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Treating Wilms Tumor

If your child has been diagnosed with a Wilms tumor, your child's treatment team will discuss the options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

How is Wilms tumor treated?

Overall, about 9 of 10 children with Wilms tumors are cured. A great deal of progress has been made in treating this disease in recent decades. Much of this progress is the result of children with Wilms tumors taking part in [clinical trials](#)¹ of new treatments.

Today, most children with this cancer are treated in a clinical trial to try to improve on what doctors believe is the best treatment. The goal of these studies is to find ways to cure as many children as possible while limiting side effects by giving as little treatment as needed.

Most children with Wilms tumors will get more than one type of treatment. The main types of treatment are:

- [Surgery for Wilms Tumors](#)
- [Chemotherapy for Wilms Tumors](#)
- [Radiation Therapy for Wilms Tumors](#)

Common treatment approaches

In the United States, surgery is the first treatment for most Wilms tumors. In Europe, doctors often prefer to give a short course of chemotherapy before the surgery. There seems to be no difference in the results from these approaches.

The first goal of treatment is to remove the primary (main) tumor, even if the cancer has

spread to other parts of the body. Sometimes the tumor might be hard to remove because it's very large, it has spread into nearby blood vessels or other vital structures, or it's in both kidneys. For children with these tumors, doctors might use chemotherapy, radiation therapy, or a combination of these to try to shrink the tumor(s) before surgery.

If any cancer is left after surgery, radiation therapy or more surgery may be needed.

- [Treatment by Type and Stage of Wilms Tumor](#)

Who treats Wilms tumors?

Because Wilms tumors are rare, few doctors outside of those in children's cancer centers have much experience in treating them. Children with Wilms tumors are typically treated by a team of specialists. The doctors on this team often include:

- A **pediatric surgeon** or **pediatric urologist** (a surgeon who treats urinary system problems in children [and genital problems in boys])
- A **pediatric oncologist** (a doctor who uses chemotherapy and other medicines to treat childhood cancers)
- A **pediatric radiation oncologist** (a doctor who uses radiation therapy to treat cancer in children)

Many other specialists may be involved in your child's care as well, including other doctors, nurses, nurse practitioners (NPs), physician assistants (PAs), psychologists, social workers, rehabilitation specialists, and other health professionals.

- [How to Find the Best Cancer Treatment for Your Child²](#)
- [Navigating the Health Care System When Your Child Has Cancer³](#)

Making treatment decisions

The treatment for Wilms tumors can often be effective, but it can also cause serious side effects. It's important to discuss all treatment options as well as their possible side effects with your child's doctors so you can make an informed decision.

The treatment team will also help you take care of side effects and can help you work closely with nutritionists, psychologists, social workers, and other professionals to understand and deal with medical problems, stress, and other issues related to the treatment.

If time allows, getting a second opinion from another doctor experienced with your child's type of cancer is often a good idea. This can give you more information and help you feel more confident about the treatment plan you choose. If you aren't sure where to go for a second opinion, ask your doctor for help.

- [Questions to Ask Your Child's Doctor About Wilms Tumor](#)⁴
- [How to Talk to Your Child's Cancer Care Team](#)⁵
- [Seeking a Second Opinion](#)⁶

Thinking about taking part in a clinical trial

Today, most children and teens with cancer are treated at specialized children's cancer centers. These centers offer the most up-to-date-treatment by conducting clinical trials (studies of promising new therapies). Children's cancer centers often conduct many clinical trials at any one time, and in fact most children treated at these centers take part in a clinical trial as part of their treatment.

Clinical trials are one way to get state-of-the-art cancer treatment. Sometimes they may be the only way to get access to newer treatments (although there is no guarantee that newer treatments will be better). They are also the best way for doctors to learn better methods to treat these cancers. Still, they might not be right for everyone.

If you would like to learn more about clinical trials that might be right for your child, start by asking the treatment team if your clinic or hospital conducts clinical trials.

- [Clinical Trials](#)⁷

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your child's tumor or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used *along with* your regular medical care. Alternative treatments are used *instead of* standard medical treatment. Although some of these methods might be helpful in relieving symptoms or helping people feel better, many have not been proven to work. Some might even be harmful.

Be sure to talk to your child's cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method,

which can help you make an informed decision.

- [Complementary and Alternative Medicine](#)⁸

Preparing for treatment

Before treatment, the doctors and other members of the team will help you, as a parent, understand the tests that will need to be done. The team's social worker will also counsel you about the problems you and your child might have during and after treatments such as surgery, and might be able to help you find housing and financial aid if needed.

- [When Your Child Has Cancer](#)⁹

Help getting through cancer treatment

Your child's cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services can also be an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help. For children and teens with cancer and their families, other specialists can be an important part of care as well.

The American Cancer Society also has programs and services – including rides to treatment, lodging, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists.

- [Finding Help and Support When Your Child Has Cancer](#)¹⁰
- [Find Support Programs and Services in Your Area](#)¹¹

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Surgery for Wilms Tumors

Surgery is the main treatment for nearly all children with Wilms tumors. It's important that it is done by a surgeon who specializes in operating on children and has experience in treating these cancers.

Removing the tumor

The main goal of surgery is to remove the entire Wilms tumor in one piece, if possible. This is to keep the cancer cells from spreading in the abdomen (belly). Surgeons who operate on these tumors are careful to limit the chance of this type of cancer spread whenever possible. If the surgeon finds (either with [imaging tests](#)¹ done before surgery, or when starting the operation) that the entire tumor can't be removed safely, other treatments may be used first. If these treatments shrink the tumor enough, surgery can then be done more safely.

Depending on the situation, different operations might be used.

Radical nephrectomy

A radical nephrectomy removes the entire kidney and some nearby structures. This is the most common surgery for a Wilms tumor that's only in one kidney, as it provides the best chance of making sure all of the tumor is removed.

During this operation, the surgeon makes an incision (cut), usually down the middle of the belly, and removes the cancer along with the whole kidney, the adrenal gland that sits on top of the kidney, the surrounding fatty tissue, and the ureter (tube that carries urine from the kidney to the bladder). Most children do very well with only one kidney.

Partial nephrectomy (nephron-sparing surgery)

A partial nephrectomy removes only part of the kidney(s). For the small number of children who have Wilms tumors in both kidneys, this surgery might be done to try to save some normal kidney tissue. The surgeon may do a radical nephrectomy to remove the kidney containing the most tumor, and then a partial nephrectomy on the other kidney, removing just the tumor and a margin of normal kidney around it. Another option might be to do partial nephrectomies on both kidneys.

Sometimes, both kidneys need to be removed completely. The child would then need dialysis several times a week. In this procedure, a machine does the job of the kidneys

by filtering waste products out of the blood. Once the child is healthy enough, and if a donor kidney becomes available, a kidney transplant may be an option.

Assessing the extent of the disease (surgical exploration)

When either radical or partial nephrectomy is done, another main goal of surgery is to determine the extent of the cancer and whether or not it can all be removed. [Lymph nodes](#)² near the kidney will be removed during surgery to look for cancer cells in them. Cancer often spreads to lymph nodes (bean-sized collections of immune cells). Lymph node removal is known as a **regional lymphadenectomy**.

The other kidney and nearby organs such as the liver may also be looked at closely, and any suspicious areas [biopsied](#)³ (samples taken to be checked for cancer under a microscope).

Knowing if a Wilms tumor has spread to the lymph nodes, the other kidney, or other nearby organs is important in determining its [stage](#)⁴ and further treatment options.

Placing a central venous catheter (port)

Often, if the child is going to get [chemotherapy](#), a surgeon will insert a small tube (called a [central venous catheter](#)⁵, **venous access device**, or **port**) into a large blood vessel – usually under the collar bone. This might be done during the surgery to remove the tumor, or as a separate operation (especially if chemo is going to be given before the surgery).

One end of the catheter stays outside of the body or just under the skin, and can be used to give chemo or take blood samples without the need for more needle sticks into veins. The catheter can stay in place for months.

Possible risks and side effects of surgery

Surgery to remove a Wilms tumor is a serious operation, and surgeons are very careful to try to limit any problems either during or after surgery. Complications during surgery, such as bleeding, injuries to major blood vessels or other organs, or reactions to anesthesia, are rare, but they can happen.

Almost all children will have some pain for a while after the operation, although this can usually be helped with medicines if needed. Other problems after surgery are not common but can include internal bleeding, blood clots, infections, or problems with food

moving through the intestines.

Most children do well when only one kidney is removed. But if there are tumors in both kidneys, another concern is the loss of kidney function. In these cases, doctors must balance between making sure the tumors are removed completely and removing only as much of the kidney(s) as is needed. Children who have all or parts of both kidneys removed may need dialysis, and may eventually need a kidney transplant.

More information about Surgery

For more general information about surgery as a treatment for cancer, see [Cancer Surgery](#)⁶.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)⁷.

Hyperlinks

1. www.cancer.org/cancer/wilms-tumor/detection-diagnosis-staging/how-diagnosed.html
2. www.cancer.org/cancer/cancer-basics/lymph-nodes-and-cancer.html
3. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer.html
4. www.cancer.org/cancer/wilms-tumor/detection-diagnosis-staging/staging.html
5. www.cancer.org/treatment/treatments-and-side-effects/central-venous-catheters.html
6. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery.html
7. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

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National Cancer Institute. Wilms Tumor and Other Childhood Kidney Tumors Treatment (PDQ®). 2018. Accessed at www.cancer.gov/types/kidney/hp/wilms-treatment-pdq on September 4, 2018.

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Chemotherapy for Wilms Tumors

Chemotherapy (chemo) is the use of drugs to treat cancer. These drugs enter the blood and reach all areas of the body, which makes this treatment useful for cancer that has spread or might have spread beyond the kidney.

When might chemo be used?

Most children with Wilms tumors will get chemo at some point during their treatment. (Some children with very low risk tumors might not need it.)

In the United States, chemo is usually given after [surgery](#). Sometimes it may be needed before surgery to shrink a tumor to make the operation possible. In Europe, chemo is given before surgery and continued afterward. In both cases, the type and amount of chemo depend on the [stage](#)¹ and [histology](#)² of the cancer.

Chemo drugs used to treat Wilms tumors

A combination of chemo drugs is used to treat children with Wilms tumors. The chemo drugs used most often are:

- **Actinomycin D (dactinomycin)**
- **Vincristine**

For tumors at more advanced stages, those with anaplastic histology, or tumors that recur (come back) after treatment, other drugs might also be used, such as:

- **Doxorubicin (Adriamycin)**
- **Cyclophosphamide**

- Etoposide
- Irinotecan
- Carboplatin

How is chemo given?

Chemo drugs for Wilms tumors are injected into the blood, either through a vein (IV) or through a [central venous catheter](#)³ (a thin tube inserted into a large blood vessel during surgery).

Different drugs, doses, and lengths of treatment are used, depending on the type and stage of the Wilms tumor and the child's age. Most often, the drugs are given once a week for at least several months.

Chemo is usually given by a nurse in the doctor's office or in the outpatient section of the hospital. Some children with Wilms tumors might need to stay in the hospital while they are getting chemo, but usually this is not needed.

Possible side effects of chemo

Chemo drugs can affect cells other than cancer cells, which can lead to side effects.

The side effects of chemo depend on the types and doses of drugs used, and the length of treatment. Possible **short-term side effects** can include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Diarrhea or constipation
- Increased chance of infections (from having too few white blood cells)
- Easy bruising or bleeding (from having too few blood platelets)
- Fatigue or extreme tiredness (from having too few red blood cells)

Your child's doctor and treating team will watch closely for any side effects that develop. There are often ways to lessen these side effects. For example, drugs can be given to help prevent or reduce nausea and vomiting. Be sure to ask your child's doctor or nurse about medicines to help reduce side effects, and let them know if your child has side

effects so they can be managed.

Along with the effects listed above, some drugs can have specific side effects. For example:

- **Vincristine** can damage nerves. Some patients may have tingling, numbness, weakness, or pain, particularly in the hands and feet. (This is called *peripheral neuropathy*.)
- **Doxorubicin** can damage the heart. The risk of this happening goes up as the total amount of the drug given goes up. Doctors try to limit this risk as much as possible by not giving more than the recommended doses and by checking the heart with a test called an *echocardiogram* (an ultrasound of the heart) during treatment.
- **Cyclophosphamide** can damage the bladder, which can cause blood in the urine. The risk of this can be lowered by giving the drug with plenty of fluids and with a drug called mesna, which helps protect the bladder.

Lab tests to check for chemo side effects

Before each chemo session, your child's doctor will get [blood tests](#)⁴ to check blood cell levels and to see how well the liver and kidneys are working. If there are problems, chemo might need to be delayed or the doses reduced.

Long-term side effects of chemo

Possible long-term effects of treatment are one of the major challenges children might face after cancer treatment. For example:

- If your child is given doxorubicin (Adriamycin), there is a chance it could damage the heart. Your child's doctor will carefully watch the doses used and will check your child's heart function with imaging tests.
- Some chemo drugs can increase the risk of developing a [second type of cancer](#)⁵ (such as leukemia) years after the Wilms tumor is cured. But this small increase in risk has to be weighed against the importance of chemo in treating Wilms tumor.
- Some drugs might also affect [fertility](#)⁶ (the ability to have children) years later.

See [Living as a Wilms Tumor Survivor](#)⁷ for more on the possible long-term effects of treatment.

More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see [Chemotherapy](#)⁸.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)⁹.

Hyperlinks

1. www.cancer.org/cancer/wilms-tumor/detection-diagnosis-staging/staging.html
2. www.cancer.org/cancer/wilms-tumor/about/what-is-wilms-tumor.html
3. www.cancer.org/treatment/treatments-and-side-effects/central-venous-catheters.html
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8. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html
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Radiation Therapy for Wilms Tumors

Radiation therapy uses high-energy rays or particles to kill cancer cells.

When might radiation therapy be used?

Radiation is often part of treatment for more advanced Wilms tumors ([stages¹ III, IV, and V](#)), as well as for some earlier stage tumors with anaplastic [histology²](#). It might be used:

- After surgery to try to make sure all of the cancer is gone
- Before surgery to try to shrink the tumor to make it easier to remove
- Instead of surgery if it can't be done for some reason

For more on this, see [Treatment by Type and Stage of Wilms Tumor](#).

How radiation therapy is done

The type of radiation used for Wilms tumors is called **external beam radiation therapy**. Radiation from a source outside the body is focused onto the cancer.

Before treatments start, the radiation team will take careful measurements with imaging tests such as [CT³](#) or [MRI⁴](#) scans to determine the correct angles for aiming the radiation beams and the proper dose of radiation. This planning session is called **simulation**. Your child may be fitted with a plastic mold that looks like a body cast to keep him or her in the same position during each treatment so that the radiation can be aimed more accurately.

Radiation is usually given 5 days a week for several weeks. Each treatment is much like getting an x-ray, although the dose of radiation is much stronger. For each session, your child lies on a special table while a machine delivers the radiation from precise angles. Each session lasts about 15 to 30 minutes, with most of the time being spent making sure the radiation is aimed correctly. The actual treatment time is much shorter. The

treatment is not painful, but some younger children may be given medicine to make them drowsy or asleep before each treatment to help make sure they stay still.

Types of radiation therapy

Modern radiation therapy techniques help doctors aim the treatment at the tumor more accurately than in the past. These techniques may help increase success rates and reduce side effects.

Three-dimensional conformal radiation therapy (3D-CRT): 3D-CRT uses the results of imaging tests such as MRI and special computers to precisely map the location of the tumor. Radiation beams are then shaped and aimed at the tumor from different directions. Each beam alone is fairly weak, which makes it less likely to damage normal body tissues, but the beams converge at the tumor to give a higher dose of radiation there.

Intensity modulated radiation therapy (IMRT): IMRT is an advanced form of 3D therapy. Along with shaping the beams and aiming them at the tumor from several angles, the intensity (strength) of the beams can be adjusted to limit the dose reaching the nearby normal tissues. This lets doctors deliver a higher dose to the tumor. Many major hospitals and cancer centers now use IMRT.

Possible side effects of radiation therapy

Radiation is often an important part of treatment, but young children's bodies are very sensitive to it, so doctors try to use as little as possible to help avoid or limit any problems. Radiation therapy can cause both short-term and long-term side effects, which depend on the dose of radiation and where it's aimed.

Possible **short-term** effects include:

- Effects on areas of skin that get radiation can range from mild sunburn-like changes and hair loss to more severe skin reactions.
- Radiation to the abdomen (belly) can cause nausea or diarrhea.
- Radiation therapy can make a child tired, especially after several days or weeks of treatment.

Possible **long-term** effects include:

- Radiation to the kidney area can damage the kidneys. This is more likely to be a

concern in children who need treatment in both kidneys.

- Radiation can slow the growth of normal body tissues (such as bones) that get radiation, especially in younger children. In the past this led to problems such as short bones or a curving of the spine, but this is less likely with the lower doses of radiation used today.
- Radiation to the chest area can affect the heart and lungs. This doesn't usually cause problems right away, but in some children it might lead to heart or lung problems as they get older.
- In girls, radiation to the abdomen (belly) may damage the ovaries. This might lead to abnormal menstrual cycles or problems getting pregnant or having children later on.
- Radiation slightly increases the risk of developing a second cancer in the area, usually many years after it is given. This doesn't happen often with Wilms tumors because the amount of radiation used is low.

See [Living as a Wilms Tumor Survivor](#)⁵ for more on the possible long-term effects of treatment.

More information about radiation therapy

To learn more about how radiation is used to treat cancer, see [Radiation Therapy](#)⁶.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)⁷.

Hyperlinks

1. www.cancer.org/cancer/wilms-tumor/detection-diagnosis-staging/staging.html
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Treatment by Type and Stage of Wilms Tumor

In the United States, most children with Wilms tumors are treated in [clinical trials](#)¹ developed by the [Children's Oncology Group](#)². The goal of these studies is to cure as many children as possible while limiting side effects by giving as little treatment as is necessary. This is done by comparing the current best treatment with one the doctors think might be better. Because of this, treatment may differ slightly from what is described here.

Treatment for Wilms tumor is based mainly on the [stage](#)³ of the cancer and whether its [histology](#)⁴ (how it looks under the microscope) is favorable or anaplastic. Other factors can influence treatment as well, including:

- The child's age
- If the tumor cells have certain chromosome changes
- The size of the main tumor

In the United States, doctors prefer to use [surgery](#) as the first treatment in most cases,

and then give [chemotherapy](#) (and possibly [radiation therapy](#)) afterward. In Europe, doctors prefer to start the chemotherapy before surgery. The results from these approaches seem to be about the same.

Most often, the stage and histology of the cancer are actually determined when surgery is done to remove the cancer, because the true extent of the tumor often can't be determined by [imaging tests](#)⁵ alone. The doctors use what they learn during surgery to guide further treatment. But sometimes it's clear that the cancer has already spread beyond the kidney even before surgery is done, based on imaging tests. This can affect the order in which treatments are given, as well as the extent of surgery.

Stage I

These tumors are only in the kidney, and surgery has completely removed the tumor along with the entire kidney, nearby structures, and some nearby [lymph nodes](#)⁶.

Favorable histology: Children younger than 2 years with small tumors (weighing less than 550 grams) may not need further treatment after surgery. But they need to be watched closely because the chance the cancer will come back is slightly higher than if they also got chemo. If the cancer does come back, the chemo drugs actinomycin D (dactinomycin) and vincristine (and possibly more surgery) are very likely to be effective at this point.

For children older than 2 and for those of any age who have larger tumors, surgery is usually followed by chemo for several months, with the drugs actinomycin D and vincristine. If the tumor cells have certain chromosome changes, the drug doxorubicin (Adriamycin) may be given as well.

Anaplastic histology: For children of any age who have tumors with anaplastic histology, surgery is usually followed by radiation therapy to the area of the tumor, along with chemo with actinomycin D, vincristine, and possibly doxorubicin (Adriamycin) for several months.

Stage II

These tumors have grown outside the kidney into nearby tissues, but surgery has removed all visible signs of cancer.

Favorable histology: After surgery, standard treatment is chemo with actinomycin D and vincristine. If the tumor cells have certain chromosome changes, the drug doxorubicin (Adriamycin) may be given as well. The chemo is given for several months.

Anaplastic histology, with focal (only a little) anaplasia: When the child recovers from surgery, radiation therapy is given over several weeks. When this is finished, chemo (doxorubicin, actinomycin D, and vincristine) is given for about 6 months.

Anaplastic histology, with diffuse (widespread) anaplasia: After surgery, these children get radiation over several weeks. This is followed by a more intense type of chemo using the drugs vincristine, doxorubicin, etoposide, cyclophosphamide, and carboplatin, along with mesna (a drug that helps protect the bladder from the effects of cyclophosphamide), which is given for about 6 months.

Stage III

Surgery cannot remove these tumors completely because of their size or location or for other reasons. In some cases, surgery may be postponed until other treatments are able to shrink the tumor first (see below).

Favorable histology: Treatment is usually surgery if it can be done, followed by radiation therapy over several days. This is followed by chemo with 3 drugs (actinomycin D, vincristine, and doxorubicin). If the tumor cells have certain chromosome changes, the drugs cyclophosphamide and etoposide may be given as well. Chemo is given for about 6 months.

Anaplastic histology, with focal (only a little) anaplasia: Treatment starts with surgery if it can be done, followed by radiation therapy over several weeks. This is followed by chemo, usually with 3 drugs (actinomycin D, vincristine, and doxorubicin) for about 6 months.

Anaplastic histology, with diffuse (widespread) anaplasia: Treatment starts with surgery if it can be done, followed by radiation therapy over several weeks. This is followed by chemo, usually with the drugs vincristine, doxorubicin, etoposide, cyclophosphamide, and carboplatin, along with mesna (a drug that helps protect the bladder from the effects of cyclophosphamide). Chemo lasts about 6 months.

In some instances the tumor may be very large or may have grown into nearby blood vessels or other structures so that it can't be removed safely. In these children, a small [biopsy](#)⁷ sample is taken from the tumor to be sure that it's a Wilms tumor and to determine its histology. Then chemo is started. Usually the tumor will shrink enough within several weeks so that surgery can be done. If not, then radiation therapy might be given as well. Chemo will be started again after surgery. If radiation was not given before surgery, it's given after surgery.

Stage IV

These tumors have already spread to distant parts of the body at the time of diagnosis. As with stage III tumors, surgery to remove the tumor might be the first treatment, but it might need to be delayed until other treatments can shrink the tumor (see below).

Favorable histology: Surgery to remove the tumor is the first treatment if it can be done, followed by radiation therapy. The entire abdomen will be treated if there is still some cancer left after surgery. If the cancer has spread to the lungs, low doses of radiation might also be given to that area. This is followed by chemo, usually with 3 drugs (actinomycin D, vincristine, and doxorubicin) for about 6 months. If the tumor cells have certain chromosome changes, the drugs cyclophosphamide and etoposide may be given as well.

Anaplastic histology: Treatment might start with surgery if it can be done, followed by radiation therapy. The entire abdomen will be treated if there is still some cancer left after surgery. Low doses of radiation will also be given to the lungs if the cancer has spread there. This is followed by chemo with the drugs vincristine, doxorubicin, etoposide, cyclophosphamide, and carboplatin, along with mesna given for about 6 months. If the tumor cells have diffuse (widespread) anaplasia, some doctors might try the chemo drugs irinotecan and vincristine first instead (although this is not yet a commonly used treatment). The treatment would then be adjusted if the tumor shrinks in response to these drugs.

If the tumor is too large or has grown too much to be removed safely with surgery first, a small [biopsy](#)⁸ sample may be taken from the tumor to be sure that it's a Wilms tumor and to determine its histology. Chemo and/or radiation therapy may then be used to shrink the tumor. Surgery might be an option at this point. This would be followed by more chemo and radiation therapy if it wasn't given already.

For stage IV cancers that have spread to the liver, surgery may be an option to remove any liver tumors that still remain after chemo and radiation therapy.

Stage V

Treatment for children with tumors in both kidneys is unique for each child, although it typically includes surgery, chemo, and radiation therapy at some point.

[Biopsies](#)⁹ (tissue samples) of tumors in both kidneys and of nearby lymph nodes may be taken first, although not all doctors feel this is needed because when both kidneys have tumors, the chance that they are Wilms tumors is very high.

Chemo is typically given first to try to shrink the tumors. The drugs used will depend on the extent and histology (if known) of the tumors. After about 6 weeks of chemo, surgery (partial nephrectomy) may be done to remove the tumors if enough normal kidney tissue can be left behind. If the tumors haven't shrunk enough, treatment may include more chemo or radiation therapy for about another 6 weeks. Surgery (either partial or radical nephrectomy) may then be done. This is followed by more chemo, possibly along with radiation therapy if it hasn't been given already.

If not enough functioning kidney tissue is left after surgery, a child may need dialysis, a procedure where a special machine filters waste products out of the blood several times a week. If there is no evidence of any cancer after a year or two, a donor kidney transplant may be done.

Recurrent Wilms tumor

The prognosis and treatment for children with Wilms tumor that recurs (comes back after treatment) depends on their prior treatment, the cancer's histology (favorable or anaplastic), and where it recurs. The outlook is generally better for recurrent Wilms tumors with the following features:

- Favorable histology
- Initial diagnosis of stage I or II
- Initial chemo with vincristine and actinomycin D only
- No previous radiation therapy

The usual treatment for these children is surgery to remove the recurrent cancer (if possible), radiation therapy (if not already given to the area), and chemo, often with drugs different from those used during first treatment.

Recurrent Wilms tumors that do not have the features above are much harder to treat. These children are usually treated with aggressive chemo, such as the ICE regimen (ifosfamide, carboplatin, and etoposide) or others being studied in clinical trials. Very high-dose chemo followed by a [stem cell transplant](#)¹⁰ (sometimes called a *bone marrow transplant*) might also be an option in this situation, although this is still being studied.

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
2. <https://childrensoncologygroup.org/>
3. www.cancer.org/cancer/wilms-tumor/detection-diagnosis-staging/staging.html
4. www.cancer.org/cancer/wilms-tumor/about/what-is-wilms-tumor.html
5. www.cancer.org/treatment/understanding-your-diagnosis/tests.html
6. www.cancer.org/cancer/cancer-basics/lymph-nodes-and-cancer.html
7. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer.html
8. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer.html
9. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer.html
10. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html

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