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# High Blood Pressure and Your Kidneys



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# High Blood Pressure: The #2 Cause of Kidney Failure



**Y**our doctor told you that you have high blood pressure. You may have a lot of questions. This guide can help.

## **You will learn:**

- What high blood pressure is
- How high blood pressure can harm your kidneys
- What your blood pressure numbers mean
- Tips to stay healthy
- Where to learn more

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While reading this guide, you will see words in **bold**. These words and their meanings can be found in the glossary starting on page 18.

After reading this guide, you may still have questions. Write down any questions that you have on page 27 and take this guide with you to your next doctor visit.

## What is high blood pressure?

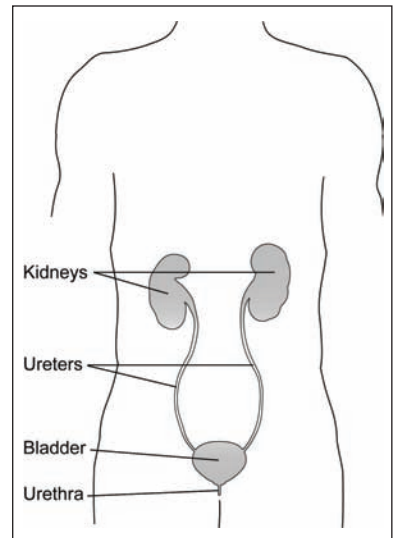
**Y**our heart pumps blood through tubes called arteries and veins. The pumped blood makes pressure inside your arteries. This is called **blood pressure**. When your blood pressure is checked, it tells how hard your heart is working to pump blood.

Blood pressure that is too high can harm your body. High blood pressure is also called hypertension. It means that your heart is working harder to pump your blood. High blood pressure can cause **kidney disease** and **kidney failure**. High blood pressure can also be caused by many things, including kidney disease.

## What do my kidneys do?

**Y**our kidneys clean waste and extra fluid from your blood. This makes up your urine (pee). They also do many other jobs that you need in order to live. Your kidneys help:

- Balance chemicals and fluid in your body
- Control your blood pressure
- Keep your bones healthy
- Make red blood cells



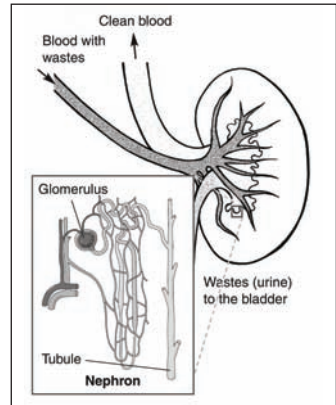
The Urinary Tract

# How can high blood pressure hurt my kidneys?

**H**igh blood pressure is the #2 leading cause of kidney failure. (Diabetes is the #1 leading cause of kidney failure.)

The filters in your kidneys are made up of tiny bunches of blood vessels (called **glomeruli**). High blood pressure can harm these tiny blood vessels. When this happens, it is called kidney disease.

Once the kidneys are harmed like this, they can't be fixed. If high blood pressure and kidney disease are not treated early, they can lead to kidney failure. Kidney failure means that the kidneys don't work well enough to clean your blood. There is no cure for kidney failure. If your kidneys fail, you will need **dialysis** or a **kidney transplant** to live.



The kidneys are full of tiny bunches of blood vessels called glomeruli.

But you can take steps today to help protect your kidneys. Damage caused by high blood pressure happens over time. Sometimes it takes many years. Control your blood pressure to help prevent kidney disease. If your kidneys are already damaged, control your blood pressure to help keep the damage from getting worse.

## Important!

You will not be able to feel if high blood pressure has harmed your kidneys. The only way to know is to be tested. Your doctor can do a few simple tests to check how well your kidneys are working. Keep reading to learn more!

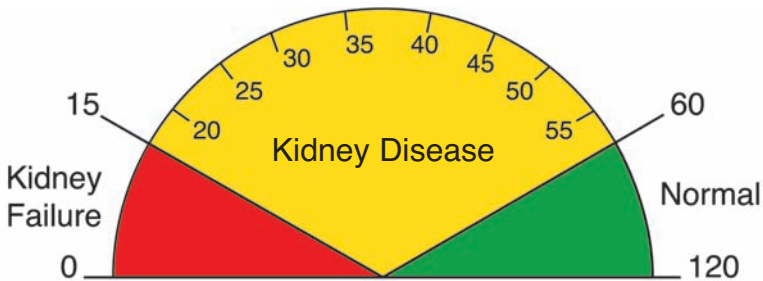
# How will I know if high blood pressure has harmed my kidneys?

Your doctor can check your kidneys by doing a simple blood test and a urine test.

**eGFR** - The **estimated Glomerular Filtration Rate (eGFR)** is a number based on your blood test for **creatinine**. It tells how well your kidneys are working.

Your doctor will test your blood for creatinine. Creatinine is a waste that comes from your muscles. Your doctor will use the result from your creatinine test, your age, your sex and your race to calculate your eGFR.

Use the scale below to see what your eGFR may mean:<sup>1</sup>



Use the chart on page 25 to track your eGFR result.

The eGFR is a good test, but it's not for everyone. For example, this test may not be accurate if you are younger than 18, pregnant, very overweight or very muscular. Talk to your doctor to find out if this test is right for you.

**Urine Test** - When your kidneys are damaged, they may let protein leak into your urine. This can be one of the earliest signs of kidney disease. To check for protein in your urine (called **proteinuria**), your doctor may suggest a urine test. There are two types of urine tests your doctor may use:

- A dipstick urine test tells your doctor if there is protein in your urine.
  - Your doctor may test your urine in the office or ask you to bring a sample from home.
  - If your first dipstick urine test shows protein in your urine, ask your doctor when you should be tested again. Also ask if a **Urine Albumin-to-Creatinine Ratio (UACR)** test is right for you.
- A UACR test tells your doctor how much protein is in your urine.
  - Your doctor will test your urine for the amounts of protein and a kind of waste called creatinine. Your doctor will compare these results to figure out your UACR.
  - A normal UACR is less than 30.<sup>1</sup> If your UACR is more than 30, ask your doctor when you should be tested again. Also ask your doctor if an eGFR test is right for you (see page 4).

Use the chart on page 25 to track your urine test results.

# How can I prevent or slow kidney disease caused by high blood pressure?

**T**o prevent or slow kidney disease, you should:

- Control your blood pressure
- Control your blood sugar if you have **diabetes**
- Control your **cholesterol**
- Avoid tobacco
- Limit alcohol
- Keep a healthy weight
- Be physically active

## ***Control Your Blood Pressure***

High blood pressure can damage your kidneys. Keeping your blood pressure in a healthy range can help protect your kidneys and prevent or slow kidney disease.

A heart-healthy diet, exercise and

medicines can help you keep a healthy blood pressure.

Since you will not be able to feel if your blood pressure is high, checking your blood pressure on a regular basis will help you know how you're doing.



## Checking Your Blood Pressure at Home

Your doctor may suggest that you check your blood pressure at home. The easiest way to do this is with a digital blood pressure monitor. You can get a monitor from your local drug store, hospital, clinic or online. Your doctor can help you find a monitor that is right for you. Many pharmacies also have in-store monitors that you can use for free.

Your blood pressure monitor will come with directions for how to check your blood pressure. Take your monitor to your next doctor visit. Your doctor can help make sure you are using the monitor correctly.

When you check your blood pressure, your result will be given as two numbers. Both numbers are important.

- The first, or top, number is your **systolic pressure**. This is when your heart is beating and your blood pressure is at its highest.
- The second, or bottom, number is your **diastolic pressure**. This is when your heart is between beats and your blood pressure is at its lowest.

Example:  $\frac{120 \text{ (Systolic)}}{80 \text{ (Diastolic)}}$

For most people, a normal blood pressure is less than 120/80 or “120 over 80.” If either number is high, your blood pressure is high.

Ask your doctor what your blood pressure should be.

	<b>Normal blood pressure<sup>2</sup></b>
Most people	Less than 120/80
People with diabetes	Less than 130/80
People with kidney disease	Less than 130/80

My blood pressure should be: \_\_\_\_\_

Ask your doctor how often you should check your blood pressure.

I should check my blood pressure: \_\_\_\_\_

\_\_\_\_\_

Keep track of your blood pressure numbers. Write down your result and when you took the test. Share these numbers with your doctor at your next visit.

Use the chart on the next page to get started.



## ***Eat a Heart Healthy Diet***

What you eat can affect your blood pressure. Pick foods low in salt (sodium) and fat to help keep your blood pressure in a healthy range. Use these tips to get started:

### **Limit Salt**

- Do not add salt to your food when cooking or eating. Try cooking with fresh herbs, lemon juice or other spices.
- Choose fresh or frozen vegetables instead of canned vegetables. If you do use canned vegetables, rinse them before eating or cooking with them to remove extra salt.
- Shop for items that say “reduced-sodium” or “low-sodium.”
- Avoid processed foods like frozen dinners and lunch meats.
- Limit fast food and salty snacks, like chips, pretzels and salted nuts.



## Important!

Be careful when using salt substitutes. These are often high in potassium. If you have kidney disease, check with your doctor or a **dietitian** before using a salt substitute.

## Limit Fat

- Choose lean meats or fish. Remove the skin and trim the fat off your meats before you cook them.
- Bake, grill or broil your foods instead of frying them.
- Shop for fat-free and low-fat dairy products, salad dressing and mayonnaise.
- Try olive oil or canola oil instead of vegetable oil.
- Choose egg whites or egg substitute rather than whole eggs.

A dietitian can help you learn other ways to limit salt and fat in your diet. A meeting with a dietitian may be covered by your health insurance. To find a dietitian in your area, contact the American Dietetic Association at **1.800.877.1600** or [www.eatright.org](http://www.eatright.org).

## ***Talk to Your Doctor about Blood Pressure Medicines***

If changes to your lifestyle are not enough to control your blood pressure, your doctor may prescribe a blood pressure medicine. There are many types of blood pressure medicines, and you may need to be on more than one medicine to control your blood pressure. Whichever medicine(s) you use, getting your blood pressure into a healthy range is most important.

**ACE Inhibitors** and **ARBs** are two types of blood pressure medicines that can help protect your kidneys. Ask your doctor if an ACE inhibitor or ARB is right for you. Your doctor might also prescribe a **diuretic** (also called a “water pill”). This is a type of medicine that helps your body get rid of extra fluid. Having too much fluid in your body can raise your blood pressure.

If your doctor prescribes medicines, take them as directed. To work right, blood pressure medicines need to be taken even when you feel fine. If you have side effects from a medicine, talk to your doctor. He or she may suggest a different medicine that does not have those side effects.

If you have trouble remembering to take your medicine, try to:

- Set an alarm to remind yourself.
- Use a pill box.
- Take your medicine at the same time every day as part of your normal routine, like when you brush your teeth or eat a meal.

## ***Control Diabetes***

Diabetes can also harm your kidneys. In fact, diabetes is the #1 cause of kidney failure. Remember, high blood pressure is the #2 cause. Having both diabetes and high blood pressure puts you more at risk for kidney disease and heart disease.

Diabetes has few symptoms. The only way to know if you have diabetes is to be tested. There are a few simple blood tests that can check for diabetes. Talk to your doctor about which test is best for you.

If you already have diabetes, work with your doctor to manage it. Ask your doctor about how to follow a diabetic diet and other tips to control your blood sugar level.

**Learn more!** A **diabetes educator** can help you learn more about how to control your blood sugar. Ask your doctor to refer you to a diabetes educator in your area. You can also get a listing of diabetes educators from the American Association of Diabetes Educators at **1.800.338.3633** or [www.diabeteseducator.org](http://www.diabeteseducator.org). To learn more about preventing or controlling diabetic kidney disease, please contact the American Kidney Fund's toll-free HelpLine at **1.866.300.2900** or visit [www.kidneyfund.org](http://www.kidneyfund.org).

## Control Your Cholesterol

Cholesterol is a waxy, fat-like substance in your blood. If you have too much cholesterol, it can build up in your arteries and put you at risk for high blood pressure, kidney disease, heart disease and stroke. If you already have kidney disease, high cholesterol can cause it to get worse faster.

For most people, normal cholesterol levels are:<sup>3</sup>

	Normal for most
Total Cholesterol	Less than 200
HDL (“good” cholesterol)	More than 40
LDL (“bad” cholesterol)	Less than 100

Use the chart on page 25 to track your cholesterol results.

Your **triglycerides**, a type of fat in your blood, are also important. Like with cholesterol, high triglycerides put you more at risk for kidney disease, heart disease and stroke. For most people, a healthy triglyceride level is less than 150.<sup>3</sup>

If your total cholesterol, LDL or triglycerides are high, or if your HDL is low, talk to your doctor. Your doctor may suggest exercise, diet changes or medicines to help you stay healthy.

## ***Avoid Tobacco***

Using tobacco (smoking or chewing) puts you more at risk for high blood pressure, kidney disease and many other health problems. If you already have kidney disease, using tobacco can make it get worse faster.

If you use tobacco, quitting can help lower your chances of getting kidney disease or help slow the disease down if you already have it.

## ***Limit Alcohol***

Drinking alcohol in large amounts can cause your blood pressure to rise. Limiting how much alcohol you drink can help you keep a healthy blood pressure. Have no more than two drinks per day if you're a man and no more than one drink per day if you're a woman.

## ***Keep a Healthy Weight***

Keeping a healthy weight can help you control your blood pressure and lower your risk for kidney disease. Being overweight puts you more at risk for high blood pressure. Talk to your doctor about how much you should weigh. If you are overweight, losing just a few pounds can make a big difference.

## ***Be Physically Active***

Exercise can help you keep a healthy blood pressure. To get the most benefit, exercise for at least 30 minutes, 5 days of the week. If that seems like too much, start out slow and work your way up. Look for fun activities that you enjoy.



Try walking with a friend, dancing, swimming or playing a sport. Adding just a little more activity to your routine can help. Exercise can also help relieve stress, another common cause of high blood pressure.

Be sure to talk to your doctor before starting any exercise program.

# How can I learn more?

There are many resources that can help you learn how to control your blood pressure and protect your kidneys:

## **American Kidney Fund**

Phone: 866.300.2900  
[www.kidneyfund.org](http://www.kidneyfund.org)

## **American Heart Association**

Phone: 800.242.8721  
[www.heart.org](http://www.heart.org)

## **National Heart Lung and Blood Institute**

Phone: 301.592.8573  
[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

## **National Institute of Diabetes and Digestive and Kidney Diseases**

Phone: 800.891.5390  
[www.niddk.nih.gov](http://www.niddk.nih.gov)



# Glossary

**ACE Inhibitor:** Angiotensin-Converting Enzyme Inhibitor. A medicine used to treat high blood pressure. ACE Inhibitors can also help prevent or slow kidney damage.

**ARB:** Angiotensin II Receptor Blocker/Inhibitor. A medicine used to treat high blood pressure. ARBs can also help prevent or slow kidney damage.

**Blood Pressure:** Your heart pumps blood through tubes called arteries and veins. The pumped blood makes pressure inside your arteries. This is called blood pressure. When your blood pressure is checked, it tells how hard your heart is working to pump your blood. For most people, a normal blood pressure is less than 120/80.

**Cholesterol:** A waxy, fat-like substance in your blood. Your body needs some cholesterol, but too much cholesterol can raise your risk for heart disease and kidney disease. A normal total cholesterol is less than 200.<sup>3</sup>

**Creatinine:** A type of waste in the blood that comes from using your muscles in everyday activities. Healthy kidneys clean creatinine from the blood. When your kidneys are not working, creatinine can build up in your blood.

**Diabetes:** A disease that keeps your body from making or using insulin correctly. Your body needs insulin to get energy from sugar in the foods you eat. If your body can't make or use insulin correctly, sugar can build up in your blood and cause problems.

**Diabetes Educator:** An important member of your healthcare team. Diabetes educators can teach you how to better control your diabetes.

**Dialysis:** A way of cleaning waste and extra fluid from the blood once the kidneys have failed. There are two types of dialysis: hemodialysis and peritoneal dialysis.

**Diastolic Pressure:** Your blood pressure between heart beats. This is when the pressure is lowest.

**Dietitian:** An important member of your healthcare team. A dietitian can help you manage your blood pressure through diet changes.

**Diuretic:** A type of medicine that helps your body get rid of extra fluid. Having too much fluid in your body can raise your blood pressure. Diuretics are sometimes called "water pills."

**Estimated Glomerular Filtration Rate (eGFR):** A number based on your blood test for creatinine. It tells how well your kidneys are working. An eGFR less than 60 for 3 months or more may be a sign of kidney disease.<sup>1</sup>

**Glomeruli:** The tiny blood vessels in your kidneys that filter your blood.

**HDL:** Also called high density lipoprotein or “good” cholesterol. HDL carries cholesterol to the liver where it can be removed from the blood. An HDL level more than 40 is good. An HDL level more than 60 is even better.<sup>3</sup>

**Kidney Disease:** Permanent damage to the kidneys. The most common causes are diabetes and high blood pressure. If left untreated, kidney disease can lead to kidney failure.

**Kidney Failure:** When the kidneys don’t work well enough to clean your blood. A person with kidney failure will need dialysis or a kidney transplant to live.

**Kidney Transplant:** When a healthy kidney from one person is placed in someone else whose kidneys have failed. A kidney transplant can come from a living donor or from someone who has just died.

**LDL:** Also called low density lipoprotein or “bad” cholesterol. A high LDL level puts you more at risk for kidney disease, heart disease and stroke. A normal LDL level is less than 100.<sup>3</sup>

**Proteinuria:** The medical name for protein in your urine. This may be an early sign of kidney disease.

**Systolic Pressure:** Your blood pressure when your heart beats. This is when the pressure is highest.

**Triglycerides:** A type of fat in the blood. Normal triglycerides are less than 150.<sup>3</sup> High triglycerides can raise your risk of heart disease and kidney disease.

**Urine Albumin-to-Creatinine Ratio (UACR):** A urine test that compares the amount of albumin (protein) to the amount of creatinine in your urine. A normal UACR is less than 30.<sup>1</sup>

## References

<sup>1</sup>National Kidney Disease Education Program. (2008, March). *Quick Reference on UACR and GFR, In Evaluating Patients with Diabetes for Kidney Disease*. Retrieved from [http://www.nkdep.nih.gov/resources/uacr\\_gfr\\_quickreference.htm](http://www.nkdep.nih.gov/resources/uacr_gfr_quickreference.htm).

<sup>2</sup>National Heart, Lung, and Blood Institute. (2003, December). *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure*. Retrieved from <http://www.nhlbi.nih.gov/guidelines/hypertension/express.pdf>.

<sup>3</sup>National Cholesterol Education Program. (2005, June). *High Blood Cholesterol, What you need to know*. Retrieved from National Heart Lung and Blood Institute website at <http://www.nhlbi.nih.gov/health/public/heart/chol/wyntk.pdf>.



# My healthcare team

Controlling high blood pressure takes teamwork. Know your healthcare team. Tell your healthcare team members about any changes in your health. The following table can help you keep track of your doctors and appointments.

Primary Care Doctor	
Name:	
Phone:	Next Appointment:
Nephrologist (Kidney Doctor)	
Name:	
Phone:	Next Appointment:
Cardiologist (Heart Doctor)	
Name:	
Phone:	Next Appointment:
Pharmacist	
Name:	
Phone:	
Other Members of My Healthcare Team	
Name:	
Phone:	
Name:	
Phone:	

# My medicines

When you visit your doctors, they may ask you what medicines you are taking. Your doctors need to know this, because some medicines should not be taken with others. Some medicines can also harm your kidneys. Use this chart to keep track of your medicines. Include any over-the-counter medicines and supplements you are taking.

Medication	Dose	When to take it	Prescribing doctor
<i>Example: Vitamin C</i>	<i>50mg</i>	<i>With breakfast</i>	<i>Dr. Kidd Knee</i>

Take your medicines the way your doctors prescribe them, even if you feel fine.

# My lab results

Knowing your numbers can help you stay healthy. See how your numbers compare to the normal results in the chart below. If your numbers are too high or too low, talk to your doctor about what you can do to control them. Also ask your doctor when you should be tested again.

	Normal for most	My result	When to test again
<b>Blood tests</b>			
eGFR ( <i>page 4</i> )	More than 60		
Total cholesterol ( <i>page 14</i> )	Less than 200		
HDL ( <i>page 14</i> )	More than 40		
LDL ( <i>page 14</i> )	More than 100		
Triglycerides ( <i>page 14</i> )	Less than 150		
<b>Urine Tests</b>			
Dipstick ( <i>page 5</i> )	No protein		
UACR ( <i>page 5</i> )	Less than 30		
<b>Other Tests</b>			
Blood Pressure ( <i>page 7</i> )	Less than 120/80		

Please see the pages listed for sources.

# My questions

These are some questions that you may want to ask your doctor at your next visit. Please look at all of the questions first to see which ones apply to you. There is space on the next page for you to write in your own questions that you would like to ask your doctor at your next visit.

## ***Questions about my tests:***

- Is the eGFR test right for me?
- What should my blood pressure be?
- How often should I check my blood pressure?
- Should I be tested for diabetes?

## ***Questions about specialists:***

- Should I see a nephrologist (kidney specialist)?

## ***Questions about my medicines:***

- Is an ACE inhibitor or an ARB right for me?

## *Additional Questions*

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## Where to Find More Help

To learn more, visit our website at [www.kidneyfund.org](http://www.kidneyfund.org). If you still have questions, call the American Kidney Fund's toll-free HelpLine at **1.866.300.2900**, or email us at [helpline@kidneyfund.org](mailto:helpline@kidneyfund.org).



American Kidney Fund<sup>®</sup>

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