

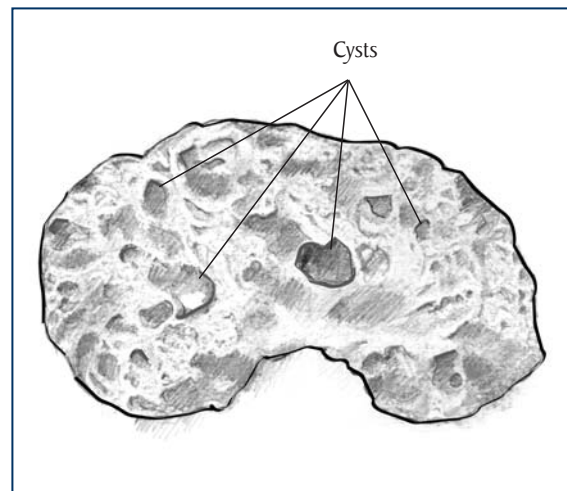
Acquired Cystic Kidney Disease

What is acquired cystic kidney disease (ACKD)?

Many people with chronic kidney disease develop ACKD, a condition in which the kidneys develop fluid-filled sacs called renal (kidney) cysts. ACKD occurs in children and adults. The cysts are more likely to develop in people who are on hemodialysis or peritoneal dialysis. Kidney failure, not dialysis, causes the cysts. However, the risk of developing ACKD increases with the number of years a person is on dialysis.

- About 20 percent of people starting dialysis treatments already have ACKD.
- About 60 to 80 percent of people on dialysis for 4 years develop ACKD.
- About 90 percent of people on dialysis for 8 years develop ACKD.^{1,2}

In most cases, the cysts are harmless and require no treatment. Sometimes problems occur—including infection in the



In ACKD, the kidneys develop fluid-filled sacs called cysts.

cyst, which may be associated with fever and back pain. Sometimes the cysts bleed and blood will appear in the urine. Blood in the urine should always be reported to a doctor.

Although doctors debate the exact percentage, somewhere between 10 and 20 percent of people with ACKD develop kidney tumors, which in some cases are cancerous.² The rate of kidney cancer in people with ACKD is low, but it is higher than the rate in the general population.

¹Fick-Brosnahan GM. Polycystic and acquired cystic kidney disease. In: Greenberg A, ed. *Primer on Kidney Diseases*. 3rd ed. National Kidney Foundation. San Francisco: Academic Press; 2001: 303–308.

²Grantham JJ, Nair V, Winklhofer F. Cystic diseases of the kidney. In: Brenner B, ed. *Brenner & Rector's The Kidney*. 6th ed. Philadelphia: W.B. Saunders; 2000: 1699–1730.



U.S. Department of Health
and Human Services

NATIONAL INSTITUTES OF HEALTH

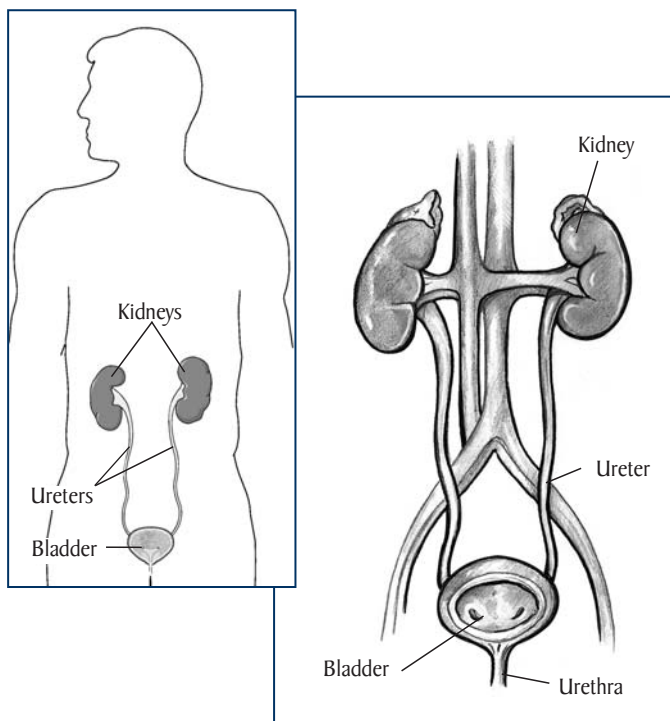
NIDDK NATIONAL INSTITUTE OF
DIABETES AND DIGESTIVE
AND KIDNEY DISEASES

National Kidney and Urologic Diseases
Information Clearinghouse

What are the kidneys and what do they do?

The kidneys are two bean-shaped organs, each about the size of a fist. They are located on either side of the spine, just below the rib cage. The kidneys filter wastes and extra fluid from the blood to produce urine. They also release hormones that regulate blood pressure, stimulate the production of red blood cells, and regulate the body's use of calcium to keep the bones healthy.

When the kidneys stop working, a person must receive a new kidney through transplantation or have regular blood-cleansing treatments called dialysis.



The kidneys filter wastes and extra fluid from the blood to produce urine. Urine flows from the kidneys to the bladder through the ureters.

What causes ACKD?

Dialysis filters out many, but not all, of the wastes that healthy kidneys remove. Researchers believe that an unidentified waste product not removed through dialysis causes cysts to form in the kidneys. Dialysis itself does not cause the cysts.

How does ACKD differ from polycystic kidney disease (PKD)?

ACKD differs from PKD in several ways. People with PKD often have a family history of PKD. They are born with the disease-causing gene. No disease-causing gene is associated with ACKD. PKD is associated with enlarged kidneys and cyst formation in other parts of the body. In ACKD, the kidneys are normal sized or smaller and cysts do not occur in other parts of the body. In PKD, the presence of cysts marks the onset of disease. People with ACKD already have chronic kidney disease when they develop cysts.

What are the symptoms of ACKD?

ACKD often has no symptoms. If a cyst becomes infected, a person may have back pain, fever, or even chills. If a cyst bleeds, a person will often notice blood in the urine.

How is ACKD diagnosed?

A doctor may suspect ACKD based on a patient's history and symptoms. To confirm the diagnosis, the doctor may order one or more imaging procedures:

- **Ultrasound.** In an ultrasound, or sonogram, a technician glides a device, called a transducer, over the abdomen. The transducer sends harmless sound waves into the body and catches them as they bounce off the internal organs to create a picture on a monitor. Abdominal ultrasounds are used to evaluate the size and shape of the kidneys.
- **Computerized tomography (CT) scan.** CT scans use a combination of x rays and computer technology to create three-dimensional images. Sometimes a contrast dye is injected into the patient to better see the structure of the kidneys. CT scans require the patient to lie on a table that slides through a donut-shaped scanning machine. CT scans can help identify cysts and tumors in the kidneys.
- **Magnetic resonance imaging (MRI).** MRI machines use radio waves and magnets to produce detailed pictures of internal organs and tissues. No exposure to radiation occurs. With most MRI machines, the patient lies on a table that slides into a tunnel that may be open-ended or closed at one end. Some newer machines are designed to allow the patient to lie in a more open space. Like CT scans, MRIs can help identify cysts and tumors.

Images of the kidneys may help the health care provider distinguish ACKD from PKD.

How is ACKD treated?

If ACKD is not causing pain or discomfort, no treatment is required. Infections are treated with a course of antibiotics. If large cysts are causing pain, they may be drained using a long needle inserted through the skin.

If tumors are suspected, a person may need regular examinations to monitor the kidneys for cancer. Some doctors recommend all patients be screened for kidney cancer after 3 years of dialysis. In rare cases, surgery is used to stop cysts from bleeding and to remove tumors or suspected tumors.

In transplantation, the diseased kidneys are left in place unless they are causing infection or high blood pressure. ACKD usually disappears, even in the diseased kidneys, after a person receives a transplanted kidney.

Points to Remember

- Acquired cystic kidney disease (ACKD) is a condition in which the kidneys develop many fluid-filled sacs called cysts.
- ACKD is most common in people who have been on dialysis for several years.
- ACKD differs from polycystic kidney disease (PKD). People with PKD often have a family history of PKD. PKD is associated with enlarged kidneys and cyst formation in other parts of the body. In ACKD, the kidneys are normal sized or smaller and cysts do not form in other parts of the body.
- Between 10 and 20 percent of people with ACKD develop kidney tumors, which in some cases are cancerous.
- ACKD often has no symptoms.
- If tumors are suspected, a person may need regular examinations to monitor the kidneys for cancer.
- In rare cases, surgery is used to stop cysts from bleeding and to remove tumors or suspected tumors.
- ACKD usually disappears after a person receives a transplanted kidney.

Hope through Research

In recent years, researchers have learned a great deal about kidney disease. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) sponsors several programs aimed at understanding kidney failure and finding treatment to stop its progression. The NIDDK's Division of Kidney, Urologic, and Hematologic Diseases supports basic research into normal kidney function and the diseases that impair normal function at the cellular and molecular levels, including diabetes, high blood pressure, glomerulonephritis, and cystic kidney diseases.

Participants in clinical trials can play a more active role in their own health care, gain access to new research treatments before they are widely available, and help others by contributing to medical research. For information about current studies, visit www.ClinicalTrials.gov.

For More Information

American Association of Kidney Patients

3505 East Frontage Road, Suite 315

Tampa, FL 33607

Phone: 1-800-749-2257

Fax: 813-636-8122

Email: info@aakp.org

Internet: www.aakp.org

American Kidney Fund

6110 Executive Boulevard, Suite 1010

Rockville, MD 20852

Phone: 1-800-638-8299

Fax: 301-881-0898

Email: helpline@kidneyfund.org

Internet: www.kidneyfund.org

Life Options Rehabilitation Resource Center

c/o Medical Education Institute, Inc.

414 D'Onofrio Drive, Suite 200

Madison, WI 53719

Phone: 1-800-468-7777

Email: lifoptions@MEIresearch.org

Internet: www.lifeoptions.org

www.kidneyschool.org

National Kidney Foundation

30 East 33rd Street

New York, NY 10016

Phone: 1-800-622-9010 or 212-889-2210

Fax: 212-689-9261

Internet: www.kidney.org

Acknowledgments

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts. This publication was reviewed by Catherine Kelleher, M.D., University of Colorado Health Sciences Center, Denver.

About the Kidney Failure Series

The NIDDK Kidney Failure Series includes booklets and fact sheets that can help you learn more about treatment methods for kidney failure, complications of dialysis, financial help for the treatment of kidney failure, and eating right on hemodialysis. For free single printed copies of this series, please contact the National Kidney and Urologic Diseases Information Clearinghouse.

You may also find additional information about this topic by visiting MedlinePlus at www.medlineplus.gov.

This publication may contain information about medications. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit www.fda.gov. Consult your doctor for more information.

National Kidney and Urologic Diseases Information Clearinghouse

3 Information Way
Bethesda, MD 20892-3580
Phone: 1-800-891-5390
TTY: 1-866-569-1162
Fax: 703-738-4929
Email: nkudic@info.niddk.nih.gov
Internet: www.kidney.niddk.nih.gov

The National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC) is 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. Established in 1987, the Clearinghouse provides information about diseases of the kidneys and urologic system to people with kidney and urologic disorders and to their families, health care professionals, and the public. The NKUDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about kidney and urologic diseases.

This publication is not copyrighted. The Clearinghouse encourages users of this fact sheet to duplicate and distribute as many copies as desired.

This fact sheet is also available at
www.kidney.niddk.nih.gov.



U.S. DEPARTMENT OF HEALTH
AND HUMAN SERVICES
National Institutes of Health

NIH Publication No. 09-6403
May 2009

