



## Staying on Track

Managing your blood pressure is a lifetime commitment. Work with your healthcare provider to get the care you need. Keep in mind that even small changes can result in improvements in your health over time. The tips below can help you stay on track with your treatment.

- **Set realistic goals.** Don't try to tackle everything at once. Start with changes that are easiest for you. Then aim for steady improvements.
- **Make changes fit your lifestyle.** Look for ways to make healthy changes part of your routine. Try a salad at lunch. Walk after dinner instead of watching TV or using the computer.
- **Get support.** Ask family or friends to join you in making healthy changes. Get together to shop for foods or prepare meals. They can also remind you when to take pills or help check your blood pressure.
- **Reward yourself for sticking with it.** When you reach a goal, give yourself a healthy reward. See a movie. Visit a museum. You've earned it!

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# MANAGING HIGH BLOOD PRESSURE



**Lifestyle Changes and Medications  
to Improve Your Health**

# Why High Blood Pressure Matters

Being told you have high blood pressure (**hypertension**) is a warning. You may feel fine now. But having high blood pressure puts you at risk of serious health problems. These can include heart attack, heart failure, stroke, and kidney disease. Fortunately, you can take steps to manage high blood pressure and protect your health. This booklet will help show you how.

## What Is High Blood Pressure?

**Blood pressure** is the force of moving blood against artery walls. With high blood pressure, the force is too strong. This force can damage the heart and arteries and lead to health problems throughout the body. By managing high blood pressure, you can help prevent these problems.



## Key Points About High Blood Pressure

- High blood pressure is often called a “silent killer.” That’s because most of the time it doesn’t cause symptoms. In fact, many people don’t know they have it until other problems develop.
- High blood pressure is very common. Older adults are more likely to have the problem. But it can affect people of all ages and backgrounds.

▶▶ Certain things called **risk factors** can make high blood pressure more likely. These can include unhealthy habits, such as smoking. See page 8 to learn more about risk factors.

# Monitoring Your Blood Pressure

Your healthcare provider may ask you to monitor your blood pressure at home. This helps you know how well you’re staying in control. For best results, use a digital blood pressure monitor that fits snugly around your arm. These are sold at most drugstores.

## Check Your Blood Pressure Often

Checking your blood pressure is easy to do and takes just a few minutes. Use these tips:

- Follow all the instructions that come with your monitor. Ask your healthcare provider to check the monitor to make sure it’s accurate.
- Ask your healthcare provider how often to check your blood pressure. You may need to test a few times a day. This helps you know your normal range.

## Track Your Progress

Write down your numbers each time you check your blood pressure. Then bring them to appointments with your healthcare provider. There are also online tools and cellphone applications that can be used to track blood pressure. Talk with your healthcare provider or do an Internet search to learn more. It’s normal for numbers to vary over time. But call your healthcare provider right away if a reading suddenly gets much higher or lower.



▶▶ Sit and relax for 5 minutes before taking your blood pressure. Rest your arm on a firm, flat surface.

# Making Lifestyle Changes

**Taking medications and healthy eating are important parts of managing high blood pressure. But they won't work nearly as well unless you also make some other lifestyle changes. Below are the best places to start.**

## Stop Smoking

Smoking increases blood pressure and damages blood vessels. For help stopping:

- Ask your healthcare provider for advice on stop-smoking programs. Also ask about products that can help you quit.
- Join a support group. Ask for help from family and friends.

## Lose Excess Weight

Maintaining a healthy weight will help lower your blood pressure. To lose weight:

- Work with your healthcare provider to set weight-loss goals and start an exercise program.
- Eat smaller portions. Fill up on fruits, vegetables, whole grains, lean proteins, and low-fat dairy products.

## Limit Alcohol

Drinking too much alcohol can raise blood pressure. Men should have no more than 2 drinks per day. Women should have no more than 1. A drink is equal to a beer, a glass of wine, or a shot of liquor.

## Control Stress

Stress makes your heart work harder and beat faster. To help control stress:

- Get enough sleep.
- Try a stress-reduction class, deep breathing, or meditation.

## Be More Active

Exercise helps your heart and blood vessels work better. Try to be active for at least 40 minutes, 3 to 4 days a week. Also:

- Choose activities you enjoy. This makes you more likely to stick with your exercise.
- Make the most of opportunities to be active. Use the stairs instead of the elevator. Park farther from your destination and walk.



►► An outing with friends can be a simple and fun way to get daily exercise.

## What You Can Do

High blood pressure has no cure. Once you have it, it is something you manage for life. But you *can* manage it. Your healthcare provider will work with you to develop a treatment plan to keep it under control. This plan will likely include lifestyle changes and medications. To get the most from your treatment:

- Learn all you can about high blood pressure, your risk factors, and treatment options.
- See your provider for visits as directed.
- Ask any questions you have and participate in making decisions about your treatment.
- Follow your treatment plan. Commit to making changes and forming healthy habits.

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# Understanding Blood Pressure

The **circulatory system** is made up of the heart and blood vessels that carry blood throughout the body. Your heart is the pump for this system. With each heartbeat (contraction), the heart sends blood out through blood vessels called **arteries**. Blood pressure is the force of moving blood as it pushes against the walls of the arteries.

## Pressure in a Connected System

Your blood vessels are a network of smoothly lined tubes. The arteries carry oxygen-rich blood away from the heart. The blood then returns to the heart through veins. To maintain the constant flow of blood, the heart and blood vessels are all connected in a continuous loop. This means that changes in any part of the system affect blood pressure throughout the body. Below are the three main factors that can raise or lower blood pressure.

### Force of Contraction

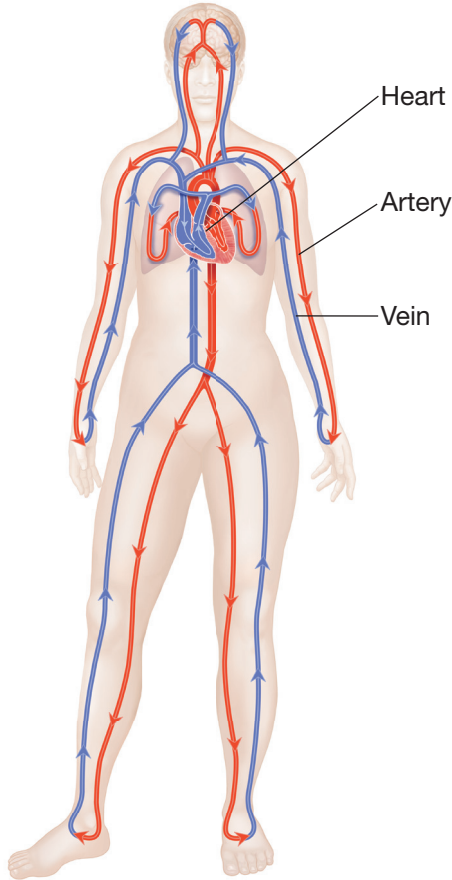
This is the force the heart uses to pump blood. When the heart pumps blood more forcefully, the pressure in the circulatory system increases.

### Tone

This refers to the ability of the smallest arteries (called **arterioles**) to get wider or narrower depending on the body's needs. If certain factors make the arterioles stay narrow, blood pressure increases. This is because it takes more force to pump blood through narrower arteries.

### Volume

This is the amount of blood moving through the circulatory system. The volume can change depending on how much fluid is in the blood. When the amount of fluid in the blood increases, so does the pressure inside the blood vessels.



To learn more about the DASH eating plan, visit [www.nhlbi.nih.gov/health/health-topics/topics/dash](http://www.nhlbi.nih.gov/health/health-topics/topics/dash).



## Using the DASH Eating Plan

The DASH (Dietary Approaches to Stop Hypertension) Eating Plan has been proven to help lower high blood pressure. The chart below can help get you started.\*

Food Group	Servings	Serving Sizes	Examples
<b>Vegetables</b>	4-5 per day	1 cup raw leafy vegetable ½ cup cooked vegetable ½ cup vegetable juice	Tomatoes, potatoes, carrots, green peas, squash, broccoli, turnip greens, collards, kale, spinach, artichokes, green beans, lima beans, sweet potatoes
<b>Fruits</b>	4-5 per day	½ cup fruit juice 1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit	Apricots, bananas, cantaloupe, dates, grapes, oranges, orange juice, mangoes, melons, peaches, pineapples, prunes, raisins, strawberries, tangerines
<b>Grains and grain products</b>	6-8 per day	1 slice bread 1 oz dry cereal ½ cup cooked rice, pasta, or cereal	Whole-wheat bread, English muffin, pita bread, bagel, cereals, grits, oatmeal, unsalted pretzels, unsalted popcorn
<b>Low-fat or fat-free dairy foods</b>	2-3 per day	1 cup milk 1 cup yogurt 1½ oz cheese	Fat-free (skim) or low-fat (1%) milk, fat-free or low-fat cheese, and fat-free or low-fat regular or frozen yogurt
<b>Meats, poultry, and fish</b>	6 or less per day	1 oz cooked meats, poultry, or fish 1 egg	Select only lean meats. Trim away visible fat. Broil, roast, or boil, instead of frying. Remove skin from poultry.
<b>Nuts, seeds, and dry beans</b>	4-5 per week	⅓ cup (or 1½ oz) nuts ½ oz seeds ½ cup cooked dry beans or peas	Unsalted almonds, filberts, mixed nuts, peanuts, walnuts, sunflower seeds, kidney beans, lentils
<b>Fats and oils</b>	2-3 per day	1 teaspoon soft margarine or vegetable oil 1 tablespoon low-fat mayonnaise 2 tablespoons light salad dressing	Vegetable oil (such as olive, corn, canola, or safflower), soft margarine, low-fat mayonnaise, light salad dressing
<b>Sweets</b>	No more than 5 per week	1 tablespoon sugar 1 tablespoon jelly or jam ½ cup sorbet or gelatin 1 cup lemonade	Maple syrup, sugar, jelly, jam, fruit-flavored gelatin, jelly beans, hard candy, fruit punch, sorbet, flavored ices

\*Serving amounts are based on a daily intake of 2,000 calories.

# Choosing a Healthy Diet

Eating foods that are low in salt and fat is always a good idea. But it's even more important when you have high blood pressure. Use the ideas on these pages to help you and your whole family eat better.

## Reducing Sodium (Salt)

Reducing the amount of sodium (mostly found in salt) you eat can help lower your blood pressure. Your healthcare provider may tell you not to eat more than 1,500 mg of sodium per day. This is about half a teaspoon of salt. The tips below can help.



### When Shopping

- Check food labels for the amount of sodium in each serving.
- Choose fresh foods as much as possible.
- Avoid salty foods such as canned soups and sauces, instant noodles, lunch meats, and salted snacks.

### When Cooking

- Don't add salt to food.
- Use fresh herbs or lemon juice as a seasoning instead of salt.
- Avoid prepackaged spices, such as gravy and taco mix, bouillon cubes, and noodle seasoning packets.

### When Eating Out

- Ask your waiter to make sure foods are prepared with no added salt, soy sauce, or MSG.
- Ask for broiled or baked foods. Don't eat breaded or deep-fried foods.
- Avoid most fast foods. They are often loaded with salt.

## Reducing "Bad" Fats

Reducing "bad" fats in your diet lowers cholesterol levels and also helps keep arteries healthy. The guide below can help:

- **Unsaturated fat—OKAY.** This type of fat is good for you in small amounts. It's found in foods such as fish, nuts, olive oil, and avocados.
- **Saturated fat—LIMIT.** This type of fat can raise cholesterol levels. It is found mainly in meat and dairy foods, such as hamburger, poultry skin, milk, cheese, and butter. Eat as little of this fat as you can.
- **Trans fat—AVOID.** This type of fat is the least healthy. It is found mainly in pastries, baked goods, and other prepackaged foods. Avoid trans fat as much as you can. Also avoid any food that has the word "hydrogenated" in its ingredients. This is a sign of trans fat.

# How Blood Pressure Is Measured

A blood pressure test measures the force of blood flow against the arteries. It can be done by a healthcare provider or by yourself at home. The test always gives two numbers: a **systolic** pressure "over" a **diastolic** pressure (for example, "120 over 80").

## Systolic Pressure

Systolic pressure is the first, or "top" number. It measures the pressure when the heart beats and blood flow is strongest. A healthy systolic pressure reading is below 120.

## Diastolic Pressure

Diastolic pressure is the second, or "bottom" number. It measures the pressure in the arteries when the heart relaxes between heartbeats. A healthy diastolic pressure reading is below 80.

Systolic measures pressure when the heart beats.

**Systolic**

119/79

**Diastolic**

Diastolic measures pressure when the heart relaxes.



## When Your Numbers Vary

It's normal for your blood pressure numbers to vary at certain times. They might be higher in the morning and lower at night. They can also change depending on your activity level or emotion. For some people, a doctor visit can make their numbers go up. So keep in mind that no single blood pressure reading is a perfect measure. The best way to learn your normal range is to check your pressure several times a week.

# When Blood Pressure Is Too High

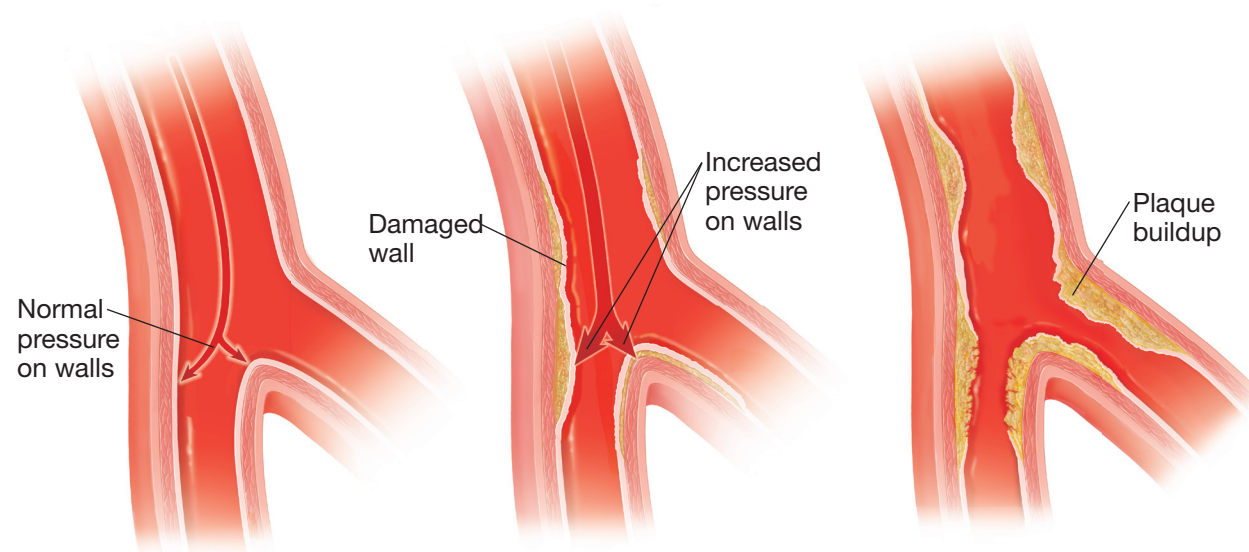
High blood pressure strains the heart. It can also damage arteries. Over time, damage to the arteries puts the whole body at risk. Blood pressure is too high when it stays above 140/90 most of the time. Blood pressure between 120/80 and 139/89 is called **prehypertension**. It's a warning sign that high blood pressure may develop in the future.

## The Heart Is Overworked

The heart is a muscle. When blood pressure is too high, the heart has to work harder to pump blood. Over time, this hard work makes the heart muscle thicken. If the heart muscle gets too thick, it may not be able to pump blood well. This can lead to a condition called heart failure.

## The Arteries May Be Damaged

In a healthy artery, the inner lining is smooth. The force of high blood pressure can damage the lining. This makes it easier for **plaque** (a fatty substance) to build up in the artery walls. Over time, plaque hardens and narrows arteries. Plaque also reduces blood flow and can allow blood clots to form.



Normal pressure on walls

Damaged wall

Increased pressure on walls

Plaque buildup

**Blood flows freely** through a healthy artery. The inner lining is smooth, the outer layers are flexible.

**Artery walls are roughened** by high blood pressure. This makes it easier for plaque to build up.

**Plaque collects** in the walls of the artery. This hardens and narrows the artery.

## Tips for Taking Medication

- **Take ALL your medications.** Many blood pressure medications work best along with other drugs. Don't take one kind of medication and skip another.
- **Have a routine.** Take your medication at the same time each day. This might be with breakfast, when you brush your teeth, or before you walk the dog. If you miss a pill, don't take two the next time.
- **Use reminders.** Keep medication where you can see it. Put notes on the refrigerator or other places you'll see them. Using a pillbox can also help.
- **Plan ahead.** Refill prescriptions before they run out. Be sure to have enough medication on hand if you travel.
- **Never change your dosage or stop taking medication on your own.** This can be dangerous. Always talk to your healthcare provider before making any changes in your medication plan.
- **Tell your healthcare provider about other medications you take.** This includes herbal remedies, vitamins, and over-the-counter medications. These can react with your medication. Some cold and flu medications can also raise blood pressure.



►► A pillbox can help you remember to take the correct amount of medication each day.

## Coping with Side Effects

You may have some side effects when you first start taking blood pressure medications. This does *not* mean you should stop taking your prescription. Instead, talk to your healthcare provider. Be sure to mention side effects such as dizziness, headaches, or blurred vision. Also mention if any medication causes urinary or sexual problems. Your provider may change the amount of medication you take. Or, you may be given a different type of medication.



# Taking Medications

Medications will likely be included in your treatment plan. For your health, taking your medications on time and as directed is essential. If you don't understand something about your medications or have concerns, talk to your healthcare provider or pharmacist. Don't let confusion, cost, or fear keep you from better health.

## Types of Medication

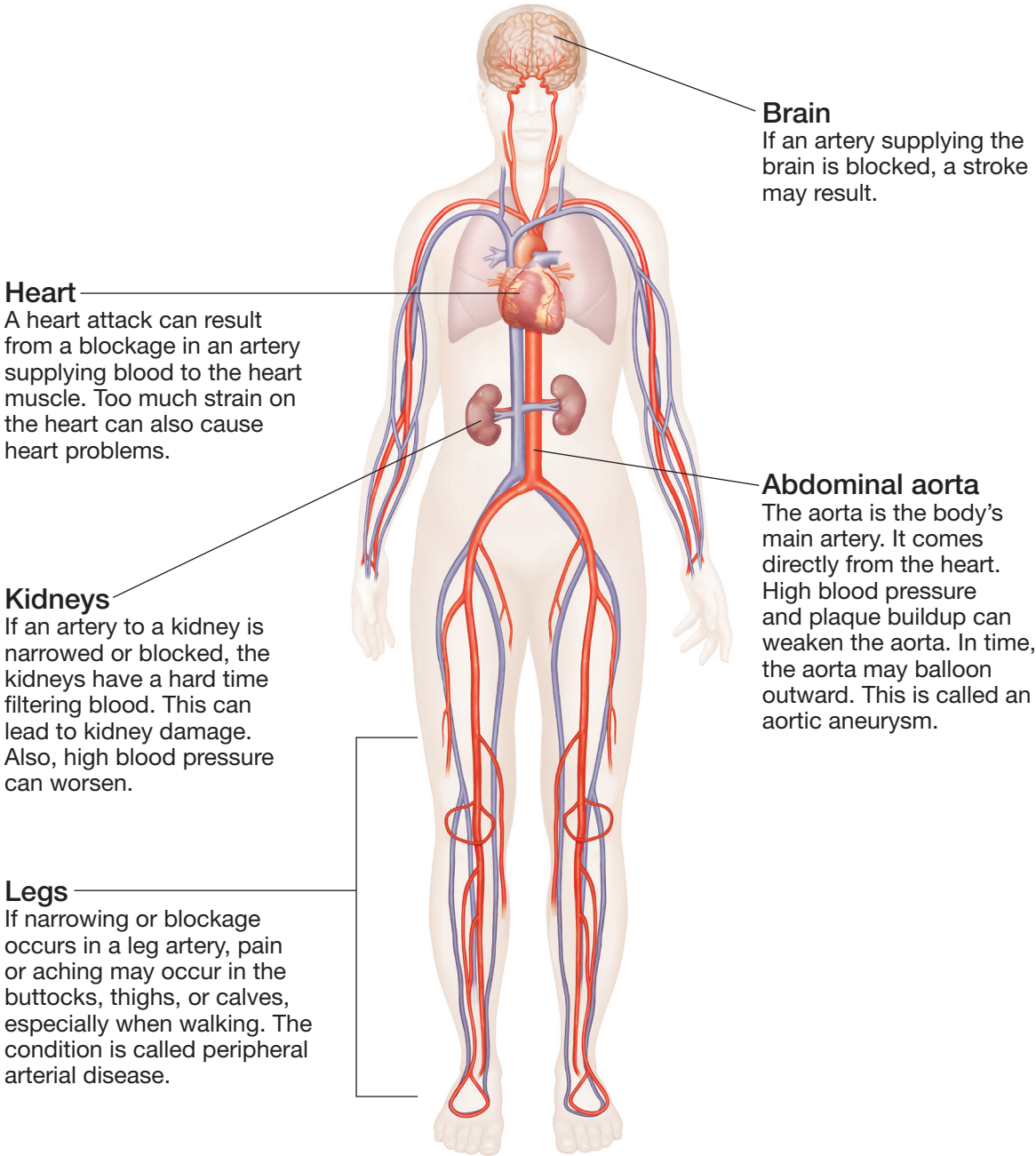
No single medication works for everyone to control blood pressure. So your provider will likely prescribe more than one kind of medication. Some types relax the heart or arteries. Others remove excess fluid from the blood.



Type	Medication Names (fill in yours)	How They Work
Diuretics		Relax (dilate) blood vessels and help the body get rid of excess fluid.
Beta-Blockers		Block the effects of adrenaline, so that the force and rate of the heart's pumping action are reduced.
Calcium Channel Blockers		Some types of calcium channel blockers relax your arterioles. Other types ease the force and rate of the heart's pumping action.
Angiotensin-Converting Enzyme (ACE) Inhibitors		Relax arteries by reducing the body's production of angiotensin. This is a chemical that makes the arteries narrow.
Angiotensin Receptor Blockers (ARBs)		Have a similar effect as ACE inhibitors. But instead of stopping angiotensin from being made, they reduce angiotensin's effects.
Vasodilators		Relax blood vessels, which makes it easier for blood to flow through the circulatory system.
Alpha-Blockers		Relax arterioles, which reduces pressure in the circulatory system.
Others (ask your provider to fill in)		

## The Whole Body Is At Risk

Any artery in your body can narrow with plaque. Also, blood clots and pieces of plaque sometimes come loose and travel through the bloodstream. They may become lodged and block blood flow in other parts of the body. The damage that results may be mild, severe, or fatal. Some of the most common and serious effects of artery damage are discussed below.



# Learning About Risk Factors

Certain health and lifestyle factors make high blood pressure more likely. Others increase the chance of problems like heart attack or stroke. The more of these factors you have, the greater your risk. This page will help you learn which risk factors you have. With this knowledge, you and your healthcare provider can make a plan to improve your health.

## What Are Your Risks?

Risk factors are different for each person. Check the boxes that apply to you. You're more likely to have high blood pressure if:

Your Background	Your Health History	Your Lifestyle
<div><input type="checkbox"/> Your parent, brother, or sister has high blood pressure.</div> <div><input type="checkbox"/> You're over age 60.</div> <div><input type="checkbox"/> You're African American.</div>	<div><input type="checkbox"/> You're overweight or obese.</div> <div><input type="checkbox"/> You have prehypertension (see page 6).</div>	<div><input type="checkbox"/> You smoke.</div> <div><input type="checkbox"/> You eat too much salt.</div> <div><input type="checkbox"/> You rarely exercise.</div> <div><input type="checkbox"/> You drink more than 1 alcoholic drink a day (women) or 2 alcoholic drinks a day (men).</div>

## Risks for Related Health Problems

Having high blood pressure raises your risk for artery problems that lead to heart attack and stroke. Some risk factors for high blood pressure—like smoking, lack of activity, family history, and poor diet—are also risk factors for heart attack and stroke. Other risk factors for heart attack and stroke include having unhealthy cholesterol levels or having diabetes. To protect your health, work with your healthcare provider to manage your risk factors.

## Understanding Metabolic Syndrome

A grouping of risk factors called **metabolic syndrome** puts you at especially high risk of heart disease, stroke, and diabetes. Talk with your healthcare provider if you have three or more of these:

- Excess weight, especially around the waist
  - High level of triglycerides
- Low level of HDL
  - High blood pressure
  - High fasting blood sugar level

## Forming Your Treatment Plan

Forming the right treatment plan takes teamwork between you and your healthcare provider. Your exact plan will depend on your risk factors and blood pressure numbers. It may include:

- Taking medications as prescribed.
- Eating healthier. It's especially important to reduce salt and fat.
- Making other lifestyle changes. This includes quitting smoking, being more active, losing excess weight, managing stress, and limiting alcohol.
- Monitoring your blood pressure at home.

## Setting Blood Pressure Goals

As part of your treatment plan, your healthcare provider will help you set goals for lowering your blood pressure. In general, the goal is to keep blood pressure below 140/90. However, your personal goal numbers may vary depending on your age and whether you have other health problems. Be sure to see your healthcare provider as often as directed. This allows your provider to monitor your health and track how well you are managing your blood pressure.



▶▶ You and your healthcare provider will work together to form a plan to manage your blood pressure. Don't hesitate to ask questions and get the answers you need.