UW Medicine
UNIVERSITY OF WASHINGTON MEDICAL CENTER

Acute Kidney Injury

How kidneys work and what happens if there is injury

This handout describes how your kidneys work and the causes, symptoms, and treatment of acute kidney (renal) injury. It includes resources where you can learn more.

What are kidneys?

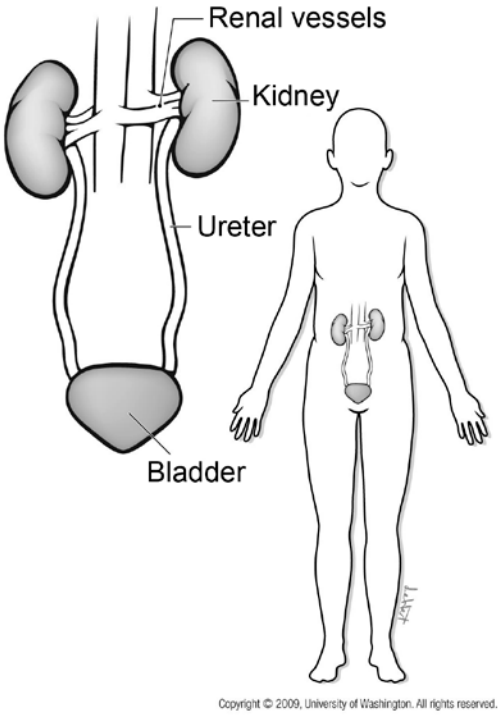
Most people have 2 kidneys. These organs are each about the size of a fist, and are shaped like a kidney bean. Your kidneys are near the middle of your back, below your rib cage.

What do kidneys do?

Kidneys filter your blood by keeping the substances that your body needs and removing waste and extra fluid. They also help control blood pressure, help keep bones healthy, and help produce red blood cells.

Renal vessels (arteries and *veins)* connect each kidney to your blood system. The word *renal* means "related to the kidneys." Narrow tubes called *ureters* connect each kidney to your bladder.

Every 30 minutes, your kidneys filter all the blood in your body. They create urine from the waste products and extra fluid. The urine is stored in your bladder until you *urinate* (pee).



Kidneys create urine, which is stored in your bladder until you urinate.

What is acute kidney injury?

Acute kidney injury (AKI) is also called *acute renal failure*. Many things can hurt your kidneys, but the most common cause is lack of blood flow. If the kidneys do not get enough blood, they also do not get enough oxygen. Lack of oxygen can make them stop working well.

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Two of the most common reasons for lack of blood flow are large amounts of blood loss and severe infection. Sometimes, medicines or dyes used in medical procedures can hurt the kidneys. This is more common in people who already have kidney problems.

What are the symptoms of kidney injury?

- Little or no urine output
- Swelling, most often in the legs and feet
- Thirst and dry mouth
- Rapid heart rate
- Feeling dizzy when standing up after sitting or lying down
- Loss of appetite, nausea, or vomiting
- Feeling confused, anxious, restless, or sleepy
- Pain on one side of the back, above the waist or below the ribs

How is acute kidney injury diagnosed?

Making less urine and changes in blood test results are often the main signs of kidney injury. If your doctor thinks you may have kidney injury, you will have blood tests to measure the levels of 2 waste products your body makes. These 2 products are *urea* and *creatinine*. High levels of these in your blood mean that your kidneys are not working well.

You may also need other blood tests, urine tests, X-rays, or ultrasound to help your doctor diagnose your kidney problem. A urine test will check for inflammatory cells or bacteria. Ultrasound may be used to see the size of your kidneys and to see if urine is blocked from flowing.

How is acute kidney injury treated?

Treatment of acute kidney injury depends on the cause of the kidney injury. Treatment may include:

- Giving fluids and stopping bleeding so that blood flow to the kidneys returns.
- Stopping medicines that may be hurting the kidney.
- Using anti-inflammatory medicines or *plasma exchange* to treat some *autoimmune* diseases that cause kidney injury. Autoimmune diseases occur when your own immune system attacks tissues of your body. Plasma exchange is a process that takes blood from your body, removes and replaces the *plasma* (the liquid part), and then returns the blood to your body.

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- Removing blockages in the urinary tract so the urine can flow.
- Starting *dialysis* if too many waste products or fluids are building up.

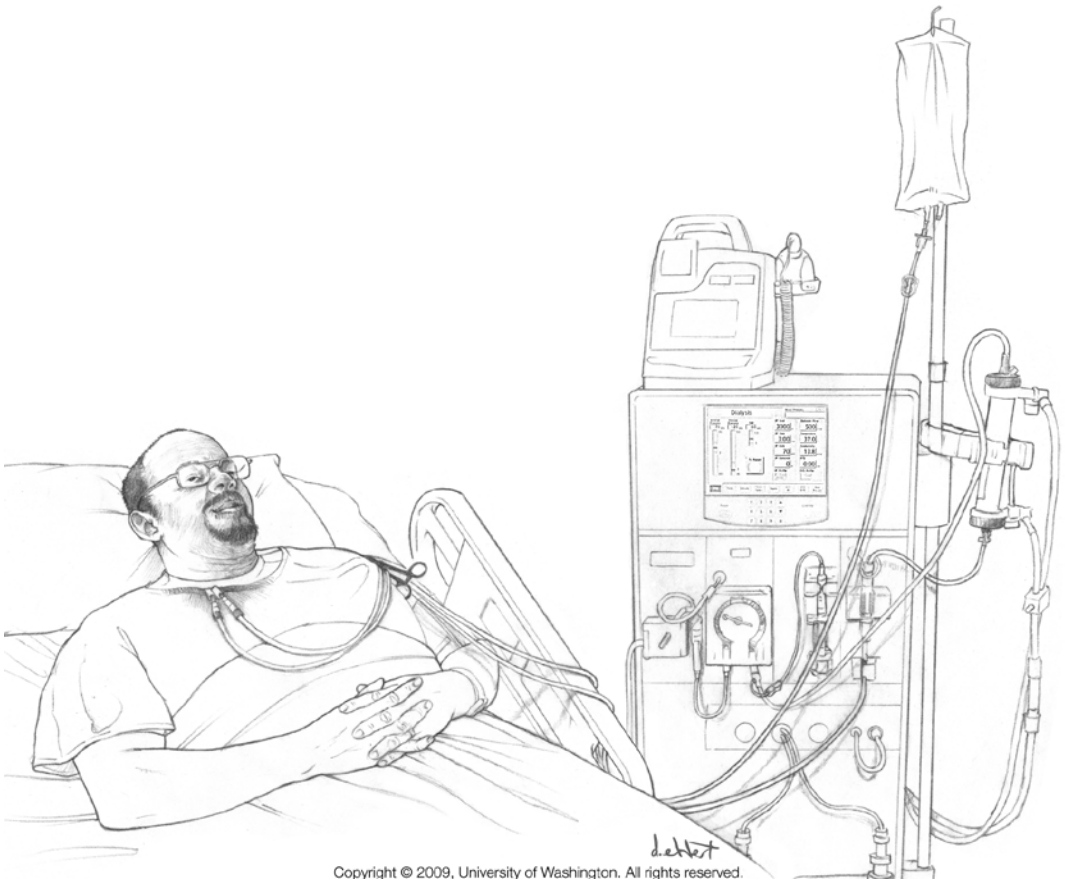
What is dialysis?

Dialysis is a procedure that filters waste and removes extra fluid from your body. There are 2 main types of dialysis:

- *Hemodialysis* filters your blood
- *Peritoneal dialysis* filters your blood using fluid in your *peritoneum* (the membrane that lines the inside of your abdomen)

Both types of dialysis use a *dialysis access* device. This device stays in place during your treatment. Blood or fluid is removed and returned to your body through it. In hemodialysis, the access device is usually placed in a vein in your neck or groin. In peritoneal dialysis, the access device ends in your belly.

Talk with a member of your *nephrology* (kidney) care team to learn more about dialysis.



Hemodialysis uses a machine to filter your blood, usually through a temporary access in your neck or groin. Long-term access can be created in the arm.

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Will my kidneys recover?

About half the people who have acute kidney injury recover fully. These people do not need more treatment. But, some people will need to keep having their kidneys checked to avoid more injury.

When will my kidneys recover?

Once a kidney problem is diagnosed and treated, kidneys may start to work normally within a few days to a few months. Your recovery depends on:

- What caused your kidney injury
- How severe your injury was
- How long your kidneys remained injured
- How quickly your acute kidney injury was diagnosed and treated
- Other medical conditions you may have that could make kidney disease more likely

What happens if my kidneys do not recover?

Some peoples' kidneys do not recover. These people may need long-term dialysis or a kidney transplant. Your healthcare team will work with you to help you decide how to care for your kidneys in the future.

Where can I learn more?

To learn more about kidney disease and kidney failure:

- Ask a member of your nephrology care team for more information. This team includes doctors, nurses, pharmacists, social workers, and dietitians.
- Talk with your primary care provider.
- Call the Northwest Kidney Centers at 206.292.2771 or visit *www.nwkidney.org*.
- Call the National Kidney Foundation toll-free at 800.622.9010 or visit *www.kidney.org*.
- Visit Kidney School online at *www.kidneyschool.org*.

Questions?

Your questions are important. Call your doctor or health provider if you have questions or concerns.

Outpatient Renal Nurses: 206.598.2844 or 206.598.9116

Renal Clinical Nurse Specialist: 206.598.4442

Your Nephrologist:

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