



Kidney tumours (also called renal tumours) occur when abnormal cells in the kidneys grow in an uncontrolled way.

The most common type of kidney tumour in children is called Wilms tumour (also known as nephroblastoma). Other types of kidney tumours in children include:

- clear cell sarcoma of the kidney
- malignant rhabdoid tumour of the kidney
- mesoblastic nephroma
- renal cell carcinoma.

Wilms tumours are more common in younger children, usually 3–4-year-olds, and less common in older children. In teenagers and young adults, other types of kidney tumours such as renal cell carcinoma are more common.

## Risk factors

A risk factor is anything that increases a person's chance of developing a certain condition or disease, such as cancer. In adults, lifestyle and environmental factors (such as smoking or exposure to certain chemicals) can be significant risk factors for developing certain types of cancer. In children, very few risk factors have been identified that increase the chance of developing cancer. For most children with cancer, the underlying cause is unknown.

Even if your child has a risk factor, it does not mean they will develop cancer. Many children with a risk factor will never develop cancer, while others with cancer may have had no known risk factors. Even if a child with a risk factor develops cancer, it is usually hard to know how much that risk factor contributed to the development of their disease.

The causes of kidney tumours are not well understood, but factors associated with a higher chance of developing kidney tumours include the following.

### Family history

In a small number of children with Wilms tumour, one or more of their relatives also has Wilms tumour. These children are more likely to develop tumours in both kidneys.

Knowledge of your family's history relating to cancer may change over time.

### Genetic conditions

Wilms tumour is associated with several genetic conditions, including:



- WAGR syndrome
- Beckwith–Weidemann syndrome
- Denys–Drash syndrome
- hemihypertrophy syndrome.

If your child is diagnosed with one of these genetic conditions, they will need specific follow-up. The health care team will advise which ongoing tests your child will need.

Cancers in children that are linked to genetic conditions may also affect the risk for other family members. Speak to your child's treatment team to see whether genetic counselling is recommended for you or your family.

For more information about genetic conditions, see the [children's cancer glossary](#) or the [Centre for Genetics Education](#).

## Symptoms

Wilms tumours can grow quite large without causing any symptoms. Symptoms of Wilms tumour may include:

- lump or swelling in the belly
- fever
- nausea
- loss of appetite
- trouble breathing
- extreme tiredness
- blood in the urine
- high blood pressure.

### Note about symptoms

Many conditions – including common childhood infections – can cause these symptoms, not just kidney tumours. If your child has any of these symptoms and you are concerned, talk to your child's doctor.



## Diagnosis

Your child will have a number of tests to investigate their symptoms and confirm a diagnosis of a kidney tumour, including:

- medical history and physical examination
- blood tests
- urine tests
- medical imaging, which may include
  - X-ray
  - ultrasound
  - computed tomography (CT) scan
  - magnetic resonance imaging (MRI)
  - bone scan
- biopsy – where a small sample of the cancer is removed to be examined under a microscope. The sample can also be tested for genetic changes that can help determine the best type of treatment for your child.

These tests are explained in more detail in [How is cancer diagnosed?](#)

## Staging

If your child is diagnosed with a kidney tumour, some of the diagnostic tests will also help to stage the tumour. Staging determines where the tumour is, how big it is and whether it has spread to other parts of the body. This is important to determine the outlook (prognosis) for your child, and to decide on the best options for treatment.

There are different ways to assess the stage or extent of disease. One of the most common ways of describing stages for Wilms tumour is as follows:

- Stage I – the tumour was in 1 kidney, and the outer layer of the kidney has not been broken. The tumour has not spread and was completely removed by surgery.
- Stage II – the tumour has grown beyond the kidney into nearby tissue or blood vessels, but not to the lymph nodes, and was completely removed by surgery.
- Stage III – the tumour was not completely removed by surgery, but it has not spread beyond the belly. There might be cancer cells around the edges of the surgery site or elsewhere within the belly cavity, or the tumour might have invaded important tissues nearby (such as a major blood vessel) so that it could not be removed during surgery. The cancer might have spread to nearby lymph nodes.
- Stage IV – the cancer has spread to other organs that are far away from the kidneys, such as the lungs, liver, brain, bone or distant lymph nodes.
- Stage V – there are tumours in both kidneys when Wilms tumour is first diagnosed.





## Treatment

Treatment and care of children with cancer is usually provided by a team of health professionals called a multidisciplinary team. Members of this team are specialists in children's cancers – they understand the differences between children's cancer and adult cancer, and each team member brings different skills in managing care to meet the needs of both you and your child.

The team will be led by a childhood cancer specialist (paediatric oncologist). Other members of the team depend on the age of your child and their type of disease, and may change over time as your child's needs change. A list of team members who might make up the multidisciplinary team can be found in [The treatment team](#).

Treatment for kidney tumours depends on the age of your child, the stage of the disease, the biological features of the cancer and other factors identified during diagnosis. Treatment will be tailored to your child's particular situation, and may involve one or more of the following (see [How is cancer treated](#) page for more detail).

### Surgery

Your child is likely to have surgery to remove the tumour, and this is usually done by removing all or part of the affected kidney. Your child might have surgery to insert a venous access device, which is a tube that allows chemotherapy to be delivered directly into a blood vessel.

### Chemotherapy

Chemotherapy uses anti-cancer medicines to destroy cancer cells. It is often given as a combination of medicines to try to prevent the cancer cells from becoming resistant to just one or two medicines.

Chemotherapy medicines are given together in courses, often over a few days. Once the body has recovered from the side effects, the next course is given. Most children receive multiple courses of chemotherapy.

Chemotherapy may be used:

- before surgery (to shrink the tumour and make it easier to remove)
- after surgery (to destroy any remaining cancer cells)
- as the main treatment (if the cancer has spread to other parts of the body, or if surgery is not a good option).

### Radiation therapy

Radiation therapy (also called radiotherapy) uses high-energy X-rays or other types of radiation to





destroy cancer cells or stop them from growing. External radiation therapy is usually only used for Wilms tumour stages III, IV or V; it is used less often in earlier stages.

Radiation therapy can have long-term side effects in children. If the potential benefits outweigh the risks and radiation therapy is included in your child's treatment, special care will be taken to reduce these risks.

## Support

Diagnosis of cancer in a child is a very difficult time for the child, their family and their friends. You might feel overwhelmed, scared, anxious or angry. These are all normal feelings. It is very important to seek support from family, friends, health professionals or other services to help you, your child and your family cope with cancer.

Talk to your child's treatment team if you are having difficulties coping.

[Living with children's cancer](#) has information about physical, emotional and practical issues during and after diagnosis and treatment. There is also a page with helpful links on [where to find support](#).

The [Cancer Council](#) in your state or territory can give you general information about cancer, as well as information on resources and support groups in your local area. Call the Cancer Council Helpline from anywhere in Australia for the cost of a local call on **13 11 20**.

For additional specific information about childhood cancer, contact any of the major [children's hospitals and networks](#) in your state or territory.

## Chance of cure

Many children with cancer are cured of the disease. Children's bodies have great capacity for healing. Also, huge improvements have been made in the treatment of childhood cancer in the past few decades. In the 1980s, around 65% of children diagnosed with cancer were alive more than 5 years after their diagnosis. Today, around 83% of children are successfully treated and become long-term survivors.

Long-term survival (also called the outlook or prognosis) and treatment options depend on a range of factors, including:



- age of your child at diagnosis
- extent or stage of the cancer
- appearance of the cancer cells under the microscope (the shape, function and structure of the cells)
- how the cancer responds to treatment
- cancer or tumour biology, which includes
  - the patterns of the cancer cells
  - how different the cancer cells are from normal cells
  - how fast the cancer cells are growing.

Talk to your child's doctor about your child's individual disease, treatment options and outlook.

## Clinical trials

Researchers are trialling new ways to diagnose and treat different types of cancer. Your child may be invited to be part of a clinical trial to test new ways of treating kidney tumours.

New treatments have to go through very strict regulation and approval processes before they can be used in a clinical trial. Your child's doctor will explain everything about the trial and give you detailed written information. You will need to give special permission for your child to be part of the trial.

Participating in a clinical trial may or may not directly benefit your child, but the results of clinical trials today will help children with cancer in the future.

See [Clinical trials and research](#) for more information, including whether there are any clinical trials your child can join.

## More information

For more information about childhood kidney tumours, see:

- [Wilms tumor](#), from the American Cancer Society
- [Wilms tumor and other childhood kidney tumors treatment \(PDQ®\)](#), from the National Cancer Institute (United States).

