

Rhabdomyosarcoma - Childhood - Treatment Options [1]

This section has been reviewed and approved by the [Cancer.Net Editorial Board](#) [2], 02/2014

ON THIS PAGE: You will learn about the different ways doctors use to treat children with this type of cancer. To see other pages, use the menu on the side of your screen.

In general, cancer in children is uncommon, so it can be hard for doctors to plan treatments unless they know what has been most effective in other children. That's why more than 60% of children with cancer are treated as part of a clinical trial. [Clinical trials](#) [3] are research studies that compare the standard treatments (the best proven treatments available) with newer approaches to treatments that may be more effective. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Studying new treatments involves careful monitoring using scientific methods and all participants are followed closely to track their health and progress. The [Children's Oncology Group \(COG\)](#) [4] conducts national clinical trials that are available for children with rhabdomyosarcoma. COG is a National Cancer Institute-supported clinical trials cooperative group devoted exclusively to childhood and adolescent cancer research.

To take advantage of these newer treatments, all children with cancer should be treated at a specialized cancer center. Doctors at these centers have extensive experience in treating children with cancer and have access to the latest research. A doctor who specializes in treating children with cancer is called a pediatric oncologist. In many cases, a team of doctors works with a child and the family to provide care; this is called a [multidisciplinary team](#) [5]. Pediatric cancer centers often have extra support services for children and their families, such as child life specialists, nutritionists, physical and occupational therapists, social workers, and counselors. Special activities and programs to help your child and family cope may also be available.

Descriptions of the most common treatment options for rhabdomyosarcoma are listed below. Children and adolescents with rhabdomyosarcoma require multidisciplinary therapy planning, which means using combinations of chemotherapy, surgery, and/or radiation therapy. All children with rhabdomyosarcoma require chemotherapy, as well as surgery and/or radiation therapy. Treatment options and recommendations depend on several factors, including the subtype, stage, and group of rhabdomyosarcoma, possible side effects, and the family's preferences and overall health. Your child's care plan may also include treatment for symptoms and side effects, an important part of cancer care.

Take time to learn about all of your child's treatment options and be sure to ask questions about

things that are unclear. Also, talk about the goals of each treatment with the doctor and what your child can expect while receiving the treatment. Learn more about [making treatment decisions](#) [6].

Surgery

Surgery is the removal of the tumor and surrounding tissue during an operation, leaving a negative margin. This means there is no trace of cancer in the healthy tissue around the tumor's location. A surgical oncologist is a doctor who specializes in treating cancer using surgery. Learn more about the basics of [cancer surgery](#) [7].

Even children who have a rhabdomyosarcoma tumor that can be completely removed by surgery still require chemotherapy (see below).

An inoperable tumor is when the tumor cannot be completely removed or is unable to be removed by surgery. If the tumor is inoperable, the doctor will recommend a different treatment plan with chemotherapy and radiation therapy to destroy the cancer cells. Also, a biopsy is needed to determine the type of tumor (see [Diagnosis](#) [8]).

Chemotherapy

Chemotherapy is the use of drugs to destroy cancer cells, usually by stopping the cancer cells' ability to grow and divide. Chemotherapy is given by a pediatric or medical oncologist, a doctor who specializes in treating cancer with medication. A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. A patient may receive one drug at a time or combinations of different drugs at the same time.

Systemic chemotherapy is delivered through the bloodstream to reach cancer cells throughout the body. Chemotherapy for rhabdomyosarcoma is given by injection into a vein (called intravenous or IV chemotherapy). The drugs that are used most often in North America for rhabdomyosarcoma are vincristine (Oncovin, Vincasar), dactinomycin (Cosmegen, Lyovac Cosmegen), and cyclophosphamide (Cytoxan, Clafen, Neosar). This combination is called VAC.

Different studies are underway to determine the best medications and doses, and often these studies are classified based on the likelihood (or the risk) that the disease will recur (come back). The tumor may be classified as one of these three categories about its recurrence risk:

- low risk,
- intermediate risk, or
- high risk

The COG recently completed a research study for patients with low-risk rhabdomyosarcoma (started in August 2004) evaluating four cycles of VAC followed by vincristine and dactinomycin (called VA), in an attempt to decrease the total amount of medication given. In addition, for patients who had tumor cells remaining after surgery, this study evaluated a lower dose of radiation therapy. Early results for the patients with the lowest risk rhabdomyosarcoma (stage 1 or 2, group I or II with embryonal tumors, or stage 1, group III orbital embryonal tumors) show that the lower amount of medication had the same outcome as prior therapies. The long-term side effects for patients who received chemotherapy and radiation therapy are still being followed.

The COG recently completed and closed the clinical trial for patients with intermediate-risk rhabdomyosarcoma, started in 2006 and closed in 2013. The clinical trial tested whether the combination of irinotecan (Camptosar) and vincristine is more effective when added to VAC. In this study, a lower dose of cyclophosphamide is used in VAC cycles. This study also evaluated the use of radiation therapy early in the treatment process. The results of this clinical trial are not yet available.

A COG study for patients with high-risk rhabdomyosarcoma completed in 2008 evaluated the effectiveness of irinotecan and vincristine as initial treatment, followed by treatment with alternating cycles of a combination of doxorubicin (Adriamycin) and cyclophosphamide, and a combination of ifosfamide (Cyfos, Ifes, Ifosfamidum) and etoposide (VePesid, Toposar), given every two weeks. This therapy was then followed by four cycles of VAC.

The chemotherapy combination from this study is the basis the just-completed pilot study that opened in January 2010 for patients with high-risk disease and is evaluating whether the addition of temozolamide (Temodar) to vincristine and irinotecan and/or the addition of IMC-A12 (Cixutumumab) is safe and potentially more effective than the base combination therapy.

Learn more about current [COG studies \[9\]](#) for rhabdomyosarcoma. (Please note that this link will take you off Cancer.Net to another website.)

The side effects of chemotherapy depend on the individual and the dose used, but they can include fatigue, risk of infection, nausea and vomiting, hair loss, loss of appetite, and diarrhea. The side effects most common for the specific drugs used to treat rhabdomyosarcoma are listed below. Talk with your health care team about what your child may experience based on his or her specific treatment plan, and how side effects will be relieved or managed.

VAC therapy: Nausea, vomiting, and bone marrow suppression, which means the child's immune system functioning may be reduced, raising the risk of infection and other problems. Although very rare, a few patients may have significant liver damage.

Doxorubicin: Nausea, vomiting, bone marrow suppression, and sores in the mouth. Rarely, this drug affects heart function.

Ifosfamide and etoposide: Nausea, vomiting, bone marrow suppression, and decreased kidney function.

Irinotecan: Loose bowel movements.

Learn more about [managing common side effects of cancer treatment](#) [10]. Most side effects usually go away once treatment is finished. However, intensive therapy used for intermediate- and high-risk rhabdomyosarcoma may cause [permanent infertility, which is the inability to have a child](#). [11] Talk with your doctor about this possibility and whether your family should talk with a fertility specialist before cancer treatment begins.

Learn more about [chemotherapy](#) [12] and [preparing for treatment](#) [13]. The medications used to treat cancer are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using [searchable drug databases](#) [14].

Radiation therapy

Radiation therapy is the use of high-energy x-rays or other particles to destroy cancer cells. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist. The most common type of radiation treatment is called external-beam radiation therapy, which is radiation therapy given from a machine outside the body. When radiation treatment is given using implants, it is called internal radiation therapy or brachytherapy. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time.

Side effects from radiation therapy include fatigue, mild skin reactions, upset stomach, and loose bowel movements. Most side effects go away soon after treatment is finished. Learn more about [radiation therapy](#) [15].

Getting care for symptoms and side effects

Cancer and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the cancer, an important part of cancer care is relieving a person's symptoms and side effects. This approach is called palliative or supportive care, and it includes supporting the patient with his or her physical, emotional, and social needs.

Palliative care can help a person at any stage of illness. People often receive treatment for the cancer and treatment to ease side effects at the same time. In fact, patients who receive both often have less severe symptoms, better quality of life, and report they are more satisfied with treatment.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, and other therapies. Your child may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, and radiation therapy. Talk with the doctor about the goals of each treatment in your treatment plan.

Before treatment begins, talk with the health care team about the possible side effects of your child's specific treatment plan and supportive care options. And during and after treatment, be sure to tell the doctor or another health care team member if your child is experiencing a problem

so it is addressed as quickly as possible. Learn more about [palliative care](#) [16].

Remission and the chance of recurrence

A remission is when cancer cannot be detected in the body and there are no symptoms. This may also be called "no evidence of disease" or NED.

A remission can be temporary or permanent. This uncertainty leads to many patients and families feeling worried or anxious that the cancer will come back. While many remissions are permanent, it's important to talk with your child's doctor about the possibility of the cancer returning. As outlined above, the disease may be classified according to its risk of returning -- as low-risk, intermediate-risk, or high-risk disease -- and this may have been a factor in the child's treatment plan. Understanding the risk of recurrence and the treatment options may help you feel more prepared if the cancer does return. Learn more about [coping with the fear of recurrence](#) [17].

If the cancer does return after the original treatment, it is called recurrent cancer. It may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence).

When this occurs, testing will begin again to learn as much as possible about the recurrence, including whether the cancer's stage and group have changed. After testing is done, your child's doctor will talk with you about treatment options. The treatment plan may involve chemotherapy, but it depends on how much of the tumor can be surgically removed, where the cancer recurred, and the treatment the child received previously. Often, new experimental treatments for recurrent rhabdomyosarcoma are offered at centers that specialize in this disease.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients and their families are encouraged to talk with their health care team about these feelings and ask about support services to help them cope. Learn more about [dealing with cancer recurrence](#) [18].

If treatment fails

Although treatment is successful for the majority of children with cancer, sometimes it is not. If a child's cancer cannot be cured or controlled, this is called advanced or terminal cancer. In rare cases, this may occur during the original diagnosis and treatment or after initial therapy has been completed and there is a recurrence. The likelihood of treatment failure tends to be higher in children with higher risk disease at the time of the original diagnosis.

This diagnosis is stressful, and it may be difficult to discuss. However, it is important to have open and honest conversations with your child's doctor and health care team to express your family's feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families.

Parents or guardians are encouraged to think about where the child would be most comfortable: at home, in a home-like setting elsewhere, in the hospital, or in a hospice environment. Hospice care is a type of palliative care for people who are expected to live less than six months. It is designed to provide the best possible quality of life for people who are near the end of life.

Nursing care and special equipment can make staying at home a workable alternative for many families. Some children may be happier if they can arrange to attend school part-time or keep up other activities and social connections. The child's health care team can help parents or guardians decide on an appropriate level of activity. Making sure a child is physically comfortable and free from pain is extremely important as part of end-of-life care. Learn more about [caring for a terminally ill child](#) [19] and [advanced cancer care planning](#) [20].

The death of a child is an enormous tragedy, and families may need support to help them cope with the loss. Pediatric cancer centers often have professional staff and support groups to help with the process of grieving. Learn more on [grieving the loss of a child](#). [21]

The next section helps explain clinical trials, which are research studies. Use the menu on the side of your screen to select About Clinical Trials, or you can select another section, to continue reading this guide.

Links:

[1] <http://www.cancer.net/cancer-types/rhabdomyosarcoma-childhood/treatment-options>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/cancer-types/rhabdomyosarcoma-childhood/about-clinical-trials>

[4] <http://www.childrensoncologygroup.org/>

[5] <http://www.cancer.net/navigating-cancer-care/cancer-basics/cancer-care-team/types-oncologists>

[6] <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/making-decisions-about-cancer-treatment>

[7] <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/surgery/what-cancer-surgery>

[8] <http://www.cancer.net/cancer-types/rhabdomyosarcoma-childhood/diagnosis>

[9] <http://www.curesearch.org/>

[10] <http://www.cancer.net/navigating-cancer-care/side-effects>

[11] <http://www.cancer.net/coping-and-emotions/sexual-and-reproductive-health/fertility-and-cancer-treatment>

[12] <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/chemotherapy/what-chemotherapy>

[13] <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/chemotherapy/what-expect-when-having-chemotherapy>

[14] <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/drug-information-resources>

[15]

<http://www.cancer.net/patient/All+About+Cancer/Cancer.Net+Features/Treatments,+Tests,+and+Procedures/Understanding+Ra>

[16] <http://www.cancer.net/navigating-cancer-care/how-cancer-treated/caring-symptoms-cancer-and-its-treatment>

[17] <http://www.cancer.net/survivorship/life-after-cancer/coping-fear-recurrence>

[18] <http://www.cancer.net/survivorship/dealing-cancer-recurrence>

[19] <http://www.cancer.net/navigating-cancer-care/advanced-cancer/caring-terminally-ill-child-guide-parents>

[20] <http://www.cancer.net/navigating-cancer-care/advanced-cancer/advanced-cancer-care-planning>

[21] <http://www.cancer.net/coping-and-emotions/managing-emotions/grief-and-loss/grieving-loss-child>