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Soft Tissue Sarcoma Early Detection, Diagnosis, and Staging

Detection and Diagnosis

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

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

Stages and Outlook (Prognosis)

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

- [Soft Tissue Sarcoma Stages](#)
- [Survival Rates for Soft Tissue Sarcoma](#)

Questions to Ask Your Cancer Care Team

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

- [Questions To Ask About Soft Tissue Sarcomas](#)

Can Soft Tissue Sarcomas Be Found Early?

People who have a strong family history of soft tissue sarcomas or who have had other cancers when they were young, might want to talk to a doctor about the benefits and disadvantages of [genetic testing](#)¹. The test results should always be explained by a genetic counselor or a specially trained doctor who can interpret the results and advise high-risk patients about the need for early cancer detection tests.

Families with a history of certain inherited conditions caused by defects in certain genes have an increased risk of soft tissue sarcomas. The changed (mutated) genes can be detected by genetic testing, so family members should discuss this option with their doctors. They should also see their doctor right away if they notice any lumps or growths. (The inherited conditions linked to soft tissue sarcoma are covered in [Risk Factors for Soft Tissue Sarcomas](#)²)

No screening tests and exams are recommended for people who have no family history of sarcoma or other sarcoma risk factors. For these people, the best approach to early detection is to tell their health care provider about any unexplained lumps or growths or other symptoms that may be caused by a soft tissue sarcoma.

Hyperlinks

1. www.cancer.org/cancer/cancer-causes/genetics.html
2. www.cancer.org/cancer/soft-tissue-sarcoma/causes-risks-prevention/risk-factors.html

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Signs and Symptoms of Soft Tissue Sarcomas

About half of soft tissue sarcomas start in an arm or leg. Most people notice a lump that's grown over time (weeks to months). The lump may or may not hurt.

When sarcomas grow in the back of the abdomen (the retroperitoneum), the symptoms often come from other problems the tumor is causing. For instance, they may cause blockage or bleeding of the stomach or bowels. They can press on nerves, blood vessels, or nearby organs. They can grow large enough for the tumor to be felt in the belly. Sometimes the tumors cause pain. About 4 of 10 sarcomas begin in the abdomen (belly).

In rare cases, sarcomas can start in the chest or in the head or neck. .

If you have any of the these problems, see a doctor right away:

- **A new lump or a lump that's growing (anywhere on your body)**
- **Abdominal pain that's getting worse**
- **Blood in your stool or vomit**
- **Black, tarry stools** (when bleeding happens in the stomach or bowels, the blood can turn black as it's digested, and it might make the stool very black and sticky)

These symptoms are more often caused by things other than sarcoma, but they still need to be checked out by a doctor.

References

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Villalobos VM, Byfield SD, Ghate SR, Adejoro O. A retrospective cohort study of treatment patterns among patients with metastatic soft tissue sarcoma in the US. *Clin Sarcoma Res*. 2017 Nov 9;7:18.

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Tests for Soft Tissue Sarcomas

If you have signs or symptoms that suggest you might have a soft tissue sarcoma, the doctor will likely need to do tests to find out if you have cancer.

Medical history and physical exam

The doctor will ask about your medical history, including your family history, to learn if you have any possible risk factors. You will also be asked about your symptoms, such as when they started and how long you've had them.

Imaging tests

Imaging tests use sound waves, x-rays, magnetic fields, or radioactive substances to create pictures of the inside of your body. Imaging tests may be done for a number of reasons, such as:

- To look at suspicious areas that might be cancer,
- To see if, and how far, cancer has spread
- To help determine if treatment is working

Plain x-ray

A regular x-ray of the area with the lump may be the first test ordered. A chest x-ray

may be done after you are diagnosed to see if the sarcoma has spread to the lungs.

CT (computed tomography) scans

A CT scan uses x-rays to make detailed cross-sectional images of your body. This test is often done if the doctor suspects a soft tissue sarcoma in the chest, abdomen (belly), or the retroperitoneum (the back of the abdomen). This test is also used to see if the sarcoma has spread to the lungs, liver, or other organs.

CT scans might be used to guide a biopsy needle into a tumor inside the body — the chest or abdomen, for example. This is called a **CT-guided needle biopsy**. (See below for more on biopsy.) You lie on the CT scanning table while a radiologist moves a biopsy needle toward the tumor. CT scans are repeated until the doctors are sure the needle is within the tumor.

MRI (magnetic resonance imaging)

MRI uses radio waves and strong magnets instead of x-rays to take pictures of the body. MRI scans are often part of the work-up of any tumor that could be a sarcoma. They're often better than CT scans in evaluating sarcomas in the arms or legs.

MRI provides a good picture of the extent of the tumor. It can show your health care team many things about the tumor, like where it is, how big it is, and sometimes even the type of tissue it comes from (like bone, fat, or muscle). MRIs are also very helpful in examining the brain and spinal cord.

Ultrasound

Ultrasound uses sound waves and their echoes to produce pictures of parts of the body. A small instrument called a *transducer* sends out sound waves and picks up the echoes as they bounce off the organs. A computer then converts the echoes into an image on a screen.

Ultrasound may be done before a biopsy to see if a lump is a cyst, meaning if it has fluid in it and is likely not cancer, or if it's solid and more likely a tumor. This test is often not needed if a CT or MRI was done.

PET (positron emission tomography) scan

PET scans use a form of radioactive sugar that's put into the blood. Because cancers use glucose (sugar) at a higher rate than normal tissues, the radioactivity collects in the

cancer. A scanner can then spot the radioactive deposits.

A PET scan is useful when your doctor thinks the cancer has spread but doesn't know where. It can be used instead of many different x-rays because it scans your whole body. Often the PET scan is used with a CT scan (called a PET/CT scan). This helps decide if changes seen on the CT scan are cancer or something else. PET isn't often used for sarcoma, but it can be helpful in some cases.

Biopsy

If a soft tissue sarcoma is suspected based on exams and imaging tests, a biopsy is needed to know for sure that it's a sarcoma and not another type of cancer or a benign (not cancer) disease. In a biopsy, the doctor takes out a small piece of the tumor. This tissue is looked at under a microscope and other lab tests may be done as well.

Several types of biopsies are used to diagnose sarcomas. Doctors experienced with these tumors will choose one, based on the size and location of the tumor. Most prefer to use a fine needle aspiration or a core needle biopsy as the first step. See [Testing Biopsy and Cytology Specimens for Cancer](#)¹ to learn more about the types of biopsies, how the tissue is used in the lab to diagnose cancer, and what the results may show.

You might want to ask about your surgeon's experience doing biopsies. Proper biopsy technique is a very important part of successfully treating soft tissue sarcomas. An improper biopsy can lead to tumor spread and problems removing the tumor later on.

Hyperlinks

1. www.cancer.org/treatment/understanding-your-diagnosis/tests/testing-biopsy-and-cytology-specimens-for-cancer.html

References

American Society of Clinical Oncology. Sarcoma, Soft Tissue: Diagnosis. 08/2017. Accessed at www.cancer.net/cancer-types/sarcoma-soft-tissue/diagnosis on March 29, 2018.

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Soft Tissue Sarcoma Stages

After someone is diagnosed with a soft tissue sarcoma, 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](#)¹ it. Doctors also use a cancer's stage when talking about survival statistics.

The stages of soft tissue sarcomas range from stages I (1) through IV (4). As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage IV, means cancer has spread more. And within a stage, an earlier letter means a lower stage. Although each person's cancer experience is unique, cancers with similar stages tend to have a similar outlook and are often treated in much the same way.

How is the stage determined?

The staging system most often used for soft tissue sarcomas is the American Joint Committee on Cancer (AJCC) **TNM** system, which is based on 4 key pieces of information:

- The extent of the tumor (**T**): How large is the cancer?

- The spread to nearby lymph nodes (**N**): Has the cancer spread to nearby lymph nodes?
- The spread (**metastasis**) to distant sites (**M**): Has the cancer spread to distant organs such as the lungs?
- The **grade (G)** of the cancer: How much do the sarcoma cells look like normal cells?

Grade

The grade is partly used to determine the stage of a sarcoma. The staging system divides sarcomas into 3 grades (1 to 3). The grade of a sarcoma helps predict how rapidly it will grow and spread. It's useful in predicting a patient's outlook and helps determine treatment options.

The grade of a sarcoma is determined using a system known as the **French or FNCLCC system**, and is based on 3 factors:

- **Differentiation:** Cancer cells are given a score of 1 to 3, with 1 being assigned when they look a lot like normal cells and 3 being used when the cancer cells look very abnormal. Certain types of sarcoma are given a higher score automatically.
- **Mitotic count:** How many cancer cells are seen dividing under the microscope; given a score from 1 to 3 (a lower score means fewer cells were seen dividing)
- **Tumor necrosis:** How much of the tumor is made up of dying tissue; given a score from 0 to 2 (a lower score means there was less dying tissue present).

Each factor is given a score, and the scores are added to determine the grade of the tumor. Sarcomas that have cells that look more normal and have fewer cells dividing are generally placed in a low-grade category. Low-grade tumors tend to be slow growing, slower to spread, and often have a better outlook (prognosis) than higher-grade tumors. Certain types of sarcoma are automatically given higher differentiation scores. This affects the overall score so much that they are never considered low grade. Examples of these include synovial sarcomas and embryonal sarcomas. Here's what the grade numbers mean:

GX: The grade cannot be assessed (because of incomplete information).

Grade 1 (G1): Total score of 2 or 3

Grade 2 (G2): Total score of 4 or 5

Grade 3 (G3): Total score of 6, 7 or 8

Defining TNM

There are different staging systems for soft tissue sarcomas depending on where the cancer is in the body.

- Head and neck
- Trunk and extremities (arms and legs)
- Abdomen and thoracic (chest) visceral organs
- Retroperitoneum

Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once a person's T, N, and M categories have been determined, this information is combined in a process called **stage grouping** to assign an overall stage. Of the 4 main locations, only 2 (Trunk and Extremities and Retroperitoneum) have stage groupings. For more information see [Cancer Staging²](#).

The staging system in the table below uses the **pathologic stage** (also called the **surgical stage**). It is determined by examining tissue removed during an operation. Sometimes, if surgery is not possible right away or at all, the cancer will be given a **clinical stage** instead. This is based on the results of a physical exam, biopsy, and imaging tests. The clinical stage will be used to help plan treatment. Sometimes, though, the cancer has spread further than the clinical stage estimates, and may not predict the patient's outlook as accurately as a pathologic stage.

The system described below is the most recent AJCC system, effective January 2018. Cancer staging can be complex, so ask your doctor to explain it to you in a way you understand.

Trunk and Extremities Sarcoma Stages

AJCC stage	Stage grouping	Trunk and Extremities Sarcoma Stage description*
IA	T1	The cancer is 5 cm (2 inches) or smaller (T1). It has not spread to nearby lymph nodes (N0) or to distant sites (M0).
	N0	
	M0	

	G1 or GX	The cancer is grade 1 (G1) or the grade cannot be assessed (GX).
IB	T2, T3, T4 N0 M0 G1 or GX	<p>The cancer is:</p> <ul style="list-style-type: none"> • Larger than 5 cm but not more than 10 cm (T2) OR • Larger than 10cm but not more than 15 cm (T3) OR • Larger than 15 cm (T4). <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 1 (G1) or the grade cannot be assessed (GX).</p>
II	T1 N0 M0 G2 or G3	<p>The cancer is 5 cm (2 inches) or smaller (T1).</p> <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 2 (G2) or grade 3 (G3).</p>
IIIA	T2 N0 M0 G2 or G3	<p>The cancer is larger than 5 cm (2 inches) but not more than 10 cm (T2).</p> <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 2 (G2) or grade 3 (G3).</p>
IIIB	T3 or T4 N0 M0 G2 or G3	<p>The cancer is:</p> <ul style="list-style-type: none"> • Larger than 10 cm but not more than 15 cm (T3) OR • Larger than 15 cm (T4). <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0).</p>

		The cancer is grade 2 (G2) or grade 3 (G3).
IV	Any T N1 M0 Any G	The cancer is any size (Any T) AND it has spread to nearby lymph nodes (N1). It has not spread to distant sites (M0). It can be any grade.
	OR	
	Any T Any N M1 Any G	The cancer is any size (Any T) AND it has spread to nearby lymph nodes (N1). It has spread to distant sites such as the lungs (M1). It can be any grade.

*The following categories are not listed in the table above:

- **TX:** Main tumor cannot be assessed due to lack of information.
- **T0:** No evidence of a primary tumor.
- **NX:** Regional lymph nodes cannot be assessed due to lack of information.

Retroperitoneum Sarcoma Stages

AJCC stage	Stage grouping	Retroperitoneum Sarcoma Stage description*
IA	T1	The cancer is 5 cm (2 inches) or smaller (T1).
	N0	It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 1 (G1) or the grade cannot be assessed (GX).
	M0	
	G1 or GX	
IB	T2, T3, T4	The cancer is:

	<p>N0</p> <p>M0</p> <p>G1 or GX</p>	<ul style="list-style-type: none"> • Larger than 5 cm but not more than 10 cm OR • Larger than 10 cm but not more than 15 cm (T3) OR • Larger than 15 cm (T4). <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 1 (G1) or the grade cannot be assessed (GX).</p>
II	<p>T1</p> <p>N0</p> <p>M0</p> <p>G2 or G3</p>	<p>The cancer is 5 cm (2 inches) or smaller (T1).</p> <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 2 (G2) or grade 3 (G3).</p>
IIIA	<p>T2</p> <p>N0</p> <p>M0</p> <p>G2 or G3</p>	<p>The cancer is larger than 5 cm (2 inches) but not more than 10 cm (T2).</p> <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 2 (G2) or grade 3 (G3).</p>
IIIB	<p>T3 or T4</p> <p>N0</p> <p>M0</p> <p>G2 or G3</p>	<p>The cancer is:</p> <ul style="list-style-type: none"> • Larger than 10 cm but not more than 15 cm (T3) OR • Larger than 15 cm (T4). <p>It has not spread to nearby lymph nodes (N0) or to distant sites (M0). The cancer is grade 2 (G2) or grade 3 (G3).</p>
	OR	
	Any T	The cancer is any size (Any T) AND it

	N1	has spread to nearby lymph nodes (N1).
	M0	It has not spread to distant sites (M0).
	Any G	It can be any grade.
IV	Any T	The cancer is any size (Any T) AND it has spread to nearby lymph nodes (N1).
	Any N	
	M1	It has spread to distant sites such as the lungs (M1). It can be any grade.
	Any G	

*The following categories are not listed in the table above:

- **TX:** Main tumor cannot be assessed due to lack of information.
- **T0:** No evidence of a primary tumor.
- **NX:** Regional lymph nodes cannot be assessed due to lack of information.

Hyperlinks

1. www.cancer.org/cancer/soft-tissue-sarcoma/treating.html
2. www.cancer.org/treatment/understanding-your-diagnosis/staging.html

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³American Joint Committee on Cancer. Soft Tissue Sarcoma of the Trunk and Extremities. In: *AJCC Cancer Staging Manual*. 8th ed. New York, NY: Springer; 2017:507.

American Joint Committee on Cancer. Soft Tissue Sarcoma of the Retroperitoneum. In: *AJCC Cancer Staging Manual*. 8th ed. New York, NY: Springer; 2017:531.

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Survival Rates for Soft Tissue Sarcoma

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 you will live, but they may help give you a better understanding of how likely it is that your 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, 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 soft tissue sarcoma to people in the overall population. For example, if the **5-year relative survival rate** for a specific stage of soft tissue sarcoma is 80%, it means that people who have that cancer are, on average, about 80% 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 soft tissue sarcoma in the United States, based on how far the cancer has spread. The SEER database, however, does not group cancers by [AJCC TNM stages](#) (stage 1, stage 2, stage 3, etc.). Instead, it groups cancers into localized, regional, and distant stages:

- **Localized:** The cancer is limited to the part of the body where it started.
- **Regional:** The cancer has spread to nearby structures or nearby lymph nodes.
- **Distant:** The cancer has spread to distant parts of the body such as the lungs.

5-year relative survival rates for soft tissue sarcoma

(Based on people diagnosed with soft tissue sarcoma between 2009 and 2015.)

SEER Stage	5-Year Relative Survival Rate
Localized	81%
Regional	57%
Distant	16%
All SEER stages combined	65%

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 your age, overall health, [tumor grade](#), [location where the tumor started \(arm, leg, or retroperitoneum\)](#)¹, how well the cancer responds to treatment, and other factors can also affect your outlook.
- **People now being diagnosed with soft tissue sarcoma 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 five years earlier.

*SEER= Surveillance, Epidemiology, and End Results

Hyperlinks

1. www.cancer.org/cancer/soft-tissue-sarcoma/about/soft-tissue-sarcoma.html

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Questions To Ask About Soft Tissue Sarcomas

As you cope with cancer and cancer treatment, you need to have honest, open discussions with your doctor. You should feel comfortable asking any question no matter how small it might seem. Nurses, social workers, and other members of the treatment team may also be able to answer many of your questions.

- What [kind of sarcoma](#)¹ do I have?
- How much experience do you have in diagnosing and treating sarcoma?
- Has my cancer spread?
- What is the [stage](#) of my cancer and what does that mean?
- What are my [treatment](#)² choices?
- What treatment do you recommend and why?
- What risks or [side effects](#)³ are there with the treatments you suggest?
- What are the chances my cancer will come back with these treatment plans?
- What should I do to be ready for treatment?
- What's my outlook?

Along with these examples, be sure to write down some of your own. For instance, you might want to know more about recovery times so that you can plan your work schedule. Or you may want to ask about [second opinions](#)⁴ or about [clinical trials](#)⁵.

Hyperlinks

1. www.cancer.org/cancer/soft-tissue-sarcoma/about/soft-tissue-sarcoma.html
2. www.cancer.org/cancer/soft-tissue-sarcoma/treating.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

4. www.cancer.org/treatment/finding-and-paying-for-treatment/choosing-your-treatment-team/seeking-a-second-opinion.html
5. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html

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