

Kidney Failure GLOSSARY



U.S. Department
of Health and
Human Services

NIDDK

NATIONAL INSTITUTES OF HEALTH
National Kidney and Urologic Diseases
Information Clearinghouse

Kidney Failure
GLOSSARY



NATIONAL INSTITUTES OF HEALTH
National Institute of Diabetes and Digestive and Kidney Diseases



Introduction

This glossary defines words that are often used when people talk or write about kidney failure and its treatments. It is designed for people whose kidneys have failed and for their families and friends.

The words are listed in alphabetical order. Some words have many meanings; only those meanings that relate to kidney diseases are included. Words that appear in *bold italic* are defined elsewhere in the glossary. A term will refer the reader to another definition only when the second definition gives additional information about the topic that is directly related to the first term.



A

access: In *dialysis*, the point on the body where a needle or *catheter* is inserted. (See also *arteriovenous fistula*, *graft*, and *vascular access*.)

acute renal (REE-nul) failure: Sudden and temporary loss of *kidney* function. (See also *chronic kidney disease*.)

allograft (AL-oh-graft): An organ or tissue *transplant* from one human to another.

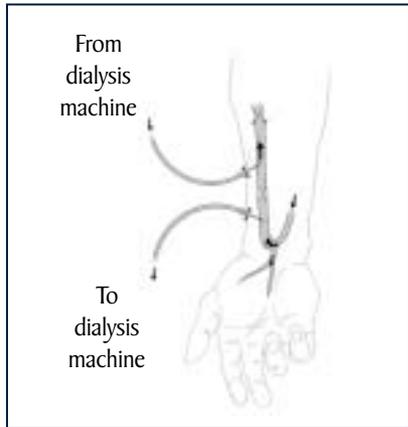
amyloidosis (AM-ih-loy-DOH-sis): A condition in which a protein-like material builds up in one or more organs. This material cannot be broken down and interferes with the normal function of that organ. People who have been on *dialysis* for several years often develop amyloidosis because the artificial *membranes* used in dialysis fail to filter the protein-like material out of the blood.

anemia (uh-NEE-mee-uh): The condition of having too few red blood cells. Healthy red blood cells carry oxygen throughout the body. If the blood is low on red blood cells, the body does not get enough oxygen. People with anemia may be tired and pale and may feel their heartbeat change. Anemia is common in people with *chronic kidney disease* or those on *dialysis*. (See also *erythropoietin*.)

anuria (uh-NYOOR-ee-uh): A condition in which a person stops making *urine*.

arterial (ar-TEER-ee-ul) line: In hemodialysis (see *dialysis*), tubing that takes blood from the body to the *dialyzer*.

arteriovenous (ar-TEER-ee-oh-VEE-nus) (AV) fistula (FIST-yoo-lah): Surgical connection of an *artery* directly to a *vein*, usually in the forearm, created in patients who will need *hemodialysis* (see *dialysis*). The AV fistula causes the vein to grow thicker, allowing the repeated needle insertions required for hemodialysis.



Arteriovenous fistula.

artery (AR-ter-ee): A blood vessel that carries blood away from the heart to the body. (See also *vein*.)

artificial kidney: Another name for a *dialyzer*.

autoimmune (aw-toh-ih-MYOON) disease: A disease that occurs when the body's *immune system* mistakenly attacks the body itself.

B

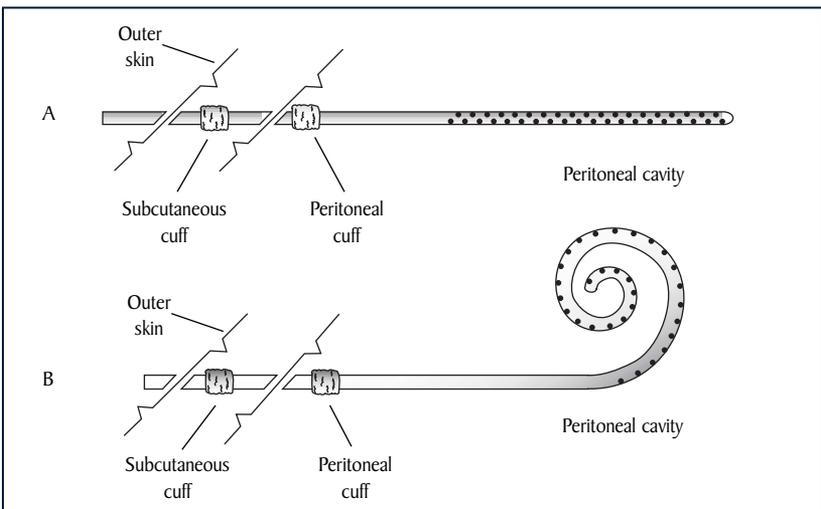
biopsy (BY-op-see): A procedure in which a tiny piece of a body part, such as the *kidney* or *bladder*, is removed for examination under a microscope.

bladder: The balloon-shaped organ inside the pelvis that holds *urine*.

blood urea (yoo-REE-uh) nitrogen (NY-truh-jen) (BUN): A waste product in the blood that comes from the breakdown of food protein. The *kidneys* filter blood to remove *urea*. As kidney function decreases, the BUN level increases.

C

catheter (KATH-eh-ter): A tube inserted through the skin into a blood vessel or cavity to draw out body fluid or infuse fluid. In peritoneal dialysis (see *dialysis*), a catheter is used to infuse *dialysis solution* into the abdominal cavity and drain it out again.



Two double-cuff Tenckhoff peritoneal catheters: standard (A), curled (B).

chronic kidney disease: Slow and progressive loss of *kidney* function over several years, often resulting in permanent *kidney failure*. People with permanent kidney failure need *dialysis* or transplantation (see *transplant*) to replace the work of the kidneys.

creatinine (kree-AT-ih-nin): A waste product from meat protein in the diet and from the muscles of the body. Creatinine is removed from blood by the *kidneys*; as kidney disease progresses, the level of creatinine in the blood increases.

creatinine clearance: A test that measures how efficiently the *kidneys* remove *creatinine* and other wastes from the blood. Low creatinine clearance indicates impaired kidney function.

cross-matching: Before a *transplant*, the *donor's* blood is tested with the recipient's blood to see whether they are compatible.

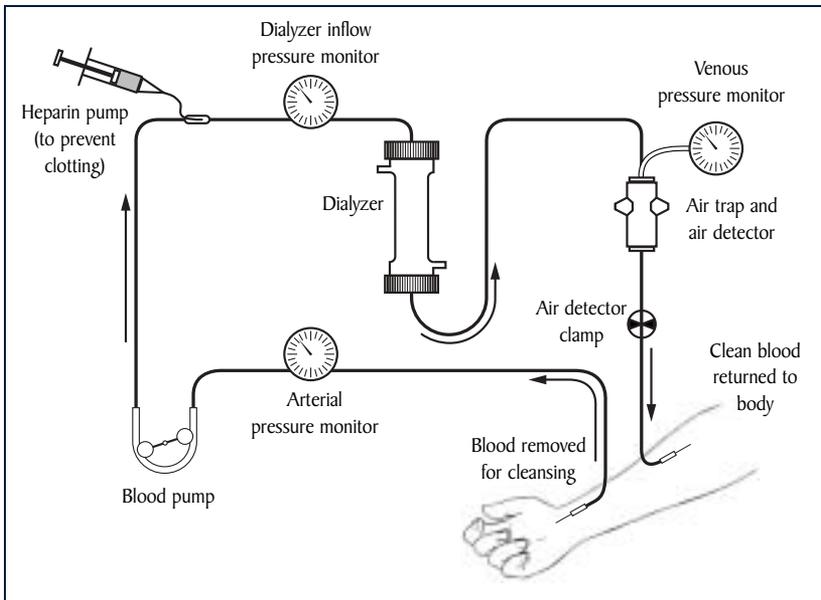


D

diabetes (dy-uh-BEE-teez) mellitus (MELL-ih-tus): A condition characterized by high blood glucose (sugar) resulting from the body's inability to use glucose efficiently. Insulin normally helps the body's cells use glucose. In type 1 diabetes, the pancreas makes little or no insulin; in type 2 diabetes, the body is resistant to the effects of available insulin.

dialysis (dy-AL-ih-sis): The process of cleaning wastes from the blood artificially. This job is normally done by the *kidneys*. If the kidneys fail, the blood must be cleaned artificially with special equipment. The two major forms of dialysis are **hemodialysis** and **peritoneal dialysis**.

- **hemodialysis (HEE-moh-dy-AL-ih-sis):** The use of a machine to clean wastes from the blood after the *kidneys* have failed. The blood travels through tubes to a *dialyzer*, which removes wastes and extra fluid. The cleaned blood then flows through another set of tubes back into the body.



Hemodialysis.

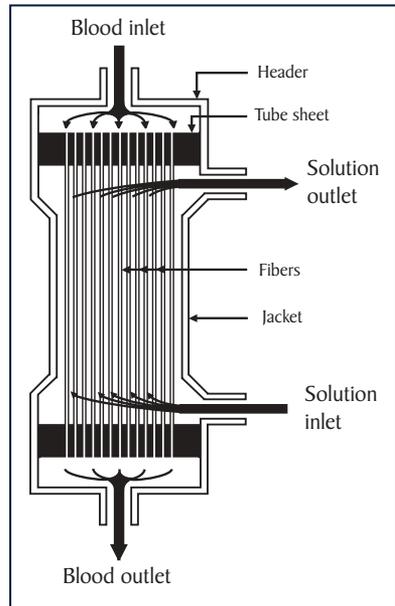
- **peritoneal (PEH-rih-tuh-NEE-ul) dialysis:** Cleaning the blood by using the lining of the abdominal cavity as a filter. A cleansing liquid, called *dialysis solution*, is drained from a bag into the abdomen. Fluids and wastes flow through the lining of the cavity and remain “trapped” in the dialysis solution. The solution is then drained from the abdomen, removing the extra fluids and wastes from the body. There are two main types of peritoneal dialysis:
 - **continuous ambulatory (AM-byoo-luh-TOH-ree) peritoneal dialysis (CAPD):** The most common type

of peritoneal dialysis. It needs no machine. With CAPD, the blood is always being cleaned. The *dialysis solution* passes from a plastic bag through the *catheter* and into the abdomen. The solution stays in the abdomen with the catheter sealed. After several hours, the person using CAPD drains the solution back into a disposable bag. Then the person refills the abdomen with fresh solution through the same catheter, to begin the cleaning process again.

- **continuous cycling peritoneal dialysis (CCPD):**
A form of peritoneal dialysis that uses a machine. This machine automatically fills and drains the *dialysis solution* from the abdomen. A typical CCPD schedule involves three to five *exchanges* during the night while the person sleeps. During the day, the person using CCPD performs one exchange with a *dwell time* that lasts the entire day.

dialysis solution: A cleansing liquid used in the two major forms of *dialysis*—hemodialysis and peritoneal dialysis. Dialysis solution contains dextrose (a sugar) and other chemicals similar to those in the body. Dextrose draws wastes and extra fluid from the body into the dialysis solution.

dialyzer (DY-uh-LY-zur): A part of the hemodialysis machine. (See *dialysis*.) The dialyzer has two sections separated by a *membrane*. One section



Structure of a typical hollow fiber dialyzer.

holds *dialysis solution*. The other holds the patient's blood.

donor: A person who offers blood, tissue, or an organ for transplantation. (See *transplant*.) In *kidney* transplantation, the donor may be someone who has just died or someone who is still alive, usually a relative.

dry weight: The ideal weight for a person after a hemodialysis (see *dialysis*) treatment. The weight at which a person's blood pressure is normal and no swelling exists because all excess fluid has been removed.

dwell time: In peritoneal dialysis (see *dialysis*), the amount of time a bag of *dialysis solution* remains in the patient's abdominal cavity during an *exchange*.

E

edema (eh-DEE-muh): Swelling caused by too much fluid in the body.

electrolytes (ee-LEK-troh-lites): Chemicals in the body fluids that result from the breakdown of salts, including *sodium*, *potassium*, magnesium, and chloride. The *kidneys* control the amount of electrolytes in the body. When the kidneys fail, electrolytes get out of balance, causing potentially serious health problems. *Dialysis* can correct this problem.

end-stage renal (REE-nul) disease (ESRD): Total and permanent *kidney failure*. When the *kidneys* fail, the body retains fluid and harmful wastes build up. A person with ESRD needs treatment to replace the work of the failed kidneys.

erythropoietin (eh-RITH-roh-POY-uh-tin): A *hormone* made by the *kidneys* to help form red blood cells. Lack of this hormone may lead to *anemia*.

ESRD: See *end-stage renal disease*.

exchange: In peritoneal dialysis (see *dialysis*), the draining of used *dialysis solution* from the abdomen, followed by refilling with a fresh bag of solution.

F

fistula (FIST-yoo-lah): See *arteriovenous fistula*.

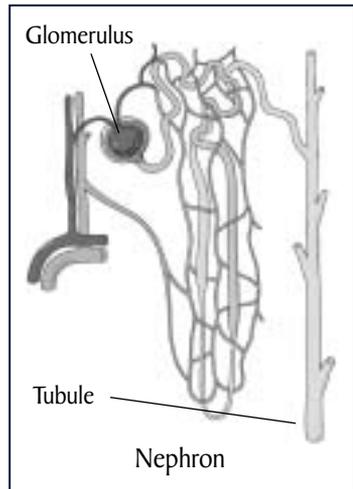
G

glomeruli (gloh-MEHR-yoo-lie): Plural of *glomerulus*.

glomerulonephritis (gloh-MEHR-yoo-loh-nef-RY-tis):
Inflammation of the *glomeruli*. Most often, it is caused by an *autoimmune disease*, but it can also result from infection.

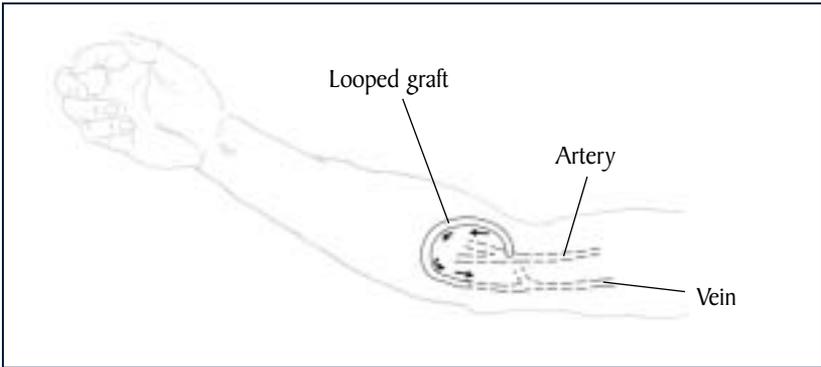
glomerulosclerosis (gloh-MEHR-yoo-loh-skleh-ROH-sis):
Scarring of the *glomeruli*. It may result from *diabetes mellitus* (diabetic glomerulosclerosis) or from deposits in parts of the glomeruli (focal segmental glomerulosclerosis). The most common signs of glomerulosclerosis are *proteinuria* and *kidney failure*.

glomerulus (gloh-MEHR-yoo-lus):
A tiny set of looping blood vessels in the *nephron* where blood is filtered in the *kidney*.



Glomerulus.

graft: In hemodialysis (see *dialysis*), a *vascular access* surgically created using a synthetic tube to connect an *artery* to a *vein*. In transplantation (see *transplant*), a graft is the transplanted organ or tissue.



Graft.

H

hematocrit (hee-MAT-uh-krit): A measure that tells what portion of a blood sample consists of red blood cells. Low hematocrit suggests *anemia* or massive blood loss.

hematuria (HEE-muh-TOO-ree-uh): A condition in which *urine* contains blood or red blood cells.

hemodialysis: See *dialysis*.

hormone: A natural chemical produced in one part of the body and released into the blood to trigger or regulate particular functions of the body. The *kidney* releases three hormones: *erythropoietin*, *renin*, and an active form of vitamin D that helps regulate calcium for bones.

hypertension (HY-per-TEN-shun): High blood pressure, which can be caused either by too much fluid in the blood vessels or by narrowing of the blood vessels.

I

immune (ih-MYOON) system: The body's system for protecting itself from viruses and bacteria or any "foreign" substances.

immunosuppressant (ih-MYOON-oh-suh-PRESS-unt): A drug given to suppress the natural responses of the body's *immune system*. Immunosuppressants are given to *transplant* patients to prevent organ rejection and to patients with *autoimmune diseases* like lupus.

interstitial (IN-ter-STISH-ul) nephritis (nef-RY-tis): Inflammation of the *kidney* cells that are not part of the fluid-collecting units, a condition that can lead to *acute renal failure* or *chronic kidney disease*.

intravenous (IN-truh-VEE-nus) pyelogram (PY-loh-gram): An x ray of the *urinary tract*. A dye is injected to make the *kidneys*, *ureters*, and *bladder* visible on the x ray and show any blockage in the urinary tract.

K

kidney: One of two bean-shaped organs that filter wastes from the blood. The kidneys are located near the middle of the back. They create *urine*, which is delivered to the *bladder* through tubes called *ureters*.

kidney failure: Loss of *kidney* function. (See also *end-stage renal disease*, *acute renal failure*, and *chronic kidney disease*.)

Kt/V (kay-tee over vee): A measurement of *dialysis* dose. The measurement takes into account the efficiency of the *dialyzer*, the treatment time, and the total volume of *urea* in the body. (See also *URR*.)



M

membrane: A thin sheet or layer of tissue that lines a cavity or separates two parts of the body. A membrane can act as a filter, allowing some particles to pass from one part of the body to another while keeping others where they are. The artificial membrane in a *dialyzer* filters waste products from the blood.

membranoproliferative (MEM-bray-no-pro-LIF-er-uh-tiv) glomerulonephritis (gloh-MEHR-yoo-loh-nef-RY-tis): A disease that occurs primarily in children and young adults. Over time, inflammation leads to scarring in the *glomeruli*, causing *proteinuria*, *hematuria*, and sometimes *chronic kidney disease* or *end-stage renal disease*.



N

nephrectomy (nef-REK-tuh-mee): Surgical removal of a *kidney*.

nephrologist (nef-RAHL-oh-jist): A doctor who treats patients with *kidney* problems or *hypertension*.

nephron (NEF-rah-n): A tiny part of the *kidneys*. Each kidney is made up of about 1 million nephrons, which are the working units of the kidneys, removing wastes and extra fluids from the blood.

nephrotic (nef-RAH-tik) syndrome: A collection of symptoms that indicate *kidney* damage. Symptoms include high levels of protein in the *urine*, lack of protein in the blood, and high blood cholesterol.

nuclear (NEW-klee-ur) scan: A test of the structure, blood flow, and function of the *kidneys*. The doctor injects a mildly radioactive solution into an arm *vein* and uses x rays to monitor its progress through the kidneys.



P

peritoneal (PEH-rih-tuh-NEE-ul) cavity: The space inside the lower abdomen but outside the internal organs.

peritoneal dialysis: See *dialysis*.

peritoneum (PEH-rih-tuh-NEE-um): The *membrane* lining the *peritoneal cavity*.

peritonitis (PEH-rih-tuh-NY-tis): Inflammation of the *peritoneum*, a common complication of peritoneal dialysis (see *dialysis*).

potassium (puh-TASS-ee-um): A mineral found in the body and in many foods.

proteinuria (PRO-tee-NOOR-ee-uh): A condition in which the *urine* contains large amounts of protein, a sign that the *kidneys* are not functioning properly.



R

renal (REE-nul): Of the *kidneys*. A renal disease is a disease of the kidneys. Renal failure means the kidneys have stopped working properly.

renal osteodystrophy (AH-stee-oh-DIS-truh-fee): Weak bones caused by poorly working *kidneys*. Renal osteodystrophy is a common problem for people on *dialysis* who have high phosphate levels or insufficient vitamin D supplementation.

renin (REE-nin): A *hormone* made by the *kidneys* that helps regulate the volume of fluid in the body and blood pressure.



S

sodium (SOH-dee-um): A mineral found in the body and in many foods.



T

thrill: A vibration or buzz that can be felt in an *arteriovenous fistula*, an indication that the fistula is healthy.

transplant: Replacement of a diseased organ with a healthy one. A *kidney* transplant may come from a living *donor*, usually a relative, or from someone who has just died.



U

urea (yoo-REE-uh): A waste product found in the blood and caused by the normal breakdown of protein in the liver. Urea is normally removed from the blood by the *kidneys* and then excreted in the *urine*. Urea accumulates in the body of people with *renal* failure.

uremia (yoo-REE-mee-uh): The illness associated with the buildup of *urea* in the blood because the *kidneys* are not working effectively. Symptoms include nausea, vomiting, loss of appetite, weakness, and mental confusion.

ureters (YOOR-uh-turs): Tubes that carry *urine* from the *kidneys* to the *bladder*.

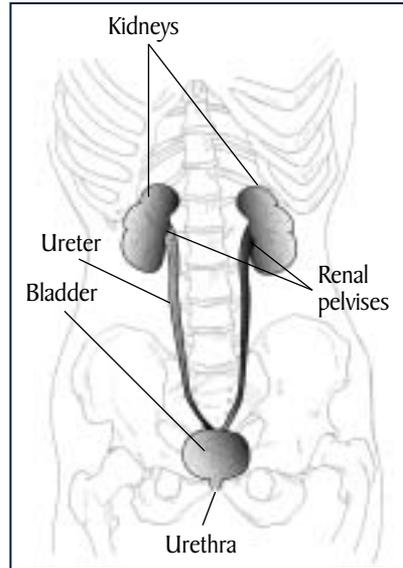
urethra (yoo-REE-thrah): The tube that carries *urine* from the *bladder* to the outside of the body.

urinalysis (yoor-in-AL-ih-sis): A test of a *urine* sample that can reveal many problems of the urinary system and other body systems. The sample may be observed for color, cloudiness, and concentration; signs of drug use; chemical composition, including sugar; the presence of protein, blood cells, or germs; or other signs of disease.

urinary (YOOR-ih-NEHR-ee) tract: The system that takes wastes from the blood and carries them out of the body in the form of *urine*. The urinary tract includes the *kidneys*, *renal pelvises*, *ureters*, *bladder*, and *urethra*.

urinate (YOOR-ih-nate): To release *urine* from the *bladder* to the outside.

urine (YOOR-in): Liquid waste product filtered from the blood by the *kidneys*, stored in the *bladder*, and expelled from the body through the *urethra* by the act of voiding or urinating. (See also *urinate*.)



Urinary tract.

URR (urea reduction ratio): A blood test that compares the amount of *blood urea nitrogen* before and after *dialysis* to measure the effectiveness of the dialysis dose.

V

vascular (VASS-kyoo-lur) access: A general term to describe the area on the body where blood is drawn for circulation through a hemodialysis (see *dialysis*) circuit. A vascular access may be an *arteriovenous fistula*, a *graft*, or a *catheter*.

vein (VANE): A blood vessel that carries blood toward the heart.

venous (VEE-nus) line: In hemodialysis (see *dialysis*), tubing that carries blood from the *dialyzer* back to the body.



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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. 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.

Publications produced by the clearinghouse are carefully reviewed by both NIDDK scientists and outside experts.

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