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# Osteosarcoma Early Detection, Diagnosis, and Staging

## Detection and Diagnosis

Catching cancer early often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- [Can Osteosarcoma Be Found Early?](#)
- [Signs and Symptoms of Osteosarcoma](#)
- [Tests for Osteosarcoma](#)

## Stages of Osteosarcoma

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- [Osteosarcoma Stages](#)

## Outlook (Prognosis)

Doctors often use survival rates as a standard way of discussing someone's outlook (prognosis). Some people want to know about survival statistics, while others might not find the numbers helpful, or might even not want to know them.

- [Survival Rates for Osteosarcoma](#)

## Questions to Ask About Osteosarcoma

Here are some questions you can ask your cancer care team to help you better understand the diagnosis and treatment options.

- [Questions to Ask the Doctor About Osteosarcoma](#)

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## Can Osteosarcoma Be Found Early?

At this time, there are no widely recommended screening tests for this cancer. (Screening is testing for cancer in people without any symptoms.)

Still, most osteosarcomas are found at an early stage, before they have clearly spread to other parts of the body. Symptoms such as bone pain or swelling often prompt a visit to a doctor. (For more on this, see [Signs and Symptoms of Osteosarcoma](#).)

Some people who are at increased risk for osteosarcoma because of certain bone diseases or inherited conditions (listed in [Osteosarcoma Risk Factors](#)<sup>1</sup>) might need increased monitoring for this disease. This type of cancer usually does not run in families, but looking out for the early signs is important if it is to be treated successfully.

### Hyperlinks

1. [www.cancer.org/cancer/osteosarcoma/causes-risks-prevention/risk-factors.html](http://www.cancer.org/cancer/osteosarcoma/causes-risks-prevention/risk-factors.html)

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Anderson ME, Randall RL, Springfield DS, Gebhart MC. Chapter 92: Sarcomas of bone. In: Niederhuber JE, Armitage JO, Doroshow JH, Kastan MB, Tepper JE, eds. *Abeloff's Clinical Oncology*. 5th ed. Philadelphia, Pa: Elsevier; 2014.

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Last Medical Review: December 15, 2017 Last Revised: January 30, 2018

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## Signs and Symptoms of Osteosarcoma

Osteosarcomas are usually found because of the symptoms they are causing.

### **Pain and swelling**

Pain in the affected bone (usually around the knee or in the upper arm) is the most common symptom of osteosarcoma. At first, the pain might not be constant and might be worse at night. The pain often increases with activity and might result in a limp if the tumor is in a leg bone.

Swelling in the area is another common symptom, although it might not occur until later. Depending on where the tumor is, it might be possible to feel a lump or mass.

Limb pain and swelling are very common in normal, active children and teens. They are much more likely to be caused by normal bumps and bruises, so they might not prompt a doctor visit right away. This can delay a diagnosis. If your child has these symptoms and they don't go away within a few weeks (or they get worse), see a doctor so that the cause can be found and treated, if needed.

These symptoms are less common in adults, so they should be a sign to see a doctor even sooner.

### **Bone fractures (breaks)**

Although osteosarcoma might weaken the bone it develops in, fractures (breaks) are not common. Exceptions are rare telangiectatic osteosarcomas, which tend to weaken bones more than other forms of osteosarcoma and are more likely to cause breaks at the tumor site.

People with a fracture next to or through an osteosarcoma often describe a limb that

was sore for a few months and suddenly became very painful when the fracture occurred.

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# Tests for Osteosarcoma

Osteosarcomas are usually found because of [signs or symptoms](#) a person is having, which prompts a visit to a doctor. If a bone tumor is suspected, exams and tests will be needed to find out for sure.

## Medical history and physical exam

If a person has signs or symptoms that suggest they might have a tumor in or around a bone, the doctor will want to take a complete **medical history** to find out more about the symptoms.

A **physical exam** can provide information about a possible tumor, as well as other health problems. For example, the doctor may be able to see or feel an abnormal mass.

The doctor may also look for problems in other parts of the body. When people (especially adults) have cancer in the bones, it's often the result of cancer that started somewhere else and then spread to the bones.

If the doctor suspects a person could have osteosarcoma (or another type of bone tumor), more tests will be done. These might include imaging tests, biopsies, and/or lab tests.

## Imaging tests

Imaging tests use x-rays, magnetic fields, or radioactive substances to create pictures of the inside of the body. Imaging tests might be done for a number of reasons, including:

- To help find out if a suspicious area might be cancer
- To help determine if a cancer might have started in another part of the body
- To learn how far cancer has spread
- To help determine if treatment is working
- To look for signs that the cancer might have come back

Patients who have or might have osteosarcoma will have one or more of these tests.

### Bone x-ray

This is often the first test done if a bone tumor is suspected. Doctors can often recognize a bone tumor such as osteosarcoma based on plain x-rays of the bone. But other imaging tests might be needed as well.

Even if results of an x-ray strongly suggest a person has osteosarcoma, a biopsy will still be needed to confirm that it is cancer rather than some other problem, such as an infection.

### Magnetic resonance imaging (MRI) scan

[MRI scans](#)<sup>1</sup> create detailed images of soft tissues in the body using radio waves and strong magnets instead of x-rays, so no radiation is involved. A contrast material called *gadolinium* may be injected into a vein before the scan to better see details.

An MRI scan is often done to get a more detailed look at a bone mass seen on an x-ray. MRI scans can usually show if the mass is likely to be a tumor, an infection, or some

type of bone damage from other causes.

MRI scans can also help show the exact extent of a tumor, as they can show the marrow inside bones and the soft tissues around the tumor, including nearby blood vessels and nerves. Sometimes, the MRI can help find small bone tumors several inches away from the main tumor (called *skip metastases*). Knowing the extent of an osteosarcoma is very important when planning [surgery](#)<sup>2</sup>.

An MRI scan usually gives better details than a CT scan (described below).

### **Computed tomography (CT) scan**

A [CT scan](#)<sup>3</sup> combines many x-ray pictures to make detailed cross-sectional images of parts of the body. If a bone x-ray shows a tumor, CT scans are sometimes used to see if the tumor has grown into nearby muscle, fat, or tendons, although MRI is often better for this.

A CT scan of the chest is often done to look for spread of the cancer to the lungs. CT scans may also be done to look for the spread of the cancer to other parts of the body.

### **Chest x-ray**

This test is sometimes done to see if cancer has spread to the lungs. It can find larger tumors, but it is not as good as a CT scan for spotting smaller tumors. If a CT scan of the chest is done, a chest x-ray probably won't be needed.

### **Bone scan**

A [bone scan](#)<sup>4</sup> can help show if a cancer has spread to other bones, and is often part of the workup for people with osteosarcoma. This test is useful because it can show the entire skeleton at once. (A positron emission tomography [PET] scan, described below, can often provide similar information, so a bone scan might not be needed if a PET scan is done.)

For this test, a small amount of low-level radioactive material is injected into the blood and travels to the bones. A special camera can detect the radioactivity and create a picture of the skeleton.

Areas of active bone changes appear as “hot spots” on the skeleton because they attract the radioactivity. Hot spots may suggest areas of cancer, but other bone diseases can also cause the same pattern. To make an accurate diagnosis, other tests

such as plain x-rays, MRI scans, or even a bone biopsy might be needed.

### **Positron emission tomography (PET) scan**

For a [PET scan](#)<sup>5</sup>, a form of radioactive sugar (known as *FDG*) is injected into the blood. Because cancer cells in the body are growing quickly, they absorb large amounts of the sugar. A special camera can then create a picture of areas of radioactivity in the body. The picture is not detailed like a CT or MRI scan, but it provides useful information about the whole body.

PET scans can help show the spread of osteosarcomas to the lungs, other bones, or other parts of the body, and can also help in seeing how well the cancer is responding to treatment.

Some newer machines can do a PET and CT scan at the same time (PET/CT scan). This lets the doctor compare areas of higher radioactivity on the PET scan with the more detailed appearance of that area on the CT scan.

To learn more about this and other imaging tests, see [Imaging \(Radiology\) Tests](#)<sup>6</sup>.

### **Biopsy**

The results of imaging tests might strongly suggest that a person has some type of bone cancer, but a biopsy (removing some of the tumor for viewing under a microscope and other lab testing) is the only way to be certain. A biopsy is also the best way to tell osteosarcoma from other types of bone cancer.

**If the tumor is in a bone, it is very important that an orthopedic surgeon experienced in treating bone tumors does the biopsy.** Whenever possible, the biopsy and surgical treatment should be planned together, and the same surgeon should do both. Proper planning of the biopsy can help prevent later complications and might reduce the amount of surgery needed later on.

There are 2 main types of biopsies.

#### **Needle biopsy**

For these biopsies, the doctor uses a hollow needle to remove a small sample of the tumor. The biopsy is usually done with local anesthesia, where numbing medicine is injected into the skin and other tissues over the biopsy site. In some cases, sedation or general anesthesia (where the patient is asleep) may be needed.

Often, the doctor can aim the needle by feeling the suspicious area if it's near the surface of the body. If the tumor can't be felt because it's too deep, the doctor can guide the needle into the tumor using an imaging test such as a CT scan. This is called a **CT-guided needle biopsy**.

**Core needle biopsy:** In a core needle biopsy, the doctor uses a large, hollow needle to remove a small cylinder of tissue from the tumor.

**Fine needle aspiration (FNA) biopsy:** For an FNA biopsy, the doctor uses a very thin needle attached to a syringe to withdraw (aspirate) a small amount of fluid and some cells from the tumor. This type of biopsy is rarely used to diagnose a bone tumor.

### **Surgical (open) biopsy**

In an open biopsy, the surgeon cuts through the skin, exposes the tumor, and then cuts out a piece of it. These biopsies are usually done in an operating room with the patient under general anesthesia (in a deep sleep). They can also be done using a nerve block, which numbs a large area of the body.

This type of biopsy must be done by an expert in bone tumors, or it could result in problems later on. For example, if the tumor is on the arm or leg, the chances of saving the limb might be lowered. If possible, the incision in the skin used in the biopsy should be lengthwise along the arm or leg because this is the way the incision will be made during the operation to remove the cancer. The entire scar of the original biopsy will also have to be removed, so making the biopsy incision this way lessens the amount of tissue that needs to be removed later on.

## **Lab tests**

### **Testing the biopsy samples**

All samples removed by biopsy are sent to a pathologist (a doctor specializing in lab tests) to be looked at with a microscope. Tests looking for chromosome or gene changes in the tumor cells might also be done. These tests can help tell osteosarcoma from other cancers that look like it under the microscope, and they can sometimes help predict whether the osteosarcoma is likely to respond to therapy.

If osteosarcoma is diagnosed, the pathologist will assign it a **grade**, which is a measure of how quickly the cancer is likely to grow and spread, based on how its cells look. Cancers that look somewhat like normal bone tissue are described as low grade, while those that look very abnormal are called high grade. For more on grading, see

## Osteosarcoma Stages.

### Blood tests

Blood tests are not needed to diagnose osteosarcoma, but they may be helpful once a diagnosis is made. For example, high levels of chemicals in the blood such as **alkaline phosphatase** and **lactate dehydrogenase (LDH)** can suggest that the osteosarcoma may be more advanced than it appears.

Other tests such as blood cell counts and blood chemistry tests are done before surgery and other treatments to get a sense of a person's overall health. These tests are also used to monitor a person's health while they are getting chemotherapy.

Finding out that you or a loved one has cancer can be overwhelming. [Coping with Cancer](#)<sup>7</sup> describes the emotions and concerns you might face and things you can do to help work through them.

### Hyperlinks

1. [www.cancer.org/treatment/understanding-your-diagnosis/tests/mri-for-cancer.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/mri-for-cancer.html)
2. [www.cancer.org/cancer/osteosarcoma/treating/surgery.html](http://www.cancer.org/cancer/osteosarcoma/treating/surgery.html)
3. [www.cancer.org/treatment/understanding-your-diagnosis/tests/ct-scan-for-cancer.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/ct-scan-for-cancer.html)
4. [www.cancer.org/treatment/understanding-your-diagnosis/tests/nuclear-medicine-scans-for-cancer.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/nuclear-medicine-scans-for-cancer.html)
5. [www.cancer.org/treatment/understanding-your-diagnosis/tests/nuclear-medicine-scans-for-cancer.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/nuclear-medicine-scans-for-cancer.html)
6. [www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html](http://www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html)
7. [www.cancer.org/treatment/treatments-and-side-effects/emotional-side-effects.html](http://www.cancer.org/treatment/treatments-and-side-effects/emotional-side-effects.html)

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Last Medical Review: December 15, 2017 Last Revised: January 30, 2018

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## Osteosarcoma Stages

After someone is diagnosed with osteosarcoma, doctors will try to figure out if it has spread, and if so, how far. This process is called *staging*. The stage of a cancer describes how much cancer is in the body. It helps determine how serious the cancer is and how best to treat it. Doctors also use a cancer's stage when talking about survival statistics.

The stage of an osteosarcoma is based on the results of physical exams, imaging tests, and any biopsies that have been done, which are described in [Tests for Osteosarcoma](#).

**A staging system** is a standard way for the cancer care team to sum up the extent of the cancer. When trying to figure out the best course of [treatment](#)<sup>1</sup>, doctors often use a simple system that divides osteosarcomas into 2 groups: **localized** and **metastatic**. Doctors can also use more formal staging systems (see below) to describe the extent of an osteosarcoma in more detail.

Osteosarcoma staging can be confusing. If you have any questions about the stage of the cancer, ask someone on your cancer care team to explain it to you in a way you understand.

## Localized osteosarcoma

A localized osteosarcoma is seen only in the bone it started in and possibly the tissues next to the bone, such as muscle, tendon, or fat.

About 4 out of 5 osteosarcomas appear to be localized when they are first found. But even when imaging tests don't show that the cancer has spread to distant areas, most patients are likely to have very small areas of cancer spread that can't be detected with tests. This is why [chemotherapy](#)<sup>2</sup> is an important part of treatment for most osteosarcomas. If it isn't given, the cancer is more likely to come back after [surgery](#)<sup>3</sup>.

Doctors further divide localized osteosarcomas into 2 groups:

- **Resectable** cancers are those in which all of the visible tumor can be removed by surgery.
- **Non-resectable** (or **unresectable**) osteosarcomas can't be removed completely by surgery.

## Metastatic osteosarcoma

A metastatic osteosarcoma has clearly spread to other parts of the body. Most often it spreads to the lungs, but it can also spread to other bones, the brain, or other organs.

About 1 out of 5 osteosarcomas has spread at the time of diagnosis. These cancers are harder to treat, but some can be cured if the metastases can be removed by surgery. The cure rate for these cancers improves markedly if chemotherapy is also given.

## Musculoskeletal Tumor Society (MSTS) Staging System

A system commonly used to stage osteosarcoma is the MSTS system, also known as the **Enneking system**. It is based on 3 key pieces of information:

- The **grade (G)** of the tumor, which is a measure of how likely it is to grow and spread, based on how it looks under the microscope. Tumors are either low grade

(G1) or high grade (G2). Low-grade tumor cells look more like normal cells and are less likely to grow and spread quickly, while high-grade tumor cells look more abnormal.

- The **extent of the primary tumor (T)**, which is classified as either intracompartmental (T1), meaning it has basically remained within the bone, or extracompartmental (T2), meaning it has extended beyond the bone into other nearby structures.
- If the tumor has **metastasized (M)**, which means it has spread to nearby lymph nodes (bean-sized collections of immune system cells) or other organs. Tumors that have not spread to the lymph nodes or other organs are considered M0, while those that have spread are M1.

These factors are combined to give an overall stage, using Roman numerals from I to III. Stages I and II are further divided into A for intracompartmental tumors or B for extracompartmental tumors.

<b>Stage</b>	<b>Grade</b>	<b>Tumor</b>	<b>Metastasis</b>
IA	G1	T1	M0
IB	G1	T2	M0
IIA	G2	T1	M0
IIB	G2	T2	M0
III	G1 or G2	T1 or T2	M1

In summary:

- Low-grade, localized tumors are stage I.
- High-grade, localized tumors are stage II.
- Metastatic tumors (regardless of grade) are stage III.

## The TNM staging system

Another system sometimes used to stage bone cancers (including osteosarcomas) is the American Joint Commission on Cancer (AJCC) TNM system. This system is based

on 4 key pieces of information:

- **T** describes the size of the main (primary) **tumor** and if it appears in different areas of the bone.
- **N** describes the extent of spread to nearby (regional) lymph **nodes**. Bone tumors rarely spread to the lymph nodes.
- **M** indicates if the cancer has **metastasized** (spread) to other organs of the body. (The most common sites of spread are to the lungs or other bones.)
- **G** stands for the **grade** of the tumor, which describes how the cells look under a microscope. Low-grade tumor cells look more like normal cells and are less likely to grow and spread quickly, while high-grade tumor cells look more abnormal.

Numbers after T, N, M, and G provide more details about each of these factors.

Once the T, N, and M categories and the grade of the bone cancer have been determined, the information is combined into an overall stage. These stages (which are different from those of the MSTS system) are described by Roman numerals from I to IV (1 to 4), and are sometimes divided further. For more detailed information on the AJCC TNM staging system for bone cancers, see [Bone Cancer Stages](#)<sup>4</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/osteosarcoma/treating.html](http://www.cancer.org/cancer/osteosarcoma/treating.html)
2. [www.cancer.org/cancer/osteosarcoma/treating/chemotherapy.html](http://www.cancer.org/cancer/osteosarcoma/treating/chemotherapy.html)
3. [www.cancer.org/cancer/osteosarcoma/treating/surgery.html](http://www.cancer.org/cancer/osteosarcoma/treating/surgery.html)
4. [www.cancer.org/cancer/bone-cancer/detection-diagnosis-staging/staging.html](http://www.cancer.org/cancer/bone-cancer/detection-diagnosis-staging/staging.html)

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Last Medical Review: December 17, 2017 Last Revised: January 30, 2018

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## Survival Rates for Osteosarcoma

Survival rates can give you an idea of what percentage of people with the same type and stage of cancer are still alive a certain amount of time (usually 5 years) after they were diagnosed. They can't tell you how long a person will live, but they may help give you a better understanding of how likely it is that treatment will be successful.

**Keep in mind that survival rates are estimates and are often based on previous outcomes of large numbers of people who had a specific cancer, but they can't predict what will happen in any particular person's case. These statistics can be confusing and may lead you to have more questions. Talk with your doctor about how these numbers may apply to you (or your child), as he or she is familiar with your situation.**

### What is a 5-year relative survival rate?

A **relative survival rate** compares people with the same type and stage of cancer to people in the overall population. For example, if the **5-year relative survival rate** for a specific stage of osteosarcoma is 70%, it means that people who have that cancer are, on average, about 70% as likely as people who don't have that cancer to live for at least 5 years after being diagnosed.

## Where do these numbers come from?

The American Cancer Society relies on information from the SEER\* database, maintained by the National Cancer Institute (NCI), to provide survival statistics for different types of cancer.

The SEER database tracks 5-year relative survival rates for osteosarcoma in the United States, based on how far the cancer has spread. The SEER database, however, does not group cancers by [MSTS or TNM stages](#) (stage 1, stage 2, stage 3, etc.). Instead, it groups cancers into localized, regional, and distant stages:

- **Localized:** There is no sign that the cancer has spread outside of the bone where it started.
- **Regional:** The cancer has spread outside the bone and into nearby structures, or it has reached lymph nodes.
- **Distant:** The cancer has spread to distant parts of the body, such as to the lungs or to bones in other parts of the body.

## 5-year relative survival rates for osteosarcoma

These numbers are based on people diagnosed with osteosarcoma between 2008 and 2014.

SEER stage	5-year relative survival rate
Localized	77%
Regional	65%
Distant	27%
All SEER stages combined	60%

## Understanding the numbers

- **These numbers apply only to the stage of the cancer when it is first diagnosed.** They do not apply later on if the cancer grows, spreads, or comes back after treatment.
- **These numbers don't take everything into account.** Survival rates are grouped

based on how far the cancer has spread. But other factors, such as those listed below, can also affect a person's outlook.

- **People now being diagnosed with osteosarcoma may have a better outlook than these numbers show.** Treatments improve over time, and these numbers are based on people who were diagnosed and treated at least 5 years earlier.

### Other factors that can affect prognosis (outlook)

Factors other than the stage of the cancer can also affect survival rates. For example, factors that have been linked with a better prognosis include:

- Being younger (child or teen, as opposed to adult)
- Being female
- The tumor being on an arm or leg (as opposed to the hip bones)
- The tumor(s) being completely [resectable](#) (removable)
- Normal blood [alkaline phosphatase and LDH](#) levels
- The tumor having a good response to [chemotherapy](#)<sup>1</sup>

\*SEER = Surveillance, Epidemiology, and End Results

### Hyperlinks

1. [www.cancer.org/cancer/osteosarcoma/treating/chemotherapy.html](http://www.cancer.org/cancer/osteosarcoma/treating/chemotherapy.html)

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Last Medical Review: December 17, 2017 Last Revised: March 1, 2019

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## Questions to Ask the Doctor About Osteosarcoma

It's important to have honest, open discussions with your cancer care team. Ask any question, no matter how minor it might seem. For instance, consider these questions:

### Before getting a bone biopsy

- How much experience do you have doing this type of biopsy?
- Are you part of a team that treats bone cancers?
- What will happen during the biopsy?
- How long will it take to get the results from the biopsy?

### If osteosarcoma has been diagnosed

- What [kind of osteosarcoma](#)<sup>1</sup> do I (does my child) have? Will this affect treatment?
- Has the cancer spread beyond the bone it started in?
- What is the [stage](#) of the cancer and what does that mean?
- Do you think the cancer can be resected (removed) completely?
- Do we need any other tests before we can decide on treatment?
- How much experience do you have treating this type of cancer?
- Who else will be part of the treatment team, and what do they do?

## When deciding on a treatment plan

- What are our [treatment options](#)<sup>2</sup>?
- What do you recommend and why?
- Are there any [clinical trials](#)<sup>3</sup> we should consider? How can we find out more about them?
- What's the goal of treatment?
- Should we get a [second opinion](#)<sup>4</sup>? How do we do that? Can you recommend someone?
- How soon do we need to start treatment?
- How long will treatment last? What will it be like? Where will it be done?
- How will treatment affect our daily lives?
- What should I (we) do to be ready for treatment?
- What are the possible risks and side effects of the suggested treatments?
- Which side effects start shortly after treatment and which ones might develop later on?
- Will treatment affect my child's ability to grow and develop?
- Are there fertility issues we need to consider?

## During and after treatment

- How will we know if the treatment is working?
- Is there anything we can do to help manage side effects?
- What symptoms or side effects should we tell you about right away?
- How can we reach you or someone on your team on nights, holidays, or weekends?
- Who can we talk to if we have questions about costs, insurance coverage, or social support?
- What are the chances of the cancer [coming back](#)<sup>5</sup> with these treatment plans? What might our options be if this happens?
- What type of [follow up](#)<sup>6</sup> and rehab will be needed after treatment?
- Are there nearby support groups or other families who have been through this that we could talk to?

Along with these sample questions, be sure to write down some of your own. For instance, you might want more information about recovery times so you can plan work or school schedules.

Keep in mind that doctors aren't the only ones who can give you information. Other health care professionals, such as nurses and social workers, can answer some of your questions. To find more about speaking with your health care team, see [The Doctor-Patient Relationship](#)<sup>7</sup>.

## Hyperlinks

1. [www.cancer.org/cancer/osteosarcoma/about/what-is-osteosarcoma.html](http://www.cancer.org/cancer/osteosarcoma/about/what-is-osteosarcoma.html)
2. [www.cancer.org/cancer/osteosarcoma/treating.html](http://www.cancer.org/cancer/osteosarcoma/treating.html)
3. [www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html](http://www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html)
4. [www.cancer.org/treatment/finding-and-paying-for-treatment/choosing-your-treatment-team/seeking-a-second-opinion.html](http://www.cancer.org/treatment/finding-and-paying-for-treatment/choosing-your-treatment-team/seeking-a-second-opinion.html)
5. [www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html](http://www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html)
6. [www.cancer.org/cancer/osteosarcoma/after-treatment.html](http://www.cancer.org/cancer/osteosarcoma/after-treatment.html)
7. [www.cancer.org/treatment/understanding-your-diagnosis/talking-about-cancer/the-doctor-patient-relationship.html](http://www.cancer.org/treatment/understanding-your-diagnosis/talking-about-cancer/the-doctor-patient-relationship.html)

Last Medical Review: December 17, 2017 Last Revised: January 30, 2018

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