



Treating Testicular Cancer

Making treatment decisions

In recent years, a lot of progress has been made in treating testicular cancer. Surgical methods have been refined, and doctors know more about the best ways to use chemotherapy and radiation to treat different types of testicular cancer.

After the cancer is diagnosed and staged, your cancer care team will discuss treatment options with you.

Depending on the type and stage of the cancer and other factors, treatment options for testicular cancer can include:

- [Surgery](#)
- [Radiation therapy](#)
- [Chemotherapy \(chemo\)](#)
- [High-dose chemotherapy and stem cell transplant](#)

In some cases, more than one of type of treatment might be used.

You may have different types of doctors on your treatment team, [depending on the stage](#) of your cancer and your treatment options. These doctors may include:

- A urologist: a surgeon who specializes in treating diseases of the urinary system and male reproductive system
- A radiation oncologist: a doctor who treats cancer with radiation therapy
- A medical oncologist: a doctor who treats cancer with medicines such as chemotherapy

Many other specialists might be involved in your care as well, including physician assistants, nurse practitioners, nurses, physical therapists, social workers, and other health professionals. See [Health Professionals Associated With Cancer Care](#) for more

on this.

It's important to discuss all of your treatment options as well as their possible side effects with your doctors to help make the decision that best fits your needs. (See [What should you ask your doctor about testicular cancer?](#) for some questions to ask.)

When time permits, getting a second opinion is often a good idea. It can give you more information and help you feel good about the treatment plan you choose.

Where you are treated is important. There is no substitute for experience. You have the best chance for a good outcome if you go to a hospital that treats many testicular cancer patients.

Thinking about taking part in a clinical trial

Clinical trials are carefully controlled research studies that are done to get a closer look at promising new treatments or procedures. Clinical trials are one way to get state-of-the-art cancer treatment. In some cases, they may be the only way to get access to newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they are not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials. You can also call our clinical trials matching service at 1-800-303-5691 for a list of studies that meet your medical needs, or see the [Clinical Trials](#) section on our website to learn more.

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn't mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage, to name a few.

Complementary methods refer to treatments that are used along with your regular medical care. Alternative treatments are used instead of a doctor's medical treatment. Although some of these methods might be helpful in relieving symptoms or helping you feel better, many have not been proven to work. Some might even be dangerous.

Be sure to talk to your cancer care team about any method you are thinking about using. They can help you learn what is known (or not known) about the method, which can help you make an informed decision. See the [Complementary and Alternative](#)

[Medicine](#) section of our website to learn more.

Help getting through cancer treatment

Your cancer care team will be your first source of information and support, but there are other resources for help when you need it. Hospital- or clinic-based support services are an important part of your care. These might include nursing or social work services, financial aid, nutritional advice, rehab, or spiritual help.

The American Cancer Society also [has programs and services](#) – including rides to treatment, lodging, support groups, and more – to help you get through treatment. Call our National Cancer Information Center at 1-800-227-2345 and speak with one of our trained specialists on call 24 hours a day, every day.

The next few sections describe the different types of treatments used for testicular cancers. This is followed by a discussion of the most common [treatment options](#), based on the type and extent of the disease.

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask him or her questions about your treatment options.

Surgery for Testicular Cancer

Surgery is typically the first treatment for all testicular cancers.

Radical inguinal orchiectomy

As described in the section [How is testicular cancer diagnosed?](#), this type of surgery removes the testicle (or testicles) containing the cancer. An incision is made just above the pubic area, and the testicle is gently removed from the scrotum through the opening. A cut is made through the spermatic cord that attaches the testicle to the abdomen. The surgeon ties off the blood and lymph vessels in the spermatic cord early in the operation and takes other special precautions to avoid spreading cancer cells into the surgical wound or dislodging them from the tumor into the bloodstream.

All testicular cancers are typically treated with this surgery, even those that have

spread.

Retroperitoneal lymph node dissection (RPLND)

Depending on the type and stage of your cancer, some lymph nodes at the back of the abdomen (around the large blood vessels known as the aorta and inferior vena cava) may also be removed at the same time as the orchiectomy or during a second operation. Not all patients with testicular cancer need to have lymph nodes removed, so it's important to discuss this (and the possible alternatives) with your doctor.

This is a complex and long operation. A large incision is typically made down the middle of the abdomen to remove the lymph nodes. It should be done by a surgeon who does this often. Experience counts.

Laparoscopic surgery: In some cases, the surgeon can remove lymph nodes through very small skin incisions in the abdomen by using a laparoscope (a narrow, lighted tube with a small video camera on the end that lets doctors see inside the abdomen) and other long, thin surgical tools. The surgeon's hands are not inside the patient's body during this type of surgery.

In laparoscopic surgery, after being put to sleep, the patient is turned onto his side. Several small incisions are made on the abdomen. A laparoscope and long instruments are inserted through the incisions to remove the lymph nodes. The incisions are then closed and the patient is awakened.

Patients recover much more quickly from this operation than the standard open procedure and are walking soon after surgery. There is usually less pain and patients are eating sooner.

Laparoscopic surgery seems to be a lot easier for the patient, but doctors are not sure if it's as safe and effective as the standard "open" surgery in removing all of the potentially cancerous lymph nodes. Because of this uncertainty, doctors are more likely to recommend chemotherapy after laparoscopic surgery if cancer is found in the lymph nodes.

This procedure is most often used for patients with early stage non-seminomas to see if the lymph nodes contain cancer. As with the standard open procedure, this is a complex operation that should only be done if the surgeon is very experienced.

Possible risks and side effects of surgery

The short-term risks of any type of surgery include reactions to anesthesia, excess bleeding, blood clots, and infections. Most men will have at least some pain after the operation, which can usually be helped with pain medicines, if needed.

Effects of orchiectomy: Losing one testicle usually has no effect on a man's ability to get an erection and have sex. But if both testicles are removed, sperm cells cannot be produced and a man becomes infertile. Also, without testicles, a man cannot make enough testosterone, which can decrease sex drive and affect his ability to have erections. Other effects could include fatigue, hot flashes, and loss of muscle mass. These side effects can be avoided by taking testosterone supplements, either in a gel, a patch, or a shot. Pills are generally not reliable sources of testosterone.

Usually men with testicular cancer are young and may be concerned that their appearance has changed. They may be dating and worry about a partner's reaction, or they may be athletic and feel embarrassed by the missing testicle when in locker rooms.

To restore a more natural look, a man can have a testicular prosthesis surgically implanted in his scrotum. The prosthesis approved for use in the United States is filled with saline (salt water) and comes in different sizes to match the remaining testicle. When in place, it can look like a normal testicle. There can be a scar after the operation, but it's often partly hidden by pubic hair. Some men might want a prosthesis, while others might not. You should discuss your wishes with your surgeon before considering this surgery. It could also help to talk with someone who has a testicular prosthesis, to hear what it has been like for them.

Effects of lymph node dissection: Surgery to remove retroperitoneal lymph nodes is a major operation. Serious complications are not common, but they can happen. About 5% to 10% of patients have temporary complications after surgery, such as bowel obstruction or wound infections. The standard approach for an RPLND requires a large incision in the abdomen, which will leave a scar and can take some time to heal. Your ability to get up and around after the operation will be limited for some time. This is less likely to be an issue if you have laparoscopic surgery, which uses smaller incisions.

This type of surgery does not cause impotence – a man can still have erections and sexual intercourse. But it might damage some of the nerves that control ejaculation. If these nerves are damaged, when a man ejaculates, the semen is not propelled forward through the urethra to exit the body but rather goes backwards into the bladder. This is known as *retrograde ejaculation*, and it can make it hard to father children.

To save the normal ejaculation function, surgeons have developed a type of retroperitoneal lymph node surgery called *nerve-sparing* surgery that is very successful when done by experienced doctors. Testicular cancer often affects men at an age when

they may be trying to have children. These men may wish to discuss nerve-sparing surgery with their doctors, as well as sperm banking (freezing and storing sperm cells obtained before treatment). Men with testicular cancer often have lower than normal sperm counts, which can sometimes make it hard to collect a good sperm sample. See [Fertility and Men With Cancer](#) to find out more about this.

- [References](#)

[See all references for Testicular Cancer](#)

Last Medical Review: January 20, 2015 Last Revised: February 12, 2016

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Radiation Therapy for Testicular Cancer

Radiation therapy uses a beam of high-energy rays (such as gamma rays or x-rays) or particles (such as electrons, protons, or neutrons) to destroy cancer cells or slow their rate of growth. In treating testicular cancer, radiation is used mainly to kill cancer cells that have spread to lymph nodes.

Radiation therapy delivered from a machine outside the body is known as *external beam radiation*. The treatment is much like getting an x-ray, but the radiation is more intense. The procedure itself is painless. Before your treatments start, the medical team will take careful measurements to determine the correct angles for aiming the radiation beams and the proper dose of radiation. Each treatment lasts only a few minutes, but the setup time – getting you into place for treatment – usually takes longer.

In general, radiation therapy is mainly used for patients with seminoma, which is very sensitive to radiation. Sometimes it's used after [orchidectomy](#) (the operation to remove the testicle) and is directed at the lymph nodes at the back of the abdomen (the retroperitoneal lymph nodes). This is to kill any tiny bits of cancer in those lymph nodes that can't be seen. It can also be used to treat small amounts of seminoma that have spread to the nodes (based on changes seen on CT and PET scans).

Radiation is also sometimes used to treat testicular cancer (both seminoma and non-seminoma) that has spread to distant organs (such as to the brain).

Possible side effects

Radiation therapy can affect nearby healthy tissue along with the cancer cells. To reduce the risk of side effects, doctors carefully figure out the exact dose you need and aim the beam as accurately as they can to hit the target. Generally, treatment of testicular cancer uses lower radiation doses than those needed for other types of cancer.

Common side effects can include:

- Fatigue
- Nausea
- Diarrhea

Some men have a skin changes such as redness, blistering, or peeling, but those are uncommon.

These side effects improve after the radiation is finished. If radiation reaches the healthy testicle it can affect [fertility](#) (sperm counts), so a special protective device is placed over the remaining testicle to help protect it.

Radiation can also have some long-term effects, such as damage to blood vessels or other organs near the treated lymph nodes and an increased risk of getting a [second cancer](#) (outside of the testicle) later in life. These risks were higher in the past when higher doses were used and more tissue was exposed to radiation.

More information on radiation therapy can be found in [Radiation Therapy](#), or in [A Guide to Radiation Therapy](#).

- [References](#)

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Chemotherapy for Testicular Cancer

Chemotherapy (chemo) is the use of drugs to treat cancer. The drugs can be swallowed in pill form, or they can be injected by needle into a vein or muscle. To treat testicular cancer, the drugs are usually given into a vein. Chemo is systemic therapy. This means that the drug travels throughout the body to reach and destroy the cancer cells. Chemo is an effective way to destroy any cancer cells that break off from the main tumor and travel to lymph nodes or distant organs.

Chemo is often used to cure testicular cancer when it has spread outside the testicle or to decrease the risk of cancer coming back after the testicle is removed. It is not used to treat cancer that is only in the testicle.

Doctors give chemotherapy in cycles, with each period of treatment followed by a rest period to allow the body time to recover. Chemo cycles generally last about 3 to 4 weeks. The main drugs used to treat testicular cancer are:

- Cisplatin
- Etoposide (VP-16)
- Bleomycin
- Ifosfamide (Ifex[®])
- Paclitaxel (Taxol[®])
- Vinblastine

Using 2 or more chemo drugs is often more effective than using any single drug. The chemotherapy regimens most commonly used as the initial treatment for testicular cancer are:

- BEP (or PEB): bleomycin, etoposide, and cisplatin
- EP: etoposide and cisplatin (also known as EP)
- VIP: VP-16 (etoposide) or vinblastine plus ifosfamide and cisplatin

Some doctors use more intensive regimens for patients with high-risk disease, and may suggest a different combination of chemotherapy drugs or even a stem cell transplant (see next section).

Possible side effects

Chemo drugs attack cells that are dividing quickly, which is why they work against cancer cells. But other cells in the body, such as those in the bone marrow (where new blood cells are made), the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemo, which can lead to certain side effects.

The [side effects](#) of chemo depend on the type and dose of drugs used and how long they are given. These side effects can include:

- Hair loss
- Mouth sores
- Loss of appetite
- Nausea and vomiting
- Diarrhea
- Increased chance of infections (from having too few white blood cells)
- Easy bruising or bleeding (from having too few blood platelets)
- Fatigue (extreme tiredness, often from having too few red blood cells)

Some of the drugs used to treat testicular cancer can have other side effects. For example:

- Cisplatin and ifosfamide can cause kidney damage. This can be lessened by giving lots of fluids (usually into a vein – IV) before and after these drugs are given.
- Cisplatin, etoposide, paclitaxel, and vinblastine can damage nerves (known as *neuropathy*). This can lead to numbness or tingling sensations in the hands or feet, and sensitivity to cold or heat. In most cases, this improves once treatment is stopped, but it may last a long time in some people.
- Cisplatin can also cause loss of hearing (called *ototoxicity*)
- Bleomycin can damage the lungs, causing shortness of breath and trouble with physical activity.
- Ifosfamide can cause the bladder to bleed (called *hemorrhagic cystitis*). To prevent this, the patient is given plenty of fluids and the drug mesna is given along with ifosfamide.

Most side effects are short-term and go away after treatment ends, but some can last a long time and may never go away completely. Report any side effects or changes you notice while getting chemo to your medical team so that you can get prompt treatment for them. There are often ways to prevent or lessen side effects. For example, there are drugs to help prevent or reduce nausea and vomiting. In some cases, the doses of the chemo drugs may need to be reduced or treatment may need to be delayed or stopped to prevent the effects from getting worse.

Some of the drugs used to treat testicular cancer can cause long-term side effects. These include some of the things mentioned earlier, like hearing loss and kidney or lung damage. Development of a [second cancer](#) (like leukemia) is a very serious but rare side effect of chemo, occurring in less than 1% of testicular cancer patients treated with chemo. People who have had chemo for testicular cancer seem to have a higher risk of

heart problems later in life. Several studies have also suggested that chemotherapy can sometimes cause high blood cholesterol to develop over time, which may later require treatment.

For more information about chemotherapy and its side effects, please see [Chemotherapy](#).

- [References](#)

[See all references for Testicular Cancer](#)

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High-Dose Chemotherapy and Stem Cell Transplant for Testicular Cancer

In general, testicular cancers respond well to chemotherapy (chemo), but not all cancers are cured. Even though higher doses of chemo might be more effective, they are not given because they could severely damage the bone marrow, which is where new blood cells are formed. This could lead to life-threatening infections, bleeding, and other problems because of low blood cell counts.

A stem cell transplant allows doctors to use higher doses of chemo. Blood-forming stem cells are collected from the bloodstream in the weeks before treatment using a special machine. In the past the stem cells were taken from the bone marrow, but this is done less often now. The stem cells are frozen, and then the patient receives high-doses of chemo.

After the chemo the patient gets his stem cells back again. This is called a transplant, but it doesn't involve surgery – the cells are infused into a vein much like a blood transfusion. The stem cells settle in the bone marrow and start making new blood cells over the next few weeks.

For testicular cancer, stem cell transplant is most often used to treat cancers that have come back after treatment with chemo. Current studies are exploring whether a stem

cell transplant may be valuable in treating some patients with advanced germ cell cancers as part of their first treatment.

A stem cell transplant is a complex treatment that can cause life-threatening side effects because of the high doses of chemotherapy used. Be sure you understand the possible benefits and risks. If the doctors think you might benefit from a transplant, it should be done at a hospital where the staff has experience with the procedure and with managing the recovery phase.

Stem cell transplants often require a long hospital stay and can be very expensive. Even if the transplant is covered by your insurance, your co-pays or other costs could add up to a lot of money. It is important to find out what your insurer will cover before deciding on a transplant to get an idea of what you might have to pay.

For more information on stem cell transplants, see [Stem Cell Transplant for Cancer](#).

- [References](#)

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Treatment Options for Testicular Cancer, by Type and Stage

Treatment for testicular cancer is based mainly on the [type](#) and [stage](#) of the cancer. Among the germ cell tumors, pure seminomas are treated one way, and all other cancers (all types of non-seminomas and mixed germ cell tumors) are treated another way.

Stage 0 germ cell tumors

In this stage, the tumor in the testicle is carcinoma in situ (CIS), the cancer has not spread outside the testicle, and the levels of tumor markers (like HCG and AFP) are not elevated.

If this stage is diagnosed after surgery to remove the testicle, no other treatment is needed.

If the CIS is found after a testicular biopsy (such as for fertility problems), the doctor may recommend that it not be treated right away. Instead, the patient may be watched closely with repeat physical exams, ultrasound of the testicle, and blood tests of tumor marker levels. Treatment may not be needed as long as there are no signs that the CIS is growing or turning into an invasive cancer. If CIS is treated, it is with [surgery](#) (to remove the testicle) or with [radiation therapy](#) to the testicle.

If tumor marker levels are high, the cancer is not really stage 0 – even when only CIS is found in the testicle and there are no signs of cancer spread. These cases are treated like stage IS cancers.

Stage I germ cell tumors

Stage I seminomas: These cancers can be cured in nearly all patients. They are first treated by surgically removing the testicle and spermatic cord ([radical inguinal orchiectomy](#)). After surgery, there are several treatment choices:

- **Careful observation (surveillance):** If the cancer has not spread beyond the testicle, often the preferred option is to be watched closely by your doctor for up to 10 years with treatments like [radiation](#) or [chemo](#) only if cancer spread is found. This means getting physical exams and blood tests every 3 to 6 months for the first year, and less often after that. [Imaging tests](#) (CT scans and sometimes chest x-rays) are often done every 3 months for 6 months, and then less often after that. If these tests do not find any signs that cancer has spread beyond the testicle, no other treatment is needed. In about 15% to 20% of patients the cancer will come back as spread to lymph nodes or other organs, but if it does, radiation or chemo can still usually cure the cancer.
- Doctors are less likely to advise surveillance if the tumor invades blood or lymph vessels in the spermatic cord or if it has reached the scrotum. In these cases, either radiation or chemo is likely to be a better option.
- **Radiation therapy:** Radiation aimed at para-aortic lymph nodes (in the back of the abdomen, around the large blood vessel called the aorta) is another option. Because seminoma cells are very sensitive to radiation, low doses can be used, usually about 10 to 15 treatments (given over 2 to 3 weeks).
- The doctor may recommend this because in about 1 in 5 patients with stage I seminoma, cancer cells have spread outside the testicle but cannot be seen on

imaging tests like CT scans. Radiation therapy can usually destroy these hidden (occult) metastases.

- **Chemotherapy:** An option that works as well as radiation is to give 1 or 2 cycles of [chemotherapy](#) (chemo) with the drug carboplatin after surgery.

Stage IS seminomas: In this stage, the level of one or more tumor markers is still high after the testicle containing the seminoma is removed. This is very rare, but it is often treated with [radiation](#).

Stage I non-seminomas: Nearly all of these cancers can be cured, but the standard treatment is different from that of seminomas. As with seminomas, the initial treatment is [surgery](#) to remove the testicle and tumor (radical inguinal orchiectomy). Then the treatment choices depend on the stage.

For stage IA (T1) there are 2 choices:

- **Careful observation (surveillance):** Surveillance might let you avoid the possible side effects of surgery, but it requires a lot of doctor visits and tests. Doctor visits and lab tests are done every 2 months for the first year, with CT scans every 4 to 6 months. Over time, the time between visits and tests gets longer. If the cancer does come back, it is usually within the first year or two. Relapses are generally treated with [chemo](#). Even though more patients will have a relapse with surveillance than with lymph node dissection, the cure rates are similar because the relapses are usually found early enough to be cured.
- **Retroperitoneal lymph node dissection (RPLND):** Removal of lymph nodes at the back of the abdomen has the advantage of a high cure rate but the disadvantages of major surgery, with its possible complications, including losing the ability to ejaculate normally. After RPLND, if cancer is found in the nodes, chemo may be recommended.

For stage IB (T2, T3, or T4) there are up to 3 options:

- **Retroperitoneal lymph node dissection** (removal of lymph nodes at the back of the abdomen). If cancer is found in the lymph nodes, chemo is often recommended.
- **Chemotherapy** with the BEP regimen (bleomycin, etoposide, and cisplatin) for 2 cycles. This has a high cure rate, but it can have side effects (which are mostly short-term). Chemo is used more often in Europe than in the United States.
- **Careful observation (surveillance):** This requires frequent doctor visits and tests for several years. This may be an option for some patients with T2 tumors.

Stage IS non-seminoma: If the tumor marker levels (like AFP or HCG) are still high

even after the testicle/tumor is removed but no tumor is seen on a CT scan, chemo is recommended, with either 3 cycles of BEP or 4 cycles of EP (etoposide and cisplatin).

Stage II germ cell tumors

Stage IIA seminomas: After [surgery](#) to remove the testicle (radical inguinal orchiectomy), the preferred treatment is [radiation](#) to the retroperitoneal lymph nodes. Usually stage II seminomas are given higher doses of radiation than stage I seminomas. The other option is [chemo](#), with either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin).

Stage IIB seminomas: These seminomas have spread to larger lymph nodes or to several different lymph nodes. After [surgery](#) to remove the testicle (radical inguinal orchiectomy), chemo is the preferred treatment. Either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin) may be used. Radiation may be an option instead of chemo for patients who don't have lymph nodes enlarged from cancer spread.

Stage IIC seminomas: These cancers are treated with radical inguinal orchiectomy, followed by chemo with 4 cycles of EP or 3 or 4 cycles of BEP. Radiation therapy is generally not used for stage IIC seminoma.

Stage II non-seminomas: After radical inguinal orchiectomy to remove the testicle with the tumor, treatment depends on the remaining levels of [tumor markers](#) in the blood and the extent of spread to retroperitoneal lymph nodes. There are 2 main options:

- **Retroperitoneal lymph node dissection (RPLND):** The lymph nodes at the back of the abdomen are removed. This is more often an option for stage IIA disease. If the lymph nodes removed contain cancer, further treatment with chemo may be needed.
- **Chemotherapy:** For many stage II cancers, the preferred treatment is chemo instead of RPLND. Either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin) may be used.
- After chemo, a CT scan is repeated to see if the lymph nodes are still enlarged. If they are, they are usually removed by RPLND.

Stage III germ cell tumors

Even though stage III germ cell tumors have spread by the time they are found, most of them can still be cured.

Both stage III seminomas and non-seminomas are treated with [radical inguinal orchiectomy](#) followed by [chemo](#) with either EP (etoposide and cisplatin) for 4 cycles or BEP (bleomycin, etoposide, and cisplatin) for 3 to 4 cycles. 4 cycles of BEP are needed for patients with poor prognosis non-seminomas (usually because they have spread to distant areas other than the lungs or because of very high [tumor marker](#) levels). If the patient has medical reasons that make treatment with bleomycin unsafe, then he may be treated with VIP (vinblastine, ifosfamide, and cisplatin).

In cases where very high levels of the tumor marker HCG is found in a man, distant spread of cancer is seen on scans, and there is a high suspicion that he may have a testicular choriocarcinoma, chemo may be started without a biopsy or initial removal of a testicle.

If the cancer has spread to the brain, it will be treated with either surgery (if there are only 1 or 2 tumors in the brain), radiation therapy aimed at the brain, or both. If the tumors in the brain are not bleeding or causing symptoms, some doctors may choose to start the chemo first.

Once chemo is complete, the doctor looks for any cancer that is left. Patients with normal scans and normal tumor marker levels are usually watched carefully after this and may need no further treatment.

Sometimes a few tumors are left. These are most often in the lung or in the retroperitoneal lymph nodes. Further treatment at this point depends on the [type](#) of cancer.

Seminomas: Small tumors that are still there after chemo or don't "light up" on a PET scan, are often watched with CT scans to see if they grow. If they do, further treatment is needed. If the tumors do light up on a PET scan, they could be cancers, and treatment is needed. Treatment may be surgery (such as a retroperitoneal lymph node dissection) or chemo (using a different combination of drugs).

Non-seminomas: Remaining tumors are usually removed surgically, which may result in a cure. If cancer is found in the tumors removed, further chemo (usually for 2 cycles, often with different drugs) might be needed. Another option might be to start by giving further chemo with different drugs. Surgery might be used after this if any tumors remain.

If the cancer is resistant to chemo or has spread to many organs, the usual doses of chemo may not always be enough. Sometimes the doctor might recommend high-dose chemo followed by a [stem cell transplant](#). Patients might also want to consider enrolling in a [clinical trial](#) of newer chemo regimens.

Recurrent germ cell tumors

If the cancer goes away with treatment and then comes back, it is said to have recurred or relapsed. If this happens, it's usually within the first 2 years after treatment. In general, if the cancer recurs, it's probably best to get a second opinion from a center with extensive experience in treating relapsed testicular cancer before starting treatment.

Treatment of recurrent germ cell tumors depends on the initial treatment and where the cancer recurs. Cancer that comes back in the retroperitoneal lymph nodes can be treated by [surgery](#) to remove the nodes (RPLND) if the recurrence is small and if the only surgical treatment given before was orchiectomy. Depending on the results of the surgery, [chemo](#) may be recommended as well.

If it looks as if cancer has recurred in a lot of the retroperitoneal lymph nodes or if the cancer has returned elsewhere, chemo is usually recommended. This may be followed by surgery.

If a man's cancer recurs after chemo or if treatment is no longer working, he will be treated with a different chemo regimen, which typically includes ifosfamide, cisplatin, and either etoposide, paclitaxel, or vinblastine.

The treatment of testicular cancer that has come back after chemo is not always as effective as doctors would like, so some doctors may advise [high-dose chemo](#) followed by a stem cell transplant. This may be a better option for some men with recurrent disease, rather than standard chemo. (See the section "[High-dose chemotherapy and stem cell transplant for testicular cancer](#)" for more information.) [Clinical trials](#) of newer treatments can also be considered.

Sertoli cell and Leydig cell tumors

Typically, [radical inguinal orchiectomy](#) is the treatment for Sertoli cell and Leydig cell tumors. Radiation therapy and chemo are generally not effective in these rare types of testicular tumors. If the doctor suspects the tumor has spread beyond the testicle, the retroperitoneal lymph nodes may be surgically removed.

More treatment information for testicular cancer

For more details on treatment options – including some that may not be addressed in this document – the National Comprehensive Cancer Network (NCCN) and the National

Cancer Institute (NCI) are good sources of information.

The NCCN, made up of experts from many of the nation's leading cancer centers, develops cancer treatment guidelines for doctors to use when treating patients. These are available on the NCCN website (www.nccn.org).

The NCI provides treatment information by phone (1-800-4-CANCER) and on its website (www.cancer.gov). More detailed information intended for use by cancer care professionals is also available on www.cancer.gov.

- [References](#)

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