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## [Testicular Cancer - Stages](#) [1]

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**ON THIS PAGE:** You will learn about how doctors describe a cancer's growth or spread. This is called the stage. To see other pages, use the menu on the side of your screen.

Staging is a way of describing if and where a cancer has spread. Doctors use diagnostic tests, including CT scans and blood tests, to find out the cancer's stage, so staging may not be complete until all of the tests are finished. Knowing the stage helps the doctor to decide what kind of treatment is best and helps predict a patient's prognosis, which is the chance of recovery. There are different stage descriptions for different types of cancer.

### **TNM staging system**

One tool that doctors use to describe the stage is the TNM system. Doctors use the results from diagnostic tests and scans to answer these questions:

- **Tumor (T):** How large is the primary tumor? Where is it located?
- **Node (N):** Has the tumor spread to the lymph nodes in the back of the abdomen (retroperitoneum)?
- **Metastasis (M):** Has the cancer metastasized to other parts of the body? If so, where and how much?

- **Serum tumor marker (S):** Are the serum tumor markers AFP, beta-hCG, and LDH (see [Diagnosis](#) [3]) elevated? If so, how high are they?

The results are combined to determine the stage of cancer for each person. There are three stages of testicular cancer: stages I, II, and III (one, two, and three). The stage provides a common way of describing how advanced the cancer is so that doctors can work together to plan the best treatments. Stage I is the least advanced and stage III is the most advanced. Patients with the least advanced stages are more likely to be cured and often need less aggressive treatment than patients with more advanced stage cancers.

There are also two different types of staging in testicular cancer:

- **Clinical staging.** The clinical stage is based on a physical examination or x-rays, CT scans, and other imaging tests (see [Diagnosis](#) [3]). For example, clinical stage II testicular cancer means that the retroperitoneal lymph nodes are enlarged when viewed with a CT or MRI scan.
- **Pathological staging.** The pathological stage is based on evaluating tissue under a microscope after it has been removed during surgery. For example, pathological stage II testicular cancer means that cancer has been found when tissue removed from the retroperitoneal lymph nodes is examined under a microscope. Pathological staging is more accurate than clinical staging, but it is not always necessary.

Here are more details on each part of the TNM system for testicular cancer:

## **Tumor (T)**

Using the TNM system, the "T" plus a letter or number (0 to 4) is used to describe the size and location of the tumor. Some stages are also divided into smaller groups that help describe the tumor in even more detail. For testicular cancer, the T stage can only be determined when tissue removed during surgery is examined under a microscope. This means that the T stage is only determined after the testicle is removed, and the T stage is always a pathological stage and never a clinical stage. The "p" before the T stage indicates that it is a pathological stage. Specific tumor stage information is below.

**pTX:** The primary tumor cannot be evaluated. If a man has not had the testicle(s) surgically removed, the term "TX" is used.

**pT0:** There is no evidence of a primary tumor in the testicles.

**pTis:** In this stage, there is intratubular germ cell neoplasia, also called carcinoma in situ (CIS). This is a precancerous condition in which there are germ cells that appear cancerous but are not

yet behaving the way cancer cells do. CIS becomes cancer when the cells spread to areas of the testicle(s) where they do not normally belong.

**pT1:** The primary tumor is only in the testicle with or without involvement of the epididymis or rete testis. It has not grown into blood vessels or lymph vessels in the testicles. The tumor may have grown into the inner membrane layer surrounding the testicle, called the tunica albuginea. It has not spread to the outer membrane layer surrounding the testicle, called the tunica vaginalis.

**pT2:** The tumor is in the testicle with or without involvement of the epididymis or rete testis. It has grown into blood vessels or lymphatic vessels, and/or it has grown through the tunica albuginea and into the tunica vaginalis.

**pT3:** The tumor has grown into the spermatic cord.

**pT4:** The tumor has grown into the scrotum.

## **Node (N)**

The “N” in the TNM staging system stands for lymph nodes, the tiny, bean-shaped organs that help fight infection. Lymph is a fluid that flows from the different tissues and organs of the body and eventually drains into the blood stream. It passes through specialized tubes called lymphatic vessels and is filtered along the way by the lymph nodes. Cancer cells often buildup and grow in lymph nodes before they spread to other parts of the body. The first place the lymphatic fluid from the testicles drains to is the retroperitoneal lymph nodes located in the back of the abdomen in front of the spine, an area called the retroperitoneum. These are called the regional lymph nodes for testicular cancer. Lymph nodes in the pelvis, chest, or other parts of the body are called distant lymph nodes even though the testicles are closer to the pelvis than to the retroperitoneum.

In men with testicular cancer, lymph nodes usually are not biopsied or removed. Instead, the “N” stage is most often estimated by using CT scans. Lymph node stage (N stage) that is based on CT scans is the clinical stage, and N stage based on a biopsy or removal of the lymph nodes is the pathological stage. When a stage has been determined pathologically, the letter “p” is added as the first letter of the stage (for example pN1). The letter “c” stands for clinical stage.

**NX:** The regional lymph nodes cannot be evaluated.

**cN0:** There is no spread to regional lymph nodes as seen on imaging tests.

**pN0:** There is no cancer found in lymph nodes removed during RPLND (see [Treatment Options \[4\]](#)).

**cN1:** Imaging tests show at least 1 enlarged lymph node in the retroperitoneum, but none of the enlarged lymph nodes are bigger than 2 centimeters (cm).

**pN1:** There is cancer in 1 to 5 lymph nodes and none is larger than 2 cm.

**cN2:** Imaging tests show at least 1 enlarged lymph node or lymph node mass in the retroperitoneum that is larger than 2 cm but not larger than 5 cm.

**pN2:** Either or both of the following conditions:

- There is cancer in more than 5 lymph nodes but none are larger than 5 cm.
- There is cancer in at least 1 lymph node that is bigger than 2 cm and smaller than 5 cm

**cN3:** Imaging tests show at least 1 enlarged lymph node or a lymph node mass in the retroperitoneum larger than 5 cm.

**pN3:** There is cancer in at least 1 enlarged lymph node or lymph node mass that is larger than 5 cm.

## **Metastasis (M)**

The "M" in the TNM system indicates whether the cancer has spread to other parts of the body, called distant metastasis. When testicular cancer spreads, it most commonly spreads to the lung and the lymph nodes of the chest, pelvis, and the base of the neck. More advanced stages may have spread to the liver and bones. Testicular cancer rarely spreads to the brain unless the primary tumor is a choriocarcinoma.

**MX:** Distant metastasis cannot be evaluated.

**M0:** The disease has not metastasized to distant lymph nodes or other organs.

**M1:** There is at least 1 distant metastasis.

**M1a:** There is cancer in distant lymph nodes and/or the lungs.

**M1b:** The cancer has spread to organs other than a lung. The lungs may or may not also be involved. For example, a testicular cancer that has spread to the liver or the bones is stage M1b.

## **Serum tumor markers (S)**

Serum tumor markers also help to stage testicular cancer. Blood tests for tumor markers will be done before and after surgical removal of the testicle(s). Tumor markers usually decrease after the surgery. Generally, the levels need to be tested until they stop decreasing or begin to rise to determine the correct S stage. For patients who will receive chemotherapy, the tumor marker levels on the first day of chemotherapy are used to determine the patient's risk group (see

below).

**SX:** Tumor marker levels are not available, or the tests have not been done.

**S0:** Tumor marker levels are normal.

**S1:** At least 1 tumor marker level is above normal. This means that LDH is less than 1.5 times the upper limit of the normal range, beta-hCG is less than 5,000 mIU/mL, and/or AFP is less than 1,000 ng/mL.

**S2:** At least 1 tumor marker level is substantially above normal. This means that LDH is 1.5 to 10 times the upper limit of the normal range, beta-hCG is 5,000 to 50,000 mIU/mL, or AFP is 1,000 to 10,000 ng/mL, and/or none of the tumor markers is elevated high enough to qualify as S3 (see below).

**S3:** 1 or more tumor marker level is very highly elevated. This means that LDH is more than 10 times the upper limit of the normal range, beta-hCG is more than 50,000 mIU/mL, or AFP is more than 10,000 ng/mL.

## Cancer stage grouping

Doctors assign the stage of the cancer by combining the T, N, and M classifications and the S level information.

**Stage 0:** Refers to carcinoma in situ, also called intratubular germ cell neoplasia (pTis).

**Stage I:** Cancer is at any T level, and there is no evidence of spread to either lymph nodes or other organs. Serum tumor marker levels have not been done or are not available (any T, N0, M0, SX).

**Stage IA:** Cancer is in the testicle and may have grown into the rete testis and the epididymis, but it has not grown into the lymphatic or blood vessels in the testis or spread to lymph nodes or distant sites. The tumor in the testis may have grown into the inner membrane surrounding the testis, called the tunica albuginea, but not the outer membrane, called the tunica vaginalis. Serum markers are normal (pT1, N0, M0, S0).

**Stage IB:** The testicular tumor has grown into the tunica vaginalis, the blood or lymphatic vessels within the testicle, the spermatic cord, or the scrotum. The cancer has not spread to lymph nodes or distant sites. Serum markers are normal (pT2, pT3, or pT4, and N0, M0, S0).

**Stage IS:** Cancer is of any T stage and has not spread to lymph nodes or distant sites. Serum markers remain above normal levels after the cancerous testicle has been removed (any T, N0, M0, and S1-3). Stage IS non-seminoma testicular cancer is treated the same as stage III testicular cancer.

**Stage II:** The cancer has spread to any number of regional lymph nodes but not to lymph nodes in other parts of the body or distant organs. Serum markers are unavailable (any T, N1-3, M0, SX).

**Stage IIA:** Cancer has spread to retroperitoneal lymph nodes, either clinical or pathological stage N1, but none is larger than 2 cm and, if a lymph node dissection has been done, no more than 5 lymph nodes contain cancer. In addition, serum tumor markers are at normal levels or slightly high, and there are no signs of cancer having spread anywhere other than the retroperitoneum (any T, N1, M0, S0 or S1).

**Stage IIB:** Cancer has spread to lymph nodes in the retroperitoneum, at least 1 of which is bigger than 2 cm but not bigger than 5 cm; or, if a lymph node dissection has been done, cancer has spread to at least 1 lymph node (or lymph node mass) between 2 cm and 5 cm or to more than 5 lymph nodes, none more than 5 cm. Serum markers are at normal levels or slightly high, and there is no evidence of cancer having spread anywhere other than the retroperitoneum (any T, N2, M0, S0 or S1).

**Stage IIC:** Cancer has spread to at least 1 lymph node (or lymph node mass) that is larger than 5 cm. Serum markers are at normal levels or slightly high and there is no evidence of cancer having spread anywhere other than the retroperitoneum (any T, N3, M0, S0 or S1).

**Stage III:** Cancer has spread to distant lymph nodes or to any organ, and serum tumor marker levels are unknown (any T, N0-3, M1, SX).

**Stage IIIA:** Cancer has spread to distant lymph nodes or the lungs. Serum markers are at normal levels or slightly high (any T, N0-3, M1a, S0 or S1).

**Stage IIIB:** Cancer has spread to any lymph nodes and/or the lungs but not to any other organs. Serum markers are at substantially and persistently high levels (any T, N1-3, M0, S2; or any T, N0-3, M1a, S2).

**Stage IIIC:** Either or both of the following:

- Serum marker levels are highly high, and the cancer has spread to at least 1 lymph node or organ (any T, N1-3, M0, S3; or any T, N0-3, M1a, S3).
- The cancer has spread to an organ other than the lungs (any T, any N, M1b, any S).

**Recurrent:** Recurrent cancer is cancer that has come back after treatment. If the cancer does return, there will be another round of tests to learn about the extent of the recurrence. These tests and scans are often similar to those done at the time of the original [diagnosis](#) [3].

*Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The*

original source for this material is the AJCC Cancer Staging Manual, Seventh Edition published by Springer-Verlag New York, [www.cancerstaging.net](http://www.cancerstaging.net) [5].

## Later-stage testicular cancer: risk group classification

If the disease has spread to lymph nodes or other organs, the following system is used to classify a germ cell tumor into a good-risk, intermediate-risk, or poor-risk group. This helps to determine the treatment plan and the likelihood of cure. Patients in the intermediate and poor-risk groups usually receive more chemotherapy than patients in the good-risk category.

The differences between good-risk, intermediate risk and poor-risk are the same as the differences between stage IIIA, IIIB, and IIIC (above). Stage IIIA is the same as good risk, IIIB is the same as intermediate risk, and IIIC is the same as poor risk.

Good Risk	
Non-Seminoma	Seminoma
No metastasis to an organ other than the lungs and Good marker levels - all of the following: AFP < 1,000 ng/mL B-hCG < 5,000 iU/L LDH < 1.5 x ULN	No metastasis to an organ other than the lungs and Normal AFP, any B-hCG, any LDH
Intermediate Risk	
Non-seminoma	Seminoma
No metastasis to an organ other than the lungs and Intermediate markers - any of AFP $\geq$ 1,000 and $\leq$ 10,000 ng/mL B-hCG $\geq$ 5,000 and $\leq$ 50,000 iU/L LDH $\geq$ 1.5 x ULN and $\leq$ 10 x ULN	Metastasis to an organ other than the lungs and Normal AFP, any B-hCG, any LDH
Poor Risk	
Non-seminoma	Seminoma

Metastasis to an organ other than the lungs or Poor markers - any of the following: AFP $\geq$ 10,000 ng/mL B-hCG $\geq$ 50,000 iU/L LDH $\geq$ 10 x ULN	There are no patients with poor-risk seminoma.

Source: Journal of Clinical Oncology.

*Information about the cancer's stage will help the doctor recommend a specific treatment plan. The [next section in this guide is Treatment Options](#) [4]. 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/testicular-cancer/stages>
- [2] <http://www.cancer.net/about-us>
- [3] <http://www.cancer.net/node/19664>
- [4] <http://www.cancer.net/node/19666>
- [5] <http://www.cancerstaging.net/>