

— BITO Health —

KIDNEY CANCER

DIAGNOSIS • SURGERY • TARGETED THERAPY
IMMUNOTHERAPY • RECOVERY • SURVIVORSHIP

This beautifully designed magazine has been created to give you all the essential information about kidney cancer in an easy-to-understand manner. We aim to empower you throughout your cancer journey, enabling you to make informed choices, anticipate treatment and lifestyle changes, and ultimately achieve the best possible outcome.

FREQUENTLY ASKED QUESTIONS

About Kidney Cancer

Just been diagnosed with kidney cancer? Here are simple answers to the questions patients and families ask most.

What is kidney cancer?

Kidney cancer usually means renal cell carcinoma (RCC), a tumor that starts in the kidney's filtering cells. It's the most common type of kidney cancer, making up about 9 in 10 cases. The most common subtype, clear cell RCC, tends to respond well to today's targeted drugs and immunotherapy. Thanks to these advances, many people with kidney cancer live for years, even with more advanced disease.

Is kidney cancer curable?

Often, yes, especially when it's found early. Surgery to remove a tumor still inside the kidney offers the best chance of a cure. Five-year survival is about 81% at stage 1 and 74% at stage 2. Stage 3 (spread to nearby tissue) is around 53%. Stage 4 (spread further) is harder to cure, but newer immunotherapy drugs have significantly extended survival, and many patients now live with it as a long-term condition.

Do I need kidney cancer surgery right away?

Not always. Very small tumors (under 4 cm) found by accident on a scan may simply be watched with regular imaging, especially in older patients. Larger or faster-growing tumors usually need surgery, either removing just the tumor (partial nephrectomy) or the whole kidney (radical nephrectomy).

What does a kidney cancer genetic test mean?

Most kidney cancers, over 95%, are not inherited. Genetic testing is usually offered if you were diagnosed young, have tumors in both kidneys, or have a family history. A change in the VHL gene is the most common inherited cause and raises lifetime kidney cancer risk to 30–50%. It's also why many targeted drugs work well against clear cell RCC. Ask your doctor if genetic counseling is right for you.

How long is kidney cancer treatment?

It depends on your stage. After surgery for higher-risk kidney cancer, immunotherapy (pembrolizumab) is usually given for about one year to lower the chance of recurrence. For advanced kidney cancer, treatment often combines two immunotherapy drugs, or immunotherapy with a targeted pill, continued as long as it's working and side effects stay manageable. Never stop treatment without talking to your oncologist.

Will kidney cancer come back after treatment?

It depends on your tumor's size, grade, and stage. Small, low-grade tumors have a low risk of returning. Larger or higher-grade tumors have a higher risk, which is why extra treatment after surgery is often recommended in those cases. Regular scans and bloodwork after treatment are the best way to catch any return early, when it's easiest to treat.

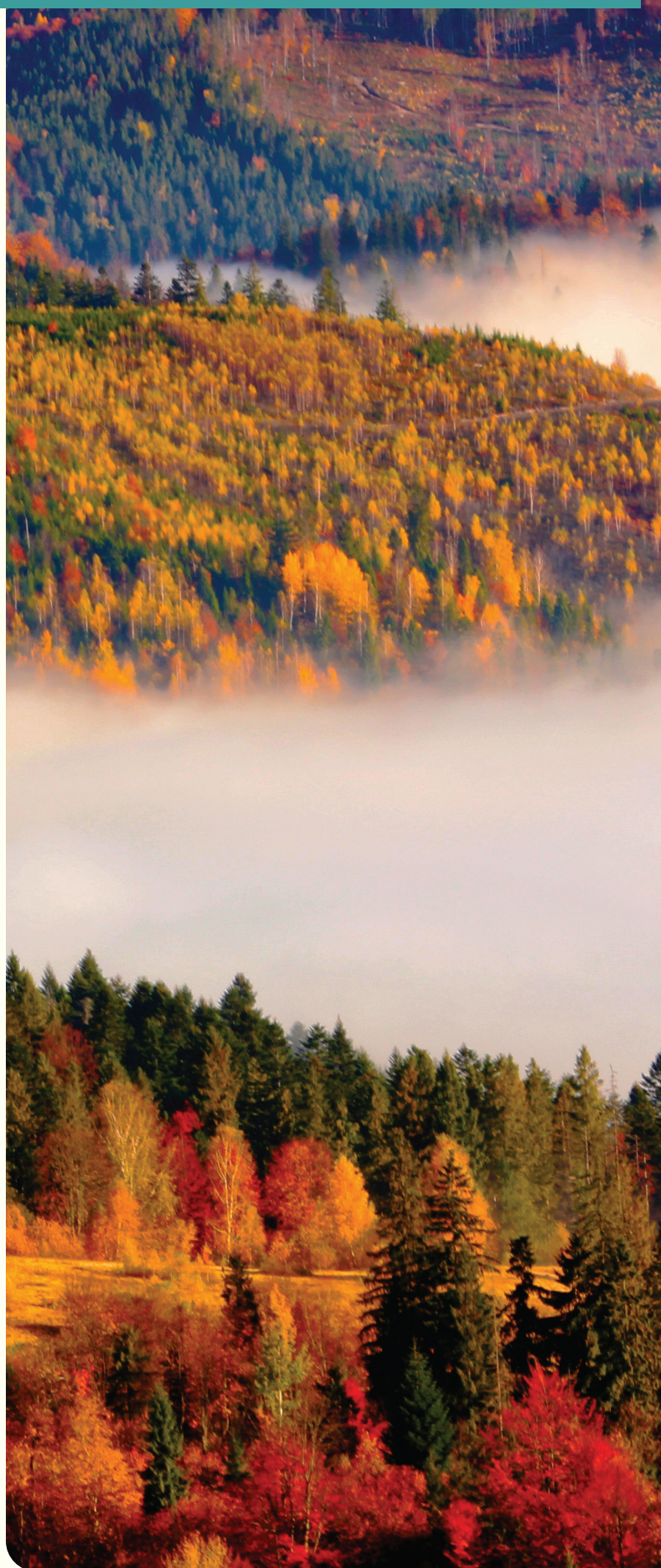
KIDNEY CANCER: AT A GLANCE

Quick Overview

Kidney cancer is a common cancer of the urinary system that usually starts in the kidney tissue that filters blood. The most common type is renal cell carcinoma (RCC), and many kidney tumors are found by chance during imaging tests done for other reasons. Treatment depends on the tumor size and stage, cancer type, and a person's overall health, and may include surgery, active surveillance or ablation for small tumors, or immunotherapy and targeted therapy for advanced disease. With modern care and regular follow-up, many people live long, active lives after kidney cancer.

About 80,000 people are diagnosed each year in the U.S. and 430,000 worldwide, most often adults over age 60, with men affected about twice as often as women. In the U.S., kidney cancer is more common in American Indian/Alaska Native and Black individuals, while globally the highest rates are in North America and Europe. Diagnosis rates have increased over time due to early detection and risk factors like obesity, high blood pressure, and smoking, but death rates have declined in many countries thanks to advances in surgery and modern treatments.

“ Clouds come
floating into my life...
to add color to
my sunset sky. ”
—Rabindranath Tagore





UNDERSTANDING KIDNEY CANCER

WHAT IS KIDNEY CANCER?

Kidney cancer starts when abnormal cells in the kidney grow out of control and form a tumor. In adults, most kidney cancers develop in the kidney's filtering cells and are called renal cell carcinoma (RCC). Many people do not notice symptoms at first, and kidney cancer is often found unexpectedly during imaging tests done for other medical reasons. Finding kidney cancer early is important because treatment is usually more effective before it spreads. Some tumors remain limited to the kidney, especially when detected early, while others can spread to nearby lymph nodes or distant organs such as the lungs, bones, liver, or brain.

WHERE ARE THE KIDNEYS AND WHAT DO THEY DO?

The kidneys are two bean-shaped organs located on either side of the spine, just below the rib cage. Their main job is to clean the blood and keep the body in balance, removing waste and extra fluid while helping important systems work properly. The kidneys:

1. **Filter** waste from the blood and turn it into urine.
2. **Balance** fluids and electrolytes, such as sodium and potassium.
3. **Help** control blood pressure by releasing hormones.
4. **Produce** erythropoietin (EPO), a hormone that helps the body make red blood cells.
5. **Activate** vitamin D, which is essential for strong bones and overall health.

HOW DOES KIDNEY CANCER DEVELOP?

Kidney cancer develops when mutations accumulate in kidney cells—often in the tubular cells that filter blood—causing them to divide uncontrollably and form a tumor. Over time, the tumor can invade nearby structures or spread through the bloodstream or lymphatic system to distant sites.

TYPES OF KIDNEY CANCER EXPLAINED

Most kidney cancers in adults are **renal cell carcinoma (RCC)**, which makes up about **85–90%** of all kidney cancers. RCC includes several subtypes that behave differently and can affect treatment decisions:

1 Clear cell RCC (~70–75%)

The most common type. It often grows faster than other subtypes and has been the focus of most kidney cancer research.

2 Papillary RCC (~10–15%)

The second most common subtype. It includes different patterns and may behave differently from clear cell cancer.

3 Chromophobe RCC (~5%)

A less common type that is often slower growing and has a better prognosis than many other kidney cancers.

4 Collecting duct carcinoma (<1%)

A rare and usually aggressive cancer that often presents at an advanced stage.

5 Renal medullary carcinoma (<0.5%)

An extremely rare and aggressive cancer, most often seen in younger people with sickle cell trait or sickle cell disease.

“Obstacles are those frightful things you see when you take your eyes off your goal.”

– Henry Ford

WHAT CAUSES KIDNEY CANCER? (RISK FACTORS)

Kidney cancer usually does not have a single cause. Instead, risk increases due to a combination of lifestyle, health, environmental, and inherited factors.

MODIFIABLE RISK FACTORS



Smoking

Tobacco chemicals damage DNA and are one of the strongest preventable risk factors for kidney cancer.



Obesity and poor metabolic health

Excess body weight and insulin resistance can increase inflammation and hormone changes that promote cancer growth.



High blood pressure (hypertension)

Long-term high blood pressure can damage kidney tissue and may increase cancer risk, independent of medications.



Certain chemical exposures

Long-term exposure to some industrial chemicals or solvents can injure kidney cells and increase cancer risk.

NON-MODIFIABLE RISK FACTORS



Family history or inherited genetic syndromes

Certain genetic conditions, such as von Hippel-Lindau (VHL) disease, increase the risk of developing kidney cancer.



Older age

Risk increases over time as DNA damage accumulates in cells.



Male sex

Kidney cancer occurs more often in men than in women, for reasons that are not fully understood.

SYMPTOMS & EARLY DETECTION

WHAT ARE THE SIGNS AND SYMPTOMS OF KIDNEY CANCER?

Early kidney cancer often causes no symptoms. In fact, 25–30% of people are diagnosed incidentally during imaging done for other reasons. When symptoms do occur, they may resemble infections or kidney stones. Persistent or unexplained symptoms should always be evaluated.

MOST COMMON SYMPTOMS

1. **Blood in the urine (hematuria)**—about 35–40%: This may be visible or microscopic and can come and go. It is the most common presenting symptom of kidney cancer.
2. **Flank or lower back pain (often on one side)**—about 30–40%: Pain usually appears when tumors grow larger and stretch the kidney capsule.
3. **A lump or mass in the abdomen or flank**—about 20–25%: This is less common today and usually suggests more advanced disease.
4. **Fatigue or low energy**—about 30%: May be related to anemia or cancer-related inflammation.
5. **Unexplained weight loss or poor appetite**—about 30–35%: Often reflects systemic effects of cancer on metabolism.
6. **Fever not caused by infection / night sweats**—about 20%: Can be caused by immune and inflammatory signals released by the tumor.

ADVANCED SYMPTOMS (CANCER SPREAD)

When kidney cancer spreads (metastatic disease), symptoms depend on where it goes:

1. **Persistent cough or shortness of breath (lungs)**—lungs involved in ~50–60% of metastatic cases.



2. **Bone pain or fractures (bones)**—bone involvement in ~30–40%.
3. **Headaches, confusion, neurologic changes (brain)**—brain metastases in ~5–15% of advanced cases.
4. **Severe fatigue, night sweats, significant weight loss**—common in advanced disease.

PARANEOPLASTIC SYNDROME

Kidney cancer can sometimes cause symptoms throughout the body, not just in the kidney. These happen because the tumor releases hormones or inflammatory substances into the bloodstream. Symptoms may improve after treatment, especially surgery. Some examples include:

1. **Anemia**: Low red blood cells causing fatigue, weakness, or shortness of breath.
2. **Abnormal liver tests (Stauffer syndrome)**: Liver test changes without cancer in the liver, often with fever, weight loss, and fatigue.

3. **Fever:** Unexplained fevers or night sweats not caused by infection.
4. **High calcium levels:** Can cause nausea, confusion, constipation, or weakness.
5. **Weight and muscle loss (cachexia):** Unintentional weight loss and weakness.
6. **High red blood cell count:** Rare; may cause headaches or blood clots.
7. **Protein buildup (amyloidosis):** From long-term inflammation, affecting organ function.
8. **High platelet count:** Uncommon but linked to more aggressive disease.
9. **Muscle and joint pain syndrome:** Stiffness and pain that often improves after kidney removal.

CAN KIDNEY CANCER BE DETECTED EARLY?

Routine screening for kidney cancer is not recommended in the United States for people at average risk. Unlike cancers such as breast, colon, or cervical cancer, there is currently no proven screening test that improves survival when used in the general population. In many cases, kidney cancer is discovered incidentally during imaging tests—such as CT scans, MRI, or ultrasound—performed for unrelated medical reasons. Early kidney tumors often cause few or no symptoms, which is why they are frequently found accidentally.

Screening may be considered only for individuals at high risk, such as those with hereditary cancer syndromes (e.g., von Hippel-Lindau disease, Hereditary Papillary RCC, Birt-Hogg-Dubé syndrome), a strong family history of kidney cancer, or long-term dialysis. In these patients, doctors may recommend periodic imaging tests such as ultrasound, CT scans, or MRI to monitor the kidneys. For the general population, however, awareness of symptoms and appropriate evaluation when symptoms occur remain the primary strategies for detection.

INCIDENTAL RENAL MASS FOUND ON IMAGING STUDY

An incidental renal mass is a kidney finding discovered unintentionally on ultrasound, CT, or MRI performed for another reason. These findings are increasingly common due to widespread imaging use, and most are benign simple cysts, especially with aging. Small renal masses (SRM) are typically defined as enhancing lesions 4 cm or less. Proper evaluation includes dedicated imaging and urologic assessment to determine risk. Incidental renal masses are frequently seen on abdominal scans, often in adults over 50, and while many small masses are malignant, most are low-grade and slow-growing.

