



Treating Eye Cancer

How is eye cancer treated?

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

- [Surgery for Eye Cancer](#)
- [Radiation Therapy for Eye Cancer](#)
- [Laser Therapy for Eye Cancer](#)
- [Chemotherapy for Eye Cancer](#)
- [Targeted Drugs and Immunotherapy for Eye Cancer](#)

Common treatment approaches

Sometimes, more than one of type of treatment is used. In choosing the best treatment plan for you, some important factors to consider include the location and stage of the cancer, your overall health, the chances of curing the disease, and the possible effect of the treatment on vision.

- [Treating Eye Melanoma by Location and Size](#)

Who treats eye cancer?

Based on your treatment options, you may have different types of doctors on your treatment team. These doctors may include:

- An **ophthalmologist**: a doctor who specializes in treating diseases of the eye
- An **ocular oncologist**: a doctor (usually an ophthalmologist) who specializes in treating cancers of the eye

- A **radiation oncologist**: a doctor who treats cancer with radiation therapy
- A **medical oncologist**: a doctor who treats cancer with medicines such as chemotherapy and targeted therapy

Many other specialists may be involved in your care as well, including nurse practitioners, nurses, psychologists, social workers, rehabilitation specialists, and other health professionals.

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

Making treatment decisions

It is important to discuss all your treatment options, including their goals and possible side effects, with your doctors to help make the best decision for you. In choosing a treatment plan, consider your health and the type and stage of the eye cancer. If there's anything you don't understand, ask to have it explained.

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.

- [Questions to Ask About Eye 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 Trials⁴](#)

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 Working⁸](#)

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 Eye Cancer

Surgery is used to treat some eye melanomas, but it is used much less often now because the use of [radiation therapy](#) has become more common.

Types of surgery for eye cancer

The type of surgery depends on the location and size of the tumor, how far the tumor has spread, and a person's overall health. All of these operations are done while you are under general anesthesia (in a deep sleep). Most people will stay in the hospital 1 or 2 days afterward. The operations used to treat people with eye melanoma include:

- **Iridectomy:** Removal of part of the iris (the colored part of the eye). This might be an option for very small iris melanomas.
- **Iridotrabeculectomy:** Removal of part of the iris, plus a small piece of the outer part of the eyeball. This might also be an option for small iris melanomas.

- **Iridocyclectomy:** Removal of a portion of the iris and the ciliary body. This operation is also used for small iris melanomas.
- **Transscleral resection:** Surgically removing just a melanoma of the ciliary body or choroid. This type of surgery should only be done by doctors in cancer centers with a lot of experience in treating eye melanomas, because it is hard to remove the tumor without damaging the rest of the eye. This could lead to severe vision problems.
- **Enucleation:** Removal of the entire eyeball. This is used for larger melanomas, but it may also be done for some smaller melanomas if vision in the eye has already been lost or if other treatment options would destroy useful vision in the eye, anyway. During the same operation, an orbital implant is usually put in to take the place of the eyeball. The implant is made out of silicone or hydroxyapatite (a substance similar to bone). It is attached to the muscles that moved the eye, so it should move the same way as the original eye would have. Within a few weeks after surgery, you visit an ophthalmologist (a specialist in eye prostheses) to be fitted with an artificial eye, a thin shell that fits over the orbital implant and under the eyelids. The artificial eye will match the size and color of the remaining eye. Once it is in place, it will be hard to tell it apart from the real eye.
- **Orbital exenteration:** Removal of the eyeball and some surrounding structures such as parts of the eyelid and muscles, nerves, and other tissues inside the eye socket. This surgery is not common, but it might sometimes be used for melanomas that have grown outside the eyeball into nearby structures. As with enucleation, an artificial eye might be placed in the socket after surgery.

Possible risks and side effects of surgery

All surgery carries some risk, including the possibility of pain, bleeding, blood clots, infections, and complications from anesthesia.

Surgery on the eye can lead to the loss of some or all of the vision in that eye. Enucleation and orbital exenteration result in complete and immediate vision loss in the eye. Other surgeries can also cause problems leading to a loss of vision, which can occur later on. In some cases, vision may have already been damaged or lost because of the cancer.

Removal of the eyeball (enucleation) obviously can affect a person's appearance. As noted above, an artificial eye can be put in place to help minimize this.

More information about Surgery

For more general information about surgery as a treatment for cancer, see [Cancer Surgery](#)¹.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)².

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/surgery.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

References

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Radiation Therapy for Eye Cancer

Radiation therapy uses high-energy x-rays to kill cancer cells. It is a common treatment for eye melanoma. Radiation therapy can often save some vision in the eye. Sometimes vision might be lost if the radiation damages other parts of the eye. An advantage over [surgery](#) is that the eye structure is preserved, which can result in a better appearance after treatment.

Different types of radiation therapy can be used to treat eye cancers.

Brachytherapy (Plaque therapy)

In this form of radiation therapy, the doctor places small seeds of radioactive material directly into or very close to the cancer. The radiation from the seeds travels a very short distance, so most of it will be focused only on the tumor. This has become the most common radiation treatment for most eye melanomas. Studies have shown that in many cases it is as effective as surgery to remove the eye (enucleation).

An operation is needed to put the plaque (a small round piece of metal that holds the radioactive seeds) in place. This surgery usually takes 1 or 2 hours and can be done with local anesthetic (numbing medicine) and sedation. The plaque is usually kept there for 4 to 7 days, depending on the size of the tumor and the strength of the radiation source. You will probably remain in the hospital during this time. Another surgery to remove the plaque is then done. It usually takes less than an hour, and you will probably be able to go home the same day. The full effect of the radiation on the tumor is not seen for 3 to 6 months.

This treatment cures about 9 out of 10 small to medium size tumors and can preserve vision in some patients, depending on what part of the eye the melanoma is in. The outlook for vision is not as good if the tumor is very close to the optic nerve, which carries visual images from the eye to the brain.

External beam radiation therapy

In this approach, radiation from a source outside the body is focused on the cancer. For eye melanomas, the use of this type of radiation therapy is generally limited to newer methods that focus narrow beams of radiation on the tumor.

Proton beam radiation therapy: Instead of using x-rays as in standard radiation therapy, this approach aims proton beams toward the cancer. Unlike x-rays, which

release energy both before and after they hit their target, protons cause little damage to tissues they pass through and release their energy only after traveling a certain distance. This means that proton beam radiation may be able to deliver more radiation to the tumor but do less damage to nearby normal tissues. This type of radiation treatment is used more often for larger tumors and for tumors that are closer to the optic nerve.

Getting treatment is much like getting an x-ray, but the dose of radiation is much higher. In most cases, the total dose of radiation is divided into daily fractions (usually given Monday thru Friday) over several weeks. The treatment is typically not painful.

The specialized machines needed to make protons are only found in certain centers in the United States at this time.

Stereotactic radiosurgery: Despite the name, there is no actual surgery involved in this treatment. The term "surgery" is used to describe the accurate nature of the radiation beams. This type of treatment delivers a large, precise radiation dose to the tumor area in a single session. It is not used as often as brachytherapy or proton beam therapy as the initial treatment for eye melanomas. Different machines can be used to deliver radiation in one of two ways:

- A *Gamma Knife* stays in one place and focuses radiation beams from hundreds of different angles at the tumor all at once for a short period of time in one treatment session.
- Several machines, such as *CyberKnife®* or *Clinac®* use a computer to control a radiation machine that moves in a circular motion (180 degrees) over the tumor to deliver individual radiation beams at separate times from many different angles. These treatments are done over multiple days.

Possible side effects of radiation therapy

The main concern with radiation therapy is damage to parts of the eye, leading to problems such as blurry vision, dry eye, cataracts, retinal detachment, glaucoma (increased pressure inside the eye), loss of eye lashes, problems with tear ducts, or bleeding into the eye. Some of these treatments can result in partial or complete loss of vision or other problems, which might not happen right away and may worsen with time. The risk depends on the size and location of the tumor.

Because the radiation is focused only on the affected eye, it is not likely to affect vision in the other eye or to cause other side effects sometimes linked with radiation therapy,

such as hair loss or nausea.

More information about radiation therapy

To learn more about how radiation is used to treat cancer, see [Radiation Therapy](#)¹.

To learn about some of the side effects listed here and how to manage them, see [Managing Cancer-related Side Effects](#)².

Hyperlinks

1. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/radiation.html
2. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

References

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Laser Therapy for Eye Cancer

Laser therapy is sometimes used to treat eye melanoma, especially when surgery or radiation are not possible.

Transpupillary thermotherapy (TTT)

This is the most common type of laser treatment for eye melanoma. It uses infrared light to heat and kill the tumor.

TTT alone is mainly used to treat very small eye melanomas because of side effects like bleeding, retinal detachment and blockage of blood vessels in the eye, as well as a high risk of [recurrence](#)¹ (cancer coming back). More recently, TTT may be used as an adjuvant (additional) treatment after brachytherapy ([plaque radiotherapy](#)) to lower the risk of recurrence.

Laser photocoagulation

This treatment uses highly focused, high-energy light beams to burn tissue. It is rarely used now to treat eye melanoma because of side effects and a high risk of recurrence, but it can be effective for very small melanomas.

Possible side effects of laser therapy

As with radiation therapy, the main concern with laser therapy is damage to parts of the eye that could result in loss of vision. The risk depends on the size and location of the tumor.

Hyperlinks

1. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-

[recurrence.html](#)

References

Finger PT. Chapter 116: Intraocular melanoma. In: DeVita VT, Lawrence TS, Rosenberg SA, eds. *DeVita, Hellman, and Rosenberg's Cancer: Principles and Practice of Oncology*. 10th ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2015.

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Chemotherapy for Eye Cancer

Chemotherapy (chemo) is the use of drugs to treat cancer. The drugs can be injected into a certain part of the body (such as the eye), or they can be injected into a vein (with an IV) or taken by mouth (as a pill) to reach most of the body, making this treatment very useful for cancers that have spread.

Melanoma usually does not respond well to standard chemo drugs. Chemo is used only when the cancer has become widespread. If chemo is used, the treatment is generally

the same as for melanoma of the skin. For more information, see [Melanoma Skin Cancer](#)¹.

Newer [targeted drugs](#), which work in different ways from chemo drugs, have shown some promise in treating skin melanomas in recent years, and are now being studied for use against eye melanomas.

Possible side effects of chemo

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 likely to be affected by chemo, which can lead to side effects.

The side effects of chemo depend on the type and dose of drugs given, how they are given, and the length of time they are taken. The side effects of systemic chemo can include:

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

These side effects usually go away after treatment is finished. There are often ways to lessen these side effects. For example, there are drugs to help prevent or reduce nausea and vomiting. Some drugs may also have specific side effects not listed above. Be sure to ask your doctor or nurse about medicines to help reduce side effects, and let him or her know when you do have side effects so they can be managed.

More information about chemotherapy

For more general information about how chemotherapy is used to treat cancer, see [Chemotherapy](#)².

To learn about some of the side effects listed here and how to manage them, see

[Managing Cancer-related Side Effects](#)³.

Hyperlinks

1. www.cancer.org/cancer/melanoma-skin-cancer.html
2. www.cancer.org/treatment/treatments-and-side-effects/treatment-types/chemotherapy.html
3. www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects.html

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Targeted Drugs and Immunotherapy for Eye Cancer

Melanoma that has spread outside of the eye can be hard to treat, and unfortunately

standard [chemotherapy](#) drugs often are not very helpful.

In recent years, researchers have developed newer types of drugs to treat advanced melanomas. Several of these drugs are now used to treat melanomas of the skin, but it's not yet clear if they will be as helpful in treating uveal (eye) melanomas. These newer drugs generally fall into 2 groups: immunotherapy and targeted therapy.

Immunotherapy drugs

These drugs work to stimulate the body's own immune system to recognize and attack cancer cells more effectively. They are very helpful in treating skin melanoma and a few initial studies with the drugs pembrolizumab (Keytruda[®]) and ipilimumab (Yervoy[®]) have shown benefit in some people with uveal eye melanoma. (See [Immunotherapy for Melanoma Skin Cancer](#)¹.) These and some other immunotherapy drugs are being studied in people with eye melanomas.

Targeted drugs

Some newer drugs target parts of melanoma cells that make them different from normal cells. For example, about half of all skin melanomas have a change (mutation) in a gene called *BRAF*, and several drugs that target this gene change are now available to treat these cancers. (See [Targeted Therapy for Melanoma Skin Cancer](#)².) This mutation is very uncommon in uveal melanomas, but in people who have it, these drugs might be helpful. These drugs are also being tested in people with conjunctival melanoma. Drugs targeting other gene changes are also being studied.

For more information on some of these newer drugs, see [What's New in Eye Cancer Research?](#)³

Hyperlinks

1. www.cancer.org/cancer/melanoma-skin-cancer/treating/immunotherapy.html
2. www.cancer.org/cancer/melanoma-skin-cancer/treating/targeted-therapy.html
3. www.cancer.org/cancer/eye-cancer/about/new-research.html

References

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Treating Eye Melanoma by Location and Size

The main factors in deciding on treatment for eye melanoma include the location and size of the cancer, as well as the likelihood of saving vision in the eye. There is not much advantage in saving an eye if a small melanoma in a crucial place has already destroyed vision in the eye. On the other hand, doctors will not necessarily want to remove an eye that functions normally even if the tumor is large. Because of this, your treatment plan will depend on your situation, and could be different than what's described here.

It's important to keep in mind that outcomes and quality of life both tend to be similar over time for people who have had an eye removed ([enucleation](#)) and those who have had [radiation therapy](#). Radiation therapy is more likely to preserve some vision in the eye, especially during the first few years after treatment, but studies have found that people who have had radiation therapy are also more likely to be more anxious about the chance of the cancer coming back. Be sure to talk with your doctor before treatment about what is most important to you.

Choroidal melanomas

Treating melanomas that start in the choroid depends on the size of the tumor and how well the eye functions. The smaller the tumor, the less likely surgery will be needed, unless the eye is badly damaged or vision is lost.

Small melanomas: There are often several options for treating small choroidal melanomas. Both you and your doctor should decide which option is best for you:

- Careful observation (also known as *watchful waiting*). Not all of these melanomas grow quickly and need to be treated right away. And sometimes, it's very hard for the doctor to even be sure if a spot on the choroid is truly a melanoma. If the tumor is very small, watching it closely (sometimes every 3-4 months) and treating it only if it starts to grow is often a reasonable option.
- [Radiation therapy](#), such as brachytherapy (plaque therapy), proton beam therapy, or stereotactic radiation therapy
- [Laser therapy](#), including transpupillary thermotherapy (TTT), most often along with brachytherapy
- [Surgery](#), which may require removing only the tumor or might need to be as extensive as enucleation (removing the entire eye). This might be necessary if the eye is severely damaged by the tumor.

Medium-sized melanomas: These tumors can usually be treated by many of the same approaches used for small melanomas:

- [Radiation therapy](#), such as brachytherapy (plaque therapy), proton beam therapy, or stereotactic radiation therapy
- [Laser therapy](#), including transpupillary thermotherapy (TTT) or laser coagulation, along with brachytherapy
- [Surgery](#), which may require removing only the tumor or might need to be as extensive as enucleation (removing the entire eye). This might be necessary if the eye is severely damaged by the tumor.

Once again, the choice of treatment is a decision that should be made by both you and your doctor. Radiation and surgery appear to be about equally effective. Radiation offers the best chance of preserving vision in the eye, but some people who have radiation may eventually need surgery, too.

Large melanomas: The standard treatment for these cancers is usually [radiation](#). Proton beam therapy and stereotactic radiation therapy are usually used first. Additional treatment with surgery or lasers may also be considered if the radiation does not work

completely.

Surgery with enucleation (removal of the entire eye) is the preferred surgery for large melanomas when radiation is not an option. Enucleation might also be considered for cancers that take up more than half of the eye orbit, that cause significant pain, or that have caused loss of vision in the eye. In rare cases where the cancer has grown extensively outside of the eye, the doctor might recommend removing other structures in the eye socket, such as muscles or part of the eyelid, as well.

Iris melanomas

Melanomas of the iris (the colored part of the eye) are usually small, slow-growing tumors. One option for people with an early stage iris melanoma is to watch it closely to see if it grows. A series of special photographs are taken to help monitor the tumor. If it begins to grow, treatment may be **surgery** or **radiation therapy** (in certain situations).

If surgery is recommended, the amount of eye tissue to be removed depends on the extent of the cancer. Types of surgery for early iris melanomas include:

- Iridectomy (removal of part of the iris)
- Iridotrabeculectomy (removal of part of the iris, plus a small piece of the outer part of the eyeball)
- Iridocyclectomy (removal of a portion of the iris and the ciliary body)
- Enucleation (removal of the eyeball)

Ciliary body melanomas

These rare cancers can be treated with either **surgical removal** of the tumor, if it is small enough, or **radiation therapy**. In more advanced cases or if there is serious eye damage, enucleation (removal of the eyeball) may be needed.

Conjunctival melanomas

Although rare, melanomas of the conjunctiva tend to be more aggressive than most uveal melanomas. They are more likely to grow into local structures and spread to distant organs like the liver and lungs where the situation can become life-threatening. Treatment is focused on completely removing the tumor with **surgery** and giving adjuvant treatment with **radiation** or topical chemotherapy (with interferon or Mitomycin-C) to reduce the likelihood of metastases (tumor spread).

Because of the aggressive nature of this tumor, a biopsy of the tumor may be done initially to look for certain traits that can predict the likelihood the cancer will spread or [recur](#)¹. If the chances are on the high side, more frequent follow-up exams after treatment may be recommended.

Advanced and recurrent melanomas

Most uveal melanomas are still only within the eye when they are first diagnosed. It is rare for the cancer to have already spread outside of the eye. But unfortunately, in about half of all patients the melanoma will come back at some point after treatment.

Cancer that comes back after treatment is called *recurrent*. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the lungs or liver). Treating melanomas that come back depends on many factors, including where the cancer recurs and what type of treatment was used initially.

Cancers that recur within the eye (intraocular recurrence) are usually treated by removing the eye ([enucleation](#)).

When melanoma recurs outside the eye (called *extraocular recurrence*), it most often comes back in the liver. It might also come back in other areas, like the lungs or bones. These cancers are often hard to treat.

If the cancer is only in the liver, different types of treatments might help keep the cancer under control or help relieve symptoms. These include surgery (if there is only one or a few tumors), radiation therapy, destroying (ablating) tumors by heating or freezing them, or injecting drugs or other substances into the liver to try to kill the tumors or cut off their blood supply. Tumor ablation and radiation might also be used for tumors that have spread to other parts of the body, such as the lungs.

Treatment such as [chemotherapy](#) has not yet been proven to be very helpful in treating eye melanomas that have spread. However, [Immunotherapy and targeted therapy](#) are showing promise and might help keep the cancer in check for a time in some people. Because current treatments for advanced eye melanomas are limited, [clinical trials](#)² of newer treatments might be a good option. (See [What's New In Eye Cancer Research?](#)³ for some examples of newer treatments now being studied.)

Hyperlinks

1. www.cancer.org/treatment/survivorship-during-and-after-treatment/understanding-recurrence.html

2. www.cancer.org/treatment/treatments-and-side-effects/clinical-trials.html
3. www.cancer.org/cancer/eye-cancer/about/new-research.html

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