



Treating Melanoma Skin Cancer

Once melanoma has been [diagnosed](#) and [staged](#), your cancer care team will discuss your treatment options with you. It's important that you think carefully about your choices. You will want to weigh the benefits of each treatment option against its possible risks and side effects.

Which treatments are used for melanoma?

Based on the stage of the cancer and other factors, your treatment options might include:

- [Surgery](#)
- [Immunotherapy](#)
- [Targeted therapy](#)
- [Chemotherapy](#)
- [Radiation therapy](#)

Early-stage melanomas can often be treated with surgery alone, but more advanced cancers often require other treatments. Sometimes more than one type of treatment is used. To learn about the most common approaches to treating these cancers, see [Treatment of Melanoma Skin Cancer by Stage](#).

Which doctors treat melanoma?

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

- A **dermatologist**: a doctor who treats diseases of the skin
- A **surgical oncologist** (or oncologic surgeon): a doctor who uses surgery to treat cancer

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

Many other specialists might be part of your treatment team as well, including physician assistants (PAs), nurse practitioners (NPs), nurses, nutrition specialists, social workers, and other health professionals. To learn more about who may be on your cancer care team, see [Health Professionals Associated With Cancer Care](#).

Making treatment decisions

It's important to discuss all of your treatment options as well as their possible side effects with your treatment team to help make the decision that best fits your needs. Some important things to consider include:

- Your age and overall health
- The [stage](#) (extent) of your cancer
- The likelihood that treatment will cure your cancer (or help in some other way)
- Your feelings about the possible side effects from treatment

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 just learned. It's also very important to ask questions if there is anything you're not sure about. See [What Should You Ask Your Health Care Team About Melanoma Skin Cancer?](#) for some questions to ask.

Getting a second opinion

If time allows, you may also want to get a second opinion from another doctor or medical team. This can give you more information and help you feel more certain about the treatment plan you choose. If you aren't sure where to go for a [second opinion](#), ask your doctor for help.

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. Sometimes 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 [Clinical Trials](#) 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 [Complementary and Alternative Medicine](#) to learn more.

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. Learn more in [If Cancer Treatments Stop Working](#).

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 this through with your doctors before you make this 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](#).

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 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, 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 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.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

Last Medical Review: May 19, 2016 Last Revised: May 20, 2016

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

Surgery for Melanoma Skin Cancer

Surgery is the main treatment option for most melanomas, and usually cures early-stage melanomas.

Wide excision

When melanoma is diagnosed by skin biopsy, more surgery will probably be needed to help make sure the cancer has been removed (excised) completely. This fairly minor operation will cure most thin melanomas.

Local anesthesia is injected into the area to numb it before the excision. The site of the tumor is then cut out, along with a small amount of normal skin at the edges. The normal, healthy skin around the edges of the cancer is called the *margin*. The wound is carefully stitched back together afterward. This will leave a scar.

The removed sample is then viewed with a microscope to make sure that no cancer cells were left behind at the edges of the skin that was removed.

Wide excision differs from an excisional biopsy. The margins are wider because the diagnosis is already known. The recommended margins vary depending on the thickness of the tumor. Thicker tumors need larger margins (both at the edges and in the depth of the excision).

The margins can also vary based on where the melanoma is on the body and other factors. For example, if the melanoma is on the face, the margins may be smaller to avoid large scars or other problems. Smaller margins might increase the risk of the cancer coming back, so be sure to discuss the options with your doctor.

Mohs surgery

In some situations, Mohs surgery might be an option. This type of surgery is used more often for some other types of skin cancer, but not all doctors agree on using it for melanoma.

Mohs surgery is done by a specially trained dermatologist or surgeon. In this procedure, the skin (including the melanoma) is removed in very thin layers. Each layer is then looked at with a microscope. If cancer cells are seen, the surgeon removes another layer of skin. The operation continues until a layer shows no signs of cancer. In theory, this allows the surgeon to remove the cancer while saving as much of the surrounding normal skin as possible.

Amputation

In uncommon situations where the melanoma is on a finger or toe and has grown deeply, part or all of that digit might need to be amputated.

Lymph node dissection

In this operation, the surgeon removes all of the [lymph nodes](#) in the region near the primary melanoma. For example, if the melanoma is on a leg, the surgeon would remove the nodes in the groin region on that side of the body, which is where melanoma cells would most likely travel to first.

Once the diagnosis of melanoma is made from the skin biopsy, the doctor will examine the lymph nodes near the melanoma. Depending on the thickness and location of the

melanoma, this may be done by physical exam, or by [imaging tests](#) (such as CT or PET scans) to look at nodes that are not near the body surface.

If the nearby lymph nodes are abnormally hard or large, and a fine needle aspiration (FNA) biopsy or excisional biopsy finds melanoma in a node or nodes, a lymph node dissection is usually done.

If the lymph nodes are not enlarged, a sentinel lymph node biopsy may be done, particularly if the melanoma is thicker than 1 mm. (See [Tests for Melanoma Skin Cancer](#) for a description of this procedure.) If the sentinel lymph node does not contain cancer, then there is no need for a lymph node dissection because it's unlikely the melanoma has spread to the lymph nodes. If the sentinel lymph node contains cancer cells, removing the remaining lymph nodes in that area with a lymph node dissection is usually advised. This is called a *completion lymph node dissection*.

It's not clear if a lymph node dissection can cure melanomas that have spread to the nodes. This is still being studied. Still, some doctors feel it might prolong a patient's life and at least avoid the pain that may be caused by cancer growing in these lymph nodes.

A full lymph node dissection can cause some long-term side effects. One of the most troublesome is called *lymphedema*. Lymph nodes in the groin or under the arm normally help drain fluid from the limbs. If they are removed, fluid may build up. This can cause limb swelling, which may or may not go away. If severe enough, it can cause skin problems and an increased risk of infections in the limb. Elastic stockings or compression sleeves can help some people with this condition. For more information, see our [Lymphedema](#) section.

Lymphedema, along with the pain from the surgery itself, is a main reason why lymph node dissection is not done unless the doctor feels it is really necessary. Sentinel lymph node biopsy, however, is unlikely to have this effect. It's important to discuss the risks of side effects with your doctor before having either of these procedures.

Surgery for metastatic melanoma

If melanoma has spread (metastasized) from the skin to other organs such as the lungs or brain, the cancer is very unlikely to be curable by surgery. Even when only 1 or 2 areas of spread are [found by imaging tests](#) such as CT or MRI scans, there are likely to be others that are too small to be found by these scans.

Surgery is sometimes done in these circumstances, but the goal is usually to try to

control the cancer rather than to cure it. If 1 or even a few metastases are present and can be removed completely, this surgery may help some people live longer. Removing metastases in some places, such as the brain, might also help prevent or relieve symptoms and improve a person's quality of life.

If you have metastatic melanoma and surgery is a treatment option, talk to your doctor and be sure you understand what the goal of the surgery would be, as well as its possible benefits and risks.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

Last Medical Review: May 19, 2016 Last Revised: May 20, 2016

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

Immunotherapy for Melanoma Skin Cancer

Immunotherapy is the use of medicines to stimulate a person's own immune system to recognize and destroy cancer cells more effectively. Several types of immunotherapy can be used to treat melanoma.

Immune checkpoint inhibitors

These newer drugs have shown a lot of promise in treating advanced melanomas. An important part of the immune system is its ability to keep itself from attacking normal cells in the body. To do this, it uses "checkpoints", which are proteins on immune cells that need to be turned on (or off) to start an immune response. Melanoma cells sometimes use these checkpoints to avoid being attacked by the immune system. But these drugs target the checkpoint proteins, helping to restore the immune response against melanoma cells.

PD-1 inhibitors

Pembrolizumab (Keytruda) and **nivolumab (Opdivo)** are drugs that target PD-1, a protein on immune system cells called *T cells* that normally help keep these cells from attacking other cells in the body. By blocking PD-1, these drugs boost the immune response against melanoma cells. This can often shrink tumors and help people live longer (although it's not yet clear if these drugs can cure melanoma).

These drugs are given as an intravenous (IV) infusion every 2 or 3 weeks.

Side effects of these drugs can include [fatigue](#), cough, [nausea](#), [itching](#), [skin rash](#), [decreased appetite](#), [constipation](#), [joint pain](#), and [diarrhea](#).

Other, more serious side effects occur less often. These drugs work by basically removing the brakes from the body's immune system. Sometimes the immune system starts attacking other parts of the body, which can cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, kidneys, or other organs.

It's very important to report any new side effects to your health care team promptly. If serious side effects do occur, treatment may need to be stopped and you may get high doses of corticosteroids to suppress your immune system.

CTLA-4 inhibitor

Ipilimumab (Yervoy) is another drug that boosts the immune response, but it has a different target. It blocks CTLA-4, another protein on T cells that normally helps keep them in check.

This drug is given as an intravenous (IV) infusion, usually once every 3 weeks for 4 treatments. In patients with melanomas that can't be removed by surgery or that have spread to other parts of the body, this drug has been shown to help people live longer, although it's not clear if it can cure the melanoma.

The most common side effects from this drug include [fatigue](#), [diarrhea](#), [skin rash](#), and [itching](#).

Serious side effects seem to happen more often with this drug than with the PD-1 inhibitors. Like the PD-1 inhibitors, this drug can cause the immune system to attack other parts of the body, which can lead to serious problems in the intestines, liver, hormone-making glands, nerves, skin, eyes, or other organs. In some people these side effects can be life threatening.

It's very important to report any new side effects during or after treatment to your health care team promptly. If serious side effects do occur, you may need to stop treatment and take high doses of corticosteroids to suppress your immune system.

Cytokines (interferon-alfa and interleukin-2)

Cytokines are proteins in the body that boost the immune system in a general way. Man-made versions of cytokines, such as interferon-alfa and interleukin-2 (IL-2), are sometimes used in patients with melanoma. They are given as intravenous (IV) infusions, at least at first. Some patients or caregivers may be able to learn how to give injections under the skin at home.

For advanced melanomas: Both interferon-alfa and IL-2 can shrink advanced melanomas in about 10% to 20% of patients when used alone. These drugs may also be given along with [chemotherapy drugs](#) (known as *biochemotherapy*) for stage IV melanoma.

Side effects can include flu-like symptoms such as [fever](#), chills, [aches](#), [severe tiredness](#), drowsiness, and [low blood cell counts](#). Interleukin-2, particularly in high doses, can cause fluid to build up in the body so that the person swells up and can feel quite sick. Because of this and other possible serious side effects, high-dose IL-2 is given only in the hospital, in centers that have experience with this type of treatment.

After [surgery](#) for some earlier-stage melanomas: Thicker melanomas are more likely than thinner melanomas to come back in another part of the body after surgery, even if all of the cancer is thought to have been removed. Interferon-alfa can sometimes be used as an added (adjuvant) therapy after surgery to try to prevent this. This may delay the recurrence of melanoma, but it's not yet clear if it improves survival.

High doses must be used for the interferon to be effective, but many patients can't take the side effects of high-dose therapy. These can include [fever](#), chills, aches, [depression](#), [feeling very tired](#), and effects on the heart and liver. Patients getting this drug need to be watched closely by a doctor who is experienced with this treatment.

When deciding whether to use adjuvant interferon therapy, patients and their doctors need to take into account the potential benefits and side effects of this treatment.

Oncolytic virus therapy

Viruses are a type of germ that can infect and kill cells. Some viruses can be altered in

the lab so that they infect and kill mainly cancer cells. These are known as *oncolytic viruses*. Along with killing the cells directly, the viruses can also alert the immune system to attack the cancer cells.

Talimogene laherparepvec (Imlygic), also known as T-VEC, is an oncolytic virus that can be used to treat melanomas in the skin or lymph nodes that can't be removed with surgery. The virus is injected directly into the tumors, typically every 2 weeks. This treatment can sometimes shrink these tumors, but it hasn't been shown to shrink tumors in other parts of the body. It's also not clear if this treatment can help people live longer. Side effects can include flu-like symptoms and pain at the injection site.

Bacille Calmette-Guerin (BCG) vaccine

BCG is a germ related to the one that causes tuberculosis. BCG doesn't cause serious disease in humans, but it does activate the immune system. The BCG vaccine is sometimes used to help treat stage III melanomas by injecting it directly into tumors.

Imiquimod cream

Imiquimod (Zyclara) is a drug that is put on the skin as a cream. It stimulates a local immune response against skin cancer cells. For very early (stage 0) melanomas in sensitive areas on the face, some doctors may use imiquimod if surgery might be disfiguring. It can also be used for some melanomas that have spread along the skin. Still, not all doctors agree it should be used for melanoma.

The cream is usually applied 2 to 5 times a week for around 3 months. Some people have serious skin reactions to this drug. Imiquimod is not used for more advanced melanomas.

Newer treatments

Some other types of immunotherapy have shown promise in treating melanoma in early studies. At this time they are available only through clinical trials (see [What's New in Melanoma Skin Cancer Research?](#)).

To learn more about this type of treatment, see [Cancer Immunotherapy](#).

- [References](#)

[See all references for Melanoma Skin Cancer](#)

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

Targeted Therapy for Melanoma Skin Cancer

These drugs target parts of melanoma cells that make them different from normal cells. Targeted drugs work differently from standard [chemotherapy](#) drugs, which basically attack any quickly dividing cells. Sometimes, targeted drugs work when chemotherapy doesn't. They can also have less severe side effects. Doctors are still learning the best way to use these drugs to treat melanoma.

Drugs that target cells with *BRAF* gene changes

About half of all melanomas have changes (mutations) in the *BRAF* gene. Melanoma cells with these changes make an altered BRAF protein that helps them grow. Some drugs target this and related proteins.

If you have advanced melanoma, a biopsy sample of it might be tested to see if the cancer cells have a *BRAF* mutation. Drugs that target the BRAF protein (or the MEK proteins) aren't likely to work in patients whose melanomas have a normal *BRAF* gene.

BRAF inhibitors

Vemurafenib (Zelboraf) and **dabrafenib (Tafinlar)** are drugs that attack the BRAF protein directly.

These drugs shrink or slow the growth of tumors in some people whose metastatic melanoma has a *BRAF* gene change. They can also help some patients live longer, although the melanoma typically starts growing again eventually.

These drugs are taken as pills or capsules, twice a day. Common [side effects](#) can include skin thickening, rash, itching, sensitivity to the sun, headache, fever, joint pain, fatigue, hair loss, and nausea. Less common but serious side effects can include heart

rhythm problems, liver problems, kidney failure, severe allergic reactions, severe skin or eye problems, and increased blood sugar levels.

Some people treated with these drugs develop new [squamous cell skin cancers](#). These cancers are usually less serious than melanoma and can be treated by removing them. Still, your doctor will want to check your skin often during treatment and for several months afterward. You should also let your doctor know right away if you notice any new growths or abnormal areas on your skin.

MEK inhibitors

The *MEK* gene works together with the *BRAF* gene, so drugs that block MEK proteins can also help treat melanomas with *BRAF* gene changes.

The MEK inhibitors **trametinib (Mekinist)** and **cobimetinib (Cotellic)** have been shown to shrink some melanomas with *BRAF* changes. They are pills taken once a day. Common [side effects](#) can include rash, nausea, diarrhea, swelling, and sensitivity to sunlight. Rare but serious side effects can include heart damage, excess bleeding, loss of vision, lung problems, and skin infections.

When used by themselves, these drugs don't seem to shrink as many melanomas as the *BRAF* inhibitors. A more common approach is to combine a MEK inhibitor with a *BRAF* inhibitor. This seems to shrink tumors for longer periods of time than using either type of drug alone. Some side effects (such as the development of other skin cancers) are actually *less* common with the combination.

Drugs that target cells with *C-KIT* gene changes

A small portion of melanomas have changes in the *C-KIT* gene that help them grow. These changes are more common in melanomas that start in certain parts of the body:

- On the palms of the hands, soles of the feet, or under the nails (known as *acral melanomas*)
- Inside the mouth or other mucosal (wet) areas
- In areas that get chronic sun exposure

Some targeted drugs, such as **imatinib (Gleevec)** and **nilotinib (Tasigna)**, can affect cells with changes in *C-KIT*. If you have a melanoma that started in one of these places, your doctor may test your melanoma cells for changes in the *C-KIT* gene, which might mean that one of these drugs could be helpful.

Drugs that target different gene changes are also being studied in clinical trials (see [What's new in melanoma skin cancer research?](#)).

- [References](#)

[See all references for Melanoma Skin Cancer](#)

Last Medical Review: May 19, 2016 Last Revised: May 20, 2016

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

Chemotherapy for Melanoma Skin Cancer

Chemotherapy (chemo) uses drugs that kill cancer cells. The drugs are usually injected into a vein or taken by mouth as a pill. They travel through the bloodstream to all parts of the body and attack cancer cells that have already spread beyond the skin.

When might chemo be used?

Chemo can be used to treat advanced melanoma, but it's not often used as the first treatment since newer forms of [immunotherapy](#) and [targeted drugs](#) have become available. Chemo is usually not as effective for melanoma as it is for some other types of cancer, but it may relieve symptoms or extend survival for some patients.

Which chemo drugs are used to treat melanoma?

Several chemo drugs can be used to treat melanoma:

- Dacarbazine (also called DTIC)
- Temozolomide
- Nab-paclitaxel
- Paclitaxel
- Cisplatin
- Carboplatin

- Vinblastine

Some of these drugs are given alone, while others are often combined with other drugs. It's not clear if using combinations of drugs is more helpful than using a single drug, but it can add to the side effects.

Some studies suggest that combining chemo drugs with immunotherapy drugs such as interferon-alpha and/or interleukin-2 (see [Immunotherapy for Melanoma Skin Cancer](#)) might work better than a single chemo drug alone, although it's not clear if this helps people live longer. This type of treatment is also called *biochemotherapy* or *chemoimmunotherapy*.

Doctors give chemo in cycles, with each period of treatment followed by a rest period to give the body time to recover. Each chemo cycle typically lasts for a few weeks.

Isolated limb perfusion: This is a way of giving chemotherapy that is sometimes used to treat advanced melanoma that is confined to an arm or leg. It is done during a surgical procedure. The blood flow of the arm or leg is separated from the rest of the body, and a high dose of chemotherapy is circulated through the limb for a short period of time. This lets doctors give high doses to the area of the tumor without exposing other parts of the body to these doses, which would otherwise cause severe side effects.

To do this, a tube is placed into the artery that feeds blood into the limb, and a second tube is placed into the vein that drains blood from it. The tubes are connected to a special machine in the operating room. A tourniquet is tied around the limb to make sure the chemo doesn't enter the rest of the body. Chemotherapy (usually with a drug called melphalan) is then infused into the blood in the limb through the artery. During the treatment session, the blood exits the limb through the tube in the vein, is heated by the machine (to help the chemo work better), and is then returned back to the limb through the tube in the artery. By the end of the treatment the drug is completely washed out of the limb, and the tubes are removed so that the circulation is returned to normal.

Possible side effects of chemotherapy

Chemo drugs can cause side effects. These depend on the type and dose of drugs given and how long they are used. The side effects of chemo can include::

- [Hair loss](#)
- [Mouth sores](#)
- [Loss of appetite](#)

- [Nausea and vomiting](#)
- [Diarrhea or constipation](#)
- Increased risk of [infection](#) (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 once treatment is finished. There are often ways to lessen side effects. For example, drugs can help prevent or reduce nausea and vomiting. Be sure to ask your doctor or nurse about drugs to help reduce side effects.

Some chemo drugs can have other side effects. For example, some drugs can damage nerves, which can lead to symptoms (mainly in the hands and feet) such as pain, burning or tingling sensations, sensitivity to cold or heat, or weakness. This condition is called [peripheral neuropathy](#). It usually goes away once treatment is stopped, but for some people it can last a long time.

Be sure to talk with your cancer care team about what to expect in terms of side effects. While you are getting chemo, report any side effects to your medical team so that they can be treated promptly. In some cases, the doses of chemo may need to be reduced or treatment may need to be delayed or stopped to prevent side effects from getting worse.

To learn more, see the [Chemotherapy](#) section of our website.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

Last Medical Review: May 19, 2016 Last Revised: May 20, 2016

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

Radiation Therapy for Melanoma Skin Cancer

Radiation therapy uses high-energy rays (such as x-rays) or particles to kill cancer cells.

When might radiation therapy be used?

Radiation therapy is not often used to treat melanoma on the skin, although it's sometimes used if [surgery](#) is not an option for some reason.

Radiation can also be used after surgery for an uncommon type of melanoma known as *desmoplastic melanoma*.

Sometimes, radiation is given after surgery in the area where lymph nodes were removed, especially if many of the nodes contained cancer cells. This is to try to lower the chance that the cancer will come back.

Radiation can also be used to treat melanoma that has come back after surgery, either in the skin or lymph nodes, or to help treat distant spread of the disease.

Radiation therapy is often used to relieve symptoms caused by the spread of the melanoma, especially to the brain or bones. Treatment with the goal of relieving symptoms is called [palliative therapy](#). Palliative radiation therapy is not expected to cure the cancer, but it might help shrink it or slow its growth for a time to help control some of the symptoms.

How is radiation therapy given?

The type of radiation most often used to treat melanoma, known as *external beam radiation therapy*, focuses radiation from a source outside of the body on the cancer.

The treatment schedule can vary based on the goal of treatment and where the melanoma is. Before treatments start, your radiation team will take careful measurements to find the correct angles for aiming the radiation beams and the proper dose of radiation. This planning session is called *simulation*.

Treatment is much like getting an x-ray, but the radiation is stronger. The procedure itself is painless. Each treatment lasts only a few minutes, although the setup time – getting you into place for treatment – usually takes longer.

Stereotactic radiosurgery (SRS)

SRS is a type of radiation therapy that can sometimes be used for tumors that have spread to the brain. (Despite the name, there is no actual surgery.) High doses of radiation are aimed precisely at the tumor(s) in one or more treatment sessions. There

are 2 main ways to give SRS:

- In one version, a machine called a Gamma Knife[®] focuses about 200 beams of radiation on the tumor from different angles over a few minutes to hours. The head is kept in the same position by placing it in a rigid frame.
- In another version, a linear accelerator (a machine that creates radiation) that is controlled by a computer moves around the head to deliver radiation to the tumor from many different angles over a few minutes. The head is kept in place with a head frame or a plastic face mask.

These treatments can be repeated if needed.

Stereotactic body radiation therapy (SBRT)

This approach is similar to SRS (using a linear accelerator), but it can be used to treat tumors in other parts of the body.

Possible side effects of radiation therapy

Side effects of radiation are usually limited to the area getting radiation. Common side effects can include:

- Sunburn-like [skin problems](#)
- [Changes in skin color](#)
- [Hair loss](#) where the radiation enters the body
- [Fatigue](#)
- [Nausea](#) (if radiation is aimed at the abdomen)

Often these go away after treatment. When radiation is given with [chemotherapy](#), the side effects are often worse.

Radiation therapy to the brain can sometimes cause [memory loss](#), [headaches](#), [trouble thinking](#), or [reduced sexual desire](#). Usually these symptoms are minor compared with those caused by a tumor in the brain, but they can still affect your quality of life.

To learn more about radiation, see the [Radiation Therapy](#) section of our website.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

Last Medical Review: May 19, 2016 Last Revised: May 20, 2016

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

Treatment of Melanoma Skin Cancer, by Stage

The type of treatment(s) your doctor recommends will depend on the [stage](#) and location of the melanoma and on your overall health. This section lists the options usually considered for each stage of melanoma.

Treating stage 0 melanoma

Stage 0 melanomas have not grown deeper than the top layer of the skin (the epidermis). They are usually treated by [surgery](#) (wide excision) to remove the melanoma and a small margin of normal skin around it. The removed sample is then sent to a lab to be looked at with a microscope. If cancer cells are seen at the edges of the sample, a repeat excision of the area may be done.

Some doctors may consider the use of imiquimod cream (Zyclara) or [radiation therapy](#) instead of surgery, although not all doctors agree with this.

For melanomas in sensitive areas on the face, some doctors may use [Mohs surgery](#) or even imiquimod cream if surgery might be disfiguring, although not all doctors agree with these uses.

Treating stage I melanoma

Stage I melanoma is treated by wide excision ([surgery](#) to remove the melanoma as well as a margin of normal skin around it). The margin of normal skin removed depends on the thickness and location of the melanoma.

Some doctors may recommend a [sentinel lymph node biopsy](#), especially if the melanoma is stage IB or has other characteristics that make it more likely to have spread to the lymph nodes. You and your doctor should discuss this option.

If cancer cells are found on the sentinel lymph node biopsy, a lymph node dissection

(removal of all lymph nodes near the cancer) is often recommended, but it's not clear if this improves survival. Some doctors may recommend adjuvant (additional) treatment with interferon after the lymph node surgery. Other drugs or perhaps vaccines might be options as part of a [clinical trial](#) to try to lower the chance the melanoma will come back.

Treating stage II melanoma

Wide excision ([surgery](#) to remove the melanoma and a margin of normal skin around it) is the standard treatment for stage II melanoma. The amount of normal skin removed depends on the thickness and location of the melanoma.

Because the melanoma may have spread to lymph nodes near the melanoma, many doctors recommend a [sentinel lymph node biopsy](#) as well. This is an option that you and your doctor should discuss. If it is done and the sentinel node contains cancer cells, then a lymph node dissection (where all the lymph nodes in that area are surgically removed) will probably be done at a later date.

For some patients (such as those with lymph nodes containing cancer), doctors may advise treatment with interferon after surgery (adjuvant therapy). Other drugs or perhaps vaccines may also be recommended as part of a [clinical trial](#) to try to lower the chance the melanoma will come back.

Treating stage III melanoma

These cancers have already reached the lymph nodes when the melanoma is first diagnosed. [Surgical treatment](#) for stage III melanoma usually requires wide excision of the primary tumor as in earlier stages, along with lymph node dissection. Adjuvant therapy with interferon may help keep some melanomas from coming back longer. Other drugs or perhaps vaccines may also be recommended as part of a [clinical trial](#) to try to reduce the chance the melanoma will come back. Another option is to give [radiation therapy](#) to the areas where the lymph nodes were removed, especially if many of the nodes contain cancer.

If melanomas are found in nearby lymph vessels in or just under the skin (known as *in-transit tumors*), they should all be removed, if possible. Other options include injections of the T-VEC vaccine (Imlygic), Bacille Calmette-Guerin (BCG) vaccine, interferon, or interleukin-2 (IL-2) directly into the melanoma; radiation therapy; or applying imiquimod cream. For melanomas on an arm or leg, another option might be isolated limb perfusion (infusing the limb with a heated solution of [chemotherapy](#)). Other possible treatments might include [targeted therapy](#), [immunotherapy](#), chemotherapy, or a

combination of immunotherapy and chemotherapy (biochemotherapy).

Some patients might benefit from newer treatments being tested in clinical trials. Many patients with stage III melanoma might not be cured with current treatments, so they may want to think about taking part in a [clinical trial](#).

Treating stage IV melanoma

Stage IV melanomas are often hard to cure, as they have already spread to distant lymph nodes or other areas of the body. Skin tumors or enlarged lymph nodes causing symptoms can often be removed by [surgery](#) or treated with [radiation therapy](#).

Metastases in internal organs are sometimes removed, depending on how many there are, where they are, and how likely they are to cause symptoms. Metastases that cause symptoms but cannot be removed may be treated with radiation, immunotherapy, targeted therapy, or chemotherapy.

The treatment of widespread melanomas has changed in recent years as newer forms of immunotherapy and targeted drugs have been shown to be more effective than chemotherapy.

[Immunotherapy](#) drugs called *checkpoint inhibitors* such as pembrolizumab (Keytruda), nivolumab (Opdivo), and ipilimumab (Yervoy) have been shown to help some people with advanced melanoma live longer. These drugs can sometimes have serious side effects, so patients who get them need to be watched closely. [Other types of immunotherapy](#) might also help, but these are only available through clinical trials.

In about half of all melanomas, the cancer cells have changes in the *BRAF* gene. If this gene change is found, treatment with newer [targeted therapy](#) drugs such as vemurafenib (Zelboraf), dabrafenib (Tafinlar), trametinib (Mekinist), and cobimetinib (Cotellic) might be helpful. They might be tried before or after the newer immunotherapy drugs, but they aren't used at the same time. Like the checkpoint inhibitors, these drugs can help some people live longer, although they haven't been shown to cure these melanomas.

A small portion of melanomas have changes in the *C-KIT* gene. These melanomas might be helped by targeted drugs such as imatinib (Gleevec) and nilotinib (Tasigna), although, again, these drugs aren't known to cure these melanomas.

[Immunotherapy](#) using interferon or interleukin-2 can help a small number of people with stage IV melanoma live longer. Higher doses of these drugs seem to be more effective,

but they can also have more severe side effects, so they might need to be given in the hospital.

[Chemotherapy](#) can help some people with stage IV melanoma, but other treatments are usually tried first. Dacarbazine (DTIC) and temozolomide (Temodar) are the chemo drugs used most often, either by themselves or combined with other drugs. Even when chemotherapy shrinks these cancers, the cancer usually starts growing again within several months.

Some doctors may recommend biochemotherapy, which is a combination of chemotherapy and either interleukin-2, interferon, or both. This can often shrink tumors, which might make patients feel better, although it has not been shown to help patients live longer.

It's important to carefully consider the possible benefits and side effects of any recommended treatment before starting it.

Because stage IV melanoma is hard to cure with current treatments, patients may want to think about taking part in a [clinical trial](#). Many studies are now looking at new targeted drugs, immunotherapies, chemotherapy drugs, and combinations of different types of treatments.

Even though stage IV melanoma is often hard to cure, a small portion of people respond very well to treatment and survive for many years after diagnosis.

Treating recurrent melanoma

Treatment of melanoma that comes back after initial treatment depends on the stage of the original melanoma, what treatments a person has already had, where the melanoma comes back, and other factors.

Melanoma might come back in the skin near the site of the original tumor, sometimes even in the scar from the surgery. In general, these local (skin) recurrences are treated with surgery similar to what would be recommended for a primary melanoma. This might include a sentinel lymph node biopsy. Depending on the thickness and location of the tumor, other treatments may be considered, such as isolated limb perfusion [chemotherapy](#); [radiation therapy](#); or local [immunotherapy](#) treatments such as tumor injection with the T-VEC vaccine (Imlygic), BCG vaccine, interferon, or interleukin-2. Systemic treatments such as [immunotherapy](#), [targeted therapy](#), or [chemotherapy](#) might also be options.

If nearby lymph nodes weren't removed during the initial treatment, the melanoma might come back in these lymph nodes. Lymph node recurrence is treated by lymph node dissection if it can be done, sometimes followed by treatments such as interferon or radiation therapy. If [surgery](#) is not an option, radiation therapy or systemic treatment (immunotherapy, targeted therapy, or chemo) can be used.

Melanoma can also come back in distant parts of the body. Almost any organ can be affected. Most often, the melanoma will come back in the lungs, bones, liver, or brain. Treatment for these recurrences is generally the same as for stage IV melanoma (see above). Melanomas that recur on an arm or leg may be treated with isolated limb perfusion chemotherapy.

Melanoma that comes back in the brain can be hard to treat. Single tumors can sometimes be removed by surgery. Radiation therapy to the brain (stereotactic radiosurgery or whole brain radiation therapy) may help as well. Systemic treatments (immunotherapy, targeted therapy, or chemo) might also be tried.

As with other stages of melanoma, people with recurrent melanoma may want to think about taking part in a [clinical trial](#).

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.

- [References](#)

[See all references for Melanoma Skin Cancer](#)

Last Medical Review: May 19, 2016 Last Revised: May 20, 2016

American Cancer Society medical information is copyrighted material. For reprint requests, please contact permissionrequest@cancer.org.

2016 Copyright American Cancer Society

For additional assistance please contact your American Cancer Society
1-800-227-2345 or www.cancer.org