Blood Pressure

What is blood pressure?

Blood pressure is vital to life. Blood pressure makes it possible for blood to circulate throughout our bodies. With each beat of the heart, blood is pumped out of the heart into our blood vessels. The blood carries oxygen and food to our vital organs — such as the brain, heart, and kidneys — so they can work. Blood pressure is the force (tension) that the blood exerts in our blood vessels.

How is blood pressure measured?

A blood pressure check measures 2 things, so your blood pressure reading will have 2 numbers. The first or top number shows systolic (sis-TOLL-ik) pressure. It shows the pressure of blood against the artery walls when your heart contracts and pumps out blood. The second or bottom number shows diastolic (dye-es-TOLL-ik) pressure. It shows the pressure of blood against the artery walls when your heart rests between pumps and fills with blood. An example of a blood pressure reading is 130/80 (read as “130 over 80”). The systolic pressure is 130. The diastolic pressure is 80.

Why should I know my blood pressure numbers?

You should learn and remember your blood pressure numbers. Blood pressure numbers fall into 3 ranges. The ranges show if your blood pressure is healthy or if you have a health problem.

Normal Blood Pressure

Your blood pressure is normal when the first number is less than 120, and the second number is less than 80.When your blood pressure is normal, work to keep it normal by adopting a healthy lifestyle.

Hypertension

Hypertension (HI-per-TEN-shun) is the medical name for high blood pressure. Your blood pressure is high when the first number is 140 or higher, or the second number is 90or higher. When blood pressure remains in this range, it is dangerous to your health. It takes several readings at different times to determine if you have high blood pressure.

Pre-Hypertension

Your blood pressure may not be normal or high. A first number between 120 and 139 or a second number between 80 and 89 is a warning. The medical name for this range is “pre-hypertension.” This means that you don’t have high blood pressure now, but you’re likely to have it in the future.

Blood Pressure	Systolic	Diastolic
Normal	under 120	**and under 80**
Pre-hypertension	120 to 139	**or 80 to 89**
Stage 1 hypertension	140 to 159	**or 90 to 99**
Stage 2 hypertension	160 or over	**or 100 or over**

What causes high blood pressure?

The cause of high blood pressure is often not clear. We know a physical cause of high blood pressure for only 5 percent of patients in treatment. For example, kidney disease may be the cause of their high blood pressure. But for 95 percent of patients in treatment, we do not know a physical cause of their high blood pressure.

Why is high blood pressure dangerous?

High blood pressure is dangerous because it puts a strain on your body. It can harm your body in a number of ways. First of all, it adds to your heart’s work load. Over time as your heart works harder than normal, it tends to get bigger. A slightly bigger heart may still work well, but a heart that is too enlarged may not be able to meet your body’s needs.

High blood pressure also affects your arteries and arterioles (are-TEER-ee-ols), which are the smaller arteries. As we grow older, the arteries harden and become less flexible, even if we don’t have high blood pressure. But having high

blood pressure tends to speed up this process. Another name for hardening of the arteries is arteriosclerosis (are-TEER-ee-oh-skler-OH-sis).

When high blood pressure damages the arteries, they may not be able to supply the amount of blood the body needs. When the body's organs don't get enough oxygen and food from the blood, they cannot work properly. High blood pressure may contribute to kidney disease or eye problems, for example.

Sometimes a hardened artery becomes narrowed by a build-up of material called plaque (PLAK). This is called atherosclerosis (ATH-er-oh-skler-OH-sis). A blood clot may lodge in a narrowed artery, cutting off normal blood supply to part of the body.

Another danger is that high blood pressure usually has no warning signs or symptoms. People can think they have perfectly normal blood pressure until suddenly they have a heart problem or a stroke. High blood pressure may have silently damaged their heart and blood vessels over a long time.

Am I at risk for high blood pressure?

Everyone has some risk for high blood pressure. Our risk increases as we age. About 25 percent of adult Americans have high blood pressure. Some people have greater risk than others. They are:

- Men
- Americans of African descent

Other factors that increase your risk for high blood pressure are:

- Family history of high blood pressure
- Obesity
- Cigarette smoking
- High cholesterol
- Diabetes
- Lack of exercise
- High alcohol use
- High salt intake
- Aging
- Stress

Why should I be concerned?

You can prevent serious health problems if you take the proper steps to prevent or control high blood pressure. **It's the most important** thing you can do to reduce your chance of a stroke. When you do not control high blood pressure, you are:

- 7 times more likely to have a stroke
- 6 times more likely to get congestive heart failure
- 3 times more likely to get coronary heart disease

What should I do?

You should have your blood pressure checked as often as you can. If your doctor tells you to have your blood pressure checked once a month or several times a year, be sure to do so. In addition, attend free blood pressure screenings for the public whenever possible. You can have a blood pressure check by a doctor, nurse, nurse practitioner, physician assistant, or medical assistant:

- Your doctor's office
- A clinic where you work or go to school
- Health fair, fitness center, or community center

If your blood pressure reading is high at a public screening (for instance, at a mall or health fair), get it confirmed by your doctor or other health care professional. It is very **important** to see your doctor if you have a high blood

pressure reading. You could have other health problems that need to be treated. Early detection and treatment are key.

What tests will I need to have?

Your doctor will give you a routine physical exam and ask you questions about your health. If your blood pressure reading is high, he or she will give you 3 or more blood pressure checks several weeks apart. If your blood pressure reading is high on 3 or more careful readings, the doctor will diagnose high blood pressure. In severe cases, a doctor may diagnose high blood pressure based on a single reading.

To see if high blood pressure has damaged any organs in your body, routine blood and urine tests and an EKG (electrocardiogram) will be done. Most people with high blood pressure receive “normal” test results, indicating no signs of organ damage. For some people, the test results will indicate that they may have kidney disease, diabetes, or a hormone disorder. This is why it is so important to see your doctor when you have high blood pressure. Other health problems can be detected and treated before they get worse.

Can high blood pressure be cured?

High blood pressure can be controlled, but not cured. It is a lifelong disease. If you have high blood pressure, you can learn to control it. It’s **important** to work with your doctor to find the best treatment for you.

How do I control high blood pressure?

There’s a lot you can do to control high blood pressure. Changing your diet and living habits can help lower blood pressure. Quitting smoking reduces blood pressure and risk for heart attack and stroke. Reducing your alcohol intake helps. For some people, taking medicine also helps to reduce and control high blood pressure. When you follow the treatment plan your doctor gives you, it becomes easier to maintain a lower blood pressure.

How does the doctor decide my treatment?

To draw up a treatment plan for you, your doctor will look at a number of factors. He or she will look at your blood pressure range. There also may be signs that high blood pressure has damaged organs such as your heart, arteries, kidneys, or eyes. You may already be in treatment for other health problems, such as high cholesterol, diabetes, or heart, kidney, or lung disease. Your treatment plan may involve lifestyle changes alone. Or your treatment plan may combine lifestyle changes with medicine.

Lifestyle Changes

Lifestyle changes alone are usually tried first for people with:

- Blood pressure in the pre-hypertension range
- No other risk factors for heart disease
- No evidence of damage to other organs

Lifestyle changes mean that you must:

- Achieve or maintain a healthy weight.
- Get regular exercise.
- Avoid too much sodium. (**Do not** add table salt to your foods or eat salty foods. Ask your doctor about the DASH diet.)
- Eat a low-fat diet. (Follow guidelines of the American Heart Association.)
- Get enough fiber in your diet. (Eat 5 servings of fruits and vegetables every day.)
- Limit your use of alcohol.
- Stop smoking.
- Learn to check your blood pressure at home.
- Reduce stress in your life.

Blood Pressure Medicines

Medicine combined with lifestyle changes is often tried first for people with:

- Blood pressure in the hypertension range
- Other risk factors for heart disease
- Evidence of damage to other organs

When blood pressure is in the hypertension range, lifestyle changes plus a single, low-dose medicine usually are tried first. If this first attempt does not lower your blood pressure, then higher doses of the medicine may be tried. Or several medicines combined may be tried.

Types of Medicines

It often takes time to find the medicine that best controls your blood pressure with the fewest side effects. It may take some weeks for your body to adjust to a certain medicine and for mild, annoying side effects to fade.

Diuretics

Diuretics (dye-uh-RET-iks) work in the kidneys to rid the body of excess water and salt by increasing the flow of urine. They are often called “water pills.” These drugs help to lower blood pressure. Examples are:

Generic Name	Brand Name
Furosemide	**Lasix**
Hydrochloraothiazide	**HydroDIURIL**
Melazone	**Zaroxolyn**
Bumetanide	**Bumex**

Beta blockers

Beta (BAY-tuh) blockers help to slow the heartbeat. They work by reducing the nerve impulses to the heart and blood vessels. Then the heart does not have to work so hard. As a result, blood pressure goes down. Examples are:

Generic Name	Brand Name
Atenolol	**Tenormin**
Metoprolol	**Lopressor**
Propranolol	**Inderal**

ACE inhibitors

“ACE” stands for angiotensin (an-jee-oh-TEN-sin) converting enzyme. ACE inhibitors prevent a certain hormone from forming. This hormone is called angiotensin II. It can cause the blood vessels to narrow. ACE inhibitors relax the blood vessels, and then blood pressure goes down. Examples are:

Generic Name	Brand Name
Captopril	**Capoten**
Enalapril	**Vasotec**
Lisinopril	**Prinivil**

Angiotensin II receptor blockers (antagonists)

Angiotensin II receptor blockers prevent the effect of angiotensin II on the blood vessels. As a result, the blood vessels become wider, and blood pressure goes down. Another name for these medicines is angiotensin II antagonists. Examples are:

Generic Name	Brand Name
Losartan	**Cozaar**
Valsartan	**Diovan**

Calcium channel blockers

Calcium channel blockers (CCBs) prevent calcium from entering the heart muscle and the blood vessels. This makes the blood vessels relax, and blood pressure goes down. Examples are:

Generic Name	Brand Name
Amlodipine	**Norvasc**
Diltiazem	**Cardizem**
Nifedipine	**Adalat**

Alpha blockers

Alpha (AL-fuh) blockers reduce nerve impulses to the blood vessels. Blood can then pass through more easily, and blood pressure goes down. Examples are:

Generic Name	Brand Name
Doxazosin	**Cardura**
Prazosin	**Minipress**
Terazosin	**Hytrin**

Alpha-beta blockers

Alpha-beta blockers work like alpha blockers, reducing nerve impulses to the blood vessels so that blood passes through more easily. They also work like beta blockers, slowing the heart beat. As a result, less blood is pumped through the blood vessels, and the blood pressure goes down. Examples are:

Generic Name	Name Brand
Carvedilol	**Coreg**
labetalol	**Normodyne**

Nervous system inhibitors

Nervous system inhibitors control nerve impulses to relax the blood vessels. This allows the blood vessels to become wider, and blood pressure goes down. Examples are:

Generic Name	Brand Name
Clonidine	**Catapres**
Methyldopa	**Aldomet**

Vasodilators

Vasodilators (vay-zoh-DYElay-terz) open blood vessels directly by relaxing the muscle in the vessel walls. This causes blood pressure to go down. Examples are:

Generic Name	Brand Name
Hydralazine	**Apresoline**
Minoxidil	**Loniten**

Always review with your doctor any other medicines you take. This includes over-the-counter medicines, such as aspirin, NSAIDs (non-steroidal anti-inflammatory drugs), and herbal medicines. Some medicines may make your blood pressure medicine less effective.

Tips for high blood pressure

1. Get regular blood pressure checks. Write down the numbers, and know them.
2. Know what your weight should be. Keep it at that level or below.
3. **Do not** use too much salt in cooking or at meals.
4. Eat a low-fat diet. Follow American Heart Association guidelines.
5. **Do not** smoke cigarettes or use tobacco products.
6. Take your medicine exactly as prescribed. **Do not** run out of pills, even for one day.
7. Make and keep your doctor appointments.
8. Exercise regularly.
9. Make sure your family gets regular blood pressure checks.
10. Reduce stress in your life, and develop ways to cope with stress.