

## **Osteosarcoma - Childhood - Treatment Options** [1]

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**ON THIS PAGE:** You will learn about the different ways doctors use to treat children and teens 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 is 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.

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](#) [4]. 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 osteosarcoma are listed below. The three most common types of treatment for osteosarcoma are surgery, chemotherapy, and radiation therapy. Treatment options and recommendations depend on several factors, including the type and stage of cancer, possible side effects, the child's overall health, and the child's and family's preferences. 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 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 your child's doctor and what your child can expect while receiving the treatment. [Learn more about making treatment decisions](#) [5].

### **Surgery**

Surgery is the removal of the tumor and some surrounding tissue during an operation. An

orthopedic oncologist is a doctor who specializes in surgery when cancer affects the bone. Chemotherapy and, occasionally, radiation therapy may be used with surgery, particularly with limb-sparing surgery. In limb-sparing surgery, doctors use surgical techniques, such as bone grafting and reconstructive surgery, to help the child keep the use of the arm or leg and to give the limb a more normal appearance. Limb-sparing surgery is used whenever possible. Sometimes, the operation that results in the most useful and strongest limb is different from the one that gives the most normal appearance. Learn more about [cancer surgery](#) [6].

Occasionally, a limb will need to be amputated, or removed, to be sure all of the tumor has been eliminated. If amputation is needed, rehabilitation, including physical therapy, can help the child maximize his or her physical functioning. Rehabilitation can also help a child cope with the social and emotional effects of losing a limb. Learn more about [rehabilitation](#) [7].

## **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.

Systemic chemotherapy is delivered through the bloodstream to reach tumor cells throughout the body. Common ways to give chemotherapy include an intravenous (IV) tube placed into a vein using a needle or in a pill or capsule that is swallowed (orally). Chemotherapy for osteosarcoma is usually given intravenously. Occasionally, medications are taken by mouth or injected under the skin, usually to limit the side effects of treatment. A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. Your child may receive one drug at a time or a combination of different drugs at the same time.

Chemotherapy is often given before surgery to reduce tumor size and avoid amputation of the arm or leg. Also, it is almost always given after surgery to destroy any tumor cells that may still be in the body.

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. These immediate side effects can be managed by the health care team during treatment and usually go away once treatment is finished. Other side effects, such as decreased strength of the heart muscle, hearing loss, or decreased kidney function, may continue after treatment. The severity of the side effects depends on the type of drug given and the length of treatment. Learn more about long-term side effects in the [After Treatment](#) [8] section.

Learn more about [chemotherapy](#) [9] and [preparing for treatment](#) [10]. The medications used to treat cancer are continually being evaluated. Talking with your child's doctor is often the best way to learn about the medications prescribed for your child, their purpose, and their potential side effects or interactions with other medications. Learn more about your child's prescriptions by using [searchable drug databases](#) [11].

## **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 for osteosarcoma is called external-beam radiation therapy, which is radiation therapy given from a machine outside the body. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time.

Radiation therapy for osteosarcoma is uncommon and is only used when trying to avoid amputating an arm or leg. In fact, because of osteosarcoma's relative resistance to radiation, radiation therapy is not often used in osteosarcoma. Surgery and chemotherapy are the most common types of treatment. However, this situation may change with the increased ability to deliver higher doses of radiation safely to just about any part of body.

Side effects from radiation therapy may 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](#) [12].

### **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 your child's doctor about the goals of each treatment in the treatment plan.

Before treatment begins, talk with your child's health care team about the possible side effects of the recommended treatment plan and supportive care options. And during and after treatment, be sure to tell your child's doctor or another health care team member if your child experiences a problem so it is addressed as quickly as possible. Learn more about [palliative care](#) [13].

### **Remission and the chance of recurrence**

A remission is when cancer cannot be detected in the body. This may also be called having "no evidence of disease" or being "NED."

A remission may be temporary or permanent. This uncertainty causes many childhood cancer survivors and their families to feel worried or anxious that the cancer will come back. While many remissions are permanent, it is important to talk with your doctor about the possibility of the cancer returning. Understanding the risk of recurrence and the treatment options may help you and your child feel more prepared if the cancer does return. Learn more about [coping with the fear of recurrence](#)

[14].

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, a cycle of testing will begin again to learn as much as possible about the recurrence, including whether the cancer's stage has changed. After testing is done, you and your child's doctor will talk about the treatment options. Often the treatment plan will include the therapies described above, such as surgery and chemotherapy, but they may be used in a different combination or given at a different pace. Your child's doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer.

Treatment for recurrent osteosarcoma depends on three factors:

- Where the cancer recurred
- The type of treatment your child received for the original tumor
- The overall health of your child

If the disease recurs in the lungs, surgery is often used to remove the nodules, or tumors, in the lung. In these situations, there is usually a better outcome for children who have the lung nodules completely removed. This is especially true if the disease has recurred only after the initial treatment has been completed. Chemotherapy or other approaches may be used as well. If the cancer comes back elsewhere in the body, a combination of drugs may be used. If the cancer has spread to another bone or to a small number of other bones, surgery may be performed, particularly if chemotherapy has worked well.

When cancer recurs, patients and their families often experience emotions such as disbelief or fear. 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](#) [15].

### **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. 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 and teens 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](#) [16] and [advanced cancer care planning](#) [17].

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](#) [18].

*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.*

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**Links:**

- [1] <http://www.cancer.net/cancer-types/osteosarcoma-childhood/treatment-options>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/19475>
- [4] <http://www.cancer.net/node/25356>
- [5] <http://www.cancer.net/node/24582>
- [6] <http://www.cancer.net/node/24720>
- [7] <http://www.cancer.net/node/25397>
- [8] <http://www.cancer.net/node/19477>
- [9] <http://www.cancer.net/node/24723>
- [10] <http://www.cancer.net/node/24473>
- [11] <http://www.cancer.net/node/25369>
- [12] <http://www.cancer.net/node/24728>
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- [18] <http://www.cancer.net/node/25288>