Testicular Cancer Early Detection, Diagnosis, and Staging

Know the signs and symptoms of testicular cancer. Find out how testicular cancer is tested for, diagnosed, and staged.

Detection and Diagnosis

Finding cancer early, when it's small and before it has spread, 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 Testicular Cancer Be Found Early?
- Signs and Symptoms of Testicular Cancer
- Tests for Testicular Cancer

Stages of Testicular Cancer

After a cancer diagnosis, staging provides important information about the extent of the cancer and how it might respond to treatment.

- Testicular Cancer Stages

Outlook (Prognosis)

Doctors often use survival rates as a standard way of discussing a person's outlook (prognosis). Some people want to know the survival statistics for people in similar situations, while others might not find the numbers helpful, or might even not want to know them.
Questions to Ask About Testicular Cancer

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

Testicular self-exam

Most testicular cancers can be found at an early stage, when they're small and haven't spread. In some men, early testicular cancers cause symptoms that lead them to seek medical attention. Most of the time a lump on the testicle is the first symptom, or the testicle might be swollen or larger than normal. But some testicular cancers might not cause symptoms until they've reached an advanced stage.

Most doctors agree that examining a man's testicles should be part of a general physical exam during a routine check-up.

Some doctors recommend that all men examine their testicles monthly after puberty. Each man has to decide for himself whether or not to do this, so instructions for testicular exams are included in this section. If you have certain risk factors that increase your chance of developing testicular cancer (such as an undescended testicle, previous germ cell tumor in one testicle, or a family history), you should seriously consider monthly self-exams and talk about it with your doctor.

The American Cancer Society advises men to be aware of testicular cancer and to see a doctor right away if they find a lump in a testicle. Because regular testicular self-exams have not been studied enough to know if they reduce the death rate from this cancer, the ACS does not have a recommendation on regular testicular self-exams for all men.

Testicular self-exam

The best time for you to examine your testicles is during or after a bath or shower, when the skin of the scrotum is relaxed.
• Hold your penis out of the way and examine each testicle separately.
• Hold your testicle between your thumbs and fingers with both hands and roll it gently between your fingers.
• Look and feel for any hard lumps or nodules (smooth rounded masses) or any change in the size, shape, or consistency of your testicles.

It’s normal for one testicle to be slightly larger than the other, and for one to hang lower than the other. You should also be aware that each normal testicle has a small, coiled tube called the epididymis that can feel like a small bump on the upper or middle outer side of the testis. Normal testicles also contain blood vessels, supporting tissues, and tubes that carry sperm. Some men may confuse these with abnormal lumps at first. If you have any concerns, ask your doctor.

A testicle can get larger for many reasons other than cancer. For example, fluid can collect around the testicle to form a **hydrocele**. Or the veins in the testicle can dilate and cause enlargement and lumpiness around the testicle. This is called a **varicocele**. If your testicle seems larger, have a doctor examine you to be sure you have one of these conditions and not a tumor. The doctor may order an ultrasound exam (see **Tests for Testicular Cancer**). This is an easy and painless way of finding a tumor.

If you choose to examine your testicles regularly, you will get to know what’s normal and what’s different. Always report any changes to your doctor without delay.

**Hyperlinks**


**References**

Signs and Symptoms of Testicular Cancer

- Lump or swelling in the testicle
- Breast growth or soreness
- Early puberty in boys
- Symptoms of advanced testicular cancer

Many of these symptoms are more likely to be caused by something other than testicular cancer. A number of non-cancerous conditions, such as testicle injury or inflammation, can cause symptoms a lot like those of testicular cancer. Inflammation of the testicle (known as orchitis) and inflammation of the epididymis (epididymitis) can cause swelling and pain of the testicle. Both of these also can be caused by viral or bacterial infections.

Some men with testicular cancer have no symptoms at all, and their cancer is found during medical testing for other conditions. For instance, sometimes imaging tests done to find the cause of infertility can uncover a small testicular cancer.

But if you have any of these signs or symptoms, see your doctor right away.

Lump or swelling in the testicle

Most often, the first symptom of testicular cancer is a lump on the testicle, or the testicle becomes swollen or larger. (It’s normal for one testicle to be slightly larger than the other, and for one to hang lower than the other.) Some testicular tumors might cause pain, but most of the time they don’t. Men with testicular cancer can also have a feeling of heaviness or aching in the lower belly (abdomen) or scrotum.

Breast growth or soreness

In rare cases, germ cell tumors can make breasts grow or become sore. This happens because certain types of germ cell tumors secrete high levels of a hormone called human chorionicgonadotropin (HCG), which stimulates breast development.
Some Leydig cell tumors can make estrogens (female sex hormones), which can cause breast growth or loss of sexual desire.

**Early puberty in boys**

Some Leydig cell tumors can make androgens (male sex hormones). Androgen-producing tumors may not cause any symptoms in men, but in boys they can cause signs of puberty at an abnormally early age, such as a *deepening voice* and the *growth of facial and body hair*.

**Symptoms of advanced testicular cancer**

Even if testicular cancer has spread to other parts of the body, many men might not have symptoms right away. But some men might have some of the following:

- **Low back pain**, from cancer spread to the lymph nodes (bean-sized collections of immune cells) in back of the belly.
- **Shortness of breath, chest pain**, or a **cough** (even coughing up blood) may develop from cancer spread in the lungs.
- **Belly pain**, either from enlarged lymph nodes or because the cancer has spread to the liver.
- **Headaches** or **confusion**, from cancer spread in the brain.

**Hyperlinks**


**References**


National Cancer Institute. Testicular Cancer Treatment (PDQ®)—Patient Version. July 7,
Tests for Testicular Cancer

- Ultrasound of the testicles
- Blood tests for tumor markers
- Surgery to diagnose testicular cancer
- Imaging tests

Testicular cancer is usually found as a result of symptoms that a person is having. It can also be found when tests are done for another condition. The next step is an exam by a doctor.

The doctor will feel the testicles for swelling or tenderness and for the size and location of any lumps. The doctor will also examine your belly (abdomen), lymph nodes, and other parts of your body carefully to look for signs of cancer spread. Often the results of the exam are normal other than the changes in the testicles. If a lump or other sign of testicular cancer is found, testing will be needed to look for the cause.

Ultrasound of the testicles

An ultrasound is often the first test done if the doctor thinks you might have testicular cancer. It uses sound waves to produce images of the inside of your body. It can be used to see if a change is a certain benign condition (like a hydrocele or varicocele) or a solid tumor that could be a cancer. If the lump is solid, it's more likely to be a cancer. In this case, the doctor might recommend other tests or even surgery to remove the testicle.

Blood tests for tumor markers
Some blood tests can help diagnose testicular tumors. Many testicular cancers make high levels of certain proteins called tumor markers, such as alpha-fetoprotein (AFP) and human chorionic gonadotropin (HCG). When these tumor markers are in the blood, it suggests that there’s a testicular tumor.

Rises in levels of AFP or HCG can also help doctors tell which type of testicular cancer it might be.

- Non-seminomas often raise AFP and/or HCG levels.
- Pure seminomas occasionally raise HCG levels but never AFP levels.

This means any increase in AFP is a sign that the tumor has a non-seminoma component. (Tumors can be mixed and have areas of seminoma and non-seminoma.) Sertoli and Leydig cell tumors don’t make these substances. It’s important to note that some cancers are too small to elevate tumor markers levels.

A testicular tumor might also increase the levels of an enzyme called lactate dehydrogenase (LDH). A high LDH level often (but not always) indicates widespread disease. But, LDH levels can also be increased with some non-cancerous conditions.

Tumor marker tests sometimes are also used for other reasons, such as to help estimate how much cancer is present (see Testicular Cancer Stages) to see how well treatment is working, or to look for signs the cancer might have come back.

**Surgery to diagnose testicular cancer**

Most types of cancer are diagnosed by removing a small piece of the tumor and looking at it under a microscope for cancer cells. This is known as a biopsy. But a biopsy is rarely done for a testicular tumor because it might risk spreading the cancer. The doctor can often get a good idea of whether it’s testicular cancer based on the ultrasound and blood tumor marker tests, so instead of a biopsy the doctor will very likely recommend surgery (a radical inguinal orchiectomy) to remove the tumor as soon as possible.

The entire testicle is sent to the lab, where a pathologist (a doctor specializing in laboratory diagnosis of diseases) looks at pieces of the tumor with a microscope. If cancer cells are found, the pathologist sends back a report describing the type and extent of the cancer.

In very rare cases, when a diagnosis of testicular cancer is uncertain, the doctor may biopsy the testicle before removing it. This is done in the operating room. The surgeon makes a cut above the pubic area, takes the testicle out of the scrotum, and examines it
without cutting the spermatic cord. If a suspicious area is seen, a piece of it is removed and looked at right away by the pathologist. If cancer is found, the testicle and spermatic cord are then removed. If the tissue is not cancer, the testicle can often be returned to the scrotum.

If testicular cancer is found, your doctor will order imaging tests of other parts of your body to check for spread outside the testicle. These tests may also be done before the diagnosis is confirmed by surgery.

**Imaging tests**

*Imaging tests* use x-rays, magnetic fields, sound waves, or radioactive substances to create pictures of the inside of your body. Ultrasound of the testicles, described above, is a type of imaging test. Other imaging tests may be done for a number of reasons after a testicular cancer diagnosis, including:

- To learn if and how far the cancer might have spread
- To help determine if treatment worked
- To look for possible signs of cancer coming back after treatment

**Chest x-ray**

Your chest may be x-rayed to see if cancer has spread to your lungs.

**Computed tomography (CT) scan**

CT scans can be used to help determine the stage (extent) of the cancer by showing if it has spread to the lymph nodes, lungs, liver, or other organs.

**Magnetic resonance imaging (MRI) scan**

MRI scans are very good for looking at the brain and spinal cord. They are only done in patients with testicular cancer if the doctor has reason to think the cancer might have spread to those areas.

**Positron emission tomography (PET) scan**

A PET scan can help spot small collections of cancer cells in the body. It's sometimes useful to see if lymph nodes that are still enlarged after chemotherapy contain cancer or
are just scar tissue. PET scans are often more useful for seminomas than for non-seminomas, so they are less often used in patients with non-seminoma. Many centers have special machines that can do both a PET and CT scan at the same time (PET/CT scan). This lets the doctor compare areas of higher radioactivity on the PET with the more detailed images of the CT.

**Bone scan**

A bone scan can help show if a cancer has spread to the bones. It might be done if there is reason to think the cancer might have spread to the bones (because of symptoms such as bone pain) and if other test results aren’t clear.

**Hyperlinks**


**References**


Smith ZL, Werntz RP, Eggener SE. Testicular Cancer: Epidemiology, Diagnosis, and
Testicular Cancer Stages

How is the stage determined?

Stages of testicular cancer

After someone is diagnosed with testicular cancer, 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 earliest stage of testicular cancer is stage 0 (also called germ cell neoplasia in situ, or GCNIS). The other stage groupings range from I (1) through III (3). There is no stage IV (4) testicular cancer. Some stages are split further to cover more details, using capital letters (A, B, etc.).

As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage III, 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 testicular cancer is the American Joint Committee on Cancer (AJCC) TNM system, which is based on 4 key pieces of information:

- The size and extent of the main tumor (T): How large is the tumor? Has it grown into nearby structures or organs?
- The spread to nearby lymph nodes (N): Has the cancer spread to nearby lymph nodes? How many, and how big are they?
- The spread (metastasis) to distant sites (M): Has the cancer spread to distant
parts of the body? (The most common sites of spread are distant lymph nodes, the bones, the liver, and the lungs.)

- The **serum** (blood) levels of tumor markers **(S)**: Are any tumor marker levels higher than normal? This includes lactate dehydrogenase (LDH), human chorionic gonadotropin (HCG), and alpha-fetoprotein (AFP).

Numbers or letters after T, N, M, and S provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once a person’s T, N, M, and S categories have been determined, this information is combined in a process called stage grouping to assign an overall stage. For more on this, see Cancer Staging.

The system described below is the most recent AJCC system, effective as of January 2018. It's used for germ cell tumors (seminomas and non-seminomas) that occur after puberty, and for sex cord stromal tumors (Leydig cell tumors and Sertoli cell tumors).

Testicular cancer might be given a **clinical T** category (written as cT) based on the results of a physical exam, biopsy, and imaging tests (as described in Tests for Testicular Cancer). Once surgery is done, the **pathologic T** category (written as pT) is determined by examining tissue removed during the operation.

Testicular cancer staging can be complex, so ask your doctor to explain it to you in a way you understand.

### Stages of testicular cancer

<table>
<thead>
<tr>
<th>AJCC Stage</th>
<th>Stage grouping</th>
<th>Stage description*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>pTis N0 M0 S0</td>
<td>The cancer is only in the seminiferous tubules (small tubes inside each testicle). It has not grown into other parts of the testicle (pTis). It hasn’t spread to nearby lymph nodes (N0) or to distant parts of the body (M0). All tumor marker levels are within normal limits (S0).</td>
</tr>
<tr>
<td>I</td>
<td>pT1-pT4 N0 M0 SX</td>
<td>The tumor has grown beyond the seminiferous tubules, and might have grown outside the testicle and into nearby structures (pT1-pT4). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0). Tumor marker test results aren’t available, or the tests haven’t been done (SX).</td>
</tr>
<tr>
<td>Stage</td>
<td>Description</td>
<td>Explanation</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>IA</td>
<td>pT1 N0 M0 S0</td>
<td>The tumor has grown beyond the seminiferous tubules, but is still within the testicle, and it hasn't grown into nearby blood vessels or lymph nodes (pT1). The cancer hasn't spread to nearby lymph nodes (N0) or to distant parts of the body (M0). All tumor marker levels are within normal limits (S0).</td>
</tr>
<tr>
<td>IB</td>
<td>pT2-pT4 N0 M0 S0</td>
<td>The tumor has grown outside of the testicle and into nearby structures (pT2-pT4). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0). All tumor marker levels are within normal limits (S0).</td>
</tr>
<tr>
<td>IS</td>
<td>Any pT (or TX) N0 M0 S1-S3</td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0). At least one tumor marker level is higher than normal (S1-S3).</td>
</tr>
<tr>
<td>IIA</td>
<td>Any pT (or TX) N1 M0 S0 or S1</td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has spread to at least 1 nearby lymph node (N1), and none of the lymph nodes are larger than 2 centimeters (cm) across (N1). The cancer has not spread to distant parts of the body (M0). All tumor marker levels are within normal limits (S0), or at least 1 tumor marker level is slightly higher than normal (S1).</td>
</tr>
<tr>
<td>IIB</td>
<td>Any pT (or TX) N2 M0 S0 or S1</td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has spread to at least 1 nearby lymph node (but no more than 5, if checked by surgery), and none of the lymph nodes are larger than 2 centimeters (cm) across (N1). The cancer has not spread to distant parts of the body (M0). All tumor marker levels are within normal limits (S0), or at least 1 tumor marker level is slightly higher than normal (S1).</td>
</tr>
<tr>
<td>IIC</td>
<td>Any pT (or TX) N3 M0 S0 or S1</td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has spread to at least 1 nearby lymph node (but no more than 5, if checked by surgery), OR it has grown outside of a lymph node, OR more than 5 nodes contain cancer (found during surgery) (N2). The cancer has not spread to distant parts of the body (M0). All tumor marker levels are within normal limits (S0), or at least 1 tumor marker level is slightly higher than normal (S1).</td>
</tr>
<tr>
<td>Stage</td>
<td>pT or TX</td>
<td>N</td>
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</tr>
<tr>
<td>III</td>
<td>Any pT (or TX) Any N M1 SX</td>
<td>N3 M0 S0 or S1</td>
</tr>
<tr>
<td></td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has spread to at least 1 nearby lymph node that’s larger than 5 cm across (N3). The cancer has not spread to distant parts of the body (M0). All tumor marker levels are within normal limits (S0), or at least 1 tumor marker level is slightly higher than normal (S1).</td>
<td></td>
</tr>
<tr>
<td>IIIA</td>
<td>Any pT (or TX) Any N M1a S0 or S1</td>
<td>N1-N3 M0 S2</td>
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<tr>
<td></td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has spread to 1 or more nearby lymph nodes (N1-N3), but it hasn’t spread to distant parts of the body (M0). At least 1 tumor marker level is much higher than normal (S2). OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any pT (or TX) Any N M1a S2</td>
<td>N1-N3 M0 S3</td>
</tr>
<tr>
<td></td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer has spread to 1 or more nearby lymph nodes (N1-N3), but it hasn’t spread to distant parts of the body (M0). At least 1 tumor marker level is very high (S3).</td>
<td></td>
</tr>
<tr>
<td>Cancer Staging Category</td>
<td>Description</td>
<td></td>
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<tr>
<td>-------------------------</td>
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<td></td>
</tr>
<tr>
<td>Any pT (or TX) Any N M1a S3</td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer might or might not have spread to nearby lymph nodes (any N). It has spread to distant lymph nodes or to the lungs (M1a). At least 1 tumor marker level is very high (S3).</td>
<td></td>
</tr>
<tr>
<td>Any pT (or TX) Any N M1b Any S</td>
<td>The tumor might or might not have grown outside the testicle (any pT), or the extent of the tumor can’t be assessed for some reason (TX). The cancer might or might not have spread to nearby lymph nodes (any N). It has spread to distant parts of the body other than the lymph nodes or to the lungs (M1b). Tumor marker levels might or might not be higher than normal (any S).</td>
<td></td>
</tr>
</tbody>
</table>

*The following additional category is not listed on the table above:*

**NX:** Nearby lymph nodes cannot be assessed due to lack of information.

**Hyperlinks**


**References**

Testicular Cancer Survival Rates

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.

What is a 5-year relative survival rate?

A relative survival rate compares people with the same type and stage of cancer to those in the overall population. For example, if the 5-year relative survival rate for a specific stage of testicular cancer is 90%, it means that people who have that cancer are, on average, about 90% 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 Surveillance, Epidemiology, and End Results (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 testicular cancer 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**: There is no sign that the cancer has spread outside of the testicles.
- **Regional**: The cancer has spread outside the testicle to nearby structures or lymph nodes.
- **Distant**: The cancer has spread to distant parts of the body, such as the lung, liver, or distant lymph nodes.

5-year relative survival rates for testicular cancer
These numbers are based on people diagnosed with cancer of the testicle between 2012 and 2018

<table>
<thead>
<tr>
<th>SEER* stage</th>
<th>5-year relative survival rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>Not available</td>
</tr>
<tr>
<td>Regional</td>
<td>Not available</td>
</tr>
<tr>
<td>Distant</td>
<td>Not available</td>
</tr>
<tr>
<td>All SEER stages combined</td>
<td>95%</td>
</tr>
</tbody>
</table>

*SEER = Surveillance, Epidemiology, and End Results

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.** These survival rates are grouped based on how far the cancer has spread. But other factors, including your age and overall health, the type of testicular cancer, and how well the cancer responds to treatment can also affect your outlook. Ask your doctor to explain how these or other factors might be important for you.
- **People now being diagnosed with testicular cancer 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.

Hyperlinks


References

SEER*Explorer: An interactive website for SEER cancer statistics [Internet].
As you deal with testicular cancer and the process of treatment, you need to be able to have honest, open discussions with your cancer care team. Ask any question, no matter how small it might seem. Among those you might want to ask are:

- What kind of testicular cancer do I have?
- Has the cancer spread beyond my testicle?
- What is the stage of my cancer? What does this mean for me?
- Will I need other tests before we can decide on treatment?
- Will I need to see other doctors?
- How much experience do you have treating this type of cancer?
- What are my treatment choices? What do you recommend? Why?
- Do I need a retroperitoneal lymph node dissection? If so, how many have you done?
- What should I do to be ready for treatment?
- How long will treatment last? What will it be like? Where will it be done?
- What risks or possible side effects can I expect from my treatment?
- How long will it take me to recover from treatment?
- How soon after treatment can I have sex?
- What are the chances I will become infertile? Should I bank sperm?
- What are the chances that the cancer will come back? What will we do if that happens?
- Does one type of treatment reduce the risk of recurrence (cancer coming back) more than another?
- Should I get a second opinion before I start treatment, and when would a second opinion be helpful to me?
- What type of follow-up will I need after treatment?
Along with these examples, be sure to write down some of your own. For instance, you might want to ask about clinical trials for which you may qualify. Keep in mind, too, that doctors are not the only ones who can give you information. Other health care professionals, such as nurses and social workers, may have the answers to your questions. You can learn more about communicating with your health care team in The Doctor-Patient Relationship.

Hyperlinks


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Our team is made up of doctors and oncology certified nurses with deep knowledge of cancer care as well as journalists, editors, and translators with extensive experience in medical writing.

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