

Bone Cancer - Treatment Options [1]

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

This section outlines treatments that are the standard of care (the best proven treatments available) for this specific type of cancer. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new approach to treatment to evaluate whether it is safe, effective, and possibly better than the standard treatment. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Your doctor can help you review all treatment options. For more information, see the [Clinical Trials](#) [3] section and [Latest Research](#) [4] sections.

Treatment overview

In cancer care, different types of doctors often work together to create a patient's overall treatment plan that combines different types of treatments. This is called a [multidisciplinary team](#) [5]. Oncologists are doctors who specialize in the care and treatment of people with cancer.

Descriptions of the most common treatment options for bone cancer are listed below. Treatment options and recommendations depend on several factors, including the type and stage of cancer, possible side effects, and the patient's preferences and overall health. Your 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 treatment options and be sure to ask questions about things that are unclear. Also, talk about the goals of each treatment with your doctor and what you can expect while receiving the treatment. Learn more about making [treatment decisions](#) [6].

For a low-grade tumor, the primary treatment is surgery. The goal of surgery is to remove the tumor and a margin of healthy bone or tissue around the tumor to make sure all of the cancer cells are gone.

For a high-grade tumor, oncologists often use a combination of treatments. These include surgery, chemotherapy, and radiation therapy.

Surgery

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

Surgical oncologists and orthopedic oncologists are doctors who specialize in treating bone cancer using surgery. Surgery for bone cancer often involves a wide excision of the tumor. A wide excision means that the tumor is removed along with a margin of healthy tissue around it in all directions. Learn more about [cancer surgery](#) [7].

If the tumor is in an arm or leg, limb-sparing techniques are used whenever possible. However, amputation, which is the removal of the arm or leg with the tumor, may be needed depending on the tumor's size and/or location.

Wide excision surgical techniques have reduced the number of amputations performed for patients with bone cancer. More than 90% of patients can be treated with conservative, limb-sparing surgery compared with amputation. These surgeries often require prostheses, such as metal plates or bone from other parts of the body, to replace the missing bone and provide strength to the remaining bone. This is called reconstructive surgery. Surgeons use soft tissue, such as muscle, to cover the reconstruction area. The tissue helps with healing and reduces the risk of infection.

For some patients, amputation may offer the best option. These include patients whose cancer is located where it cannot be completely removed by surgery, patients who cannot undergo reconstruction, or when the surgical area cannot be fully covered with soft tissue.

Children with bone cancer may require amputation more often than adults since their bones grow more. To avoid amputation, some children can be fitted for expandable joint prostheses that adjust as the skeleton grows. These prostheses require multiple operations to adjust bone length as the child grows.

It is important to remember that the operation that results in the most useful and strongest limb may be different from the one that gives the most normal appearance. If amputation is needed, [rehabilitation](#) [8] that includes physical therapy can help maximize the patient's physical functioning. Rehabilitation can also help a person cope with the social and emotional effects of losing a limb.

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 medical oncologist, a doctor who specializes in treating cancer with medication.

Systemic chemotherapy is delivered through 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. 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. Chemotherapy for

bone cancer can usually be given as an outpatient treatment, which is treatment given at a clinic or doctor's office instead of requiring the patient to be admitted to a hospital.

Surgery alone is not usually enough treatment for patients with some bone cancers, particularly osteosarcoma [9]. These cancers sometimes recur as distant metastases, most often in the lungs, that were most likely only able to be seen with a microscope when the person was diagnosed. The use of chemotherapy has increased survival rates for people with some types of bone cancer. In addition, chemotherapy is often useful for treating cancer that has visibly spread at the time of diagnosis.

Fast-growing bone cancer is often treated with chemotherapy before surgery. This usually reduces the size of the primary tumor and may destroy tiny areas of metastases if some of the cancer cells have spread to other areas.

Chemotherapy that is given before surgery is called preoperative chemotherapy, neoadjuvant chemotherapy, or induction chemotherapy. For most high-grade tumors, the oncologist gives chemotherapy for three to four cycles before surgery to shrink the primary tumor and make it easier to remove. Chemotherapy before surgery may also improve survival, since it destroys cancer cells that have spread from the original tumor. The tumor's response to chemotherapy, which is evaluated using a microscope after the primary tumor has been removed, can be used to better determine the prognosis.

After the patient has recovered from surgery, he or she may receive additional chemotherapy to destroy any remaining tumor cells. This is called postoperative or adjuvant chemotherapy. The use of chemotherapy to shrink the tumor before surgery combined with chemotherapy after surgery has saved many lives and many patients' limbs.

Some common chemotherapy drugs given to patients with bone cancer are cisplatin (Platinol), cyclophosphamide (Neosar), dactinomycin (Cosmegen), doxorubicin (Adriamycin), etoposide (Toposar, VePesid), ifosfamide (Ifex), and methotrexate (multiple brand names).

In particular, chemotherapy is very effective for Ewing sarcoma [10]. Some drugs used to treat Ewing sarcoma are cyclophosphamide, dactinomycin, doxorubicin, etoposide, ifosfamide, and vincristine (Oncovin).

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.

Learn more about chemotherapy [11] and preparing for treatment [12]. 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 [13].

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 a radiation oncologist. 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 treatment is given using implants, it is called internal radiation therapy or brachytherapy. A radiation therapy regimen usually consists of a specific number of treatments given over a set period of time.

For bone cancer, radiation therapy is most often used for patients who have a tumor that cannot be removed with surgery. Radiation therapy may also be done before surgery to shrink the tumor, or it may be done after surgery to destroy any remaining cancer cells. Radiation therapy makes it possible to do less extensive surgery, often preserving the arm or leg. Radiation therapy may also be used to relieve pain for people as part of palliative care. See below for more information.

For patients with Ewing sarcoma, radiation therapy is often used along with chemotherapy and surgery. Ewing sarcoma that starts in a bone that cannot be surgically removed is treated with chemotherapy and radiation therapy.

For osteosarcoma, treatment is usually limited to chemotherapy and surgery. Radiation therapy is used for recurrences or osteosarcomas that cannot be removed completely with surgery.

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](#) [14].

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. You may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, and radiation therapy. Talk with your doctor about the goals of each treatment in the treatment plan.

Before treatment begins, talk with your health care team about the possible side effects of your specific treatment plan and supportive care options. And during and after treatment, be sure to tell your doctor or another health care team member if you are experiencing a problem so it is addressed as quickly as possible. Learn more about [palliative care](#) [15].

Metastatic bone cancer

If cancer has spread to another location in the body, it is called metastatic cancer. Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating this stage of cancer because there can be different opinions about the best treatment plan. Learn more about seeking a [second opinion](#) [16] before starting treatment, so you are comfortable with the treatment plan chosen. This discussion may include [clinical trials](#) [3].

Your health care team may recommend a treatment plan that includes a combination of surgery, chemotherapy, and radiation therapy. Supportive care will also be important to help relieve symptoms and side effects.

For most patients, a diagnosis of metastatic cancer is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, including through a support group.

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 being "NED."

A remission may be temporary or permanent. This uncertainty leads to many survivors feeling 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 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, 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 doctor will talk about your treatment options. Often the treatment plan will include the therapies described above, such as surgery, chemotherapy, and radiation therapy, but they may be used in a different combination or given at a different pace. Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients 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

Recovery from cancer is not always possible. If treatment is not successful, the disease may be called advanced or terminal cancer.

This diagnosis is stressful, and this is difficult to discuss for many people. However, it is important to have open and honest conversations with your doctor and health care team to express your

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. Making sure a person is physically comfortable and free from pain is extremely important.

Patients who have advanced cancer and who are expected to live less than six months may want to consider a type of palliative care called hospice care. Hospice care is designed to provide the best possible quality of life for people who are near the end of life. You and your family are encouraged to think about where you would be most comfortable: at home, in the hospital, or in a hospice environment. Nursing care and special equipment can make staying at home a workable alternative for many families. Learn more about [advanced cancer care planning](#) [19].

After the death of a loved one, many people need support to help them cope with the loss. Learn more about [grief and loss](#) [20].

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/bone-cancer/treatment-options>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/18542>
- [4] <http://www.cancer.net/node/18545>
- [5] <http://www.cancer.net/node/25356>
- [6] <http://www.cancer.net/node/24582>
- [7] <http://www.cancer.net/node/24720>
- [8] <http://www.cancer.net/node/25397>
- [9] <http://www.cancer.net/node/31389>
- [10] <http://www.cancer.net/node/31309>
- [11] <http://www.cancer.net/node/24723>
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- [19] <http://www.cancer.net/node/25113>
- [20] <http://www.cancer.net/node/25111>