

Blood Pressure

Why be concerned?

Whether your blood pressure is normal or high – everyone should be aware of his or her blood pressure reading. But, why? Thinking about the force it takes for blood to flow through the vessels of our bodies doesn't seem like something we need to be conscious of on a day-to-day basis. And, high blood pressure alone typically has no symptoms – so why is it even something to think about?

In this issue of *HealthHints*, we will look at the body's needs for appropriate blood flow and how the pressure of your blood flow can impact your vessels and organs – with potential critical results and life quality changes, which may involve heart failure, stroke, kidney failure, blindness, and/or mental impairment. Keeping your blood pressure under control is of the utmost importance for your quality of life, and we want you to know why.



An Important Diagnosis

The pressure in your “garden hose”

Blood pressure is the force your blood exerts on the artery walls as it travels through the body, like the pressure of a garden hose.^{1,2} Because your blood carries oxygen and nutrients that are needed by the cells of the body to survive, the condition of the blood vessels (arteries) that carry fresh blood from the heart to the body is very important.³ “Each time your heart beats, it pumps out blood into the arteries. Your blood pressure is highest when your heart beats, pumping your blood. This is called *systolic pressure*. When your heart is at rest, between beats, your blood pressure falls. This is the *diastolic pressure*.”⁴

Since your blood pressure can be higher on some occasions than others, your doctor will take several readings over time to establish a diagnosis. This reading is simply done with the use of a stethoscope and a blood pressure cuff placed around your upper arm. You will feel pressure on your arm, but not pain. When the cuff is inflated, it compresses a large artery in your arm, momentarily stopping the flow of blood so that the health care provider can listen to the flow of blood when it is released.⁵ Nowadays, this can also be done with a machine, but only a doctor can diagnose

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high blood pressure.² **Note:** If you feel stressed, anxious, or nervous during your doctor's appointments (a normal reaction), your blood pressure can be temporarily elevated, and you may have what is known as “white coat hypertension.” If you feel your numbers could be high for this reason, talk with someone at your doctor's office about this issue. Your doctor may ask you to take blood pressure readings at home and will explain how.

Your blood pressure reading is given with the first (top) number being the *systolic pressure* and the second (bottom) number being the *diastolic pressure*. For example, if your blood pressure reading is given as 127/85 or “127 over 85,” the number 127 is your *systolic pressure*, and the number 85 is your *diastolic pressure*. The numbers show your blood pressure in units of millimeters of mercury (mm Hg), which is how high the pressure inside your arteries would be to raise a column of mercury.⁶

"A normal blood pressure is 120/80 or lower. High blood pressure [also called hypertension] is 140/90 or higher. If your blood pressure is between 120/80 and 140/90, you have something called *prehypertension*,"⁷ which represents an elevated blood pressure. Health risks increase even with slightly elevated blood pressure.⁸ **Note:** If you have diabetes or chronic kidney disease, a blood pressure reading of 130/80 or higher is considered high blood pressure.⁹

No symptoms – No Problem?

Why blood pressure matters

"Your blood pressure goes up and down during the day, depending on what you are doing. Brief rises in blood pressure are normal, but the higher your blood pressure stays, the more at risk you are."¹⁰ The following are some things that you should be aware of that may increase your risk of developing high blood pressure:

- **Heredity:** High blood pressure tends to run in families.
- **Race:** African Americans have high blood pressure more often and more severely than other races.
- **Age:** The tendency to develop high blood pressure increases as you age.
- **Obesity:** People who are overweight have a greater chance of developing high blood pressure.
- **Lack of exercise:** An inactive lifestyle may contribute to being overweight, which is a risk factor for high blood pressure.
- **Excessive alcohol use:** Drinking excessive amounts of alcohol can increase blood pressure.
- **Too much dietary salt:** Heavy use of salt can increase blood pressure.

- **Oral contraceptives:** Women who take the pill have an increased chance of developing high blood pressure, especially if they also smoke.
- **Gender:** High blood pressure is more common in men than in women.
- **Other Diseases:** Having chronic kidney disease and/or diabetes increases your chance of developing high blood pressure.¹¹

Discuss these risks with your doctor. To help understand your risks, see the American Heart Association's [High Blood Pressure Health Risk Calculator](#).



"Your heart, brain, and kidneys can handle increased pressure for a long time. That's why you can live for years without any symptoms or ill effects. But that doesn't mean it's not hurting you."³ When high blood pressure occurs, your heart must pump harder, and the arteries are having to carry blood that's moving under great pressure. The heart may become strained, and the blood vessels may become damaged.³ If this process continues over time, not only may your heart and arteries not work as well, but the organs that are supplied oxygen and nutrient-rich blood by them may also be affected...increasing your risk for congestive heart failure, heart attack, kidney failure, stroke, mental impairment, and disability.

"High blood pressure is a major risk factor for stroke, heart attack, heart failure, and kidney failure."³ Even advanced high blood pressure may not cause symptoms.⁸ **The only way to**

detect elevated or high blood pressure is to keep track of your blood pressure readings.⁸

What Happens

Blood vessel damage

High blood pressure damages blood vessels. When this happens, complications may arise. High blood pressure can damage blood vessels in the following ways:

A vessel wall may thicken. "When blood presses against a vessel wall with too much force, muscles in the wall lose their stretch. This causes the wall to thicken, which narrows the vessel passage and reduces blood flow."¹² "Narrowed blood vessels [also] leave a smaller opening for blood to flow through. Having narrowed blood vessels is like turning on a garden hose and holding your thumb over the opening. The smaller opening makes the water shoot out with more pressure."¹³

Clots may form along the vessel wall. "When blood pressure is too high, it can damage blood vessel walls. Fat and cholesterol (plaque) collect in the damaged spots. Blood cells stick to the plaque, forming a mass called a clot. A clot can become stuck and block blood flow in the vessel."¹²

A wall may weaken and break. "Sometimes blood flows with enough force to weaken a vessel wall. If the vessel is small or damaged, the wall can break. When this happens, blood leaks into nearby tissue and kills cells. Other cells may die because blood cannot reach them."¹²

So, what happens then? High blood pressure can be a "silent killer" or a stealer of life quality. "[When blood pressure stays high over time](#), it can damage the body,"¹⁴ potentially affecting the arteries, heart, brain, kidneys, eyes, legs, spleen, intestines, and mind.

Prevent It – Treat It Live life to the fullest

By taking steps to prevent high blood pressure or by detecting it early and treating it effectively, you can dramatically reduce your risk for the complications of high blood pressure.¹⁵

Prevention

There are 2 types of high blood pressure – primary and secondary. “The vast majority of high blood pressure diagnoses fall into the category of *primary hypertension*, which is also called *essential hypertension*. This classification means that your doctor or health care team is not able to locate a single cause that explains the elevated blood pressure. Another medical term used to describe illness without obvious underlying cause is *idiopathic*, and you may hear your doctor use this term. High blood pressure is a complicated disease, with complex and often interrelated genetic and environmental factors; it is usually not possible to say for sure which elements combined to produce it. A modest number of high blood pressure diagnoses are classified as ‘secondary hypertension.’ This classification differs from a diagnosis of primary hypertension because in this case, a clearly identifiable cause of the high blood pressure is determined. A wide variety of underlying problems can cause high blood pressure. Some important conditions include:

- kidney problems,
- pregnancy,
- medication side effects, and
- some types of tumors or cancer.”¹⁶

Secondary high blood pressure can often be resolved by treating the underlying condition, while there is not yet a cure for primary high blood pressure. Ninety to

95 percent of cases of high blood pressure are primary – the cause is unknown.¹⁷ In fact, about 1 in 3 U.S. adults has high blood pressure, but because there are no symptoms, about 1/3 of these people don’t know they have it.¹⁸ High blood pressure, however, is easily detected and usually controllable by following a treatment plan that includes:

- lifestyle changes,
- prescribed medications (for some), and
- ongoing medical care.

Treatment: Lifestyle Changes

“The first course of action usually involves lifestyle changes, especially for people with prehypertension.”⁶

- “Start eating a low-fat and low-salt [diet](#).”⁶ “Eating too much fat and salt can raise blood pressure. Read labels. Select low-fat, low-salt foods. Eat more fresh fruits and vegetables. Choose lean meats, such as fish and chicken. Or eat pasta, rice, and beans.”¹² Your doctor may recommend the [Dietary Approaches to Stop Hypertension \(DASH\) eating plan](#), which focuses on fruits, vegetables, whole grains, and other foods that are heart healthy and lower in sodium (salt). In addition to consumption of fruits, vegetables, and whole grains, the DASH diet advises people to consume low-fat and fat-free milk foods and lean meat, poultry, and fish. The DASH plan is rich in nutrients, protein, and fiber.¹⁹
- “Begin a regular [exercise](#) program.”⁶ “Like any other



muscle, the heart needs exercise to stay fit. Get up and get active. Walk or bike instead of driving. Use stairs instead of elevators. Swim! Just be sure to check with your doctor before starting any exercise program.”¹²

- “Lose weight, if you need to.”⁶ A healthy diet and exercise plan can help. “If you’re overweight or obese, aim to reduce your weight by 7–10 percent during your first year of treatment. This amount of weight loss can lower your risk for health problems related to high blood pressure. After the first year, you may have to continue to lose weight so you can lower your body mass index (BMI) to less than 25. BMI measures your weight in relation to your height and gives an estimate of your total body fat. A BMI between 25 and 29 is considered overweight. A BMI of 30 or more is considered obese. A BMI of less than 25 is the goal for keeping blood pressure under control.”¹⁹ You can measure your BMI using the NHLBI’s [online calculator](#), or your health care provider can help.
- “Learn to manage stress.”⁶ Ongoing stress can increase your blood pressure. Make time to relax and enjoy life. Find what helps you relax. Try visiting with family and friends, and keeping up with hobbies. Try to meditate, focus on something calm or peaceful, or listen to music. Find time to laugh.^{12, 19}
- “If you smoke, quit.”⁶ “Smoking raises blood pressure and damages blood vessels. Do your best to quit. Talk with your doctor about using nicotine patches or gum. Or look in your local phone book for a stop-smoking program.”¹²
- “Drink alcohol in moderation, if at all.”⁶ “Too much alcohol will

raise your blood pressure.”¹⁹
“Remember that moderate intake is an average of one or two drinks per day for men and one drink per day for women.”⁶

Treatment: Medication

If lifestyle changes aren't enough to control your blood pressure (usually within 3–6 months⁶), your doctor may prescribe medications.¹² There are different types of medications, and you may need to try more than one or find a combination of medications that work for you.

- “[Diuretics](#) help rid your body of water and sodium.”⁶
- “[ACE inhibitors](#) block the enzyme that raises your blood pressure.”⁶
- “Other types of medicines—[beta blockers](#), [calcium channel blockers](#), and other [vasodilators](#) work in different ways, but their overall effect is to help relax and widen your blood vessels and reduce the pressure inside the vessel.”⁶ For more information, see *Medicines* in the National Heart, Lung, and Blood Institute’s [How Is High Blood Pressure Treated?](#) article.

Be sure to follow directions for taking these medications to gain control over your high blood pressure:

- Take all blood pressure medicines that your doctor prescribes.²⁰
- Be sure you know the names and doses of your medicines and how to take them. If you have questions



about your medicines, talk to your doctor or pharmacist.²⁰

- Make sure you refill your medicines before they run out. Take your medicines exactly as your doctor directs—don't skip days or cut pills in half.²⁰
- Take your medication at the same time each day.¹²
- Find out if you should take your medicine with meals.¹²
- Do not stop taking your medication, unless your doctor tells you to do so. Stopping too quickly can cause your blood pressure to go dangerously high.¹²

If you experience side effects, such as faintness when getting up from sitting or lying down, dizziness, or nausea, call your doctor right away so he or she can adjust your dosages or find a medication that works better for you.¹² You shouldn't decide on your own to stop taking your medicines.²⁰

Treatment: Ongoing Medical Care

Finally, seek ongoing medical care. The National Heart, Lung, and Blood Institute makes the following recommendations:

1. “Go for medical checkups or tests as your doctor advises. Your doctor may need to change or add medicines to your treatment plan over time. Regular checkups allow your doctor to change your treatment right away if your blood pressure goes up again.”²⁰
2. “Keeping track of your blood pressure is vital. Have your blood pressure checked on the schedule your doctor advises. You may want to learn how to check your blood pressure

at home. Your doctor can help you with this. Each time you check your own blood pressure, you should write down your numbers and the date.”²⁰

3. During checkups, ask your doctor or health care team any [questions](#) you have about your lifestyle or medicine treatments.²⁰

For more detailed information on lowering your blood pressure, please see the National Heart, Lung, and Blood Institute's comprehensive booklet, [Your Guide to Lowering Blood Pressure](#), and follow up with your doctor.

Of all people with high blood pressure, about 71.8 percent are aware of it; 61.4 percent are under treatment; 35.1 percent have it under control; and 64.9 percent do not have it under control...but about 28 percent don't know they have it.¹⁷ Have your blood pressure checked at least once every 2 years if you have a normal blood pressure reading. If you have a prehypertension or high blood pressure reading, talk with your doctor about how often your blood pressure should be checked.⁵

Take steps to prevent high blood pressure or keep it under control. Take lifestyle steps to maintain a healthy weight, keep active, and eat wisely for good heart health.²¹ Follow your doctor's treatment plan for high blood pressure control including medications and ongoing medical care checks.²² In this way, you can prevent the long-term problems associated with high blood pressure.⁹

To view the references used in this newsletter, go to:
<http://fcs.tamu.edu/health/healthhints/2008/dec/ref.php>.

This document is meant for educational purposes only and is not intended to replace the advice of your doctor or other health care provider.

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When Blood Pressure Stays High over Time

“When blood pressure stays high over time, it can damage the body,”¹ resulting in serious complications. A *normal* blood pressure reading is 120/80 mm Hg. If you have *prehypertension* (a blood pressure reading between 120/80 and 140/90) or *high blood pressure* (a reading of 140/90 or greater), you are at greater risk for long-term problems and serious complications, including:

- [heart failure](#),¹
- [heart attack](#),¹
- [aneurysms](#),¹
- [stroke](#),¹
- [kidney failure](#),¹
- [impaired vision](#),¹
- [blindness](#),¹ and
- [mild cognitive impairment](#).^{2,3}

“Fortunately, in most cases, high blood pressure is easy to diagnose and is usually controllable with lifestyle modifications (such as diet and exercise) and medication.”⁴

To prevent or control blood pressure...

- Have a doctor check your blood pressure at least every 2 years if you have normal blood pressure – more often if you have a prehypertension or high blood pressure reading.⁵
- Make lifestyle changes including reducing overweight; [selecting a low-fat, low-salt diet](#) (e.g., [DASH diet](#)); beginning a [regular exercise program](#); learning to manage stress; stopping smoking and tobacco use; and keeping alcohol intake in moderation.⁶

“Fortunately, in most cases, high blood pressure is easy to diagnose and is usually controllable with lifestyle modifications (such as diet and exercise) and medication.”⁴

If lifestyle factors alone do not control your blood pressure, your doctor will likely prescribe medications. Be sure to take these medications exactly as directed. If you have any negative side effects, contact your doctor right away so he/she can adjust your dosage or change medications. Do not stop taking your medication unless your doctor tells you to do so. Stopping too quickly can cause your blood pressure to go dangerously high.⁷

Finally, seek ongoing medical care:

- Go for medical checkups or tests as your doctor advises.
- [Keep track of your blood pressure](#). Have your blood pressure checked on the schedule your doctor advises.
- During checkups, ask your doctor or health care team any [questions](#) you have about your lifestyle or medicine treatments.⁸

In these ways, you can prevent the long-term problems associated with high blood pressure.

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