

Kidney Cancer: Diagnosis



How is kidney cancer diagnosed?

Diagnosing kidney cancer starts with your healthcare provider asking you questions. They will ask about your health history, your symptoms, risk factors, and family history of disease.

Your healthcare provider will also give you a physical exam. You may be checked for a fever and high blood pressure. The healthcare provider may feel your belly (abdomen), sides, and back for lumps.

What tests might I need?

Symptoms of kidney cancer can be caused by other less serious problems. Because of this, you will likely have some tests. Unlike most types of cancer, kidney cancer can often be diagnosed without a biopsy. A biopsy is when small pieces of tissue are removed and looked at with a microscope. Instead, you may have one or more of the following:

- Urine test
- Blood tests
- CT scan
- MRI scan
- Ultrasound
- Intravenous pyelogram (IVP)
- Angiography
- Fine needle aspiration or biopsy

Urine test

About 2 out of 5 people with kidney cancer, where the cancer has invaded the kidneys' collecting system, have blood in their urine. But there are many conditions that may cause blood in the urine. Check with your healthcare provider. Blood in the urine can be found by doing a test called a urinalysis. For this test, a small sample of your urine is tested in a lab to see if it has blood. Your healthcare provider may do a special kind of urine test (urine cytology). It checks for cancer cells in the urine.

Blood tests

There is no blood test that can diagnose kidney cancer. But a complete blood count (CBC), blood comprehensive metabolic panel (CMP), and other chemistry tests can show signs in the blood that are linked with kidney cancer. They will also check how well your organs are working. For example:

- **Too few red blood cells.** This condition is called anemia. It is common in many kinds of cancer.
- **Too many red blood cells.** This condition is called erythrocytosis or polycythemia. Some types of kidney cancer cells make a hormone called erythropoietin. This causes bone marrow to make too many blood cells.
- **A high blood calcium level.** This may show that the cancer has begun to affect the bones.

- **Lactate dehydrogenase (LDH).** This enzyme may be increased when fast-growing cells like cancer cells die.
- **A high level of liver enzymes.** This may be a sign that the cancer has spread to the liver.

Imaging Tests

CT scan

A CT scan uses a series of X-rays from different angles and a computer to make detailed images of the inside of the body. This test can confirm a diagnosis of kidney cancer. During the test, you lie still on a table as it slides into a CT scanner. A CT scan is painless. You may be asked to hold your breath one or more times during the scan.

In some cases, you will be asked to drink a contrast material (sometimes called dye) 4 to 6 hours before the scan. Then you may be asked not to eat anything until a second set of pictures is taken. The contrast lets your healthcare provider see certain parts of the body more clearly. The contrast will pass through your body and exit through your urine and bowel movements. Contrast may be given by injection into a vein as well. When the contrast is injected, you may have a warm feeling from your chest to your groin. Tell your healthcare provider if you have ever had a reaction to contrast materials. This includes hives, trouble breathing, or becoming suddenly hot. Special medicines can be given before the test to help prevent these kinds of reactions.

MRI scan

An MRI uses radio waves, large, strong magnets, and a computer to create detailed images of the body. It does not use X-rays. An MRI can show if the cancer has grown into major blood vessels (such as the renal vein and inferior vena cava) or spread to your spine or brain.

You may receive contrast through a vein before the MRI scan. During the test, you lie still on a table as it passes into a scanner tube. If you can't handle small, enclosed spaces (feeling claustrophobic), you may be given a sedative before having this test. The scanner takes 2 to 15 minutes to make an image. You may need more than one set of images. The test may last an hour or more. An MRI test is painless. But it is noisy. You can bring earphones and a music device, or ask for earplugs.

Ultrasound

An ultrasound test uses high-energy sound waves to create images on a computer screen. An ultrasound does not use X-rays and is painless. A gel is put on the skin of your lower back or abdomen. A technician then uses a handheld wand (called a probe or transducer) to press on the skin above your kidneys. This test can help show if a kidney tumor is a fluid-filled sac (cyst) or a solid tumor. It can also show if the tumor has blood flowing through it. A solid tumor with blood flow is more likely to be cancer.

Intravenous pyelogram (IVP)

This test uses a special contrast material (also called agent) and X-rays to look at the kidneys, ureters, and bladder. During this test, your healthcare provider injects contrast into one of your veins. X-rays are taken as the contrast passes through your urinary tract. With the help of the contrast, your healthcare provider can see abnormal things, tumors, kidney stones, or any blocked areas that may be caused by kidney cancer. The test can also check the blood flow through the kidneys.

Angiography

This test is very much like an IVP. It uses contrast material and X-rays to look at the kidneys. This test is usually done as part of a CT scan or MRI scan to use less contrast (excess contrast can damage kidney function). With angiography, the contrast is injected directly into a renal artery that goes to your kidney. The test helps show the blood vessels and lets your healthcare provider see which blood vessels are sending blood to the tumor. This test can also help your healthcare provider see if the tumor can be taken out by surgery.

Biopsy

Fine needle aspiration (FNA) or core needle biopsy

A biopsy is a test to take small pieces of tissue from the body. The tissue is then looked at with a microscope. A biopsy is not often done for kidney cancer. In most cases, imaging tests and surgery give all the information needed to diagnose and treat the cancer. But in some cases, a biopsy may be done to confirm a diagnosis of kidney cancer. It can also give more information to help your healthcare provider decide which treatment is best.

During a biopsy, your skin is numbed. A thin needle is then inserted through your skin to remove fluid or small pieces of tissue from your kidney. Ultrasound may be used to guide the needle biopsy. Your healthcare provider then sends the sample to a specialist, called a pathologist. The pathologist then looks for abnormal cells under a microscope. It often takes several days for the results of a biopsy to come back. The healthcare provider may request biomarker lab tests on the tissue to check for specific proteins, genes, mutations, and other features unique to kidney cancers. The results may help with treatment choices.

The difference between an FNA and a biopsy can be subtle. An FNA involves sucking (aspirating) a small amount of tissue or fluid through a needle using a syringe. The needle used for FNA biopsy is thinner than the ones used for routine blood tests. The needle used in core biopsies is larger than that used in an FNA. It removes a small cylinder of tissue.

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