



Understanding Kidney Cancer

A guide for people with cancer,
their families and friends

Cancer
information

Cancer Council Helpline

13 11 20

www.cancercouncil.com.au

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Note to reader

Always consult your doctor about matters that affect your health. This booklet is intended as a general introduction to the topic and should not be seen as a substitute for medical, legal or financial advice. You should obtain independent advice relevant to your specific situation from appropriate professionals, and you may wish to discuss issues raised in this booklet with them.

All care is taken to ensure that the information in this booklet is accurate at the time of publication. Please note that information on cancer, including the diagnosis, treatment and prevention of cancer, is constantly being updated and revised by medical professionals and the research community. Cancer Council Australia and its members exclude all liability for any injury, loss or damage incurred by use of or reliance on the information provided in this booklet.

Cancer Council NSW

Cancer Council is the leading cancer charity in NSW. It plays a unique and important role in the fight against cancer through undertaking high-quality research, advocating on cancer issues, providing information and services to the public and people with cancer, and raising funds for cancer programs. This booklet is funded through the generosity of the people of NSW. To make a donation to help defeat cancer, visit Cancer Council's website at www.cancerCouncil.com.au or phone 1300 780 113.



Cancer Council NSW

153 Dowling Street, Woolloomooloo NSW 2011

Cancer Council Helpline 13 11 20

Telephone 02 9334 1900 **Facsimile** 02 9334 1741

Email feedback@nswcc.org.au **Website** www.cancerCouncil.com.au

ABN 51 116 463 846

Introduction

This booklet has been prepared to help you understand more about the most common type of kidney cancer, renal cell carcinoma.

Many people feel shocked and upset when told they have cancer in one or both kidneys. We hope this booklet will help you, your family and friends understand how kidney cancer is diagnosed and treated. We also include information about support services.

We cannot give advice about the best treatment for you. You need to discuss this with your doctors. However, we hope this information will answer some of your questions and help you think about other questions to ask your treatment team.

This booklet does not need to be read from cover to cover – just read the parts that are useful to you. Some medical terms that may be unfamiliar are explained in the glossary. You may also like to pass this booklet to your family and friends for their information.

How this booklet was developed

This booklet was developed with help from a range of health professionals and people affected by kidney cancer. It is based on international clinical practice guidelines¹ for kidney cancer.

If you're reading this book for someone who doesn't understand English, let them know that Cancer Council **13 11 20** can arrange telephone support in different languages. They can also call the Translating and Interpreting Service (TIS) direct on **13 14 50**.



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What is cancer?

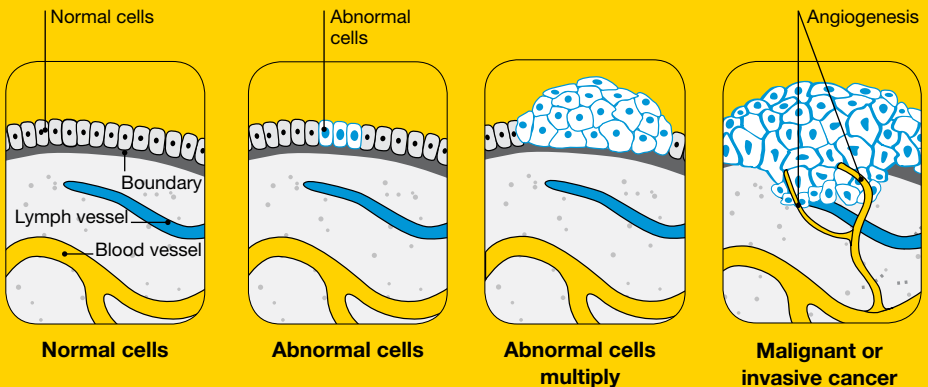
Cancer is a disease of the cells, which are the body's basic building blocks. The body constantly makes new cells to help us grow, replace worn-out tissue and heal injuries. Normally, cells multiply and die in an orderly way.

Sometimes cells don't grow, divide and die in the usual way. This may cause blood or lymph fluid in the body to become abnormal, or form a lump called a tumour. A tumour can be benign or malignant.

Benign tumour – Cells are confined to one area and are not able to spread to other parts of the body. This is not cancer.

Malignant tumour – This is made up of cancerous cells, which have the ability to spread by travelling through the bloodstream or lymphatic system (lymph fluid).

How cancer starts



The cancer that first develops in a tissue or organ is called the primary cancer. A malignant tumour is usually named after the organ or type of cell affected.

A malignant tumour that has not spread to other parts of the body is called localised cancer. A tumour may invade deeper into surrounding tissue and can grow its own blood vessels (angiogenesis).

If cancerous cells grow and form another tumour at a new site, it is called a secondary cancer or metastasis. A metastasis keeps the name of the original cancer. For example, kidney cancer that has spread to the lungs is called metastatic kidney cancer, even though the person may be experiencing symptoms caused by problems in the lungs.

How cancer spreads

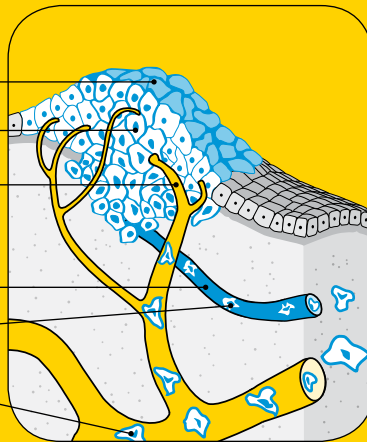
Primary cancer

Local invasion

Angiogenesis –
tumours grow their
own blood vessels

Lymph vessel

Metastasis –
cells invade other
parts of the body via
blood vessels and
lymph vessels





The kidneys

The kidneys are two bean-shaped organs, each about the size of a fist. They are positioned near the middle of your back, on either side of the backbone (spine).

The kidneys are part of the body's urinary system. Their main role is to filter and clean blood by removing excess water, salts and waste products. These filtered materials are turned into urine. Urine travels from each kidney into a funnel called the renal pelvis, then through a tube called the ureter, and into the bladder.

Urine is stored in the bladder until urination, when it leaves the body through a tube called the urethra. In women, the urethra is a short tube in front of the vagina. In men, the tube is longer and passes through the prostate and penis.

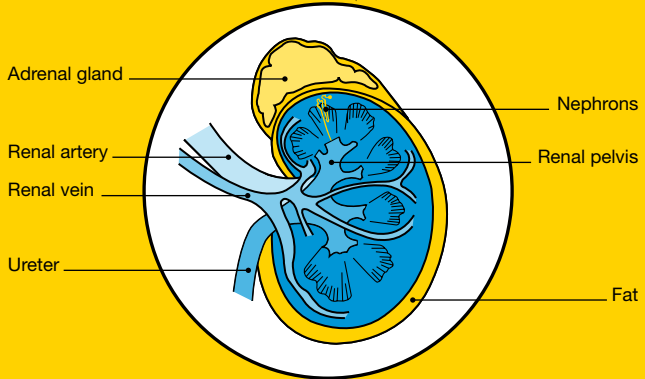
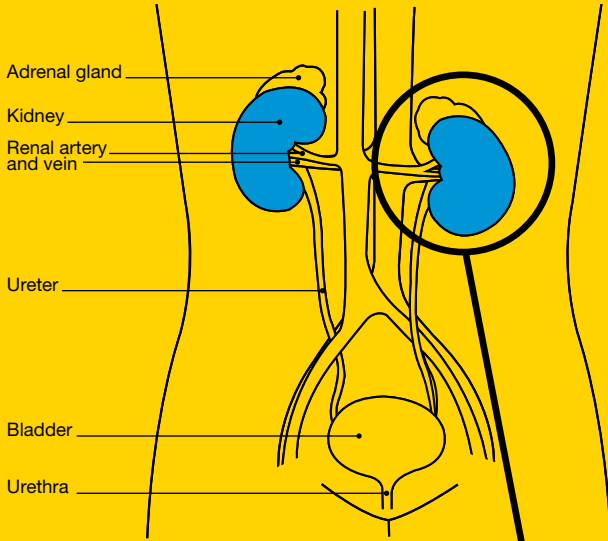
What the kidneys do

In each kidney there are about one million small units called nephrons, which filter blood.

The kidneys also produce hormones, which trigger the production of red blood cells, and control the body's calcium levels.

An adrenal gland, which produces hormones, sits above each kidney. Although adrenal glands are not part of the urinary system, cancer can spread to them.

The urinary system





Key questions

Q: What is kidney cancer?

A: Kidney cancer is a type of cancer that starts in the cells of the kidney.

In the early stages, the primary cancer forms a tumour that is confined to the kidney. As the cancer grows, it may invade organs or structures near the kidney, such as the surrounding fatty tissue, veins, adrenal glands, ureters or liver. It might also spread to other parts of the body, such as the lungs or bones.

Sometimes cancer in the kidney can be a secondary cancer (metastasis) from a primary cancer located in another part of the body. However, this type of cancer is not kidney cancer and it behaves like the cancer in the original organ where it started.

Q: What types are there?

A: About nine out of 10 kidney cancers are renal cell carcinoma (RCC), sometimes called renal adenocarcinoma. Usually only one kidney is affected, but in rare cases, both can be affected. This might be because the RCC has spread to the other kidney, or sometimes because more than one RCC has occurred in the same person.

There are different types of RCC. The most common is clear cell carcinoma, based on the way the cells look under the microscope. Other less common RCCs include papillary, chromophobe and other rarer types.

Other types of kidney cancer

Urothelial carcinoma (or transitional cell carcinoma) is a rare type of kidney cancer that can begin in the renal pelvis, where the kidney and ureter meet. It can also occur in the ureter, where it would be treated as cancer of the ureter or ureteral carcinoma.

It tends to behave more like bladder cancer (another type of urothelial cancer) and not like RCC.

This booklet has information about RCC. To find out about other types of kidney cancer, call Cancer Council **13 11 20**.

Q: What are the symptoms?

A: Most people with kidney cancer have no symptoms and are often diagnosed with the disease when they see the doctor for another reason. Symptoms can, however, include:

- blood in the urine (haematuria)
- a change in urine colour to dark, rusty or brown
- pain in the lower back on one side that is not due to an injury
- pain or a lump in the abdomen or side (flank)
- constant tiredness
- unexplained weight loss
- fever (not caused by a cold or flu)
- swelling of the abdomen or extremities, e.g. ankles, feet.

You might also have a low red blood cell count (anaemia), a high red blood cell count or high levels of blood calcium.

Sometimes these symptoms can cause fatigue and dizziness, which are related to hormones the kidney produces.

The symptoms listed on the previous page can also occur with other illnesses. Having some of these symptoms doesn't necessarily mean you have kidney cancer – only tests can confirm the diagnosis. If you are concerned, make an appointment with your general practitioner (GP).

Q: What increases the risk of getting kidney cancer?

A: The exact causes of kidney cancer are not known. However, several factors are known to increase the risk of developing kidney cancer:

Smoking – People who smoke have almost twice the risk of developing kidney cancer as nonsmokers. Up to one-third of all kidney cancers are thought to be related to smoking.

Obesity – Excess body fat may cause changes in certain hormones that can lead to kidney cancer.

High blood pressure – This is often a risk factor in people who are overweight, but other medical conditions can also cause high blood pressure.

Heavy use of certain medications – These include diuretics and pain-killers with the ingredient phenacetin.

While phenacetin is no longer used, people who took pain relievers with phenacetin (most likely before 1970) may be at a higher risk.

Kidney failure – People with advanced kidney disease have a higher risk of developing kidney cancer.

Family history – People who have family members with kidney cancer, especially a sibling, are at increased risk.

Exposure to certain substances – Those with regular exposure to certain chemicals, such as asbestos, cadmium, lead, herbicides or organic solvents, might have a higher risk.

Q: How common is it?

A: About 2700 people are diagnosed with kidney cancer each year. This accounts for about 2.5% of cancers in Australia.

Kidney cancer is the ninth most common cancer in Australia.

The average age of a person who gets kidney cancer is 63. Men are almost twice as likely to be diagnosed with kidney cancer as women are.



Diagnosis

About one in three kidney cancers are advanced at the time of diagnosis. This is because people usually don't have noticeable symptoms even though the cancer has been present for some time.

If your doctor suspects you have kidney cancer, you will have some of the following tests to confirm the diagnosis and show if cancer has spread to other parts of the body. You are unlikely to need all of these tests.

There are four categories of tests: blood and urine tests, internal examination (cystoscopy), imaging (such as an ultrasound), and tissue sampling (biopsy).

It may take up to a week to receive your test results. You might feel anxious during this time. It could be helpful to discuss your feelings with someone, such as a close friend or relative. You can also call Cancer Council 13 11 20 for information and support.

Urine and blood tests

Urine test – The most common sign of kidney cancer is blood in the urine (haematuria). Doctors will sometimes request a urine test so they can look for traces of blood and other abnormalities, such as proteins, that can't be seen with the naked eye. However, blood in the urine can be caused by conditions other than cancer.

Blood tests – The doctor will ask for a blood sample to check for changes that could be caused by kidney cancer. A blood count identifies the number of different types of blood cells present.

Too few or too many red blood cells can be a sign of kidney cancer. High calcium levels, high levels of certain substances called enzymes or other chemicals, and changes in salt levels might also be found in people with kidney cancer. In most cases, blood test results are normal and the doctor will do further tests.

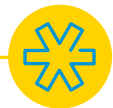
Internal examination (cystoscopy)

If you have blood in your urine, your doctor might want to look inside your bladder to see where the blood is coming from. This procedure is called a cystoscopy. You will be given a general or local anaesthetic so you are not in pain. The doctor will pass a tiny telescope (cystoscope) through the urethra and into the bladder to check for bleeding, tumours or other abnormalities.

If necessary, the urologist can also examine the ureters by using a fine telescope (ureteroscope) or perform an x-ray after pushing dye into the ureters. These tests are done to rule out other types of cancer such as urothelial carcinoma.

A cystoscopy may feel uncomfortable, but should not cause pain. For a few days afterwards, you may feel a burning sensation when passing urine or notice blood in your urine. This is normal. Let your doctor know if the blood lasts longer than a few days.

You might not need a cystoscopy if you have had an ultrasound that has shown a tumour on your kidney – see page 14.



Imaging tests

You will usually have at least one of the tests described below. If the doctor needs further information to make a diagnosis or to see if the cancer has spread, you might have more than one scan.

Ultrasound – In an ultrasound, soundwaves are used to produce pictures of your internal organs. These might show if a tumour is present.

Before the test, you might be asked to drink fluids so your bladder is full. While you're lying down, a gel is spread over your abdomen or back and a small device called a transducer is passed over the area. The device sends out soundwaves that echo when they encounter something dense, like an organ or tumour. A computer creates a picture from these echoes.

The ultrasound is painless and takes about 15–20 minutes.

CT scan – A CT (computerised tomography) scan is a procedure that uses x-ray beams to take pictures of the inside of your body. Unlike a standard x-ray, which takes a single picture, a CT scan compiles many pictures into one complete picture of an area of your body.

CT scans are useful for identifying any tumours in the kidneys and checking whether cancer has spread to other organs and tissues. The scan can provide information about the size, shape and position of a tumour. It also helps identify enlarged lymph nodes that might contain cancer.

You will probably have an injection of a dye (called contrast) into one of your veins before the scan. This dye helps make the scan pictures clearer. It might make you feel flushed and hot for a few minutes. Rarely, more serious reactions occur, such as breathing difficulties or low blood pressure. Let the person doing the scan know if you feel unwell.

You will need to lie still on a table while the CT scanner, which is large and round like a doughnut, slowly moves around you.

This scan will take about 30–40 minutes. Most people are able to go home as soon as the scan is over.



The dye used in a CT scan usually contains iodine. If you're allergic to iodine or dyes from previous scans, let the person performing the scan know in advance. You should also tell the doctor if you're diabetic, have kidney disease or are pregnant.

MRI scan – An MRI (magnetic resonance imaging) scan uses a combination of magnetism and radio waves to build up detailed cross-section pictures of your body.

Sometimes an MRI scan is ordered because it can provide different details than a CT scan can, but only a small percentage of people with kidney cancer need this test. You might have an MRI if the doctor wants to check whether the cancer has gone into the renal vein or spread to the spinal cord.

The MRI scanner sometimes makes people feel anxious or afraid of being in a confined space (claustrophobic). If you feel uncomfortable, tell the person performing the scan. You might be able to have medication to help you relax.

“ I had various scans when I was diagnosed with primary kidney cancer. I found the MRI frightening, particularly going into the cylinder headfirst and having to hold my breath. I found counting to myself helpful. It made me feel more in control. ” George

As with a CT scan, a contrast medium might be injected into your veins before a scan. Let the doctor know if you have any metallic objects, such as a pacemaker, in your body, as these can sometimes affect the image.

During the scan, you will lie on an examination table inside a metal cylinder – a large magnet – that is open at both ends. The scanner can be noisy at times.

The MRI scan might take up to an hour. You will probably be able to go home as soon as it is done.

Chest x-ray – A chest x-ray is used to check for problems in the organs and bones of the chest. If cancer has already been diagnosed, a chest x-ray can show whether the cancer has spread to your lungs or ribs. The x-ray takes only a few minutes and is painless and safe.

Radioisotope bone scan – A radioisotope scan is another way to see if any cancer cells have spread to the bones. You might have this test if you have a very large tumour or advanced kidney cancer. The scan can also help the doctor determine how well you are responding to treatment.

A small amount of radioactive substance is injected into a vein, usually in your arm. You will need to wait while the substance moves through your bloodstream to your bones, which can take about 3–4 hours.

Your body will be scanned with a machine that detects radioactivity. A larger amount of radioactivity will show up in any areas of bone affected by cancer cells. Radioisotope bone scans generally do not cause any side effects.

Exposure to radiation

The amount of radioactive substance used for a radioisotope bone scan is small. The radiation disappears from your body within a few hours.

However, tell your doctor if you are pregnant, as it might not be safe for you to have this scan.

After the scan, you should drink plenty of fluids and avoid contact with young children and pregnant women for the rest of the day.

If you need more details, ask your hospital for advice.

Tissue biopsy

A biopsy is when doctors remove fluid or cells from the body so that the tissue can be examined under a microscope to see if there have been any changes in the cells.

For kidney cancer, a tissue biopsy is not often used for diagnosis. This is because other tests will usually give the doctor enough information to recommend a type of treatment.

However, a biopsy might be recommended:

- if there is a possibility that the tumour in the kidney might not be the primary cancer but has spread from elsewhere in the body (metastasis)
- when the doctor suspects the tumour is not cancer (benign), and might not need aggressive treatment but instead could be kept under surveillance (see page 25).

A biopsy can usually identify the type of cancer cells in the body. You will have either a needle core biopsy or a fine needle aspiration.

Needle core biopsy – A sample of tissue is removed from the kidney with a needle. Local anaesthetic is used to numb the area. The biopsy usually takes about 30 minutes to perform.

Fine needle aspiration biopsy (FNA) – A thin needle is inserted through the skin into the kidney to remove either fluid or cells. It is a quick procedure, which is usually done without anaesthetic. An FNA is not common for kidney cancer, as more tissue is usually required than can be obtained with this technique.

Staging and grading kidney cancer

The tests used to diagnose kidney cancer show how far the cancer has spread (the stage), and how abnormal the cancer cells look and how fast they'll probably grow (the grade). Knowing the stage and grade of the cancer helps doctors plan the best treatment for you.

Staging: TNM system

T (Tumour) 1–4	Indicates the size of the tumour and whether it has spread to nearby tissues. A higher number after the T means that it is larger, or has spread to tissues surrounding the kidney.
N (Nodes) 0–2	Indicates whether the lymph nodes are affected. Higher numbers are used when more than one group of nodes is affected by the cancer.
M (Metastasis) 0–1	Indicates whether the cancer has spread to more distant parts of the body. 0 means that the cancer has not spread; 1 means the cancer has spread.

Grading: Fuhrman system

Grade 1	The cancer cells look fairly normal, are probably growing slowly and are less likely to spread.
Grade 2	The cancer cells appear slightly abnormal and might grow more rapidly.
Grade 3	Most cells appear abnormal and the cancer might grow quickly.
Grade 4	No cancer cells look normal and they are more likely to grow and spread rapidly.

Prognosis

Prognosis means the expected outcome of a disease. You may wish to discuss your prognosis and treatment options with your doctor, but it is not possible for any doctor to predict the exact course of your disease. Instead, your doctor can give you an idea about common issues that affect people with kidney cancer.

In most cases, the earlier kidney cancer is diagnosed, the better the outcome. If the cancer is discovered after it has spread to other parts of the body, it will probably be more difficult to treat successfully.

People who are able to have surgery to remove the cancer have a higher survival rate. However, other factors such as your age, general fitness and medical history also affect prognosis.

Which health professionals will I see?

Your GP will arrange the first tests to assess your symptoms. If these tests do not rule out cancer, you will usually be referred to a specialist, such as a urologist, who will arrange further tests and advise you about treatment options.

You will also be cared for by a range of other health professionals, who specialise in different aspects of your treatment. This multidisciplinary team will probably include the professionals described in the table opposite.

Health professional	Role
urologist	a doctor who specialises in treating diseases of the urinary system
nephrologist	a doctor who specialises in caring for people with conditions that cause kidney (renal) impairment or failure
medical oncologist	prescribes and coordinates targeted therapies and chemotherapy and helps to manage your overall health
radiation oncologist	prescribes and coordinates the course of radiotherapy
nurses	administer drugs and support you through all stages of treatment
cancer care coordinator	supports patients and families throughout treatment and liaises with other staff
dietitian	recommends an eating plan to follow while you're in treatment and recovery
social worker, counsellor, physiotherapist and occupational therapist	link you to support services and help with emotional, physical or practical issues



Key points

- Kidney cancer often doesn't produce any symptoms, but sometimes people have urinary problems or back pain.
- Cancer might be present for some time before diagnosis. Some kidney cancers have already advanced by the time they are diagnosed.
- Several types of tests are used to diagnose kidney cancer and to see if it has spread. These include blood and urine tests, internal examination, imaging tests and, occasionally, tissue sampling (biopsy).
- Tests show what type of kidney cancer you have, as well as its stage and grade.
- The stage of the cancer shows how far the cancer has spread in the body. The TNM system is used for staging. This stands for Tumour, Nodes, Metastasis.
- The grade of the cancer shows how abnormal the cancer cells appear. The Fuhrman system is used for grading (1–4).
- Knowing the stage and the grade helps doctors plan the best treatment for you.
- Your prognosis is the expected outcome of the disease, based on the type of cancer you have, your treatment options and other factors such as your age, medical history and fitness. Your doctor can discuss your prognosis with you.
- You will be cared for by various health professionals who work together as a team. This will probably include a urologist or nephrologist, nurses and other allied health professionals.



Making treatment decisions

Sometimes it is difficult to decide on the type of treatment to have. You may feel that everything is happening too fast. Check with your doctor how soon your treatment should start, and take as much time as you can before making a decision.

Understanding the disease, the available treatments and possible side effects can help you weigh up the pros and cons of different treatments and make a well-informed decision that's based on your personal values. You may also want to discuss the options with your doctor, friends and family.

You have the right to accept or refuse any treatment offered. Some people with more advanced cancer choose treatment even if it only offers a small benefit for a short period of time. Others want to make sure the benefits outweigh the side effects so that they have the best possible quality of life.

Talking with doctors

When your doctor first tells you that you have cancer, you may not remember the details about what you are told. Taking notes or recording the discussion may help. Many people like to have a family member or friend go with them to take part in the discussion, take notes or simply listen.

If you are confused or want clarification, you can ask questions – see page 49 for a list of suggested questions. If you have several questions, you may want to talk to a nurse or ask the office manager if it is possible to book a longer appointment.

A second opinion

You may want to get a second opinion from another specialist to confirm or clarify your doctor's recommendations or reassure you that you have explored all of your options. Specialists are used to people doing this.

Your doctor can refer you to another specialist and send your initial results to that person. You can get a second opinion even if you have already started treatment or still want to be treated by your first doctor. You might decide you would prefer to be treated by the doctor who provided the second opinion.

Taking part in a clinical trial

Your doctor or nurse may suggest you take part in a clinical trial. Doctors run clinical trials to test new or modified treatments and ways of diagnosing disease to see if they are better than current methods. For example, if you join a randomised trial for a new treatment, you will be chosen at random to receive either the best existing treatment or the modified new treatment.

Over the years, trials have improved treatments and led to better outcomes for people diagnosed with cancer.

It may be helpful to talk to your specialist or clinical trials nurse, or get a second opinion. If you decide to take part, you can withdraw at any time. For more information, call Cancer Council 13 11 20 and ask for a free copy of *Understanding Clinical Trials and Research* or visit www.australiancancertrials.gov.au.



Treatment: early kidney cancer

Treatments for early-stage kidney cancer include surgery and radiofrequency ablation. Other options might include cryotherapy and arterial embolisation. In some cases, your doctor might recommend surveillance.

Surveillance

When small tumours (less than 4 cm in diameter) are found in the kidney, they are less likely to be aggressive. Sometimes, a smaller tumour is benign (not cancer). Even if a small tumour is cancerous, it might not grow during a person's lifetime and, if so, might pose little risk to their health.

Doctors might suggest keeping a watch on some small tumours rather than treating them immediately. This is called surveillance. This will be done using regular ultrasounds or CT scans – see pages 14–15 for more information. If these imaging tests suggest that the tumour appears to grow at any time, you will be given treatment (usually surgery).

Surveillance might help to avoid the loss of kidney function and other side effects associated with different types of treatment. This is particularly important if the tumour is unlikely to be cancerous.

You might feel anxious about not treating tumours in your body right away, even if they are benign. However, this is a common approach and will only be recommended if the doctor thinks it is the best thing to do. If you are worried, discuss this with your urologist or a counsellor.

Surgery

Surgery is the main treatment for kidney cancer that has not spread outside the kidney (stages 1 and 2). The operation your doctor recommends will depend on the type of kidney cancer you have, your general health and the stage and grade (see page 19).

Types of surgery

You might have one of the following operations:

Removing the whole kidney (radical nephrectomy) – This is the most common type of operation for large renal cell carcinoma tumours. The whole affected kidney, a small part of the ureter and surrounding fatty tissue are removed. The adrenal gland and nearby lymph nodes might also be removed. However, sometimes it's not possible to remove all the tissue affected by the cancer.

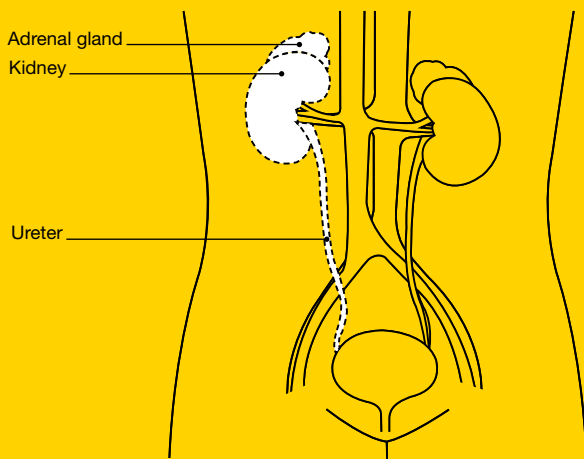
Removing part of the kidney (partial nephrectomy) – This is more commonly performed for tumours smaller than 4 cm in diameter that are easily accessible. It might also be used for people with cancer in both kidneys or only one working kidney. The cancer along with a small part of the kidney is removed, which means more of the kidney's function is preserved. A partial nephrectomy is a more difficult operation than a radical nephrectomy, and whether it is possible depends on the position of the tumour.



If a whole kidney or part of a kidney is removed, the remaining kidney usually carries out the work of both kidneys.

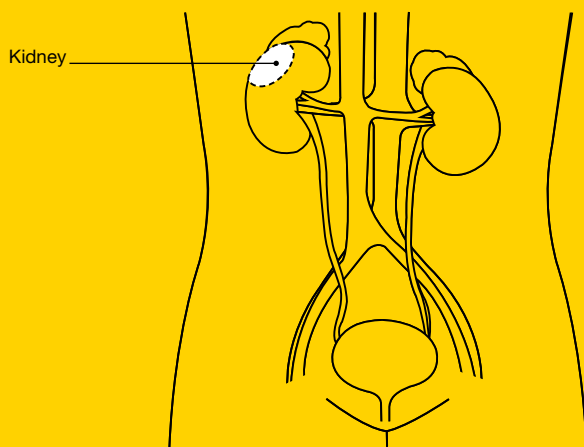
Radical nephrectomy

The kidney and ureter are removed. The adrenal gland might be removed.



Partial nephrectomy

Part of the kidney is removed.





Jodie's story

I had not been well for about a year and one day I saw blood in my urine. By the end of the day I was in such pain I ended up in emergency, where I was told it was kidney stones that should pass in a couple of days. When they didn't, I followed up with my doctor who sent me for further scans.

I was in shock when the specialist said I had kidney cancer. I was booked in for surgery about three weeks after the initial diagnosis, but within a week I couldn't pass urine and ended up back in emergency, where I stayed until my surgery.

After the surgery I was in quite a bit of pain and discomfort, and had lots of trouble going to the toilet. My greatest concern has been about the cancer coming back. For a while it was my first waking thought. Time has helped me deal with this. Every check-up has reassured me that things are okay. At first

I had six-monthly check-ups, but now they're yearly.

My family was great during this period; both my husband and son were very supportive. I was concerned I was driving my family crazy because I found the experience so consuming it was all I could talk about. I couldn't find information and there was no support group that I was aware of, except online – that's why I felt it important to become a volunteer in a peer support program. I always tell people that it was a really scary experience, but that it's okay to be afraid.

At the time of the diagnosis I was working as an office manager, but afterwards we decided we needed to reassess our life. I changed jobs and we moved house. I now work in aged care, which I love, and we moved from a big house to a small apartment overlooking the sea. I learnt to go with the flow and that life will be all right.

How the surgery is done

The surgery can be performed using different surgical methods.

A radical nephrectomy is usually performed as keyhole surgery (laparoscopically), but if the tumour is large, it may be performed by an open cut (incision). In most cases, a partial nephrectomy is done by a conventional incision, but sometimes it's done laparoscopically or with the assistance of a robot.

Surgery is usually carried out under a general anaesthetic.

Open surgery – A cut (incision) is made at the side of your abdomen where the affected kidney is located. In some cases, the incision is made in the front of the abdomen or in another area of the body where the cancer has spread. If you are having a radical nephrectomy, the surgeon will clamp off the major blood vessels and tubes in the affected kidney before removing it.

Keyhole surgery (laparoscopy) – The surgeon will make several small incisions and insert a tiny telescope (laparoscope) into one of the cuts. The laparoscope takes pictures of your body and projects them onto a TV screen. The surgeon inserts tools into the other incisions and performs the surgery using the images on the screen for guidance.

People who have laparoscopic surgery usually have a shorter hospital stay, less pain and a faster recovery time. However, laparoscopic surgery is not the best approach for everyone. Talk to your doctor about your options.

Robot-assisted surgery – This is a type of keyhole surgery. A surgeon makes small incisions in the abdomen and the camera and instruments are put in through the incisions to do the surgery. The surgeon then carries out the surgery using a machine to control the robotic arms. The surgeon has a 3D view of the operating area that they can magnify up to 10–12 times. There is no evidence yet that this type of surgery is better than other types.



There is currently no standard treatment given to reduce the risk of kidney cancer coming back after surgery (called adjuvant treatment). Targeted therapies and immunotherapies (see pages 35–37) are being tested in clinical trials to work out if they can help reduce the risk of the cancer coming back.

What to expect after surgery

After surgery, you will be in hospital for 3–7 days.

Drips and tubes – You will be given fluids and medication through a tube inserted into a vein (intravenous drip). You will also have other temporary tubes in place to help drain waste fluids away from the site of the operation.

For a few days, you will most likely have a thin tube inserted in your bladder and attached to a bag that collects urine. This is called a urinary catheter, and it helps monitor the function of the remaining kidney. When the catheter is removed, you will be able to urinate normally again.

Pain relief – You will have some pain in the areas where the incisions were made and where the kidney (or part of the kidney) was removed.

If you are in pain, ask for medication to help control it. You might have an anaesthetic injected into the area around your spine (called an epidural), pain-killers injected into a vein or muscle, or a patient-controlled analgesic system, called a PCA system. The PCA system delivers a dose of pain relief medication when you push a button.

Movement – You may see a physiotherapist while you are in hospital. They can explain the safest way to move after your surgery and show you exercises to do while you are recovering. These might include breathing exercises, that can help you avoid developing a chest infection.

It will be a while before you can lift heavy things, drive, or return to work. Ask your doctor how long you should wait before attempting any of these activities.

Returning home – When you get home, you will need to take things easy and only do what is comfortable. Let your family and friends know that you need to rest a lot and might need some help around the house.

Check-ups – You will need to visit the hospital for a check-up a few weeks after you've returned home. You can do this on an outpatient basis.

Radiofrequency ablation

Radiofrequency ablation (RFA) is a minimally invasive treatment that is still being assessed in clinical trials (see page 24). RFA uses a probe that generates heat to kill cancer cells and form internal scar tissue in a specific area of the body.

Although it is not as effective as surgery, RFA is sometimes used for patients who have a renal cell carcinoma smaller than 4 cm that is located near the edge of the kidney. These patients are unable to have an operation.

You might be given an anaesthetic, and a specialist then inserts a needle into the tumour under the guidance of a CT scan. An electrical current is passed into the tumour from the needle.

Most people only need to have this treatment once. It takes about 15 minutes and you can usually go home after a few hours. Side effects, including pain or fever, can be managed with medication.

Cryotherapy

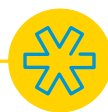
Cryotherapy (or cryosurgery) is a type of treatment that freezes and kills cancer cells. It is an emerging treatment that is still being evaluated. Trials have shown that cryotherapy is not as effective as surgery, and is not suitable for kidney tumours larger than 4 cm.

You will be given an anaesthetic for this treatment. The doctor will insert a probe into the tumour (either during surgery or under CT scan guidance) and inject liquid nitrogen, which freezes the

surrounding area and destroys the cancer cells. Afterwards, the frozen tissue thaws and is absorbed by the body.

The procedure typically takes about an hour. You might have to stay in hospital overnight. Side effects include pain, which can be managed with medication, or bleeding.

Few hospitals are equipped to perform cryotherapy, so if it is recommended, ask your doctor where it is administered and how much it costs.



Arterial embolisation

Arterial embolisation is a procedure that blocks the blood supply to the tumour. Without blood flow, the tissue can't get the food and oxygen it needs to survive, so the kidney and the tumour inside it shrink and die.

This procedure might be an option if you are unsuitable for surgery.

During treatment, a tube called a catheter is inserted into the artery using an x-ray as a guide. A substance is then injected through the catheter to block the artery's blood flow.

Side effects might include pain in the back and a high temperature. Another risk of this treatment is the cancer cells breaking off and spreading to other parts of the body. Discuss this with your doctor.



Key points

- If you have a small tumour (smaller than 4 cm) or a tumour that is benign (not cancer), your doctor might recommend surveillance rather than treatment. This means that instead of having treatment, you will be monitored with regular check-ups. If the tumour changes, treatment might be offered.
- The most common treatment for early kidney cancer is surgery. You might have either a radical nephrectomy (removing the whole kidney) or a partial nephrectomy (removing part of the kidney).
- The surgery can be performed using different surgical techniques, including open surgery, keyhole surgery or robot-assisted surgery.
- The recovery time after surgery varies, depending on the type of surgery.
- Most people are in hospital for 3–7 days following surgery.
- If the tumour is smaller than 4 cm, you may have other treatments, some of which are still being evaluated in clinical trials.
- Radiofrequency ablation uses heat from a probe to kill cancer cells.
- Cryotherapy freezes and kills cancer cells. This treatment is not available at all hospitals.
- If you're unable to have surgery, arterial embolisation may be a treatment option. This blocks the blood supply to the tumour so it shrinks and dies.



Treatment: advanced kidney cancer

When kidney cancer has spread outside the kidney and to other parts of the body, the main treatment is targeted therapy. Surgery to remove the kidney with cancer might also be recommended to help control the cancer. Other treatments might include immunotherapy and radiotherapy.

Surgery

Surgery to remove the kidney when the cancer has spread is called cytoreductive nephrectomy. There is sometimes a chance that surgery will improve survival from the cancer, and it can also reduce current symptoms or the risk of future symptoms from the cancer in the kidney.

Generally, surgery is not recommended if the cancer has spread to several places in the body.

Targeted therapies

Some newer types of treatment, called targeted therapies, attack specific cancer cells or blood vessels to stop or slow down growth or reduce the size of the tumour. They are different from standard chemotherapy drugs that act against all actively dividing cells, including normal cells (such as hair or nails cells) and cancer cells.

Two classes of targeted drugs, called tyrosine kinase inhibitors (TKIs) and mammalian target of rapamycin (mTOR) inhibitors, have recently been trialled in people with advanced kidney cancer. Both drugs block the signals that tell cancer cells to grow and divide.

Treatment – usually given in tablet form – has been shown to make both primary and secondary cancers shrink or stop growing.

For renal cell carcinoma that has spread beyond the kidney, TKIs (and sometimes mTOR inhibitors) are the most common treatment offered. The targeted therapy drug you are given might stop working after some time. In this case, your doctor might prescribe another drug. It is common to change drugs as they stop working. Common targeted therapies include:

- **Sunitinib (Sutent®)** – One of the first targeted therapies usually prescribed. Available on the Pharmaceutical Benefits Scheme (PBS) as long as certain criteria are met.
- **Pazopanib (Votrient®)** – One of the first targeted therapies usually prescribed. Available on the PBS as long as certain criteria are met.
- **Sorafenib (Nexavar®)** – Approved for use in Australia, but is not yet reimbursed on the PBS.
- **Everolimus (Afinitor®)** – Used as a second treatment if another targeted therapy has stopped working. This is not available on the PBS in this situation.
- **Axitinib (Inlyta®)** – Used if other targeted therapies stop working.
- **Temsirolimus (Torisel®)** – Used only in certain situations. This is given as an injection into a vein (intravenously).

These treatments have side effects; your treating doctor will discuss these and provide information for you to take home.

Clinical trials of newer targeted therapies might also be available – ask your medical oncologist if you are eligible.

Immunotherapy

Immunotherapy (also called biological therapy) is sometimes used to treat advanced kidney cancer. The aim of immunotherapy is to boost the body's immune system to help it fight off disease and shrink the tumour. The drugs that are used have been developed from cytokines, which are proteins that naturally occur in the body and stimulate the immune system.

This treatment is still a topic of research and clinical trials. It is most often used in countries that do not have access to targeted therapies.

Immunotherapy often works better if the kidney with the tumour is removed, so your surgeon might first perform an operation. Treatment is given intravenously or orally. You might also be given bevacizumab (Avastin®), which is given intravenously and is classified as a targeted therapy. Avastin works by slowing the growth of new blood vessels in the cancer.

Although the drugs are made from natural substances, they can sometimes cause side effects. Tell your doctor or nurse if you experience fever, chills, muscle aches, fatigue and soreness at the injection site.

Chemotherapy isn't usually used for treating kidney cancer – other treatments such as targeted therapies or immunotherapies seem to work better. New drugs are being tested in clinical trials or in combination with targeted therapy or immunotherapy.

Radiotherapy

Radiotherapy uses high-energy radiation to kill or damage cancer cells. This treatment is not effective in treating primary kidney cancer. However, radiotherapy might be used as palliative treatment (see next page).

If you have radiotherapy, the total number of treatments and their duration depends on your situation. You might have some side effects, such as fatigue, nausea, appetite loss, diarrhoea, tiredness and skin irritation.

Talk to your doctor and nurses about any side effects so you can get advice about managing them. You can also read the *Understanding Radiotherapy* booklet – call Cancer Council 13 11 20 for a free copy.



For more information about managing pain, call **13 11 20** for a free copy of the booklet and DVD *Overcoming Cancer Pain*. You can also ask for a free relaxation or meditation CD, which might help reduce your pain and anxiety.

Palliative treatment

Palliative treatment helps to improve quality of life by alleviating symptoms of cancer without trying to cure the disease.

Palliative care is particularly important for people with advanced cancer. However, it is not just for people who need end-of-life care; it can be used at all stages of cancer when required.

Often treatment is concerned with pain relief and controlling the spread of cancer, but it can also involve the management of other physical and emotional symptoms, such as bleeding, bowel problems, mobility issues, or stress and anxiety.

Treatment might also include radiotherapy, arterial embolisation (see page 33), chemotherapy or other types of medication.

For more information on palliative treatment or advanced cancer, call Cancer Council and ask for free copies of *Understanding Palliative Care* or *Living with Advanced Cancer*, or view the booklets online.



Key points

- Advanced cancer means the cancer has spread from where it started to another part of the body, or it has come back some time after you were first treated.
- Surgery is sometimes used to remove the kidney (cytoreductive nephrectomy) if the tumour has spread to only one other area.
- Targeted therapies work by interfering with signals that tell cancer cells to grow.
- Two classes of targeted drugs, called tyrosine kinase inhibitors (TKIs) and mTOR inhibitors, are most commonly used. The targeted therapy drug you are given might stop working after a while, and you will then be prescribed a different drug.
- Immunotherapies, also called biological therapies, encourage the immune system to fight cancer cells. Treatment is given intravenously or orally.
- Radiotherapy might be used to shrink advanced kidney cancer and reduce symptoms.
- People with more advanced cancer might be offered palliative treatment, such as radiotherapy and arterial embolisation. Palliative treatment is given to ease the symptoms of the cancer, rather than to cure the disease.
- All of the treatments can cause side effects, such as pain or fatigue. The side effects you experience will depend on your situation. You will also need time to recover from different treatments. Talk to your doctor about how to manage any side effects and your recovery.



Looking after yourself

Cancer can cause physical and emotional strain. It's important to try to look after your wellbeing as much as possible.

Nutrition – Eating healthy food can help you cope with treatment and side effects. A dietitian can help you manage special dietary needs or eating problems, and choose the best foods for your situation. Call Cancer Council 13 11 20 for a free copy of the *Nutrition and Cancer* booklet.

Staying active – Physical activity may help to reduce tiredness, improve circulation and elevate mood. The amount and type of exercise you do depends on what you are used to, how you feel, and your doctor's advice. Cancer Council's *Exercise for People Living with Cancer* booklet provides more information about the benefits of exercise, and outlines simple exercises that you may want to try.

Complementary therapies – These therapies are used with conventional medical treatments. You may have therapies such as massage, relaxation and acupuncture to increase your sense of control, decrease stress and anxiety, and improve your mood. Let your doctor know about any therapies you are using or thinking about trying, as some may not be safe or evidence-based.

Alternative therapies are used instead of conventional medical treatments. These therapies can include coffee enemas and magnet therapy. These can be harmful or may mean you decline a treatment that is known to offer benefit. For more information, call 13 11 20 for a free copy of the *Understanding Complementary Therapies* booklet or visit your local Cancer Council website.

Relationships with others

Having cancer can affect your relationships with family, friends and colleagues. This might be because cancer is stressful, tiring and upsetting, or as a result of more positive changes to your values, priorities, or outlook on life.

Give yourself time to adjust to what's happening, and do the same for others. People might deal with the cancer in different ways, for example, by being overly positive, playing down fears, or keeping a distance. It might be helpful to discuss your feelings with each other.

Sexuality, intimacy and fertility

Cancer can affect your sexuality in physical and emotional ways. The impact of these changes depends on many factors, such as treatment and side effects, your self-confidence, and if you have a partner. Although sexual intercourse might not always be possible, closeness and sharing can still be part of your relationship.

If you are able to have sex, you might be advised to use certain types of contraception to protect your partner or avoid pregnancy for a certain period of time. Your doctor will talk to you about the precautions to take. They will also tell you if treatment will affect your fertility permanently or temporarily. If having children is important to you, talk to your doctor before starting treatment.

Call 13 11 20 for free copies of *Sexuality, Intimacy and Cancer*, *Emotions and Cancer* and *Fertility and Cancer*, or download the booklets online.

Life after treatment

For most people, the cancer experience doesn't end on the last day of treatment. Life after cancer can present its own challenges. You may have mixed feelings when treatment ends, and worry that every ache and pain means the cancer is coming back.

Some people say that they feel pressure to return to 'normal life', but they don't want life to return to how it was before cancer. Take some time to adjust to the physical and emotional changes, and re-establish a new daily routine at your own pace.

Cancer Council 13 11 20 can help you connect with other people who have had cancer, and provide you with information about the emotional and practical aspects of living well after cancer.

Dealing with feelings of sadness

If you have continued feelings of sadness, have trouble getting up in the morning or have lost motivation to do things that previously gave you pleasure, you may be experiencing depression. This is quite common among people who have or have had cancer.

Talk to your GP, as counselling or medication – even for a

short time – may help. Some people are able to get a Medicare rebate for sessions with a psychologist. Ask your doctor if you are eligible.

The organisation [beyondblue](http://www.beyondblue.org.au) has information about coping with depression and anxiety. See www.beyondblue.org.au or call **1300 22 46 36** to order a fact sheet.

After treatment: follow-up

After your treatment, you will need regular check-ups to confirm that the cancer hasn't come back. Your doctor will talk to you about the follow-up schedule.

During these regular check-ups, you may have blood tests, cystoscopies, x-rays or ultrasounds. If these tests show that there are no further problems, your appointments will become less frequent. Tell your doctor immediately if you have any health problems between check-ups.

If your doctor recommends surveillance, you will also continue having regular check-ups.

“ I tried to stay positive, and knowing that other people had recovered from the same type of cancer has helped me. ” *Amy*

What if the cancer returns?

For some people, kidney cancer does come back after treatment, which is known as a recurrence. This is why it is important to have regular check-ups.

Kidney cancer may have spread beyond the kidney. If it has spread, you may be offered other treatment, such as immunotherapy, chemotherapy or radiotherapy.



Seeking support

Cancer may cause you to experience a range of emotions, such as fear, sadness, anxiety, anger or frustration. It can also cause practical and financial problems.

Practical and financial help

There are many services that can help deal with practical or financial problems caused by the cancer. Benefits, pensions and programs can help pay for prescription medicines, transport costs or utility bills. Home care services, aids and appliances can also be arranged to help make life easier.

Ask the hospital social worker which services are available in your local area and if you are eligible to receive them.

If you need legal or financial advice, you should talk to a qualified professional about your situation. Cancer Council offers free legal and financial services in some states and territories for people who can't afford to pay – call 13 11 20 to ask if you are eligible.

Talk to someone who's been there

Coming into contact with other people who have had similar experiences to you can be beneficial. You may feel supported and relieved to know that others understand what you are going through and that you are not alone.

People often feel they can speak openly and share tips with others who have gone through a similar experience.

In a support group, you may find that you are comfortable talking about your diagnosis and treatment, relationships with friends and family, and hopes and fears for the future. Some people say they can be even more open and honest in these support settings because they aren't trying to protect their loved ones.

Types of support

There are many ways to connect with others for mutual support and to share information. These include:

face-to-face support groups – often held in community centres or hospitals

telephone support groups – facilitated by trained counsellors

peer support programs – match you with someone who has had a similar cancer experience, e.g. Cancer Connect

online forums – such as www.cancerconnections.com.au.

Talk to your nurse, social worker or Cancer Council about what is available in your area.

“ My family members don't really understand what it's like to have cancer thrown at you, but in my support group, I don't feel like I have to explain. ” *Sam*



Caring for someone with cancer

You may be reading this booklet because you are caring for someone with cancer. Being a carer can be stressful and cause you much anxiety. Try to look after yourself – give yourself some time out and share your worries and concerns with somebody neutral, such as a counsellor or your doctor.

Many cancer support groups and cancer education programs are open to carers, as well as people with cancer. Support groups and programs can offer valuable opportunities to share experiences and ways of coping.

Support services such as Home Help, Meals on Wheels or visiting nurses can help you in your caring role. There are also many groups and organisations that can provide you with information and support, such as Carers Australia, the national body representing carers in Australia. Carers Australia works with the Carers Associations in each of the states and territories. Phone 1800 242 636 or visit www.carersaustralia.com.au for more information and resources.

You can also call Cancer Council 13 11 20 to find out more about carers' services and to get a copy of the *Caring for Someone with Cancer* booklet.



Useful websites

The internet has many useful resources, although not all websites are reliable. The websites below are good sources of information.

Australian

Cancer Council Australia.....	www.cancer.org.au
Cancer Australia.....	www.canceraustralia.gov.au
Carers Australia.....	www.carersaustralia.com.au
Department of Health.....	www.health.gov.au
healthdirect Australia.....	www.healthdirect.gov.au
Kidney Health Australia.....	www.kidney.org.au

International

American Cancer Society.....	www.cancer.org
Cancer Research UK.....	www.cancerresearch.org.uk
Macmillan Cancer Support.....	www.macmillan.org.uk
US National Cancer Institute.....	www.cancer.gov



Question checklist

You may find this checklist helpful when thinking about the questions you want to ask your doctor about your disease and treatment. If your doctor gives you answers that you don't understand, ask for clarification.

- What type of kidney cancer do I have?
- How far has the cancer spread? How fast is it growing?
- What treatment do you recommend and why?
- Are there other treatment choices for me? If not, why not?
- What are the risks and possible side effects of each treatment?
- How long will treatment take? Will I have to stay in hospital?
- How much will treatment cost? How can the cost be reduced?
- Will I have a lot of pain with the treatment? What will be done about this?
- Are the latest tests and treatments for this type of cancer available in this hospital?
- Are there any clinical trials or research studies I could join?
- How frequently will I need check-ups after treatment?
- Who should I go to for my check-up appointments?
- Are there any complementary therapies that might help me?
- Should I change my diet during or after treatment?
- If the cancer comes back, how will I know?



Glossary

abdomen

The part of the body between the chest and hips, which contains the stomach, spleen, pancreas, liver, gall bladder, bowel, bladder and kidneys.

adjuvant therapy

A treatment given with or shortly after another treatment to enhance its effectiveness.

adrenal glands

Triangular glands resting on top of each kidney that produce adrenaline and other hormones.

anaemia

A reduction in the number or quality of red blood cells in the body.

anaesthetic

A drug that stops a person feeling pain during a medical procedure. A local anaesthetic numbs part of the body; a general anaesthetic causes a temporary loss of consciousness.

angiogenesis

The formation of new blood vessels. This enables tumours to develop their own blood supply, which helps them grow.

arterial embolisation

A treatment for kidney cancer in which the artery that feeds the diseased kidney is deliberately blocked. This causes the kidney and the tumour inside it to die.

artery

A blood vessel that carries blood away from the heart.

benign

Not cancerous or malignant.

biological therapy

A range of medicines made from purified versions of chemicals that naturally occur in the body. They include monoclonal antibodies and immunotherapy. Also called biotherapies.

biopsy

The removal of a small sample of tissue from the body to be examined under a microscope and help diagnose a disease.

bladder

The hollow muscular organ that stores urine.

catheter

A hollow, flexible tube through which fluids can be passed into the body or drained from it.

cells

The basic building blocks of the body. A human is made of billions of cells that are adapted for different functions.

chemotherapy

The use of cytotoxic drugs to treat cancer by killing cancer cells or slowing their growth.

complementary therapies

Supportive treatments that are used in conjunction with conventional treatment. They might improve general health, wellbeing and quality of life, and help people cope with side effects of conventional cancer treatment.

contrast medium

A substance injected into the vein or taken orally before a scan (such as a CT or MRI scan), which helps make

pictures clearer. Also called a contrast agent or dye.

cryotherapy

The process of inserting a probe into a cancerous tumour to freeze and destroy cancer cells. Sometimes called cryosurgery.

CT scan

A computerised tomography scan. This scan uses x-rays to create a picture of the body.

cystoscope

A thin viewing instrument with a light that is inserted into the urethra and advanced into the bladder.

cystoscopy

A test using a cystoscope to examine the vagina, cervix, bladder and rectum. It is performed under a general anaesthetic.

cytoreductive nephrectomy

The surgical removal of the kidney. This technique is used when cancer has spread.

fine needle aspiration (FNA)

A biopsy procedure in which a fine needle is placed into a lump to extract cells.

grading

A score that describes how aggressive a tumour is (how fast it is likely to grow).

haematuria

Blood in the urine.

hormones

Chemical messengers in the body that send information between cells.

immune system

A network of cells and organs that defends the body against attacks by foreign invaders, such as bacteria and viruses.

immunotherapy

The prevention or treatment of disease using substances that alter the immune system's response. This is a type of biological therapy.

intravenous

Administered (injected) into a vein.

kidneys

A pair of organs in the abdomen. The kidneys remove waste from the blood and make urine. The kidneys also produce hormones that stimulate red blood cell production and control calcium levels.

laparoscope

A tiny telescope through which structures within the abdomen and pelvis can be seen.

laparoscopy

Surgery done through small cuts in the abdomen using a laparoscope for viewing. Also called keyhole surgery.

lymphatic system

A network of tissues, capillaries, vessels, ducts and nodes that remove excess fluid from tissues, absorb fatty acids and transport fat, and produce immune cells.

lymph nodes

Small, bean-shaped structures that form part of the lymphatic system. Also called lymph glands.

malignant

Cancer. Malignant cells can spread (metastasis) and can eventually cause death if they cannot be treated.

mammalian target of rapamycin (mTOR) inhibitors

Drugs that block enzymes in the body, which are connected with cell growth and survival.

metastasis

A cancer that has spread from another part of the body. Also known as secondary cancer.

MRI scan

A magnetic resonance imaging scan. The scan uses magnetism and radio waves to take detailed cross-sectional pictures of the body.

needle core biopsy

A procedure in which tissue is removed from an organ or lymph node using a needle.

nephrologist

A doctor who specialises in diagnosing and treating kidney disease.

nephrology

The branch of medicine relating to the function and diseases of the kidneys.

nephrons

The basic units of the kidney that filter the blood. Nephrons also regulate blood volume, pressure and pH and levels of electrolytes and metabolites.

oncologist

A doctor who specialises in the study and treatment of cancer. Also called medical oncologist.

palliative treatment

Medical treatment to help people manage pain and other physical and emotional symptoms.

partial nephrectomy

The surgical removal of part of a kidney.

patient-controlled analgesic (PCA) system

An intravenous system that allows a person to administer a dose of pain relief by pressing a button.

phenacetin

A pain-relieving drug that has not been used since the 1970s, because it has been linked to kidney damage and kidney cancer.

polycythaemia

A condition in which red blood cell levels are higher than normal.

primary cancer

The original cancer. Cells from the primary cancer may break away and be carried to other parts of the body, where secondary cancers may form.

prognosis

The predicted outcome of a person's disease.

prostate

A gland in the male reproductive system that produces most of the fluid that makes up semen.

radiation

Energy in the form of waves or particles, including gamma rays, x-rays and ultraviolet (UV) rays. This energy is harmful to cells and is used in radiotherapy to destroy cancer cells.

radical nephrectomy

The surgical removal of the whole of the diseased kidney. If diseased, the adrenal gland, surrounding fatty tissue and nearby lymph nodes are sometimes removed as well.

radiofrequency ablation

A treatment that uses radio waves to heat and destroy cancer cells.

radioisotope bone scan

A scan using small amounts of radioisotope to find areas of bone where there is cancer.

radiotherapy

The use of radiation, usually x-rays or gamma rays, to kill cancer cells or injure them so they cannot grow and multiply.

renal cell carcinoma (RCC)

The most common type of kidney cancer. Also called renal adenocarcinoma. It begins in the kidney's nephrons. Types of RCC include clear cell carcinoma, papillary, chromophobe or sarcomatoid kidney cancers.

renal pelvis

A funnel-shaped structure where the kidney and ureter meet.

renal sarcoma

A rare cancer that affects the connective tissues of the kidney.

staging

Performing tests to determine how far a cancer has spread.

surveillance

When a person does not receive immediate treatment, but instead

has their health monitored regularly, with the option of future treatment if necessary.

targeted therapies

Treatments that attack specific weaknesses of cancer cells while sparing healthy cells. Two types of targeted therapies are drug therapies and immunotherapies.

tumour

A new or abnormal growth of tissue on or in the body. A tumour may be benign or malignant.

tyrosine kinase inhibitors (TKIs)

Targeted drugs that block the enzyme tyrosine kinase, which is a chemical messenger that tells cells when to divide and grow.

ultrasound

A scan that uses soundwaves to create a picture of part of the body. It is used to measure the size and position of a tumour.

ureteroscopy

A test using a ureteroscope to examine the ureters. It is performed under a general anaesthetic.

ureters

The tubes that carry urine from each kidney to the bladder.

urethra

The tube that carries urine from the bladder to the outside of the body. For men, the urethra also carries semen.

urinary system

The system that removes wastes from the blood and expels them from the

body in urine. It includes the kidneys, ureters, bladder and urethra.

urologist

A surgeon who specialises in treating diseases of the urinary tract and sex organs in males, and the urinary organs in females.

urothelial carcinoma

Cancer that occurs in urothelial cells. It can start in the renal pelvis of the kidney, the ureter or the bladder. Sometimes called transitional cell carcinoma (TCC).

urothelial cells

Cells that line parts of the urinary tract, such as where the kidney joins the ureter, in the ureter itself, in the bladder and in some parts of the urethra. This forms a watertight lining. Also called transitional cells.

urothelium

The membrane lining the bladder and the urinary system.

References

¹ Escudier B, Porta C, Schmidinger M, Algaba F, Patard JJ, Khoo V, Eisen T and Horwich A on behalf of the ESMO Guidelines Working Group. Renal cell carcinoma: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Annals of Oncology* 2014; 25 (suppl 3): iii49-iii56. doi:10.1093/annonc/mdu259

Can't find what you're looking for?

For more cancer-related words, visit www.cancerCouncil.com.au/words or www.cancervic.org.au/glossary.



How you can help

At Cancer Council we're dedicated to improving cancer control. As well as funding millions of dollars in cancer research every year, we advocate for the highest quality care for cancer patients and their families. We create cancer-smart communities by educating people about cancer, its prevention and early detection. We offer a range of practical and support services for people and families affected by cancer. All these programs would not be possible without community support, great and small.

Join a Cancer Council event: Join one of our community fundraising events such as Daffodil Day, Australia's Biggest Morning Tea, Relay For Life, Girls' Night In and Pink Ribbon Day, or hold your own fundraiser or become a volunteer.

Make a donation: Any gift, large or small, makes a meaningful contribution to our work in supporting people with cancer and their families now and in the future.

Buy Cancer Council sun protection products: Every purchase helps you prevent cancer and contribute financially to our goals.

Help us speak out for a cancer-smart community: We are a leading advocate for cancer prevention and improved patient services. You can help us speak out on important cancer issues and help us improve cancer awareness by living and promoting a cancer-smart lifestyle.

Join a research study: Cancer Council funds and carries out research investigating the causes, management, outcomes and impacts of different cancers. You may be able to join a study.

To find out more about how you, your family and friends can help, please call your local Cancer Council.



Cancer Council Helpline 13 11 20

Cancer Council Helpline is a telephone information service provided by Cancer Council NSW for people affected by cancer.

For the cost of a local call (except from mobiles), you can talk confidentially with oncology health professionals about any concerns. Helpline consultants can send you information and put you in touch with services in your area. If you need information in a language other than English, an interpreting service is available.

You can call the Helpline, Monday to Friday, 9am to 5pm.

If you have difficulty communicating over the phone, contact the National Relay Service (www.relayservice.com.au) to help you communicate with a Cancer Council Helpline consultant.

For more information, go to www.cancercouncil.com.au.

Regional offices

Metro Sydney

Woolloomooloo
02 9334 1600

Crows Nest
02 9334 1600

Greater Western Sydney

Parramatta
02 9354 2000

Casula
02 9354 2000

Penrith
9354 2000

Hunter Central Coast

Charlestown
02 4923 0700

Erina
02 4336 4500

Singleton
02 6571 2899

Northern

Byron Bay
02 6639 1300

Tamworth
02 6763 0900

Coffs Harbour
02 6659 8400

Lismore
02 6629 4396

Southern

North Wollongong
02 4223 0200

Bega
02 6492 1805

Western

Wagga Wagga
02 6937 2600

Orange
02 6392 0800

For support and information on cancer and cancer-related issues, call Cancer Council Helpline. This is a confidential service.



Cancer Council
Helpline
13 11 20

For further information and details please visit our website: www.cancerCouncil.com.au