Ewing Sarcoma - 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 Ewing sarcoma. To see other pages, use the menu on the side of your screen.

In general, cancer in children and teenagers 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 standard treatments (the best known treatments available) with newer approaches to treatments that may be more effective. Clinical trials may test approaches such 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, children and teens with Ewing sarcoma should be treated at a specialized cancer center. Doctors at these centers have extensive experience in treating this age group and have access to the latest research. A doctor who specializes in treating children and teens with cancer is called a pediatric oncologist. If a pediatric cancer center is not nearby, general cancer centers sometimes have pediatric specialists who are able to be part of your child's care.

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, dietitians, physical and occupational therapists, social workers, and counselors. Special activities and programs to help your child and family cope may also be available.

Children and teenagers with Ewing sarcoma should be treated in clinical trials specifically designed for their disease. A typical treatment plan for Ewing sarcoma includes systemic therapy that treats the entire body, such as chemotherapy or stem cell transplantation, combined with localized therapy. Localized therapy focuses on treating the tumor itself using surgery and/or radiation therapy. When more than one treatment is used, it is called combination therapy.

Doctors make treatment decisions based on the stage of the disease and the age of the child, while trying to avoid or reduce long-term side effects of treatment. Descriptions of the most common treatment options for Ewing sarcoma are listed below. 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 your child's doctor and what your child can expect while receiving the treatment. Learn more about making treatment decisions [5].

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. Some children and teens may receive chemotherapy in their doctor's office, while others may go to a hospital or outpatient clinic.

Systemic chemotherapy gets into the bloodstream to reach cancer 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). However, chemotherapy for Ewing sarcoma is usually injected into a vein or muscle; it is rarely given by mouth.

When possible, treatment for Ewing sarcoma begins with chemotherapy. After this neoadjuvant chemotherapy, the doctor may use localized surgery or radiation therapy (see below) followed by additional chemotherapy to eliminate any remaining cancer cells. Sometimes, the doctor may use surgery or radiation therapy first and then give chemotherapy.

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. Children and teens with Ewing sarcoma should receive cyclophosphamide (Cytoxan, Neosar), doxorubicin (Adriamycin), etoposide (Toposar, VePesid), ifosfamide (Ifex), and/or vincristine (Oncovin, Vincasar PFS). For children and teens with Ewing sarcoma that has not spread to other parts of the body, the standard schedule is to receive chemotherapy every two weeks. Patients with metastatic Ewing sarcoma may also be treated with the above medications and dactinomycin (Cosmegen).

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 side effects usually go away once treatment is finished.

Children and teens receiving chemotherapy for Ewing sarcoma may be at risk for developing neutropenia [6], which is an abnormally low level of a type of white blood cell called neutrophils. All white blood cells help the body fight infection. Your child's doctor may give your child medications to increase his or her white blood cell levels. These medications are called white blood cell growth factors, also known as colony-stimulating factors (CSFs). Treating neutropenia is an important part of the overall treatment plan.

Learn more about the basics of chemotherapy [7] and preparing for treatment [8]. The medications used to treat Ewing sarcoma 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 prescriptions by using searchable drug databases [9].

Surgery

Surgery is the removal of the tumor and some surrounding healthy tissue during an operation. When possible, surgical removal of the tumor should happen after chemotherapy. Surgery may also be needed to remove any remaining cancer cells after chemotherapy or radiation therapy. An orthopedic oncologist is usually the doctor who will perform the surgery. Learn more about the basics of cancer surgery [10].

Often a tumor can be removed without causing disability. However, if the tumor occurs in an arm or leg, surgery to remove much of the bone may affect the limb's ability to function. Bone grafts from other parts of the body may help reconstruct the limb, and a prosthesis made of metal or plastic bones or joints can replace lost tissue. Physical therapy after surgery can help children and teens learn to use the limb again. Support services are available to help children and teens cope with the emotional effects of the loss of a limb. Learn more about rehabilitation [11].

Radiation therapy

Radiation therapy is the use of high-energy x-rays or other high-energy particles to destroy tumor cells. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist. For Ewing sarcoma, radiation therapy is used when surgery is not possible or did not remove all of the tumor cells, as well as when chemotherapy was not effective.

The most common type of radiation treatment is called external-beam radiation therapy, which is radiation given from a machine outside the body. When radiation therapy 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. Intraoperative radiation therapy, which is given inside the body during surgery, is being studied in clinical trials.

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. In the long term, radiation therapy can also interfere with normal bone growth and increase the risk of developing a secondary cancer. Learn more about the basics of radiation therapy [12].

Stem cell transplantation/bone marrow transplantation

For Ewing sarcoma, stem cell transplantation is an experimental approach that is still being researched to find out how effective it is as a treatment option. It should only be done as part of a clinical trial [3].

A stem cell transplant is a medical procedure in which bone marrow that contains cancer is replaced by highly specialized cells, called hematopoietic stem cells, that develop into healthy bone marrow. Hematopoietic stem cells are blood-forming cells found both in the bloodstream and in the bone marrow. Today, this procedure is more commonly called a stem cell transplant, rather than bone marrow transplant, because it is the stem cells in the blood that are typically being transplanted, not the actual bone marrow tissue.

Before recommending transplantation, doctors will talk with the patient and family about the risks of this treatment and consider several other factors, such as the type of tumor, results of any previous treatment, and the child's age and general health.

There are two types of stem cell transplantation depending on the source of the replacement blood stem cell: allogeneic (ALLO) and autologous (AUTO). ALLO uses donated stem cells, while AUTO uses the patient's own stem cells. AUTO transplants are the type used to treat Ewing sarcoma.

The goal of stem cell transplantation is to destroy all of the cancer cells in the marrow, blood, and other parts of the body using high doses of chemotherapy and/or radiation therapy and then allow replacement blood stem cells to create healthy bone marrow. Learn more about the basics of stem cell and bone marrow transplantation [13].

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 child'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 is any treatment that focuses on reducing symptoms, improving quality of life, and supporting patients and their families. Any person, regardless of age or type and stage of cancer, may receive palliative care. It works best when palliative care is started as early as needed in the cancer treatment process.

Children and teens 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, emotional support, and other therapies. Your child may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, or 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 palliative 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 can be addressed as quickly as possible. Learn more about palliative care [14].

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 having "no evidence of disease" or NED.

A remission may be temporary or permanent. This uncertainty causes many people to worry that the cancer will come back. While many remissions are permanent, it is important to talk with your child's doctor about the possibility of the cancer returning. Understanding your child's risk of recurrence and the treatment options may help everyone feel more prepared if the cancer does return. Learn more about coping with the fear of recurrence [15].

If the cancer does return after the original treatment, it is called recurrent disease. It may come back in the same place (called a local recurrence), nearby (regional recurrence), or in another place (distant recurrence). Recurrence is most common within the first two years after treatment has finished. However, late recurrences that develop up to five years after treatment are more common with Ewing sarcoma than with other types of childhood cancers.

If there is a recurrence, a cycle of testing will begin again to learn as much as possible about the recurrence. After testing is done, you, your child, and your child's doctor will talk about the treatment options. The next round of treatment will depend on where and when the cancer recurred and how it was first treated. The doctor may recommend chemotherapy, including cyclophosphamide and irinotecan (Camptosar), temozolomide (Temodar, Methazolastone), and topotecan (Hycamtin); radiation therapy; and/or surgery to remove new tumors. Stem cell transplantation may also be recommended. Your child's doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer. Whichever treatment plan you choose, palliative care will be important for relieving symptoms and side effects.

Patients with recurrent Ewing sarcoma and their parents often experience emotions such as disbelief or fear. Patients and 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 a recurrence [16].

If treatment fails

Although treatment is successful for the majority of children and teens with cancer, sometimes it is not. If a child's cancer cannot be cured or controlled, this is called advanced or terminal disease. This diagnosis is stressful, and advanced cancer 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 [17] and advanced cancer care planning [18].

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. [19]

The next section in this guide is About Clinical Trials [3]*, and it offers more information about research studies that are focused on finding better ways to care for children and teens with cancer. Or, use the menu on the side of your screen to choose another section to continue reading this guide.*

Links
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