

## What can I do to avoid more stones?

Drink more water. Try to drink 12 full glasses of water a day. Drinking lots of water helps to flush away the substances that form stones in the kidneys.

You can also drink ginger ale, lemon-lime sodas, and fruit juices. But water is best. Limit your coffee, tea, and cola to 1 or 2 cups a day because the caffeine may cause you to lose fluid too quickly.

Your doctor may ask you to eat more of some foods and to cut back on other foods. For example, if you have a uric acid stone, your doctor may ask you to eat less meat, because meat breaks down to make uric acid.

If you are prone to forming calcium oxalate stones, you may need to limit foods that are high in oxalate. These foods include rhubarb, beets, spinach, and chocolate.

The doctor may give you medicines to prevent calcium and uric acid stones.

## Points to Remember

- Most stones will pass out of the body without a doctor's help.
- See your doctor if you have severe pain in your back or side that will not go away.
- See your doctor if you have blood in your urine, urine will appear pink.
- When you pass a stone, try to catch it in a strainer to show your doctor.
- Drink lots of water to prevent more kidney stones from forming.
- Talk with your doctor about other ways to avoid more stones.

*Printed with permission from the National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC), a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services.*

For a complete list of NIDDK/NIH reviewers of this pamphlet, please visit: [http://kidney.niddk.nih.gov/kudiseases/pubs/stones\\_ez/index.htm](http://kidney.niddk.nih.gov/kudiseases/pubs/stones_ez/index.htm)

The Kidney & Urology Foundation of America, Inc. is a national, not-for-profit organization dedicated to helping people avoid the debilitating effects of kidney and urologic diseases – disorders affecting as many as 70 million Americans today.

By funding research, medical conferences, and interdisciplinary hospital initiatives, the Kidney & Urology Foundation provides the leadership necessary to promote a better understanding of kidney and urologic diseases.

We are committed to making research and resources accessible to patients and their families, as well as to caregivers, and we measure our success by our ability to respond meaningfully and personally to the public and to people in need.

*To show your support of a family member, friend, or loved one or to celebrate a special occasion, consider making a gift to the Kidney & Urology Foundation of America. All donations bring hope and help to the millions of Americans, young and old, suffering from kidney, urologic, and related diseases.*

**For more information on arranging a legacy, gifts of real estate, automobiles, and securities, please contact:**



No. 3  
Printed  
Sept. 2008

152 Madison Avenue, Suite 201, New York, NY 10016  
212.629.9770 or 1.800.63.DONATE fax 212.629.5652  
Visit our web site at [www.kidneyurology.org](http://www.kidneyurology.org)

- I am interested in receiving information about: \_\_\_\_\_.
- I would like to receive information to distribute to my club/organization. Please contact me.
- I would like to volunteer my time with KUFA. Please contact me.
- Please send me # \_\_\_\_\_ all-occasion gift envelopes.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

- I would like to support the programs of the Foundation.  
**Gifts may be made by check or by credit card:**
- Check enclosed (payable to Kidney & Urology Foundation of America) and **mail to:** Kidney & Urology Foundation of America, 152 Madison Avenue, Suite 201, New York, NY 10016
- Please bill my credit card:  MC  Visa  AMEX

Name on Card: \_\_\_\_\_

Credit Card Number: \_\_\_\_\_

Billing Address: \_\_\_\_\_

Expiration Date: \_\_\_\_\_ Amount of Charge: \$ \_\_\_\_\_

Signature: \_\_\_\_\_



# What I Need to Know about Kidney Stones

The National Public  
EDUCATION SERIES

**KIDNEY & UROLOGY**  
FOUNDATION OF AMERICA, INC.

Research and Programs That Touch People

1.800.63.DONATE

[www.kidneyurology.org](http://www.kidneyurology.org)

## What is a Kidney Stone?

A kidney stone is a solid piece of material that forms in a kidney out of substances in the urine.

A stone may stay in the kidney or break loose and travel down the urinary tract. A small stone may pass all the way out of the body without causing too much pain.

A larger stone may get stuck in a ureter, the bladder, or the urethra. A problem stone can block the flow of urine and cause great pain.

## Are all kidney stones alike?

No. Doctors have found four major types of kidney stones.

- The most common type of stone contains calcium. Calcium is a normal part of a healthy diet. Calcium that is not used by the bones and muscles goes to the kidneys. In most people, the kidneys flush out the extra calcium with the rest of the urine. People who have calcium stones keep the calcium in their kidneys.

The calcium that stays behind joins with other waste products to form a stone. The most common combination is called calcium oxalate.

- A struvite stone may form after an infection in the urinary system. These stones contain the mineral magnesium and the waste product ammonia.

- A uric acid stone may form when the urine contains too much acid. If you tend to form uric acid stones, you may need to cut back on the amount of meat you eat.

- Cystine stones are rare. Cystine is one of the building blocks that make up muscles, nerves, and other parts of the body. Cystine can build up in the urine to form a stone. The disease that causes cystine stones runs in families.

## What do kidney stones look like?

Kidney stones may be as small as a grain of sand or as large as a pearl. Some stones are even as big as golf balls. Stones may be smooth or jagged. They are usually yellow or brown.

## What can my doctor do about a problem stone?

If you have a stone that will not pass by itself, your doctor may need to take steps to get rid of it. In the past, the only way to remove a problem stone was through surgery.

Now, doctors have new ways to remove problem stones. The following sections describe a few of these methods.

### Shock Waves

Your doctor can use a machine to send shock waves directly to the kidney stone. The shock waves break a large stone into small stones that will pass through your urinary system with your urine. The full name for this method is extracorporeal shock wave lithotripsy. Doctors often call it ESWL for short. Lithotripsy is a Greek word that means stone crushing.

Two types of shock wave machines exist. With one machine, you sit in a tub of water. With most newer machines, you lie on a table. A health technician will use ultrasound or x-ray images to direct the sound waves to the stone.

## Tunnel Surgery

In tunnel surgery, the doctor makes a small cut into the patient's back and makes a narrow tunnel through the skin to the stone inside the kidney. With a special instrument that goes through the tunnel, the doctor can find the stone and remove it. The technical name for this method is percutaneous nephrolithotomy.

## Ureteroscope

A ureteroscope looks like a long wire. The doctor inserts it into the patient's urethra, passes it up through the bladder, and directs it to the ureter where the stone is located. The ureteroscope has a camera that allows the doctor to see the stone. A cage is used to catch the stone and pull it out, or the doctor may destroy it with a device inserted through the ureteroscope.

*Ask your doctor which method is right for you.*

## How will my doctor find out what kind of stone I have?

The best way for your doctor to find out what kind of stone you have is to test the stone itself. If you know that you are passing a stone, try to catch it in a strainer.

Your doctor may ask for a urine sample or take blood to find out what caused your stone. You may need to collect your urine for a 24-hour period. These tests will help your doctor find ways for you to avoid stones in the future.

## Why do I need to know the kind of stone?

The therapy your doctor gives you depends on the type of stone you have. For example, a medicine that helps prevent calcium stones will not work if you have a struvite stone. The diet changes that help prevent uric acid stones may not work to prevent calcium stones. Therefore, careful analysis of the stone will help guide your treatment.



*Kidney stones vary in size and shape. These are not actual size.*

KIDNEY  
UROLOGY

*Foundation of America, Inc.™*

152 Madison Avenue, Suite 201  
New York, NY 10016

212.629.9770 or 1.800.63.DONATE  
fax 212.629.5652

Visit our web site at [www.kidneyurology.org](http://www.kidneyurology.org)