

KIDNEY STONES

(Renal Calculi; Urinary Calculi)



BASIC INFORMATION

DESCRIPTION

Small, solid particles that form in one or both kidneys and sometimes travel into the ureter (slender muscular tubes that carry urine from the kidneys to the urinary bladder). Stones vary from the size of a grain of sand to a golf ball, and there may be one or several. Kidney stones usually affect adults over age 30, of both sexes, but more often occur in men.

FREQUENT SIGNS AND SYMPTOMS

- Episodes of severe, colicky (intermittent) pain every few minutes. The pain usually appears first in the back, just below the ribs. Over several hours or days, the pain follows the stone's course through the ureter toward the groin. Pain stops when the stone passes.
- Frequent nausea.
- Traces of blood in urine. Urine may appear cloudy or dark.

CAUSES

- Excess calcium in the urine caused by disturbance in the parathyroid gland, which upsets calcium metabolism or by excess calcium or vitamin D intake.
- Gout (uric-acid stones).
- Blockage of urine from any cause.

RISK INCREASES WITH

- Decreased urine volume due to dehydration or hot, dry weather.
- Improper diet (too much calcium).
- Family history of kidney stones.
- Hyperparathyroidism.
- Excess alcohol consumption.
- Bed confinement for any reason.
- Geographical living area (southeastern U.S.).

PREVENTIVE MEASURES

- Drink 3 quarts of fluid, mostly purified water, every day.
- Avoid milk and milk products if you have had a calcium or phosphorus kidney stone.
- Avoid excessive sweating.

EXPECTED OUTCOMES

Large stones usually remain in the kidney without symptoms, although they can damage the kidney. Small stones pass easily into the ureter through the urine. Stones that are big enough to pass but not small enough to pass with ease cause excruciating pain. These usually pass in a few days. If the stone stops and blocks urine, it must be removed to prevent further kidney damage.

POSSIBLE COMPLICATIONS

- Urinary-tract infection.
- Damage to the kidney, necessitating surgical removal.
- Recurrence of stones.



TREATMENT

GENERAL MEASURES

- Strain all urine through filter paper or gauze to detect passage of the stone; or urinate into a glass jar, look for and re-

cover any stone and discard the urine. Take stone to the doctor for composition analysis.

- Diagnostic tests may include urinalysis and urine culture, X-ray of the abdomen, kidney ultrasound, CT scan, and intravenous urography (method of studying the kidneys and urinary tract by injecting a medication into the bloodstream that X-rays can detect).
- Small solitary stone, uncomplicated by obstruction or infection, may need no specific treatment.
- Treatment to remove larger stones, if they don't pass spontaneously, and are causing complications, infection or severe pain. Options include chemical dissolution, endourologic stone extraction, percutaneous nephrolithotomy, extracorporeal shock wave lithotripsy, and rarely, open surgery. Other, new approaches are also under development.
- Stones due to excess calcium in the body may require surgical removal of abnormal parathyroid tissue.
- Additional information available from the National Kidney & Urologic Diseases Information Clearinghouse, Box NKUDIC, Bethesda, MD 20893, (301) 468-6345 or call the American Kidney Fund, (800) 638-8299.

MEDICATIONS

- Pain relievers.
- Antispasmodics to relax the ureter muscles and help the stone pass.
- Depending on the type of stone (calcium-containing, struvite stones, cystine stones, uric acid or other composition), medication may be prescribed that will stop the growth of existing stones or new stones. This often involves a prolonged program, and your compliance is important.

ACTIVITY

- If you know you have kidney stones, avoid situations in which a sudden pain might cause danger, such as climbing ladders or working on roofs or girders.
- During a kidney-stone episode, stay as active as possible. Don't go to bed. Activity may help the stone pass.

DIET

- If the stone proves to be calcium or phosphorus, avoid products made with milk, chocolate and nuts.
- If the stone is a phosphate, an acid-ash diet will keep the urine slightly acid.
- If the stone is a urate or cystine stone, an alkaline-ash diet will keep the urine slightly alkaline.
- For all types of stones, drink at least 13 glasses of fluid daily. Most of the fluid should be purified water.
- Low-fat, high-fiber diet recommended.



NOTIFY OUR OFFICE IF

- You or a family member has symptoms of a kidney stone.
- Temperature rises to 101° F (38.3° C).
- Symptoms of a kidney infection develop (stinging, burning on urination or a frequent urge to urinate).
- New, unexplained symptoms develop. Drugs used in treatment may produce side effects.