KIDNEY CANCER

What You Need to Know

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TABLE OF CONTENTS

What is kidney cancer?

Kidney cancer is a disease that most often starts in the kidneys. It happens when healthy cells in one or both kidneys turn cancerous and then grow out of control to form a lump (called a *tumor*).

Renal cell carcinoma (RCC) is the most common type of kidney cancer in adults. RCC usually starts in the lining of tiny tubes in the kidney called *renal tubules*. RCC often stays in the kidney, but it can spread to other parts of the body, most often the bones, lungs, or brain.

There are many types of RCC tumors. Some types spread very fast and others are less likely to spread. The most common RCC tumors are: clear-cell, chromophobe, and papillary.

Other types of kidney cancer include: transitional cell carcinoma (TCC), Wilms tumor (most often found in children), and renal sarcoma.

What are signs and symptoms?

In the early stages, most people don't have signs or symptoms. Kidney cancer is usually found by chance during an abdominal (belly) imaging test for other complaints. However, as the tumor grows, you may have:

- Blood in the urine
- Pain in the lower back
- A lump in the lower back or side of the waist
- Unexplained weight loss, night sweats, fever, or fatigue

How does my doctor diagnose kidney cancer?

Your doctor will diagnose kidney cancer by reviewing your medical history and doing a physical exam, along with blood and urine tests.

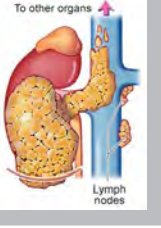
You will also have one or a few of these imaging tests:

- ***Computed tomography (CT)*** scans use x-rays to make a complete picture of the kidneys and abdomen (belly). They can be done with or without a contrast dye. Small amounts of radiation are used. The CT scan often shows if a tumor appears cancerous or if it has spread beyond the kidney.
- ***Magnetic resonance imaging (MRI)*** scans make a complete picture of the kidneys and abdomen, but without radiation. They can be done with or without a contrast dye called *gadolinium* that should be avoided in people on dialysis or with very low kidney function. An MRI can cost more than CT scans, take more time to do, and the pictures may not be as clear.
- ***Ultrasound*** uses sound waves to give a complete picture of the kidneys and abdomen without radiation. It may be useful in helping to decide if a mass in the kidneys is a fluid-filled cyst or a solid tumor. This test is done without contrast dye.

A ***biopsy*** can be used in special cases, but is typically not recommended. A biopsy requires a very small piece of the kidney to be removed with a needle and then tested for cancer cells.

STAGES OF KIDNEY CANCER

Once kidney cancer is found, your doctor will run tests to find out if the cancer has spread within the kidney or to other parts of the body. This process is called *staging*. It is important to know the stage before making a treatment plan. The higher the stage, the more serious the cancer.

Stage	Description	
1	The tumor is 7 centimeters (cm), which is about 2¾" or smaller, and is found only in the kidney.	
2	The tumor is larger than 7 centimeters (cm) and is found only in the kidney.	
3	Cancer is found in the main blood vessels of the kidney or in the layer of fatty tissue around the kidney. *OR* The tumor is any size and cancer is found only in the kidney and in 1 or more nearby lymph nodes.	
4	Cancer has spread beyond the layer of fatty tissue around the kidney and may be found in the adrenal gland above the kidney with cancer, or in nearby lymph nodes; or to other organs, such as the lungs, liver, bones, or brain, and may have spread to lymph nodes.	

What is the treatment for kidney cancer?

Treatment depends on your stage of kidney cancer, general health, age, and other factors. Your treatment can include one or more of the following options:

- ***Surgery*** is the most common treatment for kidney cancer—most people with early stage cancer (stages 1, 2, and 3) can be cured with surgery.
  - Partial nephrectomy: Only the tumor or the part of the kidney with the tumor is removed to leave behind as much of the kidney as possible.
  - Radical nephrectomy: The entire kidney is removed. If needed, the surrounding tissues and lymph nodes may also be removed.

  Ask your doctor about the surgical approach that is best for you:
  - *Open* (traditional surgery with a long incision);
  - *Laparoscopic* (surgery done with a video camera and thin instruments for smaller incisions);
  - and *Robotic* (laparoscopic surgery done with the help of a robot).
- ***Thermal ablation*** kills the tumor by burning or freezing it. It is most often used for small tumors in people who are not good candidates for nephrectomy surgery.
- ***Active surveillance*** is used if a small tumor is less than 4 centimeters (1 ½ inches). Most small tumors grow slowly and they may also not be cancerous. You will need regular monitoring and testing.

Treatment with medicine is often used for advanced kidney cancer that has spread to other parts of the body or where surgery cannot be done.

- ***Immunotherapy*** uses the body's defense system (immune system) to stop or slow the growth of cancer cells.
  - *Monoclonal antibodies* attack a specific part of cancer cells.
  - *Checkpoint inhibitors* help the immune system recognize and attack cancer cells.
  - *Vaccines and other immunotherapies* give an overall boost to the immune system.
- ***Anti-angiogenic therapies*** reduce the blood supply to a tumor to slow or stop its growth.
- ***Targeted therapies*** directly inhibit the growth of the cancer.
- ***Chemotherapy and radiation*** used for other types of cancer do not usually do a good job of treating most forms of kidney cancer.

Important Steps to Reduce Your Risk for Kidney Cancer

- Don't smoke.
- Maintain a healthy weight.
- Find out if you're exposed to certain toxins at work or at home. Some toxins that may increase the risk for kidney cancer include cadmium, asbestos, and trichloroethylene.
- Take care of your kidneys—people with kidney disease may be at increased risk for kidney cancer:
    - Ask your healthcare provider about 2 simple tests to find your kidney score:
    - A blood test for kidney function called GFR
    - A urine test for kidney damage called ACR.
    - Avoid prolonged use of non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and naproxen.
    - Control high blood pressure.
    - Control your blood sugar if you have diabetes.
- Be aware of certain risk factors that can't be changed, but should be followed up on:
    - Family history of kidney cancer
    - Certain diseases you may have been born with, such as von Hippel-Lindau disease

Important Steps If You Have Kidney Cancer

- Discuss all your treatment options with your medical team. Your medical team may include:
  - A urologist (*a surgical doctor who treats the urinary system*)
  - An oncologist (*a doctor who specializes in cancer*)
  - A radiation oncologist (*a doctor who treats cancer with radiation*)
  - A nephrologist (*kidney doctor*)
  - An oncology nurse, social worker, and other healthcare professionals
- Make medical and health-related appointments as soon as possible.
- Understand that you may need at least several opinions about what treatment choices are best for you.
- Maintain good nutrition during treatment so that you get enough calories, protein, and other nutrients to help prevent weight loss and to stay strong. Patients who eat well often feel better and have more energy.
- Protect your kidneys—people with kidney cancer may be at increased risk for kidney disease. Control blood pressure and blood sugar, avoid NSAIDs, don't smoke, stay physically active, and follow a healthy diet.

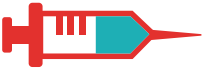
What is kidney disease?

Your kidneys' main job is to clean waste and extra water from your blood. Having kidney disease means your kidneys are damaged and cannot do this job well. Over time, kidney disease can get worse and lead to kidney failure. Once kidneys fail, treatment with dialysis or a kidney transplant is needed to stay alive. Kidney disease can be found with a simple blood test and urine test during a routine office visit with your healthcare professional.

2 Simple Tests to Check for Kidney Disease

Urine Test

You could help save your kidneys with a simple urine test. Ask your doctor about Albumin Creatinine Ratio (ACR) which estimates the amount of a type of protein, albumin, this is in the urine.



Blood Test

The Glomerular Filtration Rate (GFR) tells how well your kidneys are working to reove wastes from your blood. It is the best way to check kidney function. Over 90 is good. 60-89 should be monitored. Less than 60 for 3 months indicates kidney disease.

Major Risk Factors Include

Diabetes

High Blood Pressure

Age 60 and older

Are kidney cancer and kidney disease related?

Studies show there is a link between kidney cancer and kidney disease.

Some studies show that people with kidney disease may have a higher risk for kidney cancer. Some reasons are:

- ***Long-term dialysis:*** Some studies show that people on long-term dialysis have a 5-fold increased risk for kidney cancer. Experts believe this risk is due to kidney disease rather than dialysis.
- ***Immunosuppressant medicines:*** Some anti-rejection medicines that must be taken by kidney transplant recipients to prevent rejection can increase your risk for kidney cancer. However, taking your immunosuppressant medicine is important if you have a transplant. Without it, your body will reject your new kidney.

On the other hand, about one-third of the 300,000 kidney cancer survivors in the United States have or will develop kidney disease.[1], [2] Some reasons are:

- ***Surgery to remove an entire kidney (radical nephrectomy):*** Sometimes the entire kidney needs to be removed because the tumor is so large and most of the kidney has been destroyed. Your risk for kidney disease is higher if all (rather than part) of the kidney must be removed due to cancer. However, removing the whole kidney is often better for your survival if the tumor is large or centrally located. If a kidney tumor is small, it is better to undergo an operation to remove the tumor but not the entire kidney (partial nephrectomy). This approach decreases the chance of developing chronic kidney disease and associated problems with heart and blood vessel disease.

- ***Drugs to slow or stop cancer growth:*** Drugs that spread throughout the body to treat cancer cells, wherever they may be, are sometimes used to treat advanced kidney cancer. All cancer drugs have some side effects, but some can be toxic to the kidney (called nephrotoxic). The word "nephrotoxic" means it can damage your kidney function.

Remember, not everyone with kidney cancer will get kidney disease. Likewise, not everyone who has kidney disease or a transplant will get kidney cancer. Ask your doctor what you can do to lessen your risk.

[1] What are the Key Statistics about Kidney Cancer. American Cancer Society. 2016; http://www.cancer.org/cancer/kidneycancer/detailedguide/kidney-cancer-adult-key-statistics. Accessed October 20, 2016.

[2] Chang A, Finelli A, Berns JS, Rosner M. Chronic kidney disease in patients with renal cell carcinoma. Adv Chronic Kidney Dis. Jan 2014;21(1):91-95.

Support and Information

Living with a serious illness is not easy. People with cancer and those who care about them face many problems and challenges. Coping with these problems often is easier when you have helpful information and support from friends and relatives. It also helps many people to meet in support groups to talk about their concerns with others who have or have had cancer. In support groups, patients share what they have learned about dealing with cancer and the effects of treatment.

Keep in mind that each person is different, and the same treatments and ways of dealing with cancer may not work for everyone. Always discuss the advice of friends and family with members of your healthcare team. Many cancer treatment centers have patient navigators who can help you: know the right questions to ask your doctor and healthcare team; find more information about your condition and how to decide on the best treatment; make appointments and get the resources you need. This support can reduce the stress of dealing with your care.

Speaking with your doctor, healthcare team, and patient navigator about any concerns or questions is essential to getting the right information you need, but you can also get more information from the following organizations and programs.

National Cancer Institute, 800.4.CANCER
800.422.6237 or www.cancer.gov

National Kidney and Urologic Disease Information Clearinghouse (NKUDIC), a service of the National Institute of Diabetes, Digestive and Kidney Diseases.
800.891.5390 or www.niddk.nih.gov

Kidney Cancer Association
www.kidneycancer.org

American Cancer Society
800.227.2345 or www.cancer.org

The **National Kidney Foundation** (NKF) is the largest, most comprehensive and longstanding, patient centric organization dedicated to the awareness, prevention and treatment of kidney disease in the US.

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