

YOUR KIDNEYS AND HIGH POTASSIUM (HYPERKALEMIA)

Are You At Risk?



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About Hyperkalemia

What is hyperkalemia?

High potassium (called “hyperkalemia”) is a medical problem in which you have too much potassium in your blood. Your body needs potassium. It is an important nutrient that is found in many of the foods you eat. Potassium helps your nerves and muscles, including your heart, work the right way. But too much potassium in your blood can be dangerous. It can cause serious heart problems.



What causes hyperkalemia?

The most common causes include:

- **Kidney disease.** Hyperkalemia can happen if your kidneys do not work well. It is the job of the kidneys to balance the amount of potassium taken in with the amount lost in urine. Potassium is taken in through the foods you eat and liquids you drink. It is filtered by the kidneys, and lost through urine. Healthy kidneys can make up for high potassium by removing more. In the early stages of kidney disease, the kidneys can often make up for high potassium. But as kidney function gets worse, they may not be able to remove enough potassium from your body. Advanced kidney disease is a common cause of hyperkalemia. Common causes of kidney disease include diabetes and high blood pressure.
- **A diet high in potassium.** Eating too much food that is high in potassium can also cause hyperkalemia, especially in people with advanced kidney disease. Foods such as melons, orange juice, and bananas are high in potassium. (See page 12)
- **Drugs that prevent the kidneys from losing enough potassium.** Some drugs can keep your kidneys from removing enough potassium. This can cause your potassium levels to rise. (See page 9)

Other (less common) causes include:

- Taking extra potassium, such as a salt substitute or certain supplements.
- A disorder called “Addisons disease,” which can occur if your body does not make enough of certain hormones. Hormones are chemicals produced by different glands

and organs, including the kidneys, to trigger certain responses in your body.

- Burns or other severe injuries.
- Poorly controlled diabetes.

What are the symptoms of hyperkalemia?

Many people have few, if any, symptoms. If symptoms do appear, they are usually mild and non-specific. You may feel some muscle weakness, numbness, tingling, nausea, or other unusual feelings. Hyperkalemia is common in people with kidney disease. It usually develops slowly over many weeks or months, and is most often mild. It can recur.

If hyperkalemia comes on suddenly and you have very high levels of potassium, you may feel heart palpitations, shortness of breath, chest pain, nausea, or vomiting. Sudden or severe hyperkalemia is a life-threatening condition. It requires immediate medical care. Call 911 or go to the emergency room.

How do I know if I have hyperkalemia?

A blood test can find the level of potassium in your blood. High potassium is usually found by chance during a routine blood test.

Your healthcare provider will also give you a complete physical checkup. You will be asked about your medical history, your diet, and the medicines you take. This will help find out what caused your hyperkalemia and plan your treatment. It is important that you tell your healthcare provider about all the medicines you take, even over-the-counter products such as herbals and other supplements.

Many herbal remedies, supplements, salt substitutes, and over-the-counter products have high amounts of potassium.

Treatment for Hyperkalemia

Can hyperkalemia be treated?

Yes. You may need to follow a low-potassium diet. Your healthcare provider will tell you if any changes in your medicines are needed. You should not take salt substitutes, which are high in potassium. A dietitian can help you create a meal plan that is low in potassium.

Some people may also need special medicine to help remove extra potassium from the body and keep it from coming back. This may include:

- **Water pills (diuretics)** help rid your body of extra potassium. They work by making your kidney create more urine. Potassium is normally removed through urine.
- **Potassium binders** often come in the form of a powder. They are mixed with a small amount of water and taken with food. When swallowed, they “bind” to the extra potassium in the bowels and remove it. Some potassium binders can also be taken by the rectum (an enema). You must follow the instructions carefully when taking potassium binders. For example, potassium binders may interfere with how other drugs work if you take them at the same time. Potassium binders are not for use in children.

For sudden or severe hyperkalemia, you will need immediate medical care. If you have heart palpitations, shortness of breath, chest pain, nausea, vomiting, or muscle paralysis, call 911 or go to the emergency room. These could be signs of a serious heart problem.



What is a “normal” level of potassium in blood?

For most people, the level of potassium in your blood should be between 3.5 and 5.0, depending on the laboratory that is used. Ask your healthcare provider what your potassium level is.

If I have hyperkalemia, should I stop taking my medicines?

Do not stop taking your prescribed medicines unless your healthcare provider tells you to, especially if you have a medical condition such as diabetes, heart disease, high blood pressure, or kidney disease. Call your healthcare provider if you have any questions about the medicines you take.

What kinds of medicines can cause hyperkalemia?

Tell your healthcare provider about all the medicines you take, even herbal supplements or over-the-counter drugs. This is very important. Some examples of medicines that can raise your potassium levels are described here. ***This list does not contain all medicines that can raise your potassium levels.*** Keep an updated list of all the medicines you take. Have it with you during your healthcare visits.

- **ACE inhibitors, ARBS, and beta-blockers (blood pressure medicines).** Blood pressure medicines are used to help lower blood pressure. They are also taken by kidney patients to help preserve kidney function and keep kidney disease from getting worse. Many people with kidney disease take blood pressure medicines.
- **Herbal supplements and remedies.** Some people take herbal supplements and remedies for general health. But they may have ingredients that can raise potassium levels, such as milkweed, lily of the valley, Siberian ginseng, Hawthorn berries, preparations from dried toad skin (Bufo, Chan'su, Senso), noni juice, alfalfa, dandelion, horsetail, or nettle. In general, people with kidney disease should not take herbal supplements.
- **NSAIDs (“nonsteroidal anti-inflammatory drugs”).** These over-the-counter medicines are used to treat headache, fever, muscle aches, arthritis, and more. Examples include aspirin, ibuprofen, and naproxen. Talk to your healthcare provider if you are taking any NSAIDs on a regular basis.
- **Nutritional supplements.** Some nutritional supplements contain potassium and can raise potassium levels. Do not take any nutritional supplements without first talking to your healthcare provider.

- **Salt substitutes.** Salt substitutes are high in potassium. Most people with kidney disease should not use them.
- **Tacrolimus and cyclosporine (immunosuppressants).** Transplant patients take immunosuppressants to prevent organ rejection. There are many types of immunosuppressants. These two types can increase potassium levels in some people.
- **Trimethoprim and pentamidine (antibiotics).** Antibiotics are used to treat infection. Certain antibiotics, such as trimethoprim and pentamidine, can increase potassium levels in some people.
- **Potassium-sparing diuretics (water pills) called spironolactone, amiloride, and triamterene.** Some types of diuretics (water pills) are used to help you lose extra salt but **keep** extra potassium. Others are used to help you to **lose** salt and extra potassium. If you have hyperkalemia, you may need to take a diuretic that helps you **lose** extra potassium.





About Your Diet

How much potassium is safe for me to eat?

If you have hyperkalemia—or if you are at risk for getting it—you may need to follow a low-potassium diet. Ask your healthcare provider or dietitian how much potassium is right for you. Eating too much can be harmful, but having too little can cause problems, too. Some people may need a little more; others may need less. High protein foods such as meat, fish, and chicken also have potassium, but you need a balance of high protein foods to stay healthy. Portion size and how you prepare the food is very important. A dietitian can help you create a meal plan that gives you the right amount of potassium and protein to meet your needs.

The table on the following page will help you choose fruits, vegetables, and other foods that are lower in potassium.

What are some high-potassium foods?



Fruits

- Bananas, melons, oranges, nectarines, kiwi, mango, papaya, prunes, pomegranate
- Dates, dried fruits, dried figs

Vegetables

- Avocados, broccoli, brussel sprouts, sweet potatoes, parsnips, pumpkin, vegetable juices, white potatoes, winter squash
- Tomato and tomato-based products
- Deep-colored and leafy green vegetables (such as spinach or swiss chard)
- Dried beans and peas, black beans, refried beans, baked beans, lentils, legumes

Other

- Milk, yogurt
- Nuts and seeds
- Bran and bran products
- Chocolate, granola, molasses, peanut butter
- Salt substitutes

What are some lower-potassium foods?



Fruits

- Apple, blueberries, cranberries, grapes, grapefruit, pears, pineapple, raspberries, strawberries

Vegetables

- Asparagus, cabbage, carrots, celery, corn, cucumber, eggplant, green or wax beans, green peas or beans, lettuce (iceberg), onions, radishes, turnips, water chestnuts

Other

- Rice, noodles, pasta, bread and bread products (not whole grains)
- Angel cake, yellow cake, pies without chocolate or high-potassium fruit, cookies without nuts or chocolate

What else can I do to keep potassium levels from getting too high?

- Eat a variety of foods, but in moderation. Remember, almost all foods have some potassium. The size of the serving and how the food is prepared is very important.
- Drain canned fruits, vegetables, and meats carefully before serving. Do not drink or use the liquid.
- If you want to include some high-potassium vegetables in your diet, eat smaller portions or leach them before using.
- If you are on dialysis, do not skip or shorten your dialysis treatments.

How do I leach vegetables?

- Peel and place vegetables such as potatoes, sweet potatoes, carrots, beets, winter squash and rutabagas in cold water so they won't darken.
- Slice the vegetable 1/8th inch thick.
- Rinse in warm water for a few seconds.
- Soak for a minimum of two hours in warm water. Use ten times the amount of water to the amount of vegetables. If soaking longer, change the water every four hours.
- Rinse under warm water again for a few seconds.
- Cook vegetables with five times the amount of water to the amount of vegetable.

Points to remember:

- Hyperkalemia can happen if your kidneys do not work well.
- A simple blood test can determine the level of potassium in your blood.
- In most people, hyperkalemia develops slowly over weeks or months and is usually mild.
- Many people can control high potassium by following a low-potassium diet, and reducing or avoiding certain medicines, at the direction of their healthcare provider. Others may need to take water pills or potassium binders to help control high potassium.
- Sudden or severe hyperkalemia can be life-threatening and requires immediate medical care.
- Call 911 or go to the emergency room if you experience heart palpitations, shortness of breath, chest pain, nausea, or vomiting.



Where can I get more information?

If you have questions, ask your healthcare team. You can also call the National Kidney Foundation Cares Patient Help Line toll-free at **855.NKF.CARES (855.653.2273)** or email **nkfcares@kidney.org**. A trained professional will listen to your concerns and help answer your questions.

The National Kidney Foundation does not provide medical advice. Your healthcare provider is the single best source of information regarding your health.

If you want to learn more about kidney disease, the National Kidney Foundation has many other publications that cover many subjects:

- What kidney disease is and who is at risk for getting it
- GFR (glomerular filtration rate)
- Nutrition and diet
- Diabetes and your kidneys
- High blood pressure and your kidneys
- Lifestyle issues for people with kidney disease, including:
 - Staying fit
 - Coping with kidney disease

The **National Kidney Foundation** (NKF) is the largest, most comprehensive and longstanding, patient centric organization dedicated to the awareness, prevention and treatment of kidney disease in the US.

Help us fight kidney disease. Learn more at kidney.org



**National
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30 East 33rd Street
New York, NY 10016
800.622.9010



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