

Kidney Cancer - Treatment Options [1]

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ON THIS PAGE: You will learn about the different ways doctors use to treat people with this type of cancer. To see other pages, use the menu on the side of your screen.

This section outlines treatments that are the standard of care (the best known treatments available) for this specific type of cancer. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new approach to treatment to evaluate whether it is safe, effective, and possibly better than the standard treatment. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Your doctor can help you review all treatment options. For more information, visit the [About Clinical Trials](#) [3] and [Latest Research](#) [4] sections.

Treatment overview

In cancer care, different types of doctors often work together to create a patient's overall treatment plan that combines different types of treatments. This is called a [multidisciplinary team](#) [5]. For kidney cancer, the health care team is usually led by a urologist, a doctor who specializes in the genitourinary tract, which includes the kidneys, bladder, genitals, prostate, and testicles, or a urologic oncologist, a doctor who specializes in treating cancers of the urinary tract. Cancer care teams also include a variety of other health care professionals, including physician assistants, oncology nurses, social workers, pharmacists, counselors, dietitians, and others.

Treatment options and recommendations depend on several factors, including the type and stage of cancer, possible side effects, and the patient's preferences and overall health. Your

care plan may also include treatment for symptoms and side effects, an important part of cancer care. Take time to learn about all of your treatment options and be sure to ask questions about things that are unclear. Also, talk about the goals of each treatment with your doctor and what you can expect while receiving treatment. Learn more about [making treatment decisions](#) [6].

Kidney cancer is most often treated with surgery, targeted therapy, and/or immunotherapy. Radiation therapy and chemotherapy are occasionally used. Patients with kidney cancer that has spread (metastatic cancer, see below) often receive multiple lines of therapy, which are treatments given one after another. Descriptions of these treatment options are listed below.

Active surveillance

Sometimes the doctor may recommend monitoring the tumor closely and waiting to start active treatment until there is evidence that the disease is getting worse. This approach is called active surveillance, watchful waiting, or watch-and-wait. It is usually recommended for older adults with a small tumor and other serious medical conditions, such as heart disease, chronic kidney disease, or severe lung disease.

Surgery

Surgery is the removal of the tumor and some surrounding healthy tissue during an operation. If the cancer has not spread beyond the kidneys, surgery to remove the tumor, part or all of the kidney, and possibly nearby tissue and lymph nodes, may be the only treatment necessary.

The types of surgery used for kidney cancer include the following procedures:

- **Radical nephrectomy.** Surgery to remove the tumor, the entire kidney, and surrounding tissue is called a radical nephrectomy. If nearby tissue and surrounding lymph nodes are also affected by the disease, a radical nephrectomy and lymph node dissection is performed. During a lymph node dissection, the lymph nodes affected by the cancer are removed. If the cancer has spread to the adrenal gland or nearby blood vessels, the surgeon may remove the adrenal gland during a procedure called an adrenalectomy and parts of the blood vessels. A radical nephrectomy is usually recommended to treat a large tumor when there is little healthy tissue remaining.
- **Partial nephrectomy.** A partial nephrectomy is the surgical removal of a tumor. This type of surgery preserves kidney function and lowers the risk of developing chronic kidney disease after surgery. Research has shown that partial nephrectomy is as effective for [T1 tumors](#) [7] whenever technically possible. Newer approaches that use a smaller surgical incision, or cut, are associated with fewer side effects and a speedier recovery.
- **Laparoscopic and robotic surgery.** During laparoscopic surgery, the surgeon makes

several small incisions rather than the one larger incision in the abdomen used during a traditional surgical procedure. The surgeon then inserts telescoping equipment into these small, keyhole incisions to remove the kidney completely or perform a partial nephrectomy. Sometimes, the surgeon may use robotic instruments to perform the operation. This surgery may take longer but may be less painful and associated with a speedier recovery. Laparoscopic and robotic approaches require specialized training. It is important to discuss the potential benefits and risks of these types of surgery with your surgical team.

Sometimes surgery is not recommended because of characteristics of the tumor or the patient's overall health. The following procedures may be recommended instead:

- **Radiofrequency ablation.** Radiofrequency ablation (RFA) is the use of a needle inserted into the tumor to destroy the cancer with an electrical current. The procedure is performed by a radiologist or urologist. The patient is sedated and given local anesthesia to numb the area.
- **Cryoablation.** Cryoablation, also called cryotherapy or cryosurgery, is the freezing of cancer cells with a metal probe inserted through a small incision. The metal probe is placed into the cancerous tissue using a CT scan and ultrasound for guidance. The procedure requires general anesthesia for several hours. The U.S. Food and Drug Administration (FDA) approved this treatment for kidney cancer, but more research studies are needed to determine how effective this treatment is in the long term.

Talk with your doctor before surgery about what side effects are likely based on the type of surgery you'll have, and what can be done to reduce or manage these side effects. Learn more about the [basics of cancer surgery](#) [8].

Targeted therapy

Targeted therapy is a treatment that targets the cancer's specific genes, proteins, or the tissue environment that contributes to cancer growth and survival. This type of treatment blocks the growth and spread of cancer cells while limiting damage to healthy cells. These drugs are becoming more important in the treatment of kidney cancer.

Recent studies show that not all tumors have the same targets. Many research studies are taking place now to find out more about specific molecular targets and new treatments directed at them. Learn more about the [basics of targeted treatments](#) [9].

- **Anti-angiogenesis therapy.** This type of treatment focuses on stopping angiogenesis,

which is the process of making new blood vessels. Because a tumor needs the nutrients delivered by blood vessels to grow and spread, the goal of anti-angiogenesis therapies is to “starve” the tumor. One anti-angiogenic drug, bevacizumab (Avastin), has been shown to slow tumor growth for people with metastatic renal carcinoma. Bevacizumab combined with interferon (see Immunotherapy below) slows tumor growth and spread.

- **Tyrosine kinase inhibitors (TKIs).** Clear cell kidney cancer has a mutation of the *VHL* gene that causes the cancer to make too much of a certain protein, known as vascular endothelial growth factor (VEGF). VEGF controls the formation of new blood vessels. Drugs called TKIs help block VEGF and other chemical signals that promote the development of new blood vessels. TKIs such as pazopanib (Votrient), sorafenib (Nexavar), and sunitinib (Sutent) may be used during treatment for clear cell kidney cancer. Axitinib (Inlyta), another TKI, has been approved to treat later-stage renal cell carcinoma. Side effects of TKIs may include diarrhea, high blood pressure, and tenderness and sensitivity in the hands and feet.
- **mTOR inhibitors.** Everolimus (Afinitor) and temsirolimus (Torisel) are drugs that target a certain protein that helps kidney cancer cells grow, called mTOR. Studies show that these drugs slow kidney cancer growth.

Talk with your doctor about possible side effects for each specific medication and how they can be managed. The medications used to treat cancer are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using [searchable drug databases](#) [10].

Immunotherapy

Immunotherapy, also called biologic therapy, is designed to boost the body's natural defenses to fight cancer. It uses materials made either by the body or in a laboratory to improve, target, or restore immune system function.

Interleukin-2 (IL-2) is a drug that has been used to treat later-stage kidney cancer. It is a cellular hormone called a cytokine that is produced by white blood cells and is important in immune system function, including the destruction of tumor cells.

High-dose IL-2 can cause severe side effects, such as low blood pressure, excess fluid in the lungs, kidney damage, heart attack, bleeding, chills, and fever, so patients may need to stay in the hospital for up to 10 days during treatment. However, some symptoms may be reversible. Only centers with expertise in high-dose IL-2 for kidney cancer should recommend IL-2. Some centers use low-dose IL-2 because it has fewer side effects, although it is not as effective.

Alpha-interferon is another type of immunotherapy used to treat kidney cancer that has spread. Interferon appears to change the proteins on the surface of cancer cells and slow their growth. Although it has not proven to be as beneficial as IL-2, alpha-interferon has been shown to increase survival when compared with an older treatment called megestrol acetate.

Researchers have tested many combinations of IL-2 and alpha-interferon for patients with advanced kidney cancer, and these treatments have also been combined with chemotherapy. It has not been shown in research studies that these combinations are better than IL-2 or interferon alone.

Researchers are working to learn more about how IL-2 and interferon destroy kidney cancer cells and which patients can benefit the most from these treatments. Newer forms of immunotherapy called checkpoint inhibitors are also being tested in clinical trials (see the [Latest Research](#) [4] section).

Learn more about the [basics of immunotherapy](#) [11].

Radiation therapy

Radiation therapy is the use of high-energy x-rays or other particles to destroy cancer cells. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist.

Radiation therapy is not effective as a primary treatment for kidney cancer. It is very rarely used alone to treat kidney cancer because of the damage it causes to the healthy kidney. Radiation therapy is used only if a patient cannot have surgery and, even then, usually only on areas where the cancer has spread and not the primary kidney tumor. Most often, radiation therapy is used when the cancer has spread to help ease symptoms, such as bone pain or swelling in the brain.

The most common type of radiation treatment is called external-beam radiation therapy, which is radiation given from a machine outside the body. When radiation treatment is given using implants, it is called internal radiation therapy or brachytherapy. For kidney cancer, internal radiation therapy is given using a hollow needle to insert radioactive seeds directly into a tumor.

Another type of radiation therapy is stereotactic radiosurgery, which is designed to direct the radiation therapy to a specific area without damaging nearby tissue. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time.

Side effects from radiation therapy may include fatigue, mild skin reactions, upset stomach, and loose bowel movements. Internal radiation therapy may cause some bleeding, infection, and risk of injury to nearby tissue. Most side effects go away soon after treatment is finished.

Learn more about the [basics of radiation therapy](#) [12].

Chemotherapy

Chemotherapy is the use of drugs to destroy cancer cells, usually by stopping the cancer cells' ability to grow and divide. Chemotherapy is given by a medical oncologist, a doctor who specializes in treating cancer with medication.

Systemic chemotherapy gets into the bloodstream to reach cancer cells throughout the body. Common ways to give chemotherapy include an intravenous (IV) tube placed into a vein using a needle or in a pill or capsule that is swallowed (orally).

A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time.

Although chemotherapy is useful for treating most types of cancer, kidney cancer is often resistant to chemotherapy. However, researchers continue to study new drugs and new combinations of drugs. For some patients, the combination of gemcitabine (Gemzar) and capecitabine (Xeloda) or fluorouracil (5-FU, Adrucil) will temporarily shrink a tumor.

It is important to remember that transitional cell carcinoma, also called [urothelial carcinoma](#) [13], and [Wilms tumor](#) [14] are much more likely to be successfully treated with chemotherapy.

The side effects of chemotherapy depend on the individual and the dose used, but can include fatigue, risk of infection, nausea and vomiting, hair loss, loss of appetite, and diarrhea. These side effects usually go away once treatment is finished.

Learn more about the [basics of chemotherapy](#) [15] and [preparing for treatment](#) [16]. The medications used to treat cancer are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using [searchable drug databases](#) [10].

Getting care for symptoms and side effects

Cancer and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the cancer, an important part of cancer care is relieving a person's symptoms and side effects. This approach is called palliative or supportive care, and it includes supporting the patient with his or her physical, emotional, and social needs.

Palliative care is any treatment that focuses on reducing symptoms, improving quality of life, and supporting patients and their families. Any person, regardless of age or type and stage of cancer, may receive palliative care. It works best when palliative care is started as early as needed in the cancer treatment process.

People often receive treatment for the cancer and treatment to ease side effects at the same

time. In fact, patients who receive both often have less severe symptoms, better quality of life, and report they are more satisfied with treatment.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, emotional support, and other therapies. You may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, or radiation therapy. Talk with your doctor about the goals of each treatment in your treatment plan.

Before treatment begins, talk with your health care team about the possible side effects of your specific treatment plan and palliative care options. And during and after treatment, be sure to tell your doctor or another health care team member if you are experiencing a problem so it can be addressed as quickly as possible. Learn more about [palliative care](#) [17].

Metastatic kidney cancer

If cancer has spread to another location in the body, it is called metastatic cancer. The most common place kidney cancer spreads is to the lungs, but it can also spread to the lymph nodes, bones, liver, brain, skin, and other areas in the body.

For kidney cancer that has spread to one specific part of the body, such as the lungs, surgery may be able to completely remove the cancer. If the cancer has spread to many areas beyond the kidney, it is more difficult to treat.

Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating this stage of cancer, because there can be different opinions about the best treatment plan. Learn more about getting a [second opinion](#) [18] before starting treatment, so you are comfortable with the treatment plan chosen. This discussion may include [clinical trials](#) [3].

Your health care team may recommend a treatment plan that includes a combination of treatments. Currently, the most effective treatment for metastatic kidney cancer is targeted therapy that slows or prevents tumor growth and blood vessel formation. These drugs have been shown to lengthen life when compared with standard treatment. Palliative care is also important to help relieve symptoms and side effects.

For most patients, a diagnosis of metastatic cancer is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, including through a support group.

Remission and the chance of recurrence

A remission is when cancer cannot be detected in the body and there are no symptoms. This may also be called having “no evidence of disease” or NED.

A remission may be temporary or permanent. This uncertainty causes many people to worry

that the cancer will come back. While many remissions are permanent, it's important to talk with your doctor about the possibility of the cancer returning. Understanding your risk of recurrence and the treatment options may help you feel more prepared if the cancer does return. Learn more about [coping with the fear of recurrence](#) [19].

If the cancer does return after the original treatment, it is called recurrent cancer. It may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence).

When this occurs, a cycle of testing will begin again to learn as much as possible about the recurrence. After testing is done, you and your doctor will talk about your treatment options. Often the treatment plan will include the treatments described above, such as surgery, targeted therapy, immunotherapy, radiation therapy, and chemotherapy, but they may be used in a different combination or given at a different pace. Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer. Whichever treatment plan you choose, palliative care will be important for relieving symptoms and side effects.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients are encouraged to talk with their health care team about these feelings and ask about support services to help them cope. Learn more about [dealing with cancer recurrence](#) [20].

If treatment fails

Recovery from cancer is not always possible. If the cancer cannot be cured or controlled, the disease may be called advanced or terminal.

This diagnosis is stressful, and advanced cancer is difficult to discuss for many people. However, it is important to have open and honest conversations with your doctor and health care team to express your feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families. Making sure a person is physically comfortable and free from pain is extremely important.

Patients who have advanced cancer and who are expected to live less than six months may want to consider a type of palliative care called hospice care. Hospice care is designed to provide the best possible quality of life for people who are near the end of life. You and your family are encouraged to think about where you would be most comfortable: at home, in the hospital, or in a hospice environment. Nursing care and special equipment can make staying at home a workable alternative for many families. Learn more about [advanced cancer care planning](#) [21].

After the death of a loved one, many people need support to help them cope with the loss. Learn more about [grief and loss](#) [22].

The [next section in this guide is About Clinical Trials](#) [3], and it offers more information about

research studies that are focused on finding better ways to care for people with cancer. Or, use the menu on the side of your screen to choose another section to continue reading this guide.

Links

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