Types of Kidney Cancer

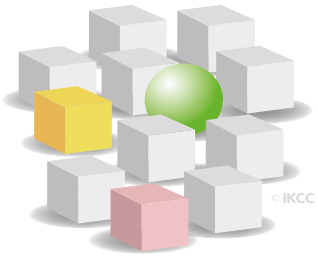
IKCC
International Kidney Cancer Coalition

Kidney cancer is a type of cancer that develops in the cells of the kidney.

There are several different types of kidney cancer, the most common being renal cell carcinoma (RCC). This accounts for about 85% of all kidney cancers. In RCC the cancerous cells grow in the kidney's tubules; the small tubes inside the kidney that filter blood and make urine. Most kidney cancers start growing in cells called clear cells, but they can also grow in other cells too, such as papillary cells, collecting duct cells and medullary cells.

There are also different subtypes of RCC, depending on which cells are affected or how the cells look under the microscope:

- Clear cell is the most common sub-type (65-70% of cases)
- Papillary (15%)
- Chromophobe (5-7%)
- Collecting duct carcinoma
- Renal medullary carcinoma
- Mucinous tubular and spindle cell carcinoma
- Renal translocation carcinoma
- Unclassified RCC (the latter five are very rare and make up the remaining 5-10% of RCC tumours)
- Hereditary kidney cancer (less than 5%).



Some kidney cancers (about 12% of the total) grow at the point where the kidney joins the ureter, a thin tube that carries urine from the kidney to the bladder. This is called transitional cell carcinoma (TCC). TCC is very similar to bladder cancer and the treatments for this type of cancer are very different.

Less than 1% of kidney cancers are renal sarcomas, which originate in the connective tissues of the kidney.

Very rarely a tumour, called a metastasis, is found in the kidney that has spread from a primary tumour elsewhere in the body. In these cases, the tumour is not kidney cancer and will be treated differently.

Sometimes benign (not cancerous) tumours may grow in the kidney. These are called kidney cysts, renal oncocytomas, or angiomyolipomas (AML) and make up about 5% of all kidney tumours.

There are some significant differences in treatment for the various types of kidney cancer. It is, therefore, important to know precisely what kind of kidney cancer has been diagnosed so you receive the right treatment. However, most patients have the clear cell RCC.

What is sarcomatoid kidney cancer?

Some kidney cancers are diagnosed as sarcomatoid kidney cancer. Sarcomatoid is a name given to a particular type of cell and can affect all the different subtypes of kidney cancer. Between 1 and 15% of kidney cancers have sarcomatoid cells. Sarcomatoid kidney cancers can be more aggressive and grow more quickly than other types of kidney cancer. They are more likely to spread to other parts of the body.

Types of hereditary kidney cancer

There are several different types of hereditary kidney cancer, which are passed down in the genes from a parent to their child. Research is ongoing to find out more information about the genes that cause kidney cancer. These genes could be used as biomarkers to predict who will get kidney cancer in the future.

- **Von Hippel–Lindau (VHL):** This is caused by a mutation in a gene called the VHL gene and usually causes clear-cell RCC.

- **Hereditary leiomyomatosis and renal cell carcinoma (HLRCC):** This is caused by a mutation in the FH gene and usually causes type 2 papillary RCC.

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- **Hereditary papillary renal cell carcinoma (HPRCC):** This is caused by a mutation in the MET gene and usually causes type 1 papillary RCC.
- **Birt–Hogg–Dubé (BHD):** This is caused by a mutation in the FLCN gene and usually causes chromophobe RCC or a benign tumour called an oncocytoma.
- **Renal cell carcinoma with hereditary paraganglioma and phaeochromocytoma:** This is caused by mutations in the SDHB or SDHD gene.
- **Chromosome 3 translocation familial renal cell carcinoma:** This is caused when a part of a chromosome (a string of DNA containing several genes) breaks off and attaches to different chromosome.
- **Tuberous sclerosis complex (TSC):** This is caused by a mutation in the TSC1 or TSC2 gene and usually causes a type of kidney cancer called angio-myolipoma. These tumours are benign, but they have many blood vessels, which can burst and lead to life-threatening internal bleeding if not treated.

Kidney cancer in children

In rare cases, children can get kidney cancer. Usually, they develop a different type of kidney cancer than adults, called Wilms' tumour (or nephroblastoma), which is usually diagnosed in children aged 2-5. However, there have been very rare cases of children with RCC or adults with Wilms' tumour.

Good to know!

Tubules
The small tubes inside the kidney that filter blood and make urine.

Sarcomatoid
Sarcomatoid means that the cells of the cancer look like sarcoma cells. Sarcoma is cancer of the body's supporting tissues, such as muscle, nerves, fat, blood vessels and fibrous tissues.

Nephroblastoma
Also called Wilms' tumour. A rare kidney cancer that affects children.

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IKCC International Kidney Cancer Coalition

The International Kidney Cancer Coalition (IKCC) is an independent international network of patient organisations that focus exclusively, or include a specific focus, on kidney cancer. It is legally incorporated as a Foundation in the Netherlands. **www.ikcc.org info@ikcc.org**