

www.nhlbi.nih.gov.

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