

## **Osteosarcoma - Childhood - Diagnosis [1]**

**This section has been reviewed and approved by the [Cancer.Net Editorial Board \[2\]](#), 11/2015**

**ON THIS PAGE:** You will find a list of the common tests, procedures, and scans that doctors can use to find out what's wrong and identify the cause of the problem. To see other pages, use the menu on the side of your screen.

Doctors use many tests to diagnose a tumor and find out if it has metastasized. Metastasis means that the tumor has spread from where it began to another part of the body. Some tests may also determine which treatments may be the most effective.

For most tumors, a biopsy is the only way to make a definitive cancer diagnosis. If a biopsy is not possible, the doctor may suggest other tests that will help make a diagnosis. For example, imaging tests may be used to find out whether the cancer has spread.

This list describes options for diagnosing this type of cancer. Not all tests listed will be used for every child. Your child's doctor may consider these factors when choosing a diagnostic test:

- Age and medical condition
- Type of tumor suspected
- Signs and symptoms
- Previous test results

In addition to a physical examination, the following tests may be used to diagnose osteosarcoma. A health care team with experience diagnosing and treating bone tumors should perform these tests.

## Imaging tests

**X-ray.** An x-ray is a way to create a picture of the structures inside of the body. It uses a small amount of radiation. The doctor will take an x-ray of the area where there is a lump or swelling. Osteosarcoma usually shows certain common features on an x-ray.

**Computed tomography (CT or CAT) scan.** A [CT scan](#) [3] creates a three-dimensional picture of the inside of the body with an x-ray machine. A computer then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. A CT scan can also be used to measure the tumor's size. Sometimes, a special dye called a contrast medium is given before the scan to provide better detail on the image. This dye can be injected into a patient's vein or given as a pill to swallow.

**Magnetic resonance imaging (MRI).** An [MRI](#) [4] uses magnetic fields, not x-rays, to produce detailed images of the body. MRI can also be used to measure the tumor's size. A special dye called a contrast medium is given before the scan to create a clearer picture. This dye can be injected into a patient's vein or given as a pill to swallow.

An MRI creates more detailed pictures than CT scans. Sometimes, it helps find a smaller tumor. Also, an MRI provides more exact pictures of the tumor and the surrounding healthy tissue. This can help the orthopedic surgeon, a doctor who specializes in surgery on the bones, plan surgery. Surgery removes the tumor-containing area of bone with a portion of the surrounding healthy tissue called the margin.

**Positron emission tomography (PET) scan.** A [PET scan](#) [5] is a way to create pictures of organs and tissues inside the body. A small amount of a radioactive sugar substance is injected into the patient's body. This sugar substance is taken up by cells that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body.

**Bone scan.** A [bone scan](#) [6] uses a radioactive tracer to look at the inside of the bones. The tracer is injected into a patient's vein. It collects in areas of the bone, and a special camera detects it. Healthy bone appears gray to the camera. Meanwhile, areas of injury, such as those caused by a tumor, appear dark. However, areas where new bone is being formed also appear dark. This is normal.

**Arteriogram (also called angiogram).** An arteriogram is a way for doctors to see inside the arteries. A small amount of a contrast medium is injected into an artery, making it appear on an x-ray. A surgeon may use this test to help plan surgery.

**Biopsy.** A [biopsy](#) [7] is the removal of a small amount of tissue for examination under a

microscope. Other tests can suggest that a tumor is present, but only a biopsy can make a definitive diagnosis. A pathologist then analyzes the sample(s). A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease.

A doctor who specializes in bone tumors should perform the biopsy. The biopsy typically involves surgery. However, sometimes, the doctor performs a needle biopsy. A needle biopsy uses a hollow needle inserted into the tumor. The doctor may analyze the genes or other features of the cancer cells to distinguish osteosarcoma from other types of cancer.

After diagnostic tests are done, your child's doctor will review all of the results with you. If the diagnosis is cancer, these results also help the doctor describe the location(s) of the cancer. This is called staging.

*The [next section in this guide is Stages](#) [8], and it explains the system doctors use to describe the extent of the disease. Or, use the menu on the side of your screen to choose another section to continue reading this guide.*

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## Links

[1] <http://www.cancer.net/cancer-types/osteosarcoma-childhood/diagnosis>

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

[3] <http://www.cancer.net/node/24486>

[4] <http://www.cancer.net/node/24578>

[5] <http://www.cancer.net/node/24565>

[6] <http://www.cancer.net/node/24410>

[7] <http://www.cancer.net/node/24406>

[8] <http://www.cancer.net/node/19473>