What Is High Blood Pressure?

High blood pressure (HBP) is a serious condition that can lead to coronary heart disease, heart failure, stroke, kidney failure, and other health problems. “Blood pressure” is the force of blood pushing against the walls of the arteries as the heart pumps blood. If this pressure rises and stays high over time, it can damage the body in many ways.

Overview

About 1 in 3 adults in the United States has HBP. The condition itself usually has no signs or symptoms. You can have it for years without knowing it. During this time, though, HBP can damage your heart, blood vessels, kidneys, and other parts of your body.

Knowing your blood pressure numbers is important, even when you’re feeling fine. If your blood pressure is normal, you can work with your health care team to keep it that way. If your blood pressure is too high, treatment may help prevent damage to your body’s organs.

Blood Pressure Numbers

Blood pressure is measured as systolic (sis-TOL-ik) and diastolic (di-ah-STOL-ik) pressures. “Systolic” refers to blood pressure when the heart beats while pumping blood. “Diastolic” refers to blood pressure when the heart is at rest between beats.

You most often will see blood pressure numbers written with the systolic number above or before the diastolic number, such as 120/80 mmHg. (The mmHg is millimeters of mercury—the units used to measure blood pressure.)

The table below shows normal blood pressure numbers for adults. It also shows which numbers put you at greater risk for health problems.

<table>
<thead>
<tr>
<th>Categories for Blood Pressure Levels in Adults (measured in millimeters of mercury, or mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Prehypertension</td>
</tr>
<tr>
<td>High blood pressure</td>
</tr>
<tr>
<td>Stage 1</td>
</tr>
<tr>
<td>Stage 2</td>
</tr>
</tbody>
</table>

The ranges in the table apply to most adults (aged 18 and older) who don’t have short-term serious illnesses.

Blood pressure doesn’t stay the same all the time. It lowers as you sleep and rises when you wake up. Blood pressure also rises when you’re excited, nervous, or active. If your numbers stay above normal most of the time, you’re at risk for health problems. The risk grows as blood pressure numbers rise. “Prehypertension” means you may end up with HBP, unless you take steps to prevent it.

If you’re being treated for HBP and have repeat readings in the normal range, your blood pressure is under control. However, you still have the condition. You should see your doctor and follow your treatment plan to keep your blood pressure under control.

Your systolic and diastolic numbers may not be in the same blood pressure category. In this case, the more severe category is the one you’re in. For example, if your systolic number is 160 and your diastolic number is 80, you have stage 2 HBP. If your systolic number is 120 and your diastolic number is 95, you have stage 1 HBP.

If you have diabetes or chronic kidney disease, HBP is defined as 130/80 mmHg or higher. HBP numbers also differ for children and teens. (For more information, go to “How Is High Blood Pressure Diagnosed?”)

Outlook

Blood pressure tends to rise with age. Following a healthy lifestyle helps some people delay or prevent this rise in blood pressure.

People who have HBP can take steps to control it and reduce their risk for related health problems. Key steps include following a healthy lifestyle, having ongoing medical care, and following your treatment plan.
The image focuses on high blood pressure in women and explains how high blood pressure increases the risk of heart disease. An estimated 1 in 3 women has high blood pressure, and the condition is dangerous because it often causes no symptoms.

The image also contains a chart showing ranges of blood pressure numbers for normal blood pressure, prehypertension, stage 1 hypertension, and stage 2 hypertension (also discussed in the text chart earlier in this section). Finally, the image states that you can take action to prevent high blood pressure by reducing sodium (salt) intake. Most adults should have less than one teaspoon, or 1,500 milligrams, of sodium a day. Being active and maintaining a healthy weight also can help you prevent high blood pressure.


Other Names for High Blood Pressure

High blood pressure (HBP) also is called hypertension (hi-per-TEN-shun).

When HBP has no known cause, it might be called essential hypertension, primary hypertension, or idiopathic (id-ee-o-PATH-ick) hypertension.

When another condition causes HBP, it’s sometimes called secondary hypertension.

Some people only have high systolic blood pressure. This condition is called isolated systolic hypertension (ISH). Many older adults have this condition. ISH can cause as much harm as HBP in which both numbers are too high.

What Causes High Blood Pressure?

Blood pressure tends to rise with age, unless you take steps to prevent or control it.

Some medical problems—such as chronic kidney disease, thyroid disease, and sleep apnea—may cause blood pressure to rise. Some medicines also may raise your blood pressure. Examples include asthma medicines (for example, corticosteroids) and cold-relief products.
Other medicines also can cause high blood pressure (HBP). If you have HBP, let your doctor know about all of the medicines you take, including over-the-counter products.

In some women, birth control pills, pregnancy, or hormone therapy (HT) may cause blood pressure to rise. Women taking birth control pills usually have a small rise in both systolic and diastolic blood pressures. If you already have HBP and want to use birth control pills, make sure your doctor knows about your HBP. Talk with him or her about how often you should have your blood pressure checked and how to control it while taking the pill.

Taking HT to reduce the symptoms of menopause can cause a small rise in systolic blood pressure. If you already have HBP and want to start using HT, talk with your doctor about the risks and benefits. If you decide to take hormones, find out how to control your blood pressure and how often you should have it checked.

Children younger than 10 years old who have HBP often have another condition that's causing it (such as kidney disease). Treating the underlying condition may resolve the HBP.

The older a child is when HBP is diagnosed, the more likely he or she is to have essential hypertension. This means that doctors don’t know what’s causing the HBP.

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Who Is at Risk for High Blood Pressure?

High blood pressure (HBP) is a common condition. In the United States, about 1 in 3 adults has HBP.

Certain traits, conditions, and habits can raise your risk for HBP. The major risk factors for HBP are described below.

**Older Age**

Blood pressure tends to rise with age. About 65 percent of Americans aged 60 or older have HBP.

Isolated systolic hypertension (ISH) is the most common form of HBP in older adults. ISH occurs when only systolic blood pressure (the top number) is high. About 2 out of 3 people over age 60 with HBP have ISH.

HBP doesn't have to be a routine part of aging. You can take steps to keep your blood pressure at a normal level. (For more information, go to "How Is High Blood Pressure Treated?")

**Race/Ethnicity**

HBP can affect anyone. However, it’s more common in African American adults than in Caucasian or Hispanic American adults. In relation to these groups, African Americans:

- Tend to get HBP earlier in life
- Often have more severe HBP
- Are more likely to be aware that they have HBP and to get treatment
- Are less likely than Caucasians to achieve target control levels with HBP treatment
- Have higher rates than Caucasians of early death from HBP-related problems, such as coronary heart disease, stroke, and kidney failure

HBP risks vary among different groups of Hispanic American adults. For instance, Puerto Rican American adults have higher rates of HBP-related death than all other Hispanic groups and Caucasians. However, Cuban Americans have lower rates of HBP-related death than Caucasians.

**Overweight or Obesity**

You're more likely to develop prehypertension or HBP if you're overweight or obese. The terms "overweight" and "obesity" refer to body weight that's greater than what is considered healthy for a certain height.

**Gender**

Men and women are equally likely to develop HBP during their lifetimes. However, before age 45, men are more likely to have HBP than women. After age 65, the condition is more likely to affect women than men.

Also, men younger than 55 are more likely to have uncontrolled HBP than women. However, after age 65, women are more likely to have uncontrolled HBP.

**Unhealthy Lifestyle Habits**

Many unhealthy lifestyle habits can raise your risk for HBP, including:

- Eating too much sodium (salt)
- Drinking too much alcohol
- Not getting enough potassium in your diet
- Lack of physical activity
- Smoking

**Other Risk Factors**

A family history of HBP raises your risk for the condition. Long-lasting stress also can put you at risk for HBP.

You're also more likely to develop HBP if you have prehypertension. Prehypertension means that your blood pressure is in the 120–139/80–89 mmHg range.

**Risk Factors for Children and Teens**

Prehypertension and HBP are becoming more common in children and teens. This is due in part to a rise in overweight and obesity among children and teens.

African American and Mexican American youth are more likely to have HBP and prehypertension than Caucasian youth. Also, boys are at higher risk for HBP than girls.

Like adults, children and teens need to have routine blood pressure checks, especially if they're overweight.
What Are the Signs and Symptoms of High Blood Pressure?

High blood pressure (HBP) itself usually has no signs or symptoms. Rarely, headaches may occur.

You can have HBP for years without knowing it. During this time, the condition can damage your heart, blood vessels, kidneys, and other parts of your body.

Some people only learn that they have HBP after the damage has caused problems, such as coronary heart disease, stroke, or kidney failure.

Knowing your blood pressure numbers is important, even when you're feeling fine. If your blood pressure is normal, you can work with your health care team to keep it that way. If your blood pressure is too high, you can take steps to lower it. Lowering your blood pressure will help reduce your risk for related health problems.

Complications of High Blood Pressure

When blood pressure stays high over time, it can damage the body. HBP can cause:

- The heart to get larger or weaker, which may lead to heart failure. Heart failure is a condition in which the heart can't pump enough blood to meet the body's needs.
- Aneurysms (AN-u-risms) to form in blood vessels. An aneurysm is an abnormal bulge in the wall of an artery. Common spots for aneurysms are the main artery that carries blood from the heart to the body; the arteries in the brain, legs, and intestines; and the artery leading to the spleen.
- Blood vessels in the kidneys to narrow. This may cause kidney failure.
- Arteries throughout the body to narrow in some places, which limits blood flow (especially to the heart, brain, kidneys, and legs). This can cause a heart attack, stroke, kidney failure, or amputation of part of the leg.
- Blood vessels in the eyes to burst or bleed. This may lead to vision changes or blindness.

How Is High Blood Pressure Diagnosed?

High blood pressure (HBP) is diagnosed using a blood pressure test. This test will be done several times to make sure the results are correct. If your numbers are high, your doctor may have you return for repeat tests to check your blood pressure over time.

If your blood pressure is 140/90 mmHg or higher over time, your doctor will likely diagnose you with HBP. If you have diabetes or chronic kidney disease, a blood pressure of 130/80 mmHg or higher is considered HBP.

The ranges for HBP in children are different, as discussed below.

How Is Blood Pressure Tested?

A blood pressure test is easy and painless. This test is done at a doctor's office or clinic.

To prepare for the test:

- Don’t drink coffee or smoke cigarettes for 30 minutes prior to the test. These actions may cause a short-term rise in your blood pressure.
- Go to the bathroom before the test. Having a full bladder can change your blood pressure reading.
- Sit for 5 minutes before the test. Movement can cause short-term rises in blood pressure.

To measure your blood pressure, your doctor or nurse will use some type of a gauge, a stethoscope (or electronic sensor), and a blood pressure cuff.

Most often, you will sit or lie down with the cuff around your arm as your doctor or nurse checks your blood pressure. If he or she doesn’t tell you what your blood pressure numbers are, you should ask.

Diagnosing High Blood Pressure in Children and Teens

Doctors measure blood pressure in children and teens the same way they do in adults. Your child should have routine blood pressure checks starting at 3 years of age.

Blood pressure normally rises with age and body size. Newborn babies often have very low blood pressure numbers, while older teens have numbers similar to adults.

The ranges for normal blood pressure and HBP generally are lower for youth than for adults. To find out whether a child has HBP, a doctor will compare the child’s blood pressure numbers to average numbers for his or her age, gender, and height.

For more information, go to the National Heart, Lung, and Blood Institute’s “A Pocket Guide to Blood Pressure Measurement in Children.”

What Does a Diagnosis of High Blood Pressure Mean?

If you’re diagnosed with HBP, your doctor will prescribe treatment. Your blood pressure will be tested again to see how the treatment affects it.

Once your blood pressure is under control, you’ll still need treatment. “Under control” means that your blood pressure numbers are in the normal range. Your doctor will likely recommend routine blood pressure tests. He or she can tell you how often you should be tested.

The sooner you find out about HBP and treat it, the better. Early treatment may help you avoid problems such as heart attack, stroke, and kidney failure.

How Is High Blood Pressure Treated?

High blood pressure (HBP) is treated with lifestyle changes and medicines.
Most people who have HBP will need lifelong treatment. Sticking to your treatment plan is important. It can help prevent or delay problems related to HBP and help you live and stay active longer.

For more tips on controlling your blood pressure, go to the National Heart, Lung, and Blood Institute's (NHLBI's) "Your Guide to Lowering Blood Pressure."

Goals of Treatment

The treatment goal for most adults is to get and keep blood pressure below 140/90 mmHg. For adults who have diabetes or chronic kidney disease, the goal is to get and keep blood pressure below 130/80 mmHg.

Lifestyle Changes

Healthy lifestyle habits can help you control HBP. These habits include:

- Following a healthy diet
- Being physically active
- Maintaining a healthy weight
- Quitting smoking
- Managing your stress and learning to cope with stress

If you combine healthy lifestyle habits, you can achieve even better results than taking single steps.

You may find it hard to make lifestyle changes. Start by making one healthy lifestyle change and then adopt others.

Some people can control their blood pressure with lifestyle changes alone, but many people can't. Keep in mind that the main goal is blood pressure control.

If your doctor prescribes medicines as a part of your treatment plan, keep up your healthy lifestyle habits. They will help you better control your blood pressure.

Following a Healthy Diet

Your doctor may recommend the DASH (Dietary Approaches to Stop Hypertension) eating plan if you have HBP. The DASH eating plan focuses on fruits, vegetables, whole grains, and other foods that are heart healthy and low in fat, cholesterol, and sodium (salt).

DASH also focuses on fat-free or low-fat dairy products, fish, poultry, and nuts. The DASH eating plan is reduced in red meats (including lean red meats), sweets, added sugars, and sugar-containing beverages. It’s rich in nutrients, protein, and fiber.

To help control HBP, you should limit the amount of salt that you eat. This means choosing low-sodium and no added salt foods and seasonings at the table and while cooking. The Nutrition Facts label on food packaging shows the amount of sodium in an item. You should eat no more than about 1 teaspoon of salt a day.

Also, try to limit alcoholic drinks. Too much alcohol will raise your blood pressure. Men should have no more than two alcoholic drinks a day. Women should have no more than one alcoholic drink a day. One drink is a glass of wine, beer, or a small amount of hard liquor.

For more information, go to the NHLBI’s "Your Guide to Lowering Your Blood Pressure With DASH."

Being Physically Active

Routine physical activity can lower HBP and reduce your risk for other health problems. Talk with your doctor before you start a new exercise plan. Ask him or her how much and what kinds of physical activity are safe for you.

People gain health benefits from as little as 60 minutes of moderate-intensity aerobic activity per week. The more active you are, the more you will benefit.

For more information about physical activity, go to the U.S. Department of Health and Human Services’ "2008 Physical Activity Guidelines for Americans.”

Maintaining a Healthy Weight

Maintaining a healthy weight can help you control HBP and reduce your risk for other health problems.

If you're overweight or obese, aim to reduce your weight by 5 to 10 percent during your first year of treatment. This amount of weight loss can lower your risk for health problems related to HBP.

To lose weight, cut back your calorie intake and do more physical activity. Eat smaller portions and choose lower calorie foods. Don't feel that you have to finish the entrees served at restaurants. Many restaurant portions are oversized and have too many calories for the average person.

After your first year of treatment, you may have to continue to lose weight so you can control HBP and reduce your risk for other health problems related to HBP.

A BMI between 25 and 29.9 is considered overweight. A BMI of 30 or more is considered obese. A BMI of less than 25 is the goal for controlling blood pressure.

To figure out your BMI, or your doctor can help you.

For more information about losing weight and keeping it off, go to the Health Topics Overweight and Obesity article.

Quit Smoking

If you smoke or use tobacco, quit. Smoking can damage your blood vessels and raise your risk for HBP. Smoking also can worsen health problems related to HBP.

Talk with your doctor about programs and products that can help you quit smoking. Also, try to avoid secondhand smoke.

If you have trouble quitting smoking on your own, consider joining a support group. Many hospitals, workplaces, and community groups offer classes to help people quit smoking.

For more information about how to quit smoking, go to the Health Topics Smoking and Your Heart article and the NHLBI’s "Your Guide to a Healthy Heart."

Managing Stress

Learning how to manage stress, relax, and cope with problems can improve your emotional and physical health.

Physical activity helps some people cope with stress. Other people listen to music or focus on something calm or peaceful to reduce stress. Some people learn yoga, tai chi, or how to meditate.

Medicines

Today’s blood pressure medicines can safely help most people control their blood pressure. These medicines are easy to take. The side effects, if any, tend to be minor.
If you have side effects from your medicines, talk with your doctor. He or she might adjust the doses or prescribe other medicines. You shouldn't decide on your own to stop taking your medicines.

Blood pressure medicines work in different ways to lower blood pressure. Some remove extra fluid and salt from the body to lower blood pressure. Others slow down the heartbeat or relax and widen blood vessels. Often, two or more medicines work better than one.

**Diuretics**

Diuretics sometimes are called water pills. They help your kidneys flush excess water and salt from your body. This reduces the amount of fluid in your blood, and your blood pressure goes down.

Diuretics often are used with other HBP medicines and sometimes combined into one pill.

**Beta Blockers**

Beta blockers help your heart beat slower and with less force. As a result, your heart pumps less blood through your blood vessels. This causes your blood pressure to go down.

**ACE Inhibitors**

ACE inhibitors keep your body from making a hormone called angiotensin II. This hormone normally causes blood vessels to narrow. ACE inhibitors prevent this, so your blood pressure goes down.

**Angiotensin II Receptor Blockers**

Angiotensin II receptor blockers are newer blood pressure medicines that protect your blood vessels from the angiotensin II hormone. As a result, blood vessels relax and widen, and your blood pressure goes down.

**Calcium Channel Blockers**

Calcium channel blockers keep calcium from entering the muscle cells of your heart and blood vessels. This allows blood vessels to relax, and your blood pressure goes down.

**Alpha Blockers**

Alpha blockers reduce nerve impulses that tighten blood vessels. This allows blood to flow more freely, causing blood pressure to go down.

**Alpha-Beta Blockers**

Alpha-beta blockers reduce nerve impulses the same way alpha blockers do. However, they also slow the heartbeat like beta blockers. As a result, blood pressure goes down.

**Nervous System Inhibitors**

Nervous system inhibitors increase nerve impulses from the brain to relax and widen blood vessels. This causes blood pressure to go down.

**Vasodilators**

Vasodilators relax the muscles in blood vessel walls. This causes blood pressure to go down.

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**Treatment for Children and Teens**

If another condition is causing your child's HBP, treating it often resolves the HBP. When the cause of a child or teen's HBP isn't known, the first line of treatment is lifestyle changes (as it is for adults).

If lifestyle changes don't control blood pressure, children and teens also may need to take medicines. Most of the medicines listed above for adults have special doses for children.

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**How Can High Blood Pressure Be Prevented?**

**If You Have Normal Blood Pressure**

If you don't have high blood pressure (HBP), you can take steps to prevent it. Healthy lifestyle habits can help you maintain normal blood pressure.

- Follow a healthy diet. Limit the amount of sodium (salt) and alcohol that you consume. The National Heart, Lung, and Blood Institute’s [DASH (Dietary Approaches to Stop Hypertension) eating plan](https://www.nhlbi.nih.gov/health-topics/dash-dietary-approaches-to-stop-hypertension) promotes healthy eating.
- Be physically active. Routine physical activity can lower HBP and reduce your risk for other health problems.
- Maintain a healthy weight. Staying at a healthy weight can help you control HBP and reduce your risk for other health problems.
- Quit smoking. Smoking can damage your blood vessels and raise your risk for HBP. Smoking also can worsen health problems related to HBP.
- Learn to manage and cope with stress. Learning how to manage stress, relax, and cope with problems can improve your emotional and physical health.

Many people who adopt these healthy lifestyle habits are able to prevent or delay HBP. The more lifestyle changes you make, the more likely you are to lower your blood pressure and avoid related health problems.

For more information about healthy lifestyle habits, go to "How Is High Blood Pressure Treated?"

**If You Have High Blood Pressure**

If you have HBP, you can still take steps to prevent the long-term problems it can cause. Healthy lifestyle habits (listed above) and medicines can help you live a longer, more active life.

Follow the treatment plan your doctor prescribes to control your blood pressure. Treatment can help you prevent or delay coronary heart disease, stroke, kidney disease, and other health problems.
Children and Teens

A healthy lifestyle also can help prevent HBP in children and teens. Key steps include having a child:

- Follow a healthy diet that focuses on plenty of fruits, vegetables, and, for children older than 4 years old, low-fat dairy products. A healthy diet also is low in saturated and trans fats and salt.
- Be active for at least 1 to 2 hours per day. Limit screen time in front of the TV or computer to 2 hours per day at most.
- Maintain a healthy weight. If your child is overweight, ask his or her doctor about how your child can safely lose weight.

Make these healthy habits part of a family health plan to help your child adopt and maintain a healthy lifestyle.

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Living With High Blood Pressure

If you have high blood pressure (HBP), you'll need to treat and control it for life. This means making lifestyle changes, taking prescribed medicines, and getting ongoing medical care.

Treatment can help control blood pressure, but it will not cure HBP. If you stop treatment, your blood pressure and risk for related health problems will rise.

For a healthy future, follow your treatment plan closely. Work with your health care team for lifelong blood pressure control.

Lifestyle Changes

Making healthy lifestyle changes can help control HBP. A healthy lifestyle includes following a healthy diet, being physically active, maintaining a healthy weight, and not smoking. (For more information, go to "How Is High Blood Pressure Treated?")

Medicines

Take all blood pressure medicines that your doctor prescribes. Know the names and doses of your medicines and how to take them. If you have questions about your medicines, talk with your doctor or pharmacist.

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.

If you're having side effects from your medicines, talk with your doctor. He or she may need to adjust the doses or prescribe other medicines. You shouldn't decide on your own to stop taking your medicines.

Ongoing Care

If you have HBP, have medical checkups or tests as your doctor advises. Your doctor may need to change or add medicines to your treatment plan over time.

Routine checkups allow your doctor to change your treatment right away if your blood pressure goes up again.

Keeping track of your blood pressure is important. 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 learn how to do this. Each time you check your own blood pressure, you should write down your numbers and the date.

The National Heart, Lung, and Blood Institute's (NHLBI's) "My Blood Pressure Wallet Card" can help you track your blood pressure. You also can write down the names and doses of your medicines and keep track of your lifestyle changes with this handy card.

During checkups, you can ask your doctor or health care team any questions you have about your treatments. For possible questions you may want to ask your doctor, go to the NHLBI's Questions to Ask Your Doctor If You Have High Blood Pressure Web page.

High Blood Pressure and Pregnancy

Many pregnant women who have HBP have healthy babies. However, HBP can cause problems for both the mother and the fetus. HBP can harm the mother's kidneys and other organs. It also can cause the baby to be born early and with a low birth weight.

If you're thinking about having a baby and you have HBP, talk with your health care team. You can take steps to control your blood pressure before and while you're pregnant.

Some women get HBP for the first time while they're pregnant. In the most serious cases, the mother has a condition called preeclampsia (pre eh KLAMP se ah).

This condition can threaten the lives of both the mother and the unborn child. You'll need special care to reduce your risk. With such care, most women and babies have good outcomes.

Go to the NHLBI's Your Guide to Lowering High Blood Pressure Web site for more information about HBP and pregnancy.

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Clinical Trials

The National Heart, Lung, and Blood Institute (NHLBI) is strongly committed to supporting research aimed at preventing and treating heart, lung, and blood diseases and conditions and sleep disorders.

NHLBI-supported research has led to many advances in medical knowledge and care. However, many questions remain about various diseases and conditions, including high blood pressure (HBP).

The NHLBI continues to support research aimed at learning more about HBP. For example, NHLBI-supported research on HBP includes studies that explore:

- How HBP and its treatments affect brain function in children
- Behavioral approaches to HBP treatment in adults
- The relationship between stress, ethnicity, and blood pressure
- How much blood pressure needs to be lowered to reduce the risk of stroke, heart disease, and other health problems in adults who have HBP
- How certain medicines and therapies can help treat and control blood pressure
Much of this research depends on the willingness of volunteers to take part in clinical trials. Clinical trials test new ways to prevent, diagnose, or treat various diseases and conditions.

For example, new treatments for a disease or condition (such as medicines, medical devices, surgeries, or procedures) are tested in volunteers who have the illness. Testing shows whether a treatment is safe and effective in humans before it is made available for widespread use.

By taking part in a clinical trial, you can gain access to new treatments before they're widely available. You also will have the support of a team of health care providers, who will likely monitor your health closely. Even if you don't directly benefit from the results of a clinical trial, the information gathered can help others and add to scientific knowledge.

If you volunteer for a clinical trial, the research will be explained to you in detail. You'll learn about treatments and tests you may receive, and the benefits and risks they may pose. You'll also be given a chance to ask questions about the research. This process is called informed consent.

If you agree to take part in the trial, you'll be asked to sign an informed consent form. This form is not a contract. You have the right to withdraw from a study at any time, for any reason. Also, you have the right to learn about new risks or findings that emerge during the trial.

For more information about clinical trials related to HBP, talk with your doctor. You also can visit the following Web sites to learn more about clinical research and to search for clinical trials:

- [www.nhlbi.nih.gov/studies/index.htm](http://www.nhlbi.nih.gov/studies/index.htm)
- [https://www.researchmatch.org/](https://www.researchmatch.org/)

For more information about clinical trials for children, visit the NHLBI's [Children and Clinical Studies](http://www.nhlbi.nih.gov/redir/disclaimer.htm) Web page.

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### Links to Other Information About High Blood Pressure

NHLBI Resources

- "A Pocket Guide to Blood Pressure Measurement in Children"
- [DASH Eating Plan](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (Health Topics)
- "My Blood Pressure Wallet Card"
- [Physical Activity and Your Heart](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (Health Topics)
- [Smoking and Your Heart](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (Health Topics)
- "Your Guide to a Healthy Heart"
- [Your Guide to Lowering High Blood Pressure](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (NHLBI Web Site)
- "Your Guide to Lowering Blood Pressure"
- "Your Guide to Lowering Your Blood Pressure With DASH"

Non-NHLBI Resources

- [High Blood Pressure](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (MedlinePlus)
- [Essential Hypertension: Interactive Tutorial](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (MedlinePlus)

Clinical Trials

- [Children and Clinical Studies](http://www.nhlbi.nih.gov/redir/disclaimer.htm)
- [Clinical Trials](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (Health Topics)
- [Current Research](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (ClinicalTrials.gov)
- [NHLBI Clinical Trials](http://www.nhlbi.nih.gov/redir/disclaimer.htm)
- [NIH Clinical Research Trials and You](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (National Institutes of Health)
- [ResearchMatch](http://www.nhlbi.nih.gov/redir/disclaimer.htm) (funded by the National Institutes of Health)