

# High Blood Pressure



written by Harvard Medical School



 **PRIMED**  
Patient Education Center

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High blood pressure, or hypertension, doesn't get the respect it deserves. It's as important as cholesterol, but most people don't know they have hypertension until they've had a stroke or heart attack. Treatment prevents problems, but most patients are not meeting their blood pressure goals.

New research has changed the way doctors think about hypertension. It's time you learned about your blood pressure, too.

For more information about high blood pressure from Harvard Health Publications, go to [www.patientedu.org](http://www.patientedu.org).

## What is Blood Pressure?

**I**t's the force that propels your blood through your arteries. Since blood pressure can swing up and down, any one reading is just a snapshot of your usual pressure. When it comes to predicting complications, your average pressure is more important than your peaks and valleys—but in most cases, one reading is all you'll get. That's good enough, if it's done right.



## Measuring Blood Pressure

Your doctor will measure two pressures with each blood pressure check. The higher number is your systolic blood pressure, the pressure in your arteries while your heart is actually pumping blood. But after each beat, your heart relaxes and fills with blood to prime the pump for the next beat. Your diastolic blood pressure is the pressure in your arteries between heartbeats. If your systolic blood pressure is 120 and your diastolic is 80, your doctor will tell you your reading is “120 over 80” and will write it as 120/80.

To get an accurate reading, avoid caffeine, nicotine, and exercise before your pressure is checked. Since stress can also boost blood pressure, you should be relaxed. That’s easier said than done, especially in a medical setting. Your doctor should always repeat your reading if it’s high, often by leaving the cuff on your arm while you rest for several minutes before a second check. And if your pressure is still high, your doctor may arrange to have a nurse or technician measure it at home or work. You can also learn to check yourself with

an automated digital arm cuff; it’s a good way to tell stress from true hypertension, and it can also help track treatment.

## What’s Your Pressure?

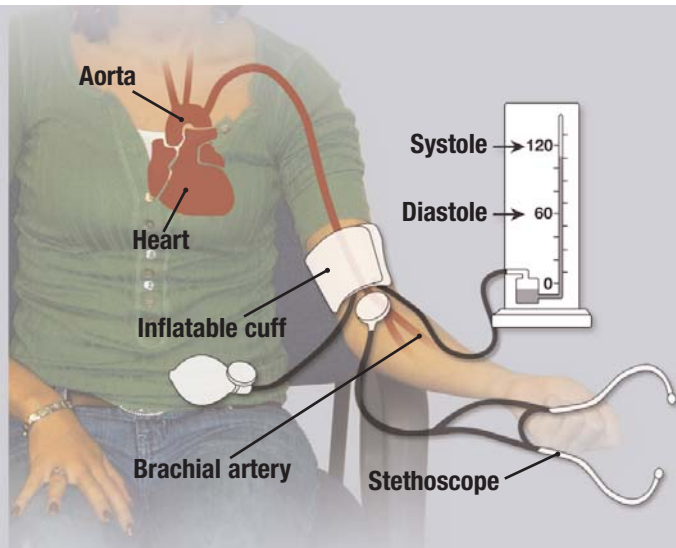
The only way to know is to have your pressure checked. Nosebleeds, mental tension, headaches, and facial flushing don’t indicate hypertension, and many people who look and feel perfectly well have high pressures.

You should have your blood pressure taken with every annual check-up. If it’s borderline or high, you may need it checked more often, and anti-hypertensive therapy always calls for close monitoring. It’s also good to ask for a blood pressure check whenever you go to a doctor, even if the problem is a sore throat or rash. Don’t pass a health fair without rolling up your sleeve and putting out your arm.

*...ask for a blood pressure check whenever you go to a doctor...*

## Measuring Blood Pressure

To measure your blood pressure, a health care professional will wrap a cuff around your arm and inflate it until the cuff temporarily blocks blood flow in your artery. Next, air is slowly released from the cuff while a stethoscope is used to listen to your artery. When blood begins to flow again, your pulse becomes audible—the number on the dial is your systolic blood pressure. As more air is released, the sounds become muffled and faint—that’s your diastolic blood pressure.



## What's Normal?

There is no one “normal” blood pressure; the higher your pressure, the higher your risk. For many years, doctors overlooked systolic readings, but they now know both numbers count. And the risk of heart attacks and strokes begins to rise with systolic pressures above 115 and diastolic pressures above 75, readings that were long considered “low normal.”



## *There is no one “normal” blood pressure...*

Based on new research, a major report called JNC 7 revised our blood pressure standards and established the new diagnosis of prehypertension, which increases the risk of strokes and heart attacks. Table 1 shows the new standards for blood pressure.

If your systolic and diastolic pressures place you in different categories, use the number that puts you in the higher classification; for example, if your reading is 114/84, you have prehypertension. If your two arms give different readings, use the higher one.

Classification	Systolic BP		Diastolic BP
Normal	Below 120	and	Below 80
Prehypertension	120–139	or	80–89
Stage 1 hypertension	140–159	or	90–99
Stage 2 hypertension	160+	or	100+

## The Burden of Hypertension

About 65 million Americans have hypertension, and another 45 million have prehypertension. That means more than half of all American adults have unhealthy blood pressures.

The American Heart Association calls hypertension “the silent killer.” High blood pressure means the heart is working too hard, so it puts extra stress on the arteries with every beat. Hypertension won’t make you look or feel ill until your circulation is damaged. It may take years, but it can cause strokes, heart attacks, congestive heart failure, kidney failure, visual loss, memory loss, and more.

About 47,000 Americans die from hypertension each year. It clearly deserves more research, good treatment, and lots of respect.

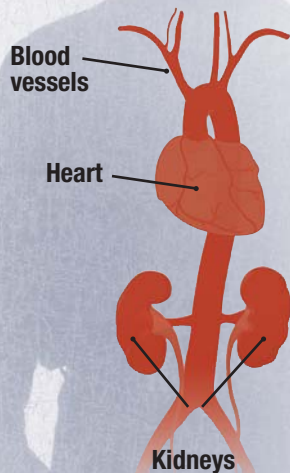


Brain

Eyes

### Danger Zones

Hypertension can have far-reaching effects. High blood pressure not only harms your arteries and blood vessels, making them stiffer and narrower, but it can also damage your heart, brain, eyes, and kidneys. That’s why the heart, brain, eyes, and kidneys are known as the “target organs” of hypertension.



Blood vessels

Heart

Kidneys

## Lowering Blood Pressure: Goals and Results

In general, a 10-point lowering of your systolic pressure or a 5-point drop in your diastolic pressure will reduce your risk of stroke by 30% to 40% and your risk of heart attack by 15% to 25%. Other conditions add to the risks of high blood pressure and call for special treatment goals (see Table 2).

Patient	Goal
Average patient	140/90 or lower
Diabetes, chronic kidney disease, heart disease	130/80 or lower

## Lowering Blood Pressure: Lifestyle Therapy

It’s the foundation of every blood pressure program—and it should be the choice for healthy people as well. Here are the basics:

**Diet.** The DASH program is best. It cuts dietary sodium to 2,300 mg a day or less. And new guidelines set a target of 1,500 mg a day or less for people with high blood pressure and for everyone who is middle-aged or older. The less salt, the better. DASH also calls for a low intake of animal fat and processed foods, but for lots of fruits, vegetables, whole grains, and low- or nonfat dairy products.



**Exercise.** Regular exercise is important for your blood pressure and your overall health. You don't have to spend long hours in a gym; in fact, as little as 30 minutes of moderate exercise, such as brisk walking, will help a lot, as long as you do it nearly every day.

## *If you choose to drink, limit yourself...*

**Moderate Alcohol Use.** Small amounts of alcohol won't raise your blood pressure, but heavier drinking will. If you choose to drink, limit yourself to 1 to 2 drinks per day, counting 5 ounces of wine, 12 ounces of beer, or 1½ ounces of spirits as one drink.



**Weight Control.** It's one of the best ways to reduce blood pressure, but it's also one of the hardest. Still, you can win at the losing game with a low-calorie diet and regular exercise.



**Stress Control.** Mental tension and hypertension are not the same, and plenty of laid-back folks have high blood pressure. But if you're under stress, winding down will protect your health.

## **Lowering Blood Pressure: Medication**

Therapy must always fit the individual. The goal is to control blood pressure and protect the circulation with the fewest side effects. Although many classes of medication can lower blood pressure, some are better at preventing complications. The JNC 7 report recommends five classes of drugs, which are discussed on pages 12 through 14. Patients with special needs, such as diabetes, heart disease, and kidney disease, require special consideration.

It often takes two or more drugs to do the job. Patients who need to lower their pressures by 20/10 or more will often need several medications. Many combination drugs are available; they make double therapy more convenient, but they're usually more expensive than individual pills.

Your doctor should monitor you carefully, checking for side effects as well as blood pressure control. Since most blood pressure medications take time to work, doctors will generally adjust therapy about once a month, then spread out your visits when you're at goal. You can help by monitoring your pressure at home, and you should always report side effects as they occur. Patients with urgent medical problems need more intensive therapy.

Here's a rundown of the major drugs recommended by JNC 7.

**Thiazide diuretics.** Although the thiazides lack glamour, they are unsurpassed in their ability to reduce the risk of heart attack, stroke, and premature death in people with high blood pressure. Low doses are as effective as high doses in most people.

Thiazides act by flushing sodium into the urine. Frequent urination, dehydration, and low potassium levels are among the side effects. Less common problems include erectile dysfunction, elevated blood sugar levels, gout, and sensitivity to the sun.

Because of their effectiveness, safety, low cost, and convenience, many experts recommend low-dose thiazides for initial treatment in the average patient. They are particularly useful in patients with congestive heart failure and previous strokes, but may be less useful in patients with kidney disease or gout.

**Angiotensin-converting enzyme inhibitors (ACEIs).** ACEIs act by preventing the body from producing a protein that narrows blood vessels and



retains salt. ACEIs rival thiazides in their ability to prevent complications. ACEIs are particularly helpful for patients with diabetes, congestive heart failure, recent heart attacks or major cardiac risk factors, previous strokes, and various forms of kidney disease. Coughing is the most frequent side effect. Other problems may include high potassium levels, abnormal kidney function, dizziness, and impaired taste and smell.

**Angiotensin receptor blockers (ARBs).** ARBs are similar to ACEIs, but they don't produce coughing. Many experts recommend an ARB when a cough or allergic reaction prevents the use of an ACEI.

**Calcium-channel blockers (CCBs).** CCBs widen blood vessels; some also slow the heart rate. CCBs may be particularly helpful in patients with angina, but they are less desirable in those with recent heart attacks and congestive heart failure. Potential side effects include dizziness, fluid retention, constipation, flushing, headache, and slow heart rates.

*Many experts recommend low-dose thiazides for initial treatment in the average patient.*

**Beta-blockers.** Long rated as first-line antihypertensives, recent studies have raised doubts about these old standbys. Still, beta-blockers can be very useful as add-on medications, and they have advantages for some patients with recent heart attack, angina, and (with special care) congestive heart failure.

By blocking some actions of adrenaline, beta-blockers widen blood vessels, relax the heart muscle, and slow the heart rate. Potential side effects include an excessive slowing of the heart, wheezing, fatigue, cold extremities, and sleep disturbances. Depression and sexual dysfunction are less common than once believed.

*Adopt the healthful lifestyle  
that will keep your blood  
pressure as low as possible.*



## Respecting Blood Pressure

Don't turn your back on hypertension. Have your pressure checked regularly and keep a record of the results. Adopt the healthful lifestyle that will keep your blood pressure as low as possible. And if that's not enough to bring you to your goal, work with your doctor to build a medication program that will succeed. You'll have to take your medication faithfully, stay alert for side effects, and report to your doctor on schedule. It takes time and patience, but the reward—good health—is huge.

Finally, remember that while controlling your blood pressure is essential, it's not sufficient to ensure good health. Rather, it should be part of an overall program to prevent premature death and disability. To be well, eat right, exercise properly, shun tobacco, drink responsibly, keep your weight down, reduce stress, be sure your cholesterol and blood sugar levels are where they should be, and, of course, control your blood pressure.





To learn more about high blood pressure, visit the **Pri-Med Patient Education Center Health-e-Library** at [www.patientedu.org](http://www.patientedu.org).

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