



[cancer.org](https://www.cancer.org) | 1.800.227.2345

Treating Testicular Cancer

If you've been diagnosed with testicular cancer, your treatment team will discuss your options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

How is testicular cancer treated?

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

- [Surgery for Testicular Cancer](#)
- [Radiation Therapy for Testicular Cancer](#)
- [Chemotherapy for Testicular Cancer](#)
- [High-Dose Chemotherapy and Stem Cell Transplant for Testicular Cancer](#)

Common treatment approaches

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

- [Treatment Options for Testicular Cancer, by Type and Stage](#)

Who treats testicular cancer?

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 like chemotherapy

You might have many other specialists on your treatment team as well, including physician assistants, nurse practitioners, nurses, nutrition specialists, social workers, and other health professionals.

- [Health Professionals Associated With Cancer Care¹](#)

Making treatment decisions

It's important to discuss all treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs. You may feel that you need to make a decision quickly, but it's important to give yourself time to absorb the information you have learned. Ask your cancer care team questions.

If time permits, it is often a good idea to seek a second opinion. A second opinion can give you more information and help you feel more confident about the treatment plan you choose.

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

- [Questions to Ask About Testicular Cancer²](#)
- [Seeking a Second Opinion³](#)

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're 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.

- [Clinical Trials](#)⁴

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 harmful.

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.

- [Complementary and Alternative Medicine](#)⁵

Help getting through cancer treatment

People with cancer need support and information, no matter what stage of illness they may be in. Knowing all of your options and finding the resources you need will help you make informed decisions about your care.

Whether you are thinking about treatment, getting treatment, or not being treated at all, you can still get supportive care to help with pain or other symptoms. Communicating with your cancer care team is important so you understand your diagnosis, what treatment is recommended, and ways to maintain or improve your quality of life.

Different types of programs and support services may be helpful, and can be 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, 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.

- [Palliative Care](#)⁶

- [Find Support Programs and Services in Your Area](#)⁷

Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors and you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- [If Cancer Treatments Stop Working](#)⁸

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 the first treatment for nearly all testicular cancers .

Radical inguinal orchiectomy

Surgery to remove a testicle with cancer is called a radical inguinal orchiectomy. An incision (cut) is made just above the pubic area, and the testicle is gently removed from the scrotum through the opening. The surgeon then removes the entire tumor along with the testicle and spermatic cord. The spermatic cord contains part of the vas deferens, as well as blood and lymph vessels that could act as pathways for testicular cancer to

spread to the rest of the body. To lessen the chance of this, these vessels are tied off early in the operation.

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, lymph nodes around the large blood vessels (the aorta and inferior vena cava) at the back of the abdomen (belly) may be removed at the same time as the orchiectomy or during a second operation. Not all people with testicular cancer need to have lymph nodes removed, so it's important to discuss this (and options to it) with your doctor.

This is a complex and long operation. In most cases, a large incision (cut) is made down the middle of the abdomen to remove the lymph nodes. RPLND 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 and other long, thin surgical tools. A laparoscope is a narrow, lighted tube with a small camera on the end that lets doctors see inside the abdomen. The surgeon's hands are not inside the patient's body during this type of surgery.

In laparoscopic surgery, after being put to sleep, you're turned onto your side. Several small incisions are made on your abdomen. The laparoscope and surgical tools are put in through the incisions to remove the lymph nodes. The incisions are then closed and you're woken up.

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

Laparoscopic surgery seems to be a lot easier for the patient, but doctors aren't sure if it's as safe and effective as the standard "open" surgery in removing all of the lymph nodes that may contain cancer. 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 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 cannot be made 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 about changes in how they look. 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 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 short-term problems after surgery, such as infection or bowel obstruction (blockage). 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 sex. But it might damage some of the nerves that control ejaculation. If these nerves are damaged, when a man ejaculates, the semen doesn't come out through the urethra to exit the body but rather goes backwards into the bladder. This is called **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's very successful when done by experienced doctors. Testicular cancer often affects men at an age when they might 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](#)¹ for more about this.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-men-with-cancer.html

References

American Society of Clinical Oncology. Testicular Cancer: Treatment Options. 09/2016. Accessed at www.cancer.net/cancer-types/testicular-cancer/treatment-options on May 1, 2018.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Testicular Cancer, Version 2.2018 -- February 16, 2018. Accessed at www.nccn.org/professionals/physician_gls/pdf/testicular.pdf on May 1, 2018.

Smith ZL, Werntz RP, Eggener SE. Testicular Cancer: Epidemiology, Diagnosis, and Management. *Med Clin N Am*. 2018;102:251-264.

Last Medical Review: May 17, 2018 Last Revised: May 17, 2018

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 growth. In treating testicular cancer, radiation is used mainly to kill cancer cells that have spread to lymph nodes.

Radiation therapy, in which a machine sends radiation to a specific part of the body is known as **external beam radiation**. The treatment is much like getting an x-ray, but the radiation is stronger. Radiation doesn't hurt. 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 set-up 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 (like the brain).

Possible side effects of radiation therapy

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 beams to hit the tumor. The treatment of testicular cancer often uses lower radiation doses than those needed for other types of cancer.

Common [side effects](#)¹ can include:

- Fatigue
- Nausea
- Diarrhea

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

These side effects get better overtime after radiation is finished. If radiation reaches the healthy testicle it can affect [fertility](#)² (sperm counts), so a special protective shield 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 It can also cause an increased risk of getting a [second cancer](#)³ (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 can be found in [Radiation Therapy](#)^{4, 5}.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/fertility-and-sexual-side-effects/fertility-and-men-with-cancer/how-cancer-treatments-affect-fertility.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/second-cancers-in-adults.html
4. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html
5. [/content/cancer/en/treatment/treatments-and-side-effects/treatment-types/radiation/radiation-therapy-guide.html](http://content.cancer/en/treatment/treatments-and-side-effects/treatment-types/radiation/radiation-therapy-guide.html)

References

American Society of Clinical Oncology. Testicular Cancer: Treatment Options. 09/2016. Accessed at www.cancer.net/cancer-types/testicular-cancer/treatment-options on May 1, 2018.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Testicular Cancer, Version 2.2018 -- February 16, 2018. Accessed at www.nccn.org/professionals/physician_gls/pdf/testicular.pdf on May 1, 2018.

Last Medical Review: May 17, 2018 Last Revised: May 17, 2018

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 (IV). Chemo is systemic therapy. This means that the drug travels throughout the body to reach and destroy the cancer cells. Chemo is used to destroy any cancer cells that break off from the main tumor and travel to lymph nodes or other parts of the body.

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

Chemo drugs used

Chemo is given 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 often works better than using any single drug alone. The chemo regimens most commonly used as the first treatment for testicular cancer are:

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

Some doctors use more intensive plans for patients with high-risk disease, and may suggest a different combination of chemo drugs or even a stem cell transplant.

Possible side effects of chemotherapy

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](#)¹ 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](#)²). This can lead to numbness or tingling in the hands and feet, and sensitivity to cold or heat. In most cases, this gets better 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 overtime after treatment ends, but some can last a long time and may never go away completely. Tell your treatment team about any side effects or changes you notice while getting chemo so 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 keep side 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](#)³ (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've had chemo for testicular cancer seem to have a higher risk of heart problems later in life. Several studies have also suggested that chemo can sometimes cause high blood cholesterol to develop over time, which may later require treatment.

For more information about chemotherapy and its side effects, see [Chemotherapy](#).⁴

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/peripheral-neuropathy.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/second-cancers-in-adults.html
4. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html

References

American Society of Clinical Oncology. Testicular Cancer: Treatment Options. 09/2016. Accessed at www.cancer.net/cancer-types/testicular-cancer/treatment-options on May 1, 2018.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology (NCCN Guidelines®), Testicular Cancer, Version 2.2018 -- February 16, 2018. Accessed at www.nccn.org/professionals/physician_gls/pdf/testicular.pdf on May 1, 2018.

Smith ZL, Werntz RP, Eggener SE. Testicular Cancer: Epidemiology, Diagnosis, and Management. *Med Clin N Am*. 2018;102:251-264.

Last Medical Review: May 17, 2018 Last Revised: May 17, 2018

High-Dose Chemotherapy and Stem Cell Transplant for Testicular Cancer

In general, testicular cancers respond well to chemotherapy (chemo), but not all of them are cured. Even though higher doses of chemo might work better, they're not given because they could severely damage the bone marrow, which is where new blood cells form. This could lead to life-threatening [infections](#)¹, bleeding, and other problems because of low blood cell counts.

But a stem cell transplant allows doctors to use higher doses of chemo. Stem cells used to be taken from the bone marrow, but this is done less often now. In the weeks before treatment, a special machine collects blood-forming stem cells from the patient's bloodstream. They are frozen and stored.

The patient then gets high-doses of chemo. After 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.

Stem cell transplant is most often used to treat testicular cancers that have [come back](#)² after treatment with chemo. Current studies are looking at whether a stem cell transplant may be valuable as part of the first treatment for some patients with advanced germ cell cancers.

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 sometimes require a long hospital stay and can cost a lot. Even if your insurance covers the transplant, your co-pays or other costs could add up to a lot of money. Before deciding on a transplant it's important to find out what your insurer will cover to get an idea of what you might have to pay.

For more information, see [Stem Cell Transplant for Cancer](#)³.

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/infections.html
2. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html
3. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/stem-cell-transplant.html

References

Allen JC, Kirschner A, Scarpato KR, Morgans AK. Current Management of Refractory Germ Cell Tumors and Future Directions. *Curr Oncol Rep*. 2017;19(2):8.

Last Medical Review: May 17, 2018 Last Revised: May 17, 2018

Treatment Options for Testicular Cancer, by Type and Stage

Treatment for testicular cancer is based mainly on the [type](#)¹ and [stage](#)² of the cancer. Among the different stages of germ cell tumors, pure seminomas tend to be treated one way, and non-seminomas and mixed germ cell tumors are treated another way.

Carcinoma in situ (stage 0) testicular tumors

In this stage, the cancer has not spread outside the testicle, and tumor marker levels (like HCG and AFP) are not elevated.

If CIS is diagnosed after surgery removes the testicle, no other treatment is needed. If CIS is found after a testicular biopsy (such as for fertility problems), the doctor may recommend that it not be treated right away. Instead, it may be watched closely with repeat physical exams, [ultrasound](#)³ 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's typically [surgery](#) (to remove the testicle) or [radiation therapy](#) to the testicle.

If tumor marker levels are high, the cancer isn't really stage 0 – even when only CIS is found in the testicle and there are no signs of cancer spread. In this case, the treatment used is for stage IS cancers. (See below.)

Seminomas

Stage I seminomas

These cancers can be cured in nearly all patients. Surgery is done first to remove the testicle and spermatic cord (called a [radical inguinal orchiectomy](#)). After surgery, there are often several treatment choices:

Careful observation (surveillance): If the cancer has not spread beyond the testicle, the plan most experts prefer is close monitoring for up to 10 years. This means getting physical exams and blood tests every 3 to 6 months for the first year, and less often after that. [Imaging tests](#)⁴ (CT scans and sometimes chest x-rays) are done every 3 months for 6 months, and then once or twice a year. If these tests do not find any signs that cancer has spread beyond the testicle, no other treatment is needed. If the cancer has spread, treatments like [radiation](#) or [chemo](#) may be used. The cancer will come back in about 15% to 20% of patients, most often as spread to lymph nodes, but if it does, radiation or chemo can still usually cure the cancer.

Radiation therapy: Radiation aimed at para-aortic lymph nodes is another option. These nodes are in the back of the abdomen (belly), around the large blood vessel called the aorta. Because seminoma cells are very sensitive to radiation, low doses can be used. About 10 to 15 treatments are given over 2 to 3 weeks.

Chemotherapy: An option that works as well as radiation is 1 or 2 cycles of chemo with the drug carboplatin after surgery. Many experts prefer chemo over radiation because it seems to be easier to tolerate.

Stage IS seminomas

In this stage, one or more tumor marker levels is still high after the testicle containing the seminoma has been removed. This is very rare, and it can be treated with chemo.

Stage IIA seminomas

Radiation: After surgery to remove the testicle (radical inguinal orchiectomy), one treatment option is radiation to the retroperitoneal lymph nodes. These are the lymph

nodes at the back of the abdomen (belly). Usually stage II seminomas are given higher doses of radiation than stage I seminomas.

Chemotherapy: Another option is chemo, with either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin). The doctor will then watch closely (every 3 to 6 months) for any signs that the cancer has [come back](#)⁵.

Stage IIB seminomas

These seminomas have spread to cause larger lymph nodes or have spread to many different lymph nodes.

Chemotherapy: This is typically the preferred treatment. It is usually either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin).

Radiation: This may be an option instead of chemo if the lymph nodes aren't enlarged from cancer spread.

Stage IIC seminomas

Treatment is typically chemotherapy with 4 cycles of EP (etoposide and cisplatin) or 3 or 4 cycles of BEP (bleomycin, etoposide, and cisplatin). Another option might be VIP (etoposide, ifosfamide, and cisplatin) for 4 cycles. Radiation therapy is generally not used for stage IIC seminoma.

Non-seminomas

Stage I non-seminomas

Nearly all of these cancers can be cured, but the treatment is different from that of seminomas. As with seminomas, the initial treatment is [surgery](#) to remove the testicle and tumor (called radical inguinal orchiectomy). The other treatment choices will depend on the stage.

Choices for stage IA (T1)

- **Careful observation (surveillance):** Surveillance is preferred by most experts, but it requires a lot of doctor visits and tests. A typical schedule might include visits every 2 months for the first year, with CT scans every 4 to 6 months; then every 3 months for the second year, with scans every 6 to 12 months. As time goes on and

you have no problems, the time between visits and tests gets longer. If the cancer does come back (relapse), it's 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 much the same because the relapses are usually found early.

- **Retroperitoneal lymph node dissection (RPLND):** Having the lymph nodes at the back of the abdomen (belly) removed has the advantage of a high initial 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.
- **Chemotherapy:** Instead of surgery, the doctor may suggest 1 cycle of the BEP regimen (bleomycin, etoposide, and cisplatin). This helps reduce the risk of relapse.

Choices for stage IB (T2, T3, or T4)

- **Retroperitoneal lymph node dissection (RPLND):** This is surgery to remove the lymph nodes at the back of the abdomen (belly). If cancer is found in the lymph nodes, chemo is often recommended depending on the number of nodes with cancer in them. (See below.)
- **Chemotherapy:** Instead of surgery, the doctor may recommend 1 cycle of the BEP regimen (bleomycin, etoposide, and cisplatin). This can help reduce the risk that the cancer will come back. If cancer was found in the lymph nodes after surgery, 2 to 4 cycles of BEP or EP (etoposide and cisplatin) may be given, depending on how many nodes had cancer in them. This has a high cure rate, but it can have side effects (which are mostly short-term).
- **Careful observation (surveillance):** This requires frequent doctor visits and tests for several years. This may be an option for some T2 tumors that haven't reached blood vessels.

Stage IS non-seminoma

If your tumor marker levels (like AFP or HCG) are still high even after the cancer has been removed, but the CT scan doesn't show a tumor, chemo is typically recommended. This may be either 3 cycles of BEP (bleomycin, etoposide, and cisplatin) or 4 cycles of EP (etoposide and cisplatin).

Stage II non-seminomas

Surgery is done first to remove the testicle and spermatic cord (called a [radical inguinal orchiectomy](#)). After surgery, treatment choices depend on the details of the cancer.

Stage IIA non-seminomas

Treatment depends on [tumor marker](#)⁶ levels after surgery and the extent of spread to the retroperitoneal lymph nodes. These are the lymph nodes at the back of the abdomen (belly).

If tumor marker levels are normal, there are 2 main options:

- **Retroperitoneal lymph node dissection (RPLND):** This is surgery to remove the lymph nodes at the back of the abdomen. If the lymph nodes that were removed contain cancer, chemo (typically for 2 cycles) might be given. If there's no cancer in the nodes, the doctor will watch closely for signs that the cancer has come back.
- **Chemotherapy:** This would include either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin). Surgery might be done after this if there are signs there might still be cancer present.

If tumor markers are still higher than normal after the initial surgery, treatment is typically with chemo as listed above (EP or BEP)..

Stage IIB non-seminomas

Treatment depends on [tumor marker](#)⁷ levels after surgery and the extent of spread to the lymph nodes at the back of the abdomen (belly). These are called the retroperitoneal lymph nodes.

If tumor marker levels are normal, the options are:

- **Chemotherapy:** Either 4 cycles of EP (etoposide and cisplatin) or 3 cycles of BEP (bleomycin, etoposide, and cisplatin) may be used. Surgery may then be done to take out all enlarged nodes if the tumor marker return to normal.
- **Retroperitoneal lymph node dissection (RPLND):** In few select cases, where the cancer has spread only to these lymph nodes, surgery may be done to take them out. Chemo may then be given after surgery.

If tumor markers are still higher than normal after the initial surgery, treatment is typically with chemo as listed above (EP or BEP).

Stage III seminomas and non-seminomas

Even though stage III cancers 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](#). Depending on the risk group the cancer falls into, this might be with:

- EP (etoposide and cisplatin) for 4 cycles
- BEP (bleomycin, etoposide, and cisplatin) for 3 or 4 cycles
- VIP (etoposide, ifosfamide, and cisplatin) for 4 cycles

If there's a high suspicion that the cancer might be a testicular choriocarcinoma, chemo may be started without a biopsy or surgery to remove the testicle.

If the cancer has spread to the brain, surgery (if there are only 1 or 2 tumors in the brain), radiation therapy aimed at the brain, or both may also be used. 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's left. If scans and tumor marker levels are normal, no further treatment may be needed.

Sometimes a few tumors might be left after treatment. These are most often in the lung or in the retroperitoneal lymph nodes. Further treatment at this point depends on the [type](#)⁸ of cancer:

- A **stage III seminoma** that's still there after chemo or doesn't "light up" on a PET scan, will be watched with CT scans to see if it grows. If it does, more treatment is needed. If the tumors do light up on a PET scan, they could be cancer, and treatment is needed. Treatment may be surgery (such as a retroperitoneal lymph node dissection) or chemo (using a different combination of drugs).
- A **stage III non-seminoma** tumor that remains after treatment is usually removed surgically, which may result in a cure. If cancer is found in the tumors removed, you might need more chemo, maybe with different drugs. After this, surgery might be done to take out any tumors that remain.

If the cancer is resistant to chemo or has spread to many organs, the usual doses of chemo may not always be enough. The doctor might recommend high-dose chemo followed by a stem cell transplant. Enrolling in a [clinical trial](#)⁹ of a newer chemo regimen might be another good option.

Recurrent testicular cancer

If the cancer goes away with treatment and then comes back, it's 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](#)¹⁰, it's probably best to get a [second opinion](#)¹¹ 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 different chemo, 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. [Clinical trials](#)¹² of newer treatments may also be good options.

Sertoli cell and Leydig cell tumors

Typically, [radical inguinal orchiectomy](#) is the treatment for Sertoli cell and Leydig cell tumors. Radiation therapy and chemo generally don't work for 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.

Hyperlinks

1. www.cancer.org/cancer/testicular-cancer/about/what-is-testicular-cancer.html
2. www.cancer.org/cancer/testicular-cancer/detection-diagnosis-staging/staging.html
3. www.cancer.org/treatment/understanding-your-diagnosis/tests/ultrasound-for-cancer.html
4. www.cancer.org/treatment/understanding-your-diagnosis/tests/imaging-radiology-tests-for-cancer.html
5. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html
6. www.cancer.org/cancer/testicular-cancer/detection-diagnosis-staging/how-diagnosed.html
7. www.cancer.org/cancer/testicular-cancer/detection-diagnosis-staging/how-diagnosed.html
8. www.cancer.org/cancer/testicular-cancer/about/what-is-testicular-cancer.html
9. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
10. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html
11. www.cancer.org/treatment/finding-and-paying-for-treatment/choosing-your-treatment-team/seeking-a-second-opinion.html
12. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html

References

See all references for Testicular Cancer (www.cancer.org/cancer/testicular-cancer/references.html)

Allen JC, Kirschner A, Scarpato KR, Morgans AK. Current management of refractory germ cell tumors and future directions. *Curr Oncol Rep*. 2017;19(2):8.

Chortis V, Johal NJ, Bancos I, et al. Mitotane treatment in patients with metastatic testicular Leydig cell tumor associated with severe androgen excess. *Eur J Endocrinol*. 2018;178(3):K21-K27.

Hamilton RJ. Active Surveillance for Stage I Testicular Cancer: A four-decade-old experiment proven correct. *Eur Urol*. 2018 Mar 15.

National Comprehensive Cancer Network, Clinical Practice Guidelines in Oncology

(NCCN Guidelines®), Testicular Cancer, Version 1.2019. Accessed at www.nccn.org/professionals/physician_gls/pdf/testicular.pdf on September 4, 2019.

Smith ZL, Werntz RP, Eggener SE. Testicular Cancer: Epidemiology, Diagnosis, and Management. *Med Clin N Am*. 2018;102:251-264.

Last Medical Review: May 17, 2018 Last Revised: September 4, 2019

Written by

The American Cancer Society medical and editorial content team
(www.cancer.org/cancer/acs-medical-content-and-news-staff.html)

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.

American Cancer Society medical information is copyrighted material. For reprint requests, please see our Content Usage Policy (www.cancer.org/about-us/policies/content-usage.html).

cancer.org | 1.800.227.2345