



National
Comprehensive
Cancer
Network®

NCCN Guidelines for Patients®

Version 1.2014

Complete our online
survey at
NCCN.org/patients/survey

Melanoma



Available online at NCCN.org/patients



Melanoma

Learning that you have cancer can be overwhelming. The goal of this book is to help you get the best care. It explains which tests and treatments are recommended by experts in melanoma.

The National Comprehensive Cancer Network® (NCCN®) is a not-for-profit alliance of 25 of the world's leading cancer centers. Experts from NCCN have written treatment guidelines for doctors who treat patients with melanoma. These treatment guidelines suggest what the best practice is for cancer care. The information in this patient book is based on the guidelines written for doctors.

This book focuses on the treatment of melanoma. NCCN also offers patient books on breast, lung, and pancreatic cancer, as well as many other cancer types. Visit NCCN.org/patients for the full library of patient books as well as other patient and caregiver resources.

Credits

NCCN® aims to improve the care given to patients with cancer. NCCN staff work with experts to create helpful programs and resources for many stakeholders. Stakeholders include health providers, patients, businesses, and others. One resource is the series of books for patients called the NCCN Patient Guidelines®. Each book presents the best practice for a type of cancer.

The patient books are based on clinical practice guidelines written for cancer doctors. These guidelines are called the NCCN Guidelines®. Clinical practice guidelines list the best health care options for groups of patients. Many doctors use them to help plan cancer treatment for their patients.

Panels of experts create the NCCN Guidelines. Most of the experts are from the 25 NCCN Member Institutions. Panelists may include surgeons, radiation oncologists, medical oncologists, and patient advocates. Recommendations in the NCCN Guidelines are based on clinical trials and the experience of the panelists.

The NCCN Guidelines are updated at least once a year. When funded, the patient books are updated to reflect the most recent version of the NCCN Guidelines for doctors. For more information about the NCCN Guidelines, visit NCCN.org/clinical.asp.

NCCN staff involved in making the guidelines for patients and doctors include:

NCCN Patient Guidelines

Dorothy A. Shead, MS
*Director, Patient and Clinical
Information Operations*

Laura J. Hanisch, PsyD
*Medical Writer/
Patient Information Specialist*

Lacey Marlow
Associate Medical Writer

NCCN Guidelines

Maria Ho, PhD
*Oncology Scientist/
Senior Medical Writer*

Nicole McMillian, MS
Guidelines Coordinator

NCCN Marketing

Susan Kidney
Graphic Design Specialist

NCCN Drugs & Biologics Programs

Rachael Clarke
Medical Copyeditor



Supported by the NCCN Foundation®

The NCCN Foundation supports the mission of the National Comprehensive Cancer Network® (NCCN®) to improve the care of patients with cancer. One of its aims is to raise funds to create a library of books for patients. Learn more about the NCCN Foundation at NCCN.org/foundation.

© 2014 National Comprehensive Cancer Network, Inc. All rights reserved. The NCCN Guidelines for Patients® and illustrations herein may not be reproduced in any form for any purpose without the express written permission of NCCN.

National Comprehensive Cancer Network (NCCN)
275 Commerce Drive • Suite 300
Fort Washington, PA 19034
215.690.0300

Melanoma

- 4** How to use this book
- 5** **Part 1**
About melanoma
Explains the growth and spread of melanoma skin cancer.
- 15** **Part 2**
Tests for melanoma
Describes suggested tests used to confirm melanoma and plan treatment.
- 25** **Part 3**
Melanoma staging
Explains how doctors rate and describe the extent of melanoma in your body.
- 33** **Part 4**
Overview of melanoma treatments
Describes the types of treatments that may be used for melanoma.
- 47** **Part 5**
Treatment guide
Presents the recommended course of action from diagnosis to after cancer treatment.
- 83** **Part 6**
Making treatment decisions
Offers tips to help you talk with your doctors and get a treatment plan that meets all your needs.
- 91** **Glossary:**
 - 92** Dictionary
 - 99** Acronyms
- 102** NCCN Panel Members
- 103** NCCN Member Institutions
- 104** Index

Who should read this book?

Melanoma is a type of cancer that starts in skin cells that give skin its color. Melanoma can also form in the eyes, nose, mouth, genitalia, or, rarely, in the internal organs. This book focuses on treatment for melanoma that starts in the skin. Patients and those who support them—caregivers, family, and friends—may find this book helpful. The information in this book may help you talk with your treatment team, understand what doctors say, and prepare for treatment.

Does the whole book apply to me?

This book includes information for many situations. Thus, not everyone will get every test and treatment listed. Your treatment team can point out what applies to you and give you more information. As you read through this book, you may find it helpful to make a list of questions to ask your doctors.

This book includes the recommendations that NCCN experts agree are most useful. However, each patient is unique and these specific

recommendations may not be right for you. Your doctors may suggest other tests or treatments based on your health and other factors. This book does not replace the knowledge and suggestions of your doctors.

Making sense of medical terms

In this book, many medical words are included that describe cancer, tests, and treatments. These are words that you will likely hear from your treatment team. Some of this information may be new to you, and it may be a lot to learn. Keep reading and review the information. Be sure to ask your treatment team to explain a word or phrase that you don't understand.

Words and acronyms that you may not know are defined in the text or underlined when first used on a page. All underlined words are defined in the *Glossary*. Acronyms are also listed and defined in the *Glossary*. Acronyms are words formed from the first letters of other words. One example is CBC for **complete blood count**.

About melanoma



1 About melanoma

- 6 Layers of the skin
- 7 What is melanoma skin cancer?
- 8 How melanoma spreads
- 9 Types of melanoma
- 10 Signs and symptoms of melanoma
- 11 Melanoma risks and prevention
- 13 Websites | Review



You've learned that you have melanoma skin cancer. It's common to feel shocked and confused. Part 1 reviews some basics about melanoma that may help you better understand this disease. These basics may also help you start planning for treatment.

Layers of the skin

The skin is the largest organ of the body. The skin has two layers. The outer layer, which can be seen, is called the epidermis. The second layer, under the epidermis, is called the dermis. Under the dermis is the subcutaneous tissue. **See Figure 1.**

Figure 1. Parts of the skin

The skin has two layers. The outer layer is called the epidermis. The second layer is called the dermis.

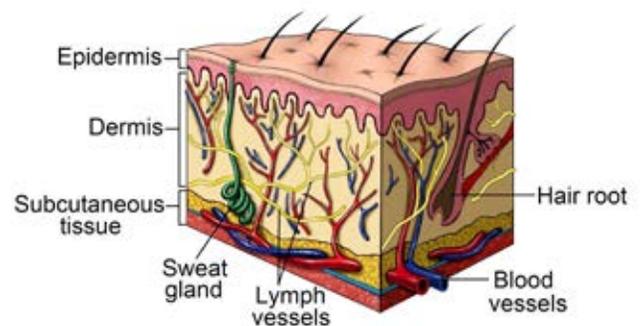


Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

Epidermis

The main job of the epidermis is to protect the body and help control body temperature. It is made up of four types of cells, including melanocytes.

Melanocytes are located at the bottom of the epidermis. These cells make melanin, which spreads to the top of the epidermis and gives skin its color. People with darker skin have the same number of melanocytes as people with lighter skin. The darkness of skin is based on how much melanin is made by the melanocytes. Higher levels of melanin cause the skin to be darker.

Dermis

The dermis is much thicker than the epidermis. It contains hair roots, blood vessels, lymph vessels, glands, and nerve endings. Blood and lymph vessels in the dermis bring nutrients to the dermis and epidermis. Glands make fluids or chemicals the body needs. Connective tissue holds all these structures in place and allows the skin to stretch.

Under the dermis is the subcutaneous tissue. Subcutaneous means “below the skin.” It is mostly

made of fat and connective tissue. It is not part of the skin but connects the skin to muscles and bones. It also saves body heat, stores energy, and absorbs shock to protect the body from injury.

What is melanoma skin cancer?

Cells are the building blocks that form tissue in the body. Genes are the instructions in cells for making new cells and controlling how cells behave. Abnormal changes (mutations) in genes can turn normal cells into cancer cells. Normal cells divide to make new cells. New cells are made as the body needs them to replace injured or dying cells. Normal cells stay in one place and do not spread to other parts of the body. When normal cells grow old or get damaged, they die. Cancer cells do not do this. Cancer cells don't stay in place as they should. Cancer cells make new cells that aren't needed and don't die quickly when old or damaged. Over time, cancer cells grow and divide enough to form a tumor. [See Figure 2](#). The first tumor formed by the overgrowth of cancer cells is called the primary tumor.

Figure 2. Normal versus cancer cell growth

Normal cells divide to make new cells as the body needs them. Normal cells die once they get old or damaged. Cancer cells make new cells that aren't needed and don't die quickly when old or damaged.

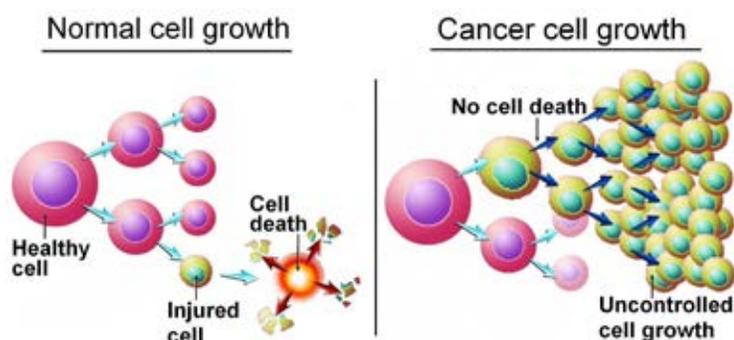


Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

Melanoma skin tumors are made of abnormal pigment cells (melanocytes) that have become cancer cells. **See Figure 3.** These tumors are often brown or black because the cells still make melanin. Melanoma is more dangerous than most other common skin cancers because it is more likely to spread if it isn't found early. However, most melanomas—about 90 out of 100—are found early before they have spread. Melanoma has the potential to spread through the dermis to nearby tissues and other parts of the body. The deeper a melanoma grows into the dermis, the higher the risk of spreading. This is why finding melanoma as early as possible is so important. Most people can be cured if melanoma is found early.

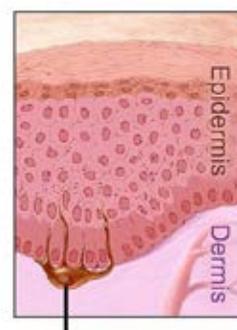
How melanoma spreads

Unlike normal cells, cancer cells can spread to other parts of the body. This process is called metastasis. The uncontrolled growth and spread of cancer cells makes cancer dangerous. Cancer cells can replace or deform normal tissue causing organs to stop working.

Cancer cells often spread to nearby and distant sites through lymph or blood. Lymph is a clear fluid that gives cells water and food. Lymph leaks out of blood vessels and then flows through tiny tubes called lymph vessels mostly in one direction toward the heart, where lymph re-enters the blood. Lymph also has white blood cells that fight germs. A lymph node is a small group of special disease-fighting cells. Lymph nodes filter lymph and remove germs. Lymph nodes are connected to each other by lymph vessels. Lymph vessels and nodes are found throughout the body. **See Figure 4.** Once melanoma has grown into the dermis, it can reach the lymph vessels. The melanoma cells can then travel through the lymph vessels to the lymph nodes and other parts of the body.

Figure 3. Melanocytes of the epidermis

Melanocytes are located at the bottom of the epidermis. These cells make melanin, which spreads to the top of the epidermis and gives skin its color. Melanoma tumors are made of abnormal melanocytes that have become cancer cells.



Melanocyte

Derivative work of Anatomy: The Skin by Don Bliss available at: <http://visualsonline.cancer.gov/details.cfm?imageid=4366>

Cancer that spreads from the primary site to a new location is called metastasis (from Greek “standing beyond”). Metastasis to a nearby body part is called a local metastasis. Metastasis to a body part far from the first tumor is called a distant metastasis. Melanoma that has spread into a nearby lymph vessel, but not to lymph nodes, is called an in-transit metastasis. Melanoma that has spread to a small area of skin near the first tumor is called a satellite metastasis.

Figure 4. Lymph nodes and vessels

Lymph nodes and lymph vessels are found throughout the body. A lymph node is a small group of special disease-fighting cells. Lymph nodes are connected to each other by tiny tubes called lymph vessels.



Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

Types of melanoma

There are four major types of melanoma skin cancer. The unique features of each can often help you tell them apart. These features include color, shape, location, and growth pattern.

Superficial spreading melanoma

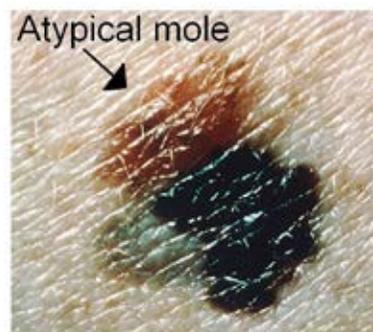
Superficial spreading melanoma is the most common type of melanoma. It usually looks like a brown-black stain that is spreading from a mole. **See Figure 5.** A mole is a spot on the skin formed by a cluster of melanocytes—cells that make melanin to give skin its color. This type of melanoma normally occurs on skin exposed to sunlight.

Nodular melanoma

Nodular melanoma may grow more quickly into the dermis than other types of melanoma. The dermis is the second layer of skin, located under the epidermis. Once in the dermis, it can spread to other tissue. Nodular melanoma looks like a dome-shaped bump and feels firm.

Figure 5. Superficial spreading melanoma

Superficial spreading melanoma is the most common type of melanoma.



Melanoma courtesy of the National Cancer Institute available at: <http://visualsonline.cancer.gov/details.cfm?imageid=9189>

Lentigo maligna melanoma

Lentigo maligna melanoma is the slowest growing type of melanoma. It is not associated with moles. It looks like a dark stain with an uneven border. Sometimes, lentigo maligna melanoma is mistaken for a sunspot. This type of melanoma often occurs on the face or arms of older adults.

Acral lentiginous melanoma

This type of melanoma occurs on the palms of the hands or soles of the feet, including fingernails and toenails. It can appear as a dark spot, like a bruise that doesn't go away. In a nail, it can look like a dark stripe. Acral lentiginous melanoma is the least common type of melanoma. However, in Asians and people with darker-colored skin such as African Americans, it is the most common type of melanoma.

Signs and symptoms of melanoma

Often, the first sign of melanoma skin cancer is a mole or spot on the skin that looks abnormal—not normal. It may be a new mole or an existing mole that has changed over the past few weeks or months. Finding melanoma before it grows deep in the skin is important. This is because deeper melanomas are more likely to have spread to other parts of the body. Treatment is more likely to cure melanoma if it has not spread.

Skin self-exam: A mole that changes is very important

You should learn about the differences between normal and abnormal moles. The “ABCDE rule” is an easy way to remember how to tell a normal mole apart from melanoma. [See Figure 6](#). Normal moles have an even tan, brown, or black color. Most normal moles are less than $\frac{1}{4}$ inch in size—about the width of a pencil eraser. However, normal moles may be larger than $\frac{1}{4}$ inch and some melanomas are smaller than $\frac{1}{4}$ inch. Normal moles are round or oval and can be either flat

Figure 6. ABCDE rule: Moles with and without signs of cancer

The ABCDE rule is an easy way to remember how to tell a normal mole apart from melanoma.

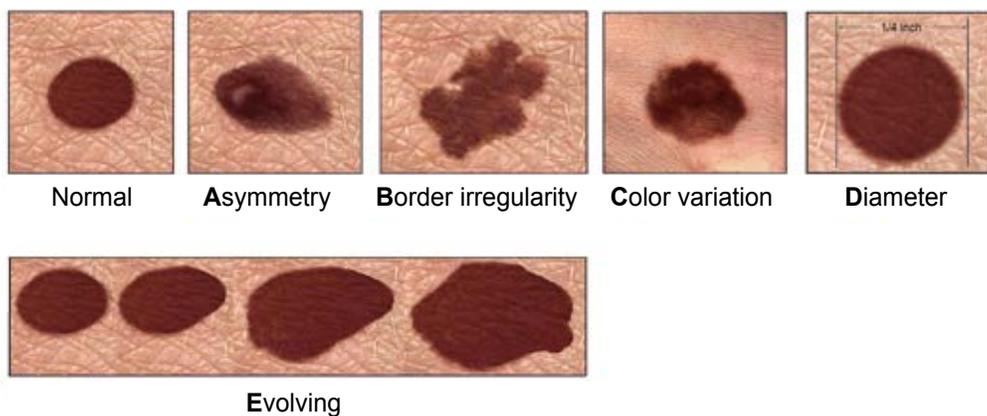


Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

or raised. They stay the same size, shape, and color for many years. Later in life, they often fade away.

In contrast, melanoma may cause moles to change size, shape, or color. Itching, scaling, oozing, bleeding, redness, swelling, and tenderness are also possible signs of melanoma.

After learning how to notice abnormal moles, you should check your skin on a regular basis. Use a full-length mirror and a hand-held mirror for areas that are hard to see. A partner may be able to help. Inspect all areas of your body. Remember, change is important. Know your skin so you can tell if there are any changes. Be sure to show your doctor any spots that have changed or that concern you.

Melanoma risks and prevention

Risk factors

Exactly what causes melanoma is unknown. However, many risk factors for melanoma are known. A risk factor is anything that increases the chance of getting a disease. Some risk factors are passed down from parents to children through genes. Other risk factors are activities that people do. Having one or more risk factors doesn't mean you'll get melanoma. Likewise, melanoma occurs in some people who have no risk factors. The major risk factors for melanoma are described next.

Ultraviolet energy

Melanoma often occurs on parts of the body exposed to UV (**ultraviolet**) energy. UV energy is invisible light energy that comes from the sun, sun lamps, and tanning beds. The main source of UV energy is

ABCDE rule

Asymmetry: One half or side of the mole does not match the other half or side.

Border irregularity: The edges of the mole are ragged or notched.

Color: The color of the mole is not the same throughout. There may be different shades of tan, brown, or black and sometimes patches of red, blue, or white.

Diameter: The mole is wider than a $\frac{1}{4}$ inch—the size of the top of a pencil eraser. However, doctors have found melanomas as small as $\frac{1}{8}$ inch.

Evolving: The mole has changed in size, shape, color, or texture over the past few weeks or months.

sunlight. Tanning lamps and booths also expose skin to UV energy. Too much exposure damages the skin and increases the risk for skin cancer. Whether skin exposure was too much depends on UV intensity, length of exposure, and how well the skin was protected. Severe sunburns with blisters, especially in youth, increase the risk for melanoma.

Many or atypical moles

Moles are dense areas of melanin—a substance that gives color to the skin. Babies usually don't have moles. They first appear during youth and continue to appear until about age 40. Most adults have moles. Most moles don't become cancer. However, having many moles, large moles, or atypical moles puts you at higher risk for melanoma. An atypical mole is a mole that looks different from a normal or common mole.

Fair complexion

Having a fair complexion raises your risk for developing melanoma. Examples of a fair complexion include red or blond hair, blue or green eyes, or skin that easily freckles or sunburns. Fair skin is less protective against UV energy because it has less melanin.

Family history

Although rare, melanoma can run in families. Thus, you have a higher risk of developing melanoma if a blood relative has had melanoma. The more family members with melanoma, the more you are at risk.

Xeroderma pigmentosum

Xeroderma pigmentosum is a rare medical condition in which the skin can't repair itself from UV damage. It is passed down from parents to children. It causes an extreme skin reaction to UV energy because the skin can't heal itself well. Xeroderma pigmentosum increases the risk for both melanoma and other types of skin cancer.

Age

Melanoma is one of the most common cancers in people younger than age 30. This may stem from more use of tanning beds in this age group. People with a family history of melanoma may also develop melanoma at a young age. About half of the people who develop melanoma do so after age 50.

Immune suppression

Some diseases and drugs weaken (suppress) the immune system—the body's natural defense against infection and disease. Individuals with a weakened immune system may have a higher risk of developing melanoma.

Prevention

The number of people with melanoma is increasing, but there are ways to lower your risk. Check your skin and tell your doctor about any changes in your moles or skin. If you have many moles, a dermatologist should check your skin regularly. A dermatologist is a doctor who's an expert in skin diseases.

One of the most important ways to prevent melanoma skin cancer is to limit your sun exposure. Parents should make sure their children have sun protection. Protecting children is very important since sunburns at an early age can greatly increase the risk for melanoma later in life. There are many ways to protect your skin.

- **Stay in the shade.** This is the best way to avoid UV light when outdoors.
- **Wear clothes that protect your skin.** Long-sleeved shirts, long pants, and hats with brims make a difference. You can find clothing at sporting goods stores made from fabrics designed to limit UV exposure.
- **Use broad-spectrum sunscreen** with an **SPF (sun protection factor)** of 15 or higher every day, because UV light is always present. Broad-spectrum sunscreen protects against

UVA (ultraviolet-A) and **UVB (ultraviolet-B)** rays. Apply more sunscreen if you sweat or after swimming since it may have come off. Don't use sunscreen to increase the time spent in the sun. UV light can still reach the skin when wearing sunscreen.

- **Wear wraparound sunglasses** with 99% to 100% UVA and UVB protection. These glasses provide the best protection for the eye area.

- **Don't use tanning beds.** These devices expose skin to UV energy and are not safer than sun exposure. Also, “getting a base tan” at a salon will not prevent sunburn or lower exposure to UV light.



Websites

American Cancer Society

www.cancer.org/cancer/skincancer-melanoma/detailedguide/melanoma-skin-cancer-what-is-melanoma

National Cancer Institute

www.cancer.gov/cancertopics/pdq/treatment/melanoma/Patient

www.cancer.gov/cancertopics/factsheet/Risk/moles

Skin Cancer Foundation

www.skincancer.org/skin-cancer-information/melanoma/melanoma-causes-and-risk-factors

www.skincancer.org/skin-cancer-information/melanoma/types-of-melanoma

American Academy of Dermatology

www.aad.org/skin-conditions/dermatology-a-to-z/melanoma

Review

- The skin has two layers. The top layer is the epidermis. The second layer is the dermis.
- Cells that give skin its color—called melanocytes—are in the top layer.
- Melanoma is a cancer of the cells that give skin its color.
- Melanoma can spread throughout the body if it grows into the second layer of skin.
- Your risk for melanoma is higher if your skin is fair, freckled, or has many moles.
- Lower your cancer risk by using sun protection and by not using tanning beds.
- Learn what skin cancer looks like so you can check your skin often.

Tests for melanoma



2 Tests for melanoma

16 General health tests

17 Tumor tissue tests

20 Lymph node tissue tests

21 Blood tests

21 Imaging tests

24 Websites | Review



Treatment planning starts with testing. This section describes the tests that are used to confirm (diagnose) melanoma skin cancer and plan treatment. This information can help you use the *Treatment guide* in Part 5. It may also help you know what to expect during testing. Not every person with melanoma will receive every test listed.

General health tests

Your doctor may send you to a dermatologist if you have signs of skin cancer. A dermatologist is a doctor who's an expert in diseases of the skin. Most skin changes aren't cancer, but sometimes only a dermatologist will know. This section describes common exams and tests used by dermatologists.

Medical history

Before and after cancer treatment, your doctor will assess your medical history. Your medical history includes any health events in your life and any medications you've taken. This information may affect which cancer treatment is best for you. It may help to make a list of old and new medications while at home to bring to your doctor's office.

Your doctor will ask about any symptoms and medical conditions that you have had. There will be specific questions about your skin and moles. Some health problems, including melanoma, can run in families. Therefore, your doctor will ask about the medical history of your immediate family and other risk factors you have for melanoma. A risk factor is something that increases the chance of getting a disease. (See page 11 for more details on risk factors.)

Physical and skin exam

Doctors usually perform a physical exam along with taking a medical history. A physical exam is a review of your body for signs of disease. Your doctor will also perform a medical skin exam. For this, your doctor will carefully inspect your skin for lesions and areas that look abnormal (not normal). A lesion is an area of abnormal tissue that has been damaged by disease or injury. Your doctor will note the size, shape, color, and texture of any lesions. Your doctor will also feel for enlarged lymph nodes in the area where the melanoma lesion is or was located. Unusual symptoms, such as bleeding or scaling, may be other signs of cancer. Be sure to have skin exams on a regular basis.

Besides your skin, other parts of your body may be examined to look for signs of cancer. During this exam, your doctor may listen to your lungs, heart, and intestines. Parts of your body, such as your liver or spleen, may be felt to see if organs are of normal size, are soft or hard, or cause pain when touched.

Tumor tissue tests

To confirm if you have melanoma, a sample of tissue must be removed from the concerning spot on your

skin to test for cancer cells with a microscope. This is called a biopsy. Based on the physical and skin exam, your doctor may perform a skin biopsy. There are many types of skin biopsies used for melanoma. The type of biopsy you will have depends on the size and location of the concerning spot (lesion) on your skin.

Types of skin biopsies

Excisional biopsy

An excisional biopsy removes the entire lesion and a small amount of normal-looking skin around the edge using a surgical knife.

Incisional biopsy

An incisional biopsy removes only part of the lesion with a surgical knife. This biopsy may be done for a very large lesion. It may also be used for a lesion that's in a place where it can't be easily removed such as the face, ear, palm of the hand, or sole of the foot.

Punch biopsy

A punch biopsy uses a sharp hollow device—like a cookie cutter—to remove a small but deep sample of both skin layers. **See Figure 7.** This kind of biopsy may be better for very large lesions or certain areas of the body. These areas include the face, ear, finger, toe, palm of the hand, or sole of the foot.

Figure 7. Punch biopsy

A punch biopsy uses a sharp hollow device—like a cookie cutter—to remove a small but deep sample of both skin layers.

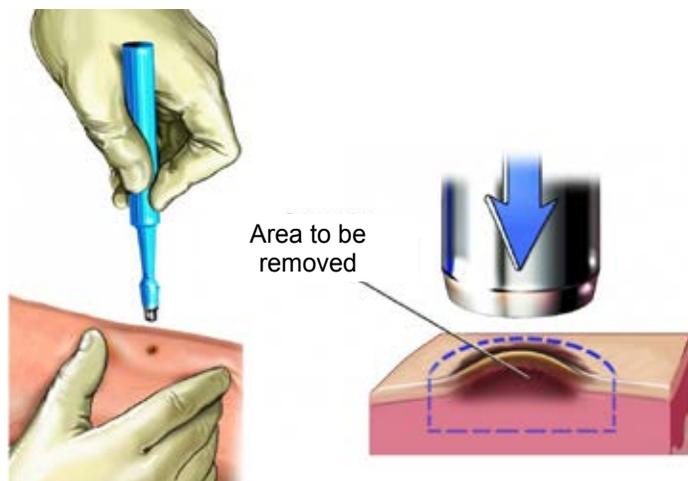


Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

Shave biopsy

A shave biopsy removes the epidermis and the top part of the dermis. The epidermis is the outer layer of skin. The dermis is the second layer of skin, under the epidermis. A shave biopsy is usually not done if your doctor thinks the melanoma has grown into the dermis. This is because it wouldn't tell how deep the cancer has grown. A shave biopsy is often used to remove moles that look normal and for skin diseases other than melanoma.

What to expect during a skin biopsy

Before a biopsy, your doctor will numb your skin with local anesthesia. Local anesthesia is a controlled loss of feeling in a small area of the body due to drugs being given in that area. Tell your doctor if you've had any reactions to anesthesia in the past. With local anesthesia, you'll feel a small needle stick and a little burning with some pressure for less than a minute. Then, there will be a loss of feeling in that area for a short time. You may feel a little pressure during the biopsy, but no pain. After the biopsy, your doctor may close the wound and apply a bandage. There are usually no side effects, but scars can form after some biopsies. If you are on blood thinners, adjustments may be needed before a biopsy can be done.

At the lab

Your doctor will send the biopsy tissue sample to a lab so a pathologist can examine it with a microscope for cancer cells. A pathologist is a doctor who's an expert in testing cells and tissues for disease. If the pathologist finds melanoma cells, he or she will determine if the cells are growing into the dermis and measure how deeply they are growing. The pathologist will also assess other features of the melanoma and describe them in the pathology report (see page 19). The pathologist may perform different tests on the skin biopsy samples if first test results aren't clear.

If the pathologist finds cancer cells in the biopsy sample, your doctor may order more tests. Depending on the extent of the melanoma, other tests may be done to see if it has spread. Cancer that has spread from the first tumor to other sites in the body is called a metastasis. Metastases are more likely if the skin tumor has grown deep into the dermis—the second layer of skin. The next section describes the possible tests that may be used to check for metastases.



The pathology report

A pathology report is a document with information about tissue removed from your body during a biopsy or surgery. A pathologist examines the tissue with a microscope to check for cancer cells and then writes the results in the pathology report. Your doctors will use this information to decide which treatment is best for you. The pathology report includes many important test results and details. It states whether cancer cells were found and, if so, what types of cancer cells. Other results in the pathology report are used to determine the extent of the cancer. This is called staging and it is explained in Part 3.

The process of preparing the tissue, examining it, and giving the results to your doctor often takes at least several days. At times, the pathologist may have questions and request a 2nd opinion from another pathologist. For melanoma, the tissue samples should be sent to a dermatopathologist to examine. A dermatopathologist is a doctor who's an expert in testing skin cells and tissues for disease. Contact your treatment team if you have questions about your pathology report or if you would like a copy of it.

Pathology results

Diagnosis. Type of melanoma found, for example, superficial spreading melanoma.

Breslow thickness. How deep the tumor has grown into the skin, measured in millimeters.

Ulceration status. Whether or not the tumor's top skin layer is present and intact (not ulcerated) or is broken or missing (ulcerated).

Dermal mitotic rate. A measure of how many melanoma cells are actually growing and dividing.

Clark level. A scale of tumor depth with 5 scores based on which layer of skin the tumor has grown into.

Peripheral margin status. Presence or absence of cancer cells in the normal-looking tissue around the sides of a tumor removed during surgery.

Deep margin status. Presence or absence of cancer cells in the normal-looking tissue under a tumor removed during surgery.

Microsatellitosis. Tiny tumors (satellites) that have spread to skin within 2 centimeters of the first melanoma tumor and can only be seen with a microscope.

Tumor location. The area of the body where the tumor is found.

Tumor regression. A decrease in the size of the tumor.

Tumor-infiltrating lymphocytes. Presence or absence of white blood cells.

Vertical growth phase. Direction of tumor growth is down into the skin.

Angiolymphatic invasion. Melanoma has grown into (invaded) lymph or blood vessels.

Neurotropism. Melanoma cells are able to grow into (invade) nerves.

Histologic subtype. Grouping of cancer types based on cancer cell qualities.

Pure desmoplasia. Presence or absence of dense connective tissue.

Lymph node tissue tests

A biopsy is the removal of a small amount of tissue from your body to test for disease. After a skin biopsy confirms melanoma, a biopsy of the lymph nodes may be recommended to check if the cancer has spread. Lymph nodes are small groups of special disease-fighting cells located throughout the body. Lymph nodes are connected to one another by lymph vessels—tubes that carry a clear fluid called lymph throughout the body. Most melanomas are found early, when the chance that cancer cells have spread to a lymph node is small. For early melanomas, lymph node testing is usually not recommended. Your doctor will discuss this with you based on the test results in the pathology report.

Types of lymph node biopsies

There is more than one type of lymph node biopsy. A lymph node biopsy may be done during surgery. Or, it may be done with a very thin needle. Which type of biopsy is recommended depends on certain factors such as whether or not there are signs of cancer spread.

Sentinel lymph node biopsy

A sentinel lymph node biopsy is a surgery that removes the sentinel lymph node(s) to test for cancer cells. The sentinel lymph node is the first lymph node to which cancer cells will likely spread from the first (primary) tumor.

This type of lymph node biopsy is recommended when there's an increased chance that the melanoma has spread to a lymph node, but the physical exam did not find any enlarged lymph nodes that may be a sign of cancer spread. It is performed to find very tiny (microscopic) cancer cells in a lymph node that cannot be found by physical exam or imaging tests (described on page 21). Because this is a surgical test, it is not recommended when the chance of cancer spread is very small.

For this biopsy, a special dye is injected into the skin near the primary tumor. The dye follows the path the lymph takes when it leaves the tumor. This allows your doctor to find the first lymph node to which lymph (and possibly a cancer cell) travels. This is called the sentinel lymph node. The sentinel node is usually removed during the same surgery to remove the primary melanoma tumor.

Possible side effects of sentinel lymph node biopsy may include numbness, pain, bruising, and fluid buildup near the biopsy site. Because only one or very few lymph nodes are removed, serious side effects such as lymphedema (swelling due to fluid buildup) are rare.

FNA (fine-needle aspiration) biopsy

This biopsy is often used when your doctor can feel an enlarged lymph node during the physical exam. An FNA biopsy uses a very thin needle to remove small pieces of a lymph node to test for cancer cells. An anesthetic may be applied or injected to numb the area before an FNA biopsy. An FNA biopsy causes little discomfort and doesn't leave a scar. Your doctor may use pictures from a test called a CT (computed tomography) scan to guide the needle into the lymph node. (Read page 21 for details on CT scans.)

Excisional lymph node biopsy

An excisional lymph node biopsy removes enlarged lymph nodes through a small surgical cut in the skin. This type of biopsy may be needed if your doctor finds an enlarged lymph node during the physical exam or imaging test and an FNA biopsy isn't possible or is unclear.

After removing the lymph node(s), your doctor will test the tissue for cancer cells. Local or general anesthesia may be used for this surgery. Local anesthesia is a controlled loss of feeling in a small area due to drugs given in that area. In contrast, general anesthesia is a controlled loss of wakefulness from drugs.

Blood tests

Blood tests are not used to find or confirm (diagnose) melanoma. They may be used to monitor melanoma once it has spread from the skin and lymph nodes to other parts of the body. Abnormal levels of certain chemicals in the blood may be a sign that the cancer has spread to distant parts of the body. One of the chemical levels that doctors look for is a high LDH (lactate dehydrogenase) level. LDH is a substance found in the blood that is involved in energy production in cells. If blood test results are abnormal, your doctor may order other tests.

Imaging tests

Imaging tests take pictures of the inside of your body. Before the test, you may be asked to stop eating or drinking for several hours. You should also remove any metal objects that are on your body. Often there are no side effects.

Imaging tests aren't used to find (diagnose) melanoma, but they may be used if you have signs or symptoms that the melanoma has spread. Such symptoms include pain that can't be explained. Imaging tests may also be given after treatment to check that treatment worked. The imaging tests that may be used for melanoma are described next.

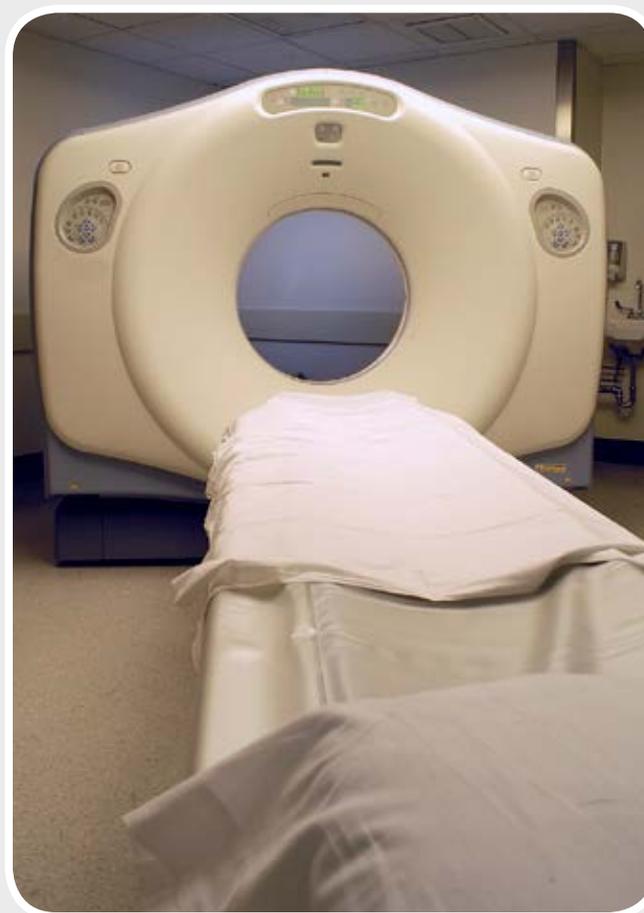
CT scan

A CT (computed tomography) scan takes many pictures of a part of the body from different angles using x-rays. As shown in Figure 8, a CT scan machine is large and has a tunnel in the middle. During the test, you will lie on a table that will move slowly through the tunnel as the machine takes many pictures. Then a computer will combine all the pictures into one detailed picture. Imaging tests can take 15 to 60 minutes to complete.

A computer combines the x-ray pictures to make detailed pictures of organs and tissues inside the body. Before the test, you may be given a contrast dye to make the pictures clearer. The dye may be put in a glass of water for you to drink, or it may be injected into your vein. It may cause you to feel flushed or get hives. Rarely, serious allergic reactions occur. Tell your doctor if you have had bad reactions before.

Figure 8. CT scan machine

A CT machine is large and has a tunnel in the middle. During the test, you will lie on a table that moves slowly through the tunnel.



MRI scan

An MRI (magnetic resonance imaging) scan is like a CT scan except it uses radio waves and powerful magnets to take pictures of the inside of the body. MRI is very useful for looking at the soft tissues, brain, spinal cord, and specific areas in the bone. An MRI scan may cause your body to feel a bit warm. Like a CT scan, a contrast dye may be used. MRI may be used along with other imaging tests or if you are concerned about radiation exposure from other tests.

PET/CT scan

A PET/CT (positron emission tomography/computed tomography) scan shows how your cells are using a simple form of sugar. To make the pictures, a sugar radiotracer first needs to be injected into your vein. The radiotracer lets out a small amount of energy that is seen by the machine that takes pictures. Cancer cells use sugar faster than normal cells, so they look brighter in the pictures. The CT portion of the scanner allows the computer to make a three-dimensional picture of sugar use throughout the body.

Ultrasound

Ultrasound is a test that uses sound waves to take pictures of the inside of the body. This test is sometimes used to get a better look at lymph nodes near the first (primary) melanoma tumor in certain situations. For example, your doctor may consider this test if findings during the physical lymph node exam were unclear. Or, it may be used if you opted not to have other lymph node tests or procedures such as a sentinel lymph node biopsy or lymph node dissection.

For this test, you will lie on a table and have a gel spread over your skin in the area of the lymph nodes. Your doctor will then glide a hand-held device back and forth over the gel area. This device sends out sound waves that bounce off the lymph nodes and other tissues in your body to make echoes. A computer uses the echoes to make a picture of the lymph nodes, shown on a computer screen.



Websites

American Cancer Society

www.cancer.org/cancer/skincancer-melanoma/detailedguide/melanoma-skin-cancer-diagnosed

National Cancer Institute

www.cancer.gov/cancertopics/pdq/treatment/melanoma/Patient/page1#Keypoint5

www.cancer.gov/cancertopics/factsheet/detection/sentinel-node-biopsy

Melanoma Research Foundation

www.melanoma.org/learn-more/melanoma-101/melanoma-diagnosis

Melanoma International Foundation

www.melanomainternational.org/melanoma-facts/pathology/

Review

- Cancer tests are needed if your skin shows signs of cancer.
- Cancer tests are used to plan treatment.
- Your health history and body exam inform your doctor about your health.
- Testing tissue removed from your body is the only way to know if you have melanoma.
- Tests of lymph nodes can show if cancer has spread.
- Blood tests monitor melanoma that has spread far to other parts of the body.
- Tests that take pictures of the inside of your body may show if the cancer has spread.

Melanoma staging



3 Melanoma staging

- 26 What is staging?
- 27 TNM scores
- 28 Stages of melanoma
- 31 Websites | Review



Cancer staging is how your doctors rate and describe the extent of cancer in your body. The rating—called the cancer stage—is based on the results of certain tests. The cancer treatments that doctors recommend highly depend on cancer staging. Part 3 describes the staging system used for melanoma. It also explains the different stages of melanoma. Contact your treatment team if you don't know your cancer stage. This information will help you use the *Treatment guide* in Part 5.

What is staging?

Cancer staging is a way that doctors rate and describe the extent of cancer in your body. Cancer stages are defined by the growth of the first (primary) tumor and its spread to other sites in the body. Cancer staging is used by doctors to plan which treatment is best for you.

Often, melanoma is staged twice. The first staging is the clinical stage. It is based on the physical exam, imaging tests, and skin biopsy of the primary melanoma tumor. Imaging tests take pictures of the inside of your body to look for signs of cancer. A skin biopsy is the removal of a sample of tissue from the concerning spot on your skin to test for cancer cells. The second staging is the pathologic stage. It is based on the clinical staging as well as results from biopsies of lymph nodes and other tissue removed during surgical treatment. Most of the time, the pathologic stage is the most important stage. This is because your lymph nodes can only be completely examined for cancer cells by viewing the biopsy sample with a microscope.

TNM scores

The TNM staging system is used to stage melanoma skin cancer. In this system, each of the letters—T, N, and M—describes a different area of cancer growth. Your doctor will assign a score to each letter. TNM scores are based on the tests described in Part 2. These scores are used to assign the cancer a stage.

T = Tumor

The T category tells you how thick the primary tumor is. The T category is given a score from 1 to 4 based on how deep the tumor has grown into the skin, measured in mm (millimeters). See Figure 9. The sharp point of a pencil is about 1 mm. For T1 to T4 melanomas, subcategories are given based on two important factors. The first factor is the ulceration status—whether or not the tumor’s top skin layer is present and intact (not ulcerated) or is broken or missing (ulcerated). The second factor is the dermal mitotic rate—a measure of how many melanoma cells are dividing per mm² (millimeter squared) of melanoma tissue.

- **Tis** means there are abnormal cells in the epidermis only.
- **T1** tumors are ≤1 mm thick.
 - **T1a** tumors have a mitotic rate of <1/mm² and no ulceration.
 - **T1b** tumors have a mitotic rate of ≥1/mm² or have ulceration or both.
- **T2** tumors are 1.01 to 2.0 mm thick.
 - **T2a** tumors do not have ulceration.
 - **T2b** tumors have ulceration.
- **T3** tumors are 2.01 to 4.0 mm thick.
 - **T3a** tumors do not have ulceration.
 - **T3b** tumors have ulceration.
- **T4** tumors are >4.0 mm thick.
 - **T4a** tumors do not have ulceration.
 - **T4b** tumors have ulceration.

Figure 9. Growth of melanoma into the skin

The T category is given a score from 1 to 4 based on how deep the melanoma tumor has grown into the skin.

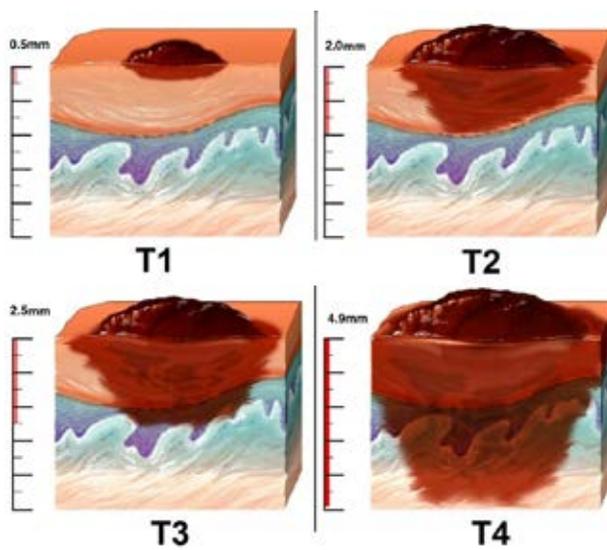


Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

N = Node

The N category reflects how far the melanoma has spread within nearby (regional) lymph nodes. Lymph nodes are small groups of special disease-fighting cells located throughout the body. The main factor for the N score is the number of lymph nodes to which cancer cells have spread. For N1 and N2 melanomas, subcategories are given based on how the lymph node metastases were found and whether cancer cells have spread to nearby skin or lymph vessels.

- **N0** means there is no cancer in nearby lymph nodes.
- **N1** means that cancer cells have spread to only 1 lymph node.
 - **N1a** means that lymph node metastases were found only by the pathologist because they were very small.
 - **N1b** means that the lymph node metastases were found during a physical exam or by imaging tests and then were confirmed by the pathologist.
- **N2** means that cancer cells have spread to 2 to 3 lymph nodes, the lymph vessels, or nearby skin.
 - **N2a** means that the lymph node metastases were found only by the pathologist because they were very small.
 - **N2b** means that the lymph node metastases were found during a physical exam or by imaging tests and then were confirmed by the pathologist.
 - **N2c** means that cancer cells have spread to small areas of nearby skin (called a satellite metastasis) or to nearby lymph vessels (called an in-transit metastasis) but not to the lymph nodes.
- **N3** means that cancer cells have spread to ≥4 lymph nodes; the nodes stick together; or

cancer cells have spread to lymph nodes and to lymph vessels or nearby skin.

M = Metastasis

The M category tells you if cancer cells have spread to distant sites—called metastasis. Melanoma usually spreads to distant skin and lymph nodes first. Next, it often spreads to the lungs, then to the liver, brain, bone, and/or intestines. Different patterns of melanoma spread are also possible. For metastases, subcategories are given based on where the cancer has spread and whether LDH levels are normal or high.

- **M0** means the melanoma hasn't spread to distant sites.
- **M1** means the melanoma has spread to distant organs.
 - **M1a** means the cancer has spread to distant skin sites, areas under the skin, or distant lymph nodes, with normal LDH levels.
 - **M1b** means the cancer has spread to the lungs, with normal LDH levels.
 - **M1c** means cancer has spread to internal organs with normal LDH levels or it has spread to any site with high LDH levels.

Stages of melanoma

The TNM scores are combined to assign the cancer a stage. **Chart 1** shows the melanoma stage groupings. The stages are labeled by Roman numerals 0 to IV. In general, melanomas of the same stage will have a similar prognosis and thus are treated in a similar way. Most melanomas—about 85 out of 100—are found early, before they have spread beyond the primary tumor. Most melanomas that are found and removed early have a good prognosis and a low chance of recurrence. However, for melanomas that are thicker, are ulcerated, and/or have lymph node spread, the risk of recurrence after surgery goes up.

Chart 1. Melanoma stages

Anatomic Stage/Prognostic Groups

Clinical staging*				Pathologic staging**			
Stage 0	Tis	N0	M0	Stage 0	Tis	N0	M0
Stage IA	T1a	N0	M0	Stage IA	T1a	N0	M0
Stage IB	T1b	N0	M0	Stage IB	T1b	N0	M0
	T2a	N0	M0		T2a	N0	M0
Stage IIA	T2b	N0	M0	Stage IIA	T2b	N0	M0
	T3a	N0	M0		T3a	N0	M0
Stage IIB	T3b	N0	M0	Stage IIB	T3b	N0	M0
	T4a	N0	M0		T4a	N0	M0
Stage IIC	T4b	N0	M0	Stage IIC	T4b	N0	M0
Stage III	Any T	≥N1	M0	Stage IIIA	T1–4a	N1a	M0
					T1–4a	N2a	M0
				Stage IIIB	T1–4b	N1a	M0
					T1–4b	N2a	M0
					T1–4a	N1b	M0
					T1–4a	N2b	M0
					T1–4a	N2c	M0w
					T1–4a	N2c	M0
				Stage IIIC	T1–4b	N1b	M0
					T1–4b	N2b	M0
					T1–4b	N2c	M0
					Any T	N3	M0
				Stage IV	Any T	Any N	M1

* Clinical staging includes microstaging of the primary melanoma and clinical/radiologic evaluation for metastases. By convention, it should be used after complete excision of the primary melanoma with clinical assessment for regional and distant metastases.

** Pathologic staging includes microstaging of the primary melanoma and pathologic information about the regional lymph nodes after partial or complete lymphadenectomy. Pathologic Stage 0 or Stage IA patients are the exception; they do not require pathologic evaluation of their lymph nodes.

Used with the permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original source for this material is the *AJCC Cancer Staging Manual*, Seventh Edition (2010) published by Springer Science+Business Media, LLC, www.springer.com.

The 5 stages of melanoma

Stage 0. The melanoma is in situ—in its original place. The melanoma cells are only in the epidermis (the outer layer of skin) and have not invaded the dermis (the second layer of skin, under the epidermis).

Stage I. In stage IA, the tumor is thinner than 1.0 mm, the cells are dividing slowly, and there is no ulceration. Stage IB tumors are thinner than 1.0 mm and have a faster dermal mitotic rate or have ulceration, or they are a bit thicker without ulceration. In stage I, there is no cancer in the lymph vessels, lymph nodes, or distant organs.

Stage II. This stage is divided into three groups—A, B, and C—based on tumor thickness and ulceration status. In stage II, there is no cancer in the lymph vessels, lymph nodes, or distant organs.

Stage III. In stage III, melanoma has spread to nearby lymph vessels, lymph nodes, and/or nearby skin (satellites). The clinical stage includes tumors of any depth with metastases in lymph nodes and/or lymph vessels. Pathologic staging divides tumors

of any size into 3 groups based on ulceration of the primary tumor and the extent of growth into the lymph vessels, lymph nodes, and nearby skin.

Stage IV. The melanoma has spread to one or more distant sites. The tumor may be of any thickness and with any range of spread in lymph vessels and lymph nodes. Stage IV includes all the subcategories (a, b, and c).

The five stages of melanoma are also grouped into three broad categories—local, regional, and metastatic melanoma. Local melanoma is when the cancer cells haven't spread beyond the primary tumor. This includes stage I and stage II melanomas, when the tumor is in the outer layer of skin (epidermis) and the second layer of skin (dermis). This group also sometimes includes stage 0 (in situ melanoma), when melanoma cells are only in epidermis. Regional melanoma is when cancer cells have spread from the primary tumor into lymph nodes and/or lymph vessels in the nearby (regional) area. Stage III is considered regional melanoma. Metastatic melanoma is when the cancer has spread to other organs and parts of the body far away from the primary tumor. Stage IV is metastatic melanoma.



Websites

National Cancer Institute

www.cancer.gov/cancertopics/pdq/treatment/melanoma/Patient/page2#Keypoint10

American Cancer Society

www.cancer.org/cancer/skincancer-melanoma/detailedguide/melanoma-skin-cancer-staging

Melanoma Research Foundation

www.melanoma.org/learn-more/melanoma-101/staging-melanoma

Skin Cancer Foundation

www.skincancer.org/skin-cancer-information/melanoma/the-stages-of-melanoma

Review

- Cancer staging is how doctors rate and describe the extent of cancer in the body.
- Melanoma is grouped into stages to help plan treatment.
- Cancer stages are based on the growth and spread of the first tumor.
- Cancer staging is often done two times—before and after lymph node surgery.

Overview of melanoma treatments



4 Overview of melanoma treatments

34	Surgery
36	Treatment with drugs
40	Radiation and ablative therapy
41	Clinical trials
42	Side effects of cancer treatments
46	Websites Review



There is more than one treatment for melanoma. The main types are described on the next pages. This information may help you use the *Treatment guide* in Part 5. It may also help you know what to expect during treatment. Not every person with melanoma will receive every treatment listed.

Surgery

Generally, surgery is the main (primary) treatment for melanoma skin cancer. Thus, almost all patients with melanoma will have surgery after the skin biopsy. The goal of surgery is to remove all of the cancer from your body. For melanomas that are deemed by your doctor to have a low risk of spread, surgery to remove the primary tumor may be the only treatment needed. There are different types of surgery that may be used for melanoma. The main types of surgery used are a wide excision, sentinel lymph node biopsy, and lymph node dissection.

Wide excision

A wide excision is surgery that removes the entire melanoma tumor along with some normal-looking tissue around its edge. **See Figure 10.** The normal-looking tissue is called the surgical margin. The size of the surgical margin, measured in cm (**centimeters**), depends mostly on the thickness of the tumor. **See Chart 2.** Depending on the size of the surgical margin and the location of the melanoma, a wide excision may be done using local anesthesia that is injected into the area to numb it before the surgery. Local anesthesia is a controlled loss of feeling in a small area of the body due to drugs being given in that area.

When wider margins are removed, or when wide excision is combined with lymph node surgery, general anesthesia is often needed. General anesthesia is a controlled loss of wakefulness from drugs. For lentigo maligna melanoma, particularly on the face, different types of surgery may be recommended to very carefully examine the surgical margins.

A pathologist will examine the removed tissue with a microscope to see if there is any cancer in the surgical margins. If the margins have cancer, you may need more surgery. A positive margin means there is cancer in the surgical margin. A negative margin means there is no cancer in the surgical margin.

Sentinel lymph node biopsy

Based on the features of the primary melanoma tumor, there may be an increased risk of microscopic spread of melanoma cells to nearby (regional) lymph nodes. These lymph nodes are often found in nodal basins. Nodal basins are groups or clusters of lymph nodes found in certain parts of the body, such as the neck, armpit, and groin area. Microscopic spread to a lymph node cannot be detected by touch or by imaging tests. If the risk is high enough, your doctor may recommend a sentinel lymph node biopsy. This surgery involves injecting a special dye into the skin near the primary tumor. The dye follows the path lymph takes when it leaves the tumor. Your doctor will measure movement

Chart 2. Surgical margins for melanoma

T	Tumor thickness	Surgical margin
Tis	In situ	0.5–1.0 cm
T1	≤1.0 mm	1.0 cm
T2	1.01–2.0 mm	1.0–2.0 cm
T3	2.01–4.0 mm	2.0 cm
T4	>4 mm	2.0 cm

of the dye to find the sentinel lymph node—the first lymph node to which lymph, and possibly a cancer cell, travels. The sentinel lymph node will then be removed through a small surgical cut in the skin so a pathologist can test it for melanoma cells.

Lymph node dissection

Your doctor may perform a lymph node dissection if the sentinel lymph node biopsy or other tests show that cancer cells have spread to a lymph node basin. A lymph node dissection is surgery that removes all the lymph nodes in the nodal basin. This surgery is done with general anesthesia—a controlled loss of wakefulness from drugs.

Figure 10. Area of wide excision with a 1.5 cm margin

A wide excision is surgery that removes the entire melanoma tumor along with some normal-looking tissue around its edge. The normal-looking tissue is called the surgical margin.

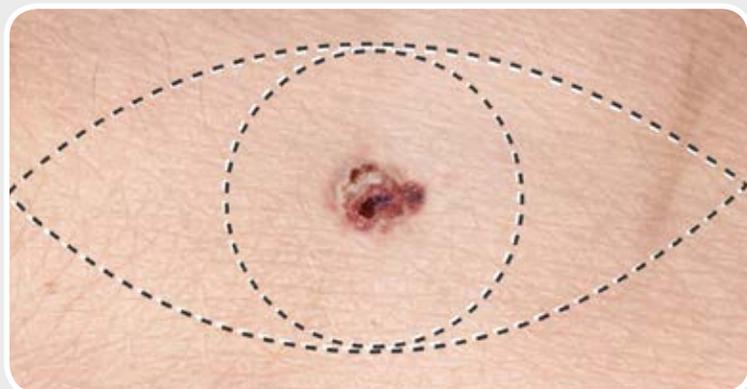


Illustration Copyright © 2014 Nucleus Medical Media, All rights reserved. www.nucleusinc.com

Treatment with drugs

Cancer doctors use drugs to treat melanoma in different ways. Sometimes drugs are given to treat melanoma in a specific, small area of the body, such as the tumor and nearby area. This is called local or regional therapy. Drugs can also be given to treat melanoma throughout the body. This is called systemic therapy. Doctors use systemic drugs to treat cancer cells that may have spread beyond the skin to distant sites. The types of drugs used for melanoma include immunotherapy, targeted therapy, vaccine therapy, and chemotherapy.

Immunotherapy

The immune system is the body's natural defense against infection and disease. The immune system has many chemicals and proteins that are made

naturally in the body. These substances can also be made in a lab to use as immunotherapy. Immunotherapy (also called biological therapy) is treatment that increases the activity of your immune system. By doing so, immunotherapy drugs improve your body's ability to find and destroy cancer cells. Immunotherapy may be used as adjuvant treatment after surgery. Or, it may be used as primary treatment for melanomas that can't be removed by surgery.

Depending on how the drugs are given, immunotherapy can be used as local therapy or as systemic therapy. **Chart 3** lists the immunotherapy drugs used for melanoma.

Two common immunotherapy drugs used as systemic therapy for melanoma are interferon alfa and IL-2 (interleukin-2). They are molecules called

Chart 3. Immunotherapy drugs for melanoma

Generic name	Brand name (sold as)	Route given
<i>Systemic therapy</i>		
Interferon alfa	Intron-A	Liquid injected into a vein or under the skin
Peginterferon alfa-2b	Sylatron	Liquid injected under the skin
Interleukin-2	Proleukin	Liquid injected into a vein
Ipilimumab	Yervoy	Liquid injected into a vein
<i>Local therapy</i>		
Bacillus Calmette-Guérin	None	Liquid injected into the tumor
Interferon alfa	Intron-A	Liquid injected into the tumor
Imiquimod	Aldara, Zyclara	Cream applied to the surface of the tumor
Interleukin-2	Proleukin	Liquid injected into the tumor

cytokines that stimulate immune cells. Cytokines exist naturally in your body as part of the immune system. They can also be made in the lab and be used as drugs to treat melanoma. When used as a treatment, cytokines are given in much higher amounts than what the body naturally makes. High doses of these drugs may cause severe side effects. A side effect is an unplanned or unwanted physical or emotional condition caused by treatment. Doctors don't completely agree about using interferon alfa as adjuvant treatment. This is because its benefits may not clearly outweigh the side effects. Talk with your doctor if you have any concerns about taking interferon alfa.

Ipilimumab is a more recent immunotherapy drug used as systemic therapy for melanoma. It is a monoclonal antibody—a type of immune system

protein made in a lab. It works by removing the “brakes” on the immune system. This boosts the immune system's response against melanoma cells in the body.

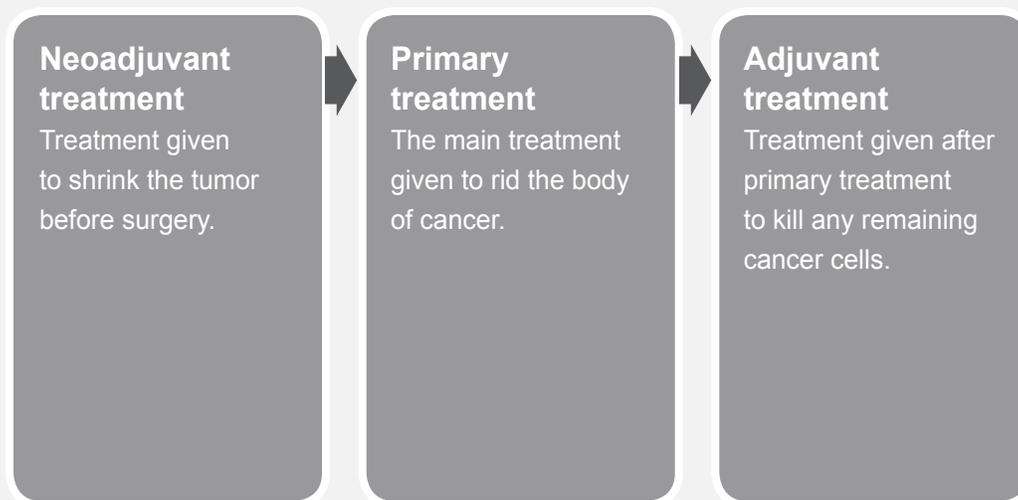
Interferon alfa and IL-2 can also be used as local therapy. In this case, the drugs are injected directly into the tumor with a needle. BCG (**B**acillus **C**almette-**G**uérin) is also a local therapy that is injected directly into the tumor. The third immunotherapy drug used as local therapy for melanoma is imiquimod cream, which is rubbed onto the surface of the tumor.

Targeted therapy

Targeted therapy drugs are designed to specifically target cancer cells. For melanoma, these drugs target the activity of a specific or unique feature of melanoma cells. Genes are the instructions in

Order of treatments

Most people with melanoma will have more than one treatment. When and why treatments are given can be hard to understand. Part 5 gives full details. Here, the terms that describe the order of treatments are explained.



cells for making new cells and controlling how cells behave. An abnormal change in these instructions—called a gene mutation—can cause cells to grow and divide out of control. Thus, some targeted therapy drugs target a specific gene that is associated with cancer. **Chart 4** lists the targeted therapy drugs used for melanoma.

In less than five years, the [FDA](#) (U.S. Food and Drug Administration) has approved 3 new targeted therapies for melanoma: vemurafenib, dabrafenib, and trametinib. All three drugs target tumors that have a damaged *BRAF* gene, so they will only help if you have this type of melanoma. Vemurafenib was the first to be approved, in 2011. Then, dabrafenib and trametinib were each approved in 2013. These drugs are given as a pill that is swallowed.

Imatinib (Gleevec) is a targeted therapy drug that may be used for certain melanoma tumors. It targets tumors that have a damaged *c-kit* gene. Imatinib is also given as a pill that is swallowed. Cancer tissue

may be removed from your body to be tested for specific gene mutations before you begin treatment with a targeted therapy drug.

Vaccine therapy

This type of treatment is being tested in clinical trials for melanoma. A clinical trial is a type of research that studies the safety and effectiveness of a test or treatment. Vaccine therapy for melanoma is similar to vaccines used to prevent other diseases, such as polio, measles, and mumps. These vaccines have a weak or dead virus that can't cause disease but that activates the immune system. Since it is unknown how well vaccine therapies work for melanoma, they are only recommended as part of a clinical trial. (Read page 41 for more details on clinical trials.)

Chart 4. Targeted therapy drugs for melanoma

Generic name	Brand name (sold as)	Route given
<i>Systemic therapy</i>		
Dabrafenib	Tafinlar	Pill that is swallowed
Imatinib	Gleevec	Pill that is swallowed
Trametinib	Mekinist	Pill that is swallowed
Vemurafenib	Zelboraf	Pill that is swallowed

Chemotherapy

Chemotherapy is a type of drug commonly used to treat cancer. Many people refer to this treatment as “chemo.” Chemotherapy drugs kill fast-growing cells, including cancer cells and normal cells. When only one drug is used, it is called a single agent. However, different types of chemotherapy drugs attack cancer cells in different ways. Therefore, more than one drug is often used. A combination regimen is the use of two or more chemotherapy drugs.

Chemotherapy can be used as systemic therapy or regional therapy for melanoma. For systemic therapy, the drug can be given as a pill that is swallowed. Or, it can be given as a liquid that is injected into a vein or under the skin with a needle. When given as systemic therapy, the drugs travel in the bloodstream to treat

cancer throughout the body. For regional therapy, the drug is given as an injection into a limb (arm or leg) in a way that it does not reach or affect the rest of the body. This is called isolated limb infusion/perfusion. The chemotherapy drug melphalan is given this way for melanoma. **Chart 5** lists the chemotherapy drugs used for melanoma.

Chemotherapy is given in cycles of treatment days followed by days of rest. These cycles vary in length depending on which drugs are used. Usually, the cycles are 14, 21, or 28 days long. These cycles give the body a chance to recover before the next treatment. Thus, a regimen of 3 to 6 months has rest periods between treatments. A regimen is a treatment plan that specifies the dosage, schedule, and length of treatment.

Chart 5. Chemotherapy drugs for melanoma

Generic name	Brand name (sold as)	Route given
<i>Systemic therapy</i>		
Carboplatin	None	Liquid injected into a vein
Cisplatin	Platinol	Liquid injected into a vein
Dacarbazine	DTIC-Dome	Liquid injected into a vein
Nab-paclitaxel	Abraxane	Liquid injected into a vein
Paclitaxel	Taxol	Liquid injected into a vein
Temozolomide	Temodar	Pill that is swallowed or liquid injected into a vein
Vinblastine	Velban, Velsar	Liquid injected into a vein
<i>Regional therapy</i>		
Melphalan	Alkeran	Isolated limb infusion/perfusion

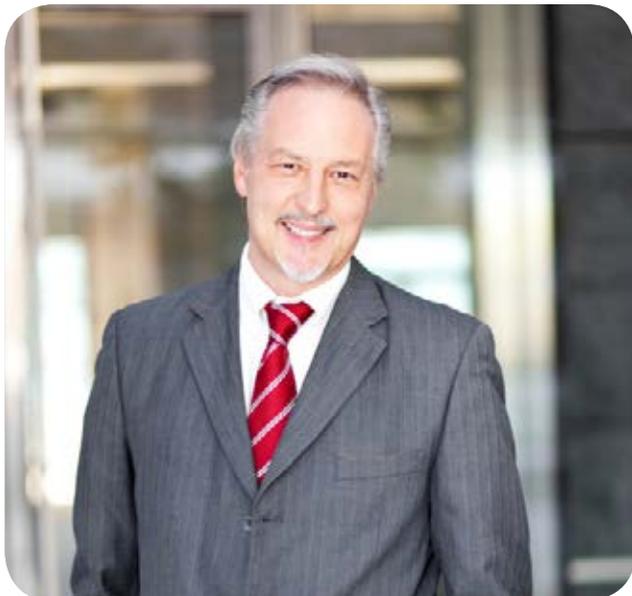
Radiation and ablative therapy

Radiation therapy

Radiation therapy uses a beam of high-energy rays to kill cancer cells. The rays damage a cell's instructions for making and controlling cells. This either kills the cancer cells or stops new cancer cells from being made. For melanoma, radiation is often given using a machine outside the body. This method is called external beam radiation therapy.

Radiation therapy is almost never used to treat the first (primary) melanoma tumor. Sometimes, it may be used as adjuvant treatment after surgery to kill any cancer cells that might have been left behind. A more common use of radiation therapy for melanoma is to relieve symptoms such as pain caused by the cancer. Another more common use is to treat recurrent or metastatic melanoma. Recurrent melanoma is melanoma that has come back after treatment. Metastatic melanoma is melanoma that has spread to parts of the body far away from the first tumor.

SRS (stereotactic radiosurgery) is a type of external beam radiation therapy that may be used for melanoma. This type of radiation therapy is most



often used to treat melanoma that has spread to the brain—called brain metastases. SRS delivers a high dose of radiation to a very specific, small area of the body.

Ablative therapy

Ablative therapy is treatment used to destroy a tumor, tissue, or organ. Carbon dioxide laser treatment is an ablative therapy for melanoma skin cancer. This treatment is a gas-produced, colorless light beam that is used like a surgical knife. The lasers cut into the surface of the skin to kill the cancer cells without reaching deeper skin layers. Ablative therapy is not used to treat the primary melanoma tumor, but may be used to treat satellite metastases or in-transit metastases. Satellite metastases are small melanoma tumors in the skin near the first tumor, less than 2 centimeters away. In-transit metastases are spots where cancer has spread into lymph vessels more than 2 centimeters away from the first tumor but not into lymph nodes.

Side effects of immunotherapy

Side effects of immunotherapy depend on the drug, how it is given, the amount taken, the length of treatment, and the person. When given in high doses, some immunotherapy drugs can cause very serious side effects. Some of the more common side effects of each immunotherapy drug used for melanoma are listed below.

Interleukin-2:

- Flu-like symptoms (fever, chills, headache, tiredness, body aches),
- Low blood pressure,
- Nausea and/or vomiting,
- Shortness of breath,
- Confusion,
- Fluid buildup,
- Heart damage,
- Skin rash, and
- Abnormal blood tests suggesting liver or kidney problems.

Interferon:

- Flu-like symptoms (fever, chills, tiredness, headache, body aches),
- Nausea,
- Vomiting,
- Not feeling hungry,
- Depression,
- Hair thinning, and
- Liver damage.

Ipilimumab:

- Fatigue,
- Diarrhea,
- Skin rash, and
- Itching.

Ipilimumab can cause serious side effects such as severe inflammation and problems in the intestines, liver, nerves, skin, eyes, and hormone glands. See *Principles of systemic therapy* on page 80 for more details.

Side effects of targeted therapy

Side effects of targeted therapy depend on the drug, dose, length of treatment, and the person. Some side effects listed below are caused only by one targeted drug. Others are caused by both targeted drugs but differ in how likely they are to occur. Common side effects of targeted drugs for melanoma include:

- Joint and/or muscle pain,
- Headache,
- Fever,
- Fatigue,
- Hair loss,
- Skin rash and/or itching,
- Other skin cancer (not melanoma),
- Sun sensitivity,
- Nausea and/or vomiting,
- Low blood cell counts,
- Swelling, and
- Diarrhea.

Questions about **treatment** to ask your doctor

1. What stage of melanoma do I have?
2. What are the available treatments for this stage of melanoma?
3. Will I have more than one treatment?
4. What are the risks and benefits of each treatment for melanoma?
5. Will my age, general health, stage of melanoma, and other health conditions limit my treatment choices?
6. Do I have to get treated?
7. Where will I be treated? Will I have to stay in the hospital or can I go home after each treatment?
8. What can I do to prepare for treatment? Should I stop taking my medications?
9. How soon should I start treatment? How long does treatment take?
10. How much will the treatment cost? How can I find out how much my insurance company will cover?
11. How likely is it that I'll be cancer-free after treatment?
12. What symptoms should I look out for while being treated for melanoma?
13. When will I be able to return to my normal activities?
14. What is the chance that the melanoma will come back or spread?
15. What should I do after I finish treatment?
16. Are there supportive services that I can get involved in? Support groups?



Websites

National Cancer Institute

www.cancer.gov/cancertopics/pdq/treatment/melanoma/Patient/page4

www.cancer.gov/clinicaltrials/learningabout/Taking-Part-in-Cancer-Treatment-Research-Studies

www.cancer.gov/cancertopics/factsheet/Therapy/biological

American Cancer Society

www.cancer.org/cancer/skincancer-melanoma/detailedguide/melanoma-skin-cancer-treating-general-info

www.cancer.org/treatment/treatmentsandsideeffects/treatmenttypes/index

Skin Cancer Foundation

www.skincancer.org/skin-cancer-information/melanoma/melanoma-treatments

Melanoma Research Foundation

www.melanoma.org/learn-more/melanoma-101/melanoma-treatment

NCCN

www.nccn.org/patients/resources/clinical_trials/default.aspx

Review

- Surgery to remove tumors is often used to treat melanoma.
- Drugs can be given to treat melanoma in one area or throughout the body.
- Chemotherapy drugs kill fast-growing cells.
- Immunotherapy drugs help the immune system fight off cancer cells.
- Targeted therapy drugs specifically target cancer cells.
- Radiation therapy kills cancer cells or stops new cancer cells from forming.

Treatment guide



5 Treatment guide

50 5.1 Melanoma testing

Presents the first set of tests used to confirm melanoma and plan treatment.

54 5.2 In situ and local melanoma

Presents the tests and treatments recommended for melanoma tumors that have not spread beyond the skin. This includes stage 0 (in situ), stage I, and stage II.

60 5.3 Regional melanoma

Presents the tests and treatments for melanoma that has spread from the first tumor to nearby skin, lymph vessels, and/or lymph nodes—stage III melanoma.

66 5.4 Persistent melanoma and nonmetastatic recurrence

Presents the treatments for melanoma that did not go away or came back after treatment but has not spread beyond the area near the first tumor.

74 5.5 Metastatic melanoma

Presents the treatments for melanoma that has spread to parts of the body far away from the first tumor—stage IV melanoma.



Part 5 is a guide through the treatment options for people with melanoma. It shows what tests and treatments are recommended under which conditions. This information is taken from the treatment guidelines written by NCCN experts for melanoma doctors.

Much effort has been made to make this guide easy to read. Charts list the treatment options and map the steps through the treatment process. The text along with each chart explains the information shown in the chart. Some words that you may not know are defined on the page and in the *Dictionary* on page 92. Words defined in the *Dictionary* are underlined when first used on a page. More information about the tests and treatments in this guide can be found in Parts 2 through 4.



5.1 Melanoma testing

Chart 5.1.1 Skin biopsy

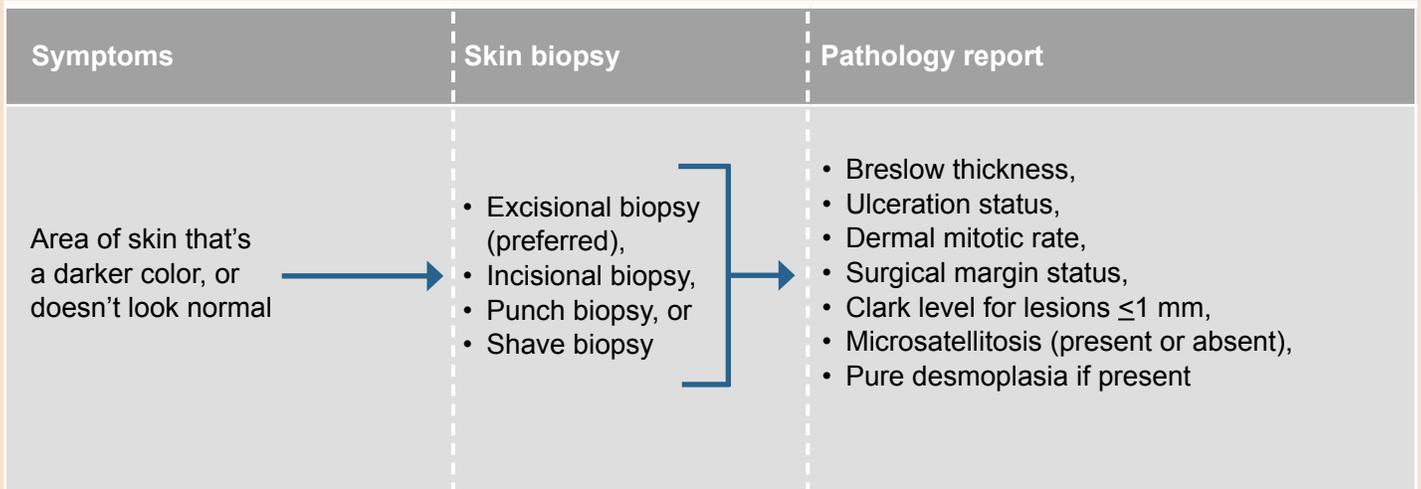


Chart 5.1.1 shows the initial tests that are recommended when your doctor thinks you might have melanoma skin cancer. These tests help your doctor to confirm (diagnose) melanoma and plan treatment.

Your doctor may test you for melanoma if an area of your skin is darker in color and doesn't look normal. The abnormal-looking area—called a lesion—may be a mole, blemish, or spot. To confirm if you have melanoma, all or part of the skin lesion must be removed and tested for cancer cells. This is called a skin biopsy. (Read Part 2 on page 17 for skin biopsy details.)

An excisional biopsy with 1- to 3-mm surgical margins is preferred for diagnosis. An excisional biopsy removes the entire lesion along with a small amount of normal-looking skin around its edge. The normal-looking skin removed is called the surgical margin. The direction and width of the surgical cut should be done in a way that it won't affect future treatment. If this can't be done, your doctor may perform an incisional biopsy or punch biopsy instead. These

biopsies only remove part of the lesion. An incisional biopsy or a punch biopsy may be used for a very large lesion. They may also be used for a lesion that's on a part of the body where it can't be easily removed. If melanoma is unlikely, your doctor may do a shave biopsy instead. However, this biopsy may not go deep enough to measure the full thickness of the lesion.

After the skin biopsy, the tissue sample will be sent to a pathologist to be tested for cancer cells. A pathologist who has experience with skin lesions should examine the biopsy sample. A pathology report is a document with information about tissue removed from your body during a biopsy or surgery. The pathology report should include a number of important results from the biopsy examination. Read page 19 for details on what should be included in the pathology report. If test results of the first biopsy are unclear, your doctor may perform another biopsy. Or, the pathologist may do other tests on the tissue sample.

Chart 5.1.2 Medical history and physical exams**Exams**

- Medical history,
- Physical exam with focus on nearby lymph nodes and organs,
- Complete skin exam, and
- Assess for risk factors for melanoma.

Chart 5.1.2 shows the tests recommended after your doctor has confirmed that you have melanoma. For your medical history, your doctor will ask about general symptoms, changes in the look and size of the tumor, and any lifetime medical conditions. Your doctor will also assess your risk for melanoma. A risk factor is anything that increases the chance of getting a disease. Your risk is higher if you have had melanoma before, have a history of unusual moles, or if any of your immediate family members have had melanoma.

During the physical exam, your doctor will note the current size, shape, color, and texture of the melanoma tumor. Any bleeding and scaling will be recorded. Your doctor will feel your lymph nodes and organs near the lesion to check if they are normal in size and firmness. A complete skin exam will be done to check for other unusual spots or moles.

Based on the biopsy test results, pathology report, and physical exam, your doctor will determine the clinical stage of the melanoma. The clinical stage is a rating of the extent of melanoma in your body based on tests done before surgery. Which tests and treatments you will have next depends on the clinical stage of melanoma. (Read Part 3 on page 26 for more details on melanoma stages.)

5.2 In situ and local melanoma

Chart 5.2.1 Tests for in situ and local melanoma

Clinical stage	Tests
Stage 0 (in situ)	<ul style="list-style-type: none"> • Medical history, • Physical exam, and • Imaging tests (CT, PET/CT, MRI) for specific signs or symptoms
Stage IA or IB (≤ 0.75 mm thick)	<ul style="list-style-type: none"> • Medical history, • Physical exam, and • Imaging tests (CT, PET/CT, MRI) for specific signs or symptoms
Stage IA (0.76–1 mm thick) Stage IB (0.76–1 mm thick) Stage II	<ul style="list-style-type: none"> • Medical history, • Physical exam, • Imaging tests (CT, PET/CT, MRI) for specific signs or symptoms, and • Possible sentinel lymph node biopsy

Part 5.2 describes the tests and treatments that are recommended for in situ and local melanoma. In situ melanoma—stage 0—is when melanoma cells are only in the outer layer of the skin (epidermis). Local melanoma includes stages I and II. Local melanoma tumors have grown into both skin layers—the epidermis and dermis, the second layer of skin. But, these melanomas haven’t spread anywhere beyond the skin. (See Part 3 on page 26 for more details on the stages of melanoma.)

Chart 5.2.1 shows the initial tests that are recommended for in situ and local melanoma, which includes stages 0, I, and II. The clinical stage is a rating of the extent of melanoma in your body based on tests done before surgery.

A few tests are recommended for all in situ and local melanoma tumors. These include a medical history and physical exam. Imaging tests—tests that take pictures of the inside of the body—are only recommended if you have a specific sign or symptom that your doctor needs to check. (Read page 21 for imaging test details.) Routine imaging and blood tests are not recommended in the absence of specific signs or symptoms.

For stage II and some thicker stage IA and IB melanoma tumors, it may be more likely that cancer cells have spread to lymph nodes based on certain risk factors. Therefore, your doctor may talk to you about having a surgical test called a sentinel lymph node biopsy.

Chart 5.2.2 Primary and adjuvant treatment

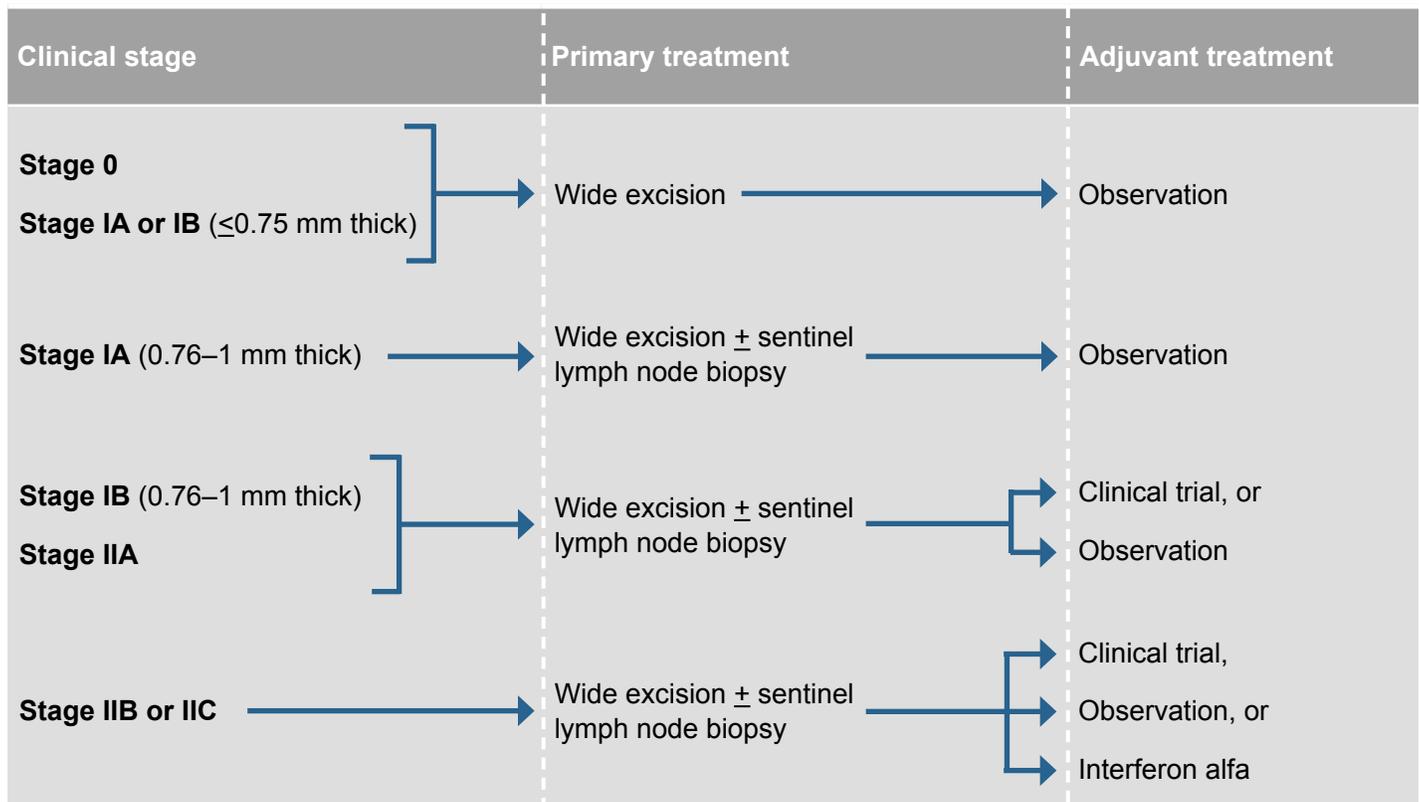


Chart 5.2.2 shows the recommended treatments for stage 0, I, and II melanomas. Primary treatment is the first or main treatment used to rid the body of cancer. Adjuvant treatment is additional treatment given after the main one to try to kill any remaining cancer cells and lower the chance of cancer recurrence (return). For local melanomas of stage 0, IA, or IB, the chance of metastasis or recurrence is low. Thus, surgery to remove the primary tumor may be the only treatment needed. However, some local melanomas may have certain features that increase the chance of metastasis or recurrence. For these melanomas, additional treatments may be needed.

Primary treatment

For stage 0, I, and II melanomas, the primary treatment is a wide excision. A wide excision is a surgery to remove the whole tumor and some normal-looking tissue around its edge. The normal-looking tissue is called the surgical margin. The size of the surgical margin depends mostly on the thickness of the tumor. (See page 35 for more details about surgical margins for melanoma.) For lentigo maligna melanoma, wider margins may be needed, particularly on the face.

Under certain circumstances, surgery may not be possible for melanoma in situ, particularly lentigo maligna type on the face. In such cases, your doctor may discuss other treatment options. These may

Chart 5.2.3 In situ and local melanoma follow-up testing

Stage	Follow-up tests
All stages	<ul style="list-style-type: none"> • Complete skin exam every year for life, • Regular self-exam of skin, • Imaging tests for specific symptoms, and • Possible regional lymph node ultrasound
Stage IA	<ul style="list-style-type: none"> • Tests recommended for all stages, and • Check lymph nodes during skin self-exam, • Medical history and physical exam with focus on skin and lymph nodes <ul style="list-style-type: none"> - Every 6 to 12 months for 5 years, then - Every year as needed
Stage IB	
Stage IIA	
Stage IIB	<ul style="list-style-type: none"> • Tests recommended for all stages, and • Check lymph nodes during skin self-exam, • Medical history and physical exam with focus on skin and lymph nodes <ul style="list-style-type: none"> - Every 3 to 6 months for 2 years, then - Every 3 to 12 months for 3 years, then - Every year as needed, • Possible chest x-ray, CT, PET/CT scans every 4 to 12 months to screen for recurrence or metastases, and • Possible brain MRI each year
Stage IIC	

Chart 5.2.3 shows the tests that are recommended after completing treatment for stage 0, I, or II melanoma. Follow-up tests are used to monitor you after treatment to check for signs of recurrence or metastasis. A recurrence is when cancer comes back (recurs) after a period of time. Metastasis is when cancer spreads from the first (primary) tumor to other sites in the body. The tests and frequency of follow-up described above are based on the risk of recurrence for each stage.

Four main follow-up tests are used for all stages of melanoma. First, you should have a complete skin exam by your doctor every year for life. You should also examine your own skin on a regular basis. Imaging tests such as a CT, PET/CT, or MRI scan are only suggested if you have specific signs or symptoms of cancer that your doctor needs to check out. An ultrasound of nearby (regional) lymph nodes may be used for follow-up in certain situations. One is when the physical lymph node exam findings are unclear. The second is if you did not undergo the sentinel lymph node biopsy that was offered.

The third is if you did not have a complete lymph node dissection after the sentinel lymph node biopsy found cancer. (Read Part 2 on page 16 for more test details.) Routine blood tests to check for recurrence are not recommended. No other follow-up tests are recommended for stage 0 (in situ) melanoma.

For stage I and II melanomas, you should check your lymph nodes during the self-exam of your skin. You should also have regular medical history check-ups and physical exams. Your doctor will look carefully at your lymph nodes and skin during the physical exam. The chart to the left lists the recommended exam schedule.

For stage IIB and IIC melanomas, you may have imaging tests to screen for cancer recurrence or metastases. Screening means testing to detect a disease when there are no signs or symptoms present. Imaging tests for screening may be done every 4 to 12 months. These tests may be done for up to 5 years after treatment has ended. Imaging tests are not recommended after 5 years if there has been no recurrence and you don't have any symptoms.

If follow-up tests show that the cancer has come back (recurred), treatment options will depend on the type of recurrence. Persistent melanoma is when cancer cells remain after surgery or other treatments. A nonmetastatic recurrence is cancer that has come back after treatment but hasn't spread beyond the area near the first tumor. Metastatic melanoma is cancer that has spread to parts of the body far from the first tumor.

Next steps: 

For persistent melanoma or nonmetastatic recurrence, see Part 5.4.
For metastatic melanoma, see Part 5.5.

5.3 Regional melanoma

Chart 5.3.1 Regional melanoma tests

Stage	Tests
Clinical stage I or II upstaged to pathologic stage III (Cancer in lymph nodes found by sentinel lymph node biopsy)	Possible baseline imaging tests (CT, PET/CT, MRI) for staging and to check out specific symptoms
Clinical stage III (Enlarged lymph nodes found by physical exam or imaging tests)	
Stage III in-transit (Cancer cells found in lymph vessels but not in lymph nodes)	
	<ul style="list-style-type: none"> • FNA biopsy (preferred) or excisional biopsy of enlarged lymph nodes, and • Baseline imaging tests (CT, PET/CT, MRI) for staging and to check out specific symptoms

Part 5.3 describes the tests and treatments that are recommended for stage III melanoma, also called regional melanoma. Regional melanoma has spread beyond the first (primary) tumor to nearby lymph nodes, lymph vessels, or both. Lymph nodes are small groups of special disease-fighting cells located throughout the body. Lymph vessels are tiny tubes that connect lymph nodes to each other. Lymph vessels also carry a clear fluid (lymph) containing white blood cells throughout the body. Regional melanoma has not spread to parts of the body far away from the primary tumor. (See Part 3 on page 26 for details on melanoma stages.)

Chart 5.3.1 shows the initial tests that are recommended for stage III (regional) melanoma. The clinical stage is a rating of the extent of melanoma in your body based on the physical exam, imaging tests, and biopsy of the primary tumor. The pathologic stage is based on the clinical stage as well as tests of lymph

nodes and other tissue removed during surgical treatment.

Clinical stage I or II melanoma is upstaged to pathologic stage III if the sentinel lymph node biopsy finds cancer in the sentinel lymph node. In this case, your doctor may use baseline imaging tests for staging and to check out specific signs or symptoms of cancer. A baseline is a starting point to which future test results are compared. (Read Part 2 on page 21 for more details on imaging tests.)

Clinical stage III melanoma is when your doctor feels enlarged lymph nodes during the physical exam or sees them with imaging tests. **Stage III in-transit melanoma** is when cancer cells have spread into nearby lymph vessels more than 2 cm away from the first tumor, but not into nearby lymph nodes. For these stages, your doctor will perform a biopsy on the enlarged lymph nodes to test them for cancer

Chart 5.3.2 Primary and adjuvant treatment

Stage	Primary treatment	Adjuvant treatment
Pathologic stage III upstaged from clinical stage I or II (Cancer in lymph nodes found by sentinel lymph node biopsy)	Clinical trial, or Lymph node dissection	Clinical trial, Observation, or Interferon alfa
Stage III in-transit (Cancer found in lymph vessels but not in nearby lymph nodes)	Clinical trial (preferred), Wide excision, BCG, interferon alfa, or IL-2 injection in tumor, Imiquimod cream, Laser/ablative therapy, Consider palliative radiation if unresectable, Heated melphalan injection confined to limb, or Systemic therapy	Clinical trial, Observation, or Interferon alfa
Clinical stage III (Enlarged lymph nodes found by physical exam or imaging tests)	Wide excision with lymph node dissection	Clinical trial, Observation, or Interferon alfa, and/or Possible radiation therapy to nodal basin

Chart 5.3.2 shows the recommended treatments for stage III melanoma, also called regional melanoma. Primary treatment is the first or main treatment used to rid your body of cancer. Adjuvant treatment is additional treatment given after the main one to try to kill any remaining cancer cells and lower the chance of cancer recurrence (return). Read Part 4 on page 34 for details on each type of treatment listed in the chart above.

For pathologic stage III melanoma that was upstaged based on the sentinel lymph node biopsy, the tumor has already been removed. Therefore, there are only two primary treatment options. One option is to have a complete lymph node dissection. The other option is to join a clinical trial testing other options. An example of such a trial is careful observation of the nearby (regional) lymph nodes using ultrasound.

After primary treatment, there are three options for adjuvant treatment. You can join a clinical trial, begin observation, or receive interferon alfa. Observation is a period of scheduled follow-up testing to watch for cancer spread (metastasis) or return (recurrence).

For stage III in-transit melanoma, primary treatment within a clinical trial is preferred if one is available. If possible, the preferred treatment is surgery to remove the tumor(s) with negative margins. Negative margins means there are no cancer cells in the normal-looking tissue around the edge of the tumor removed during surgery. Your doctor may consider doing a sentinel lymph node biopsy during surgery since it is likely that the cancer has spread. (See page 20 for lymph node biopsy details.) If the entire tumor can't be removed with surgery, there are other treatment options. Local therapy options include BCG, interferon alfa, or IL-2 injections into the tumor or imiquimod cream rubbed onto the tumor. These are immunotherapy drugs and may be good options if you have only a few in-transit metastases. Laser/ablative therapy is also a local therapy option. Your doctor may consider palliative radiation to relieve symptoms if the cancer can't be removed by surgery. A regional therapy option is isolated limb infusion/perfusion with the chemotherapy drug melphalan. This may be a good option if you have several in-transit metastases in one arm or leg. Another treatment option is systemic therapy. Chart 6 on page 81 lists systemic therapy options. For more details, read *Principles of systemic therapy* on page 80.

After primary treatment for stage III in-transit melanoma, you may have adjuvant treatment if there are no signs of cancer. There are three options for adjuvant treatment. You can join a clinical trial, begin observation, or receive interferon alfa. Observation is a period of scheduled follow-up testing to watch for cancer metastasis or recurrence. (See Part 4 on page 34 for details on each type of treatment.)

For clinical stage III melanoma, the primary treatment option is a wide excision of the melanoma with a complete lymph node dissection of all affected nearby lymph nodes. After the tumor and lymph node surgery, there are four options for adjuvant treatment. The three main options are to join a clinical trial, begin observation, or receive interferon alfa. In selected patients, radiation therapy to the area near the tumor where the group of lymph nodes was removed (nodal basin) may be considered. For more information, read *Principles of radiation therapy* on page 79.

Next steps: 

For recommended follow-up tests after treatment for regional melanoma, see Chart 5.3.3.

Chart 5.3.3 Regional melanoma follow-up testing

Stage	Follow-up tests
Stage III →	<ul style="list-style-type: none"> • Complete skin exam every year for life, • Regular self-exam of skin and lymph nodes, • Medical history and physical exam with focus on skin and lymph nodes <ul style="list-style-type: none"> - Every 3 to 6 months for 2 years, then - Every 3 to 12 months for 3 years, then - Every year as needed, • Possible regional lymph node ultrasound, • Imaging tests for specific symptoms, • Possible chest x-ray, CT, PET/CT scans every 4 to 12 months to screen for recurrence or metastases, and • Possible brain MRI each year

Chart 5.3.3 shows the follow-up tests that are recommended after completing primary or adjuvant treatment for stage III regional melanoma. Follow-up tests are used to monitor you after treatment and check for signs of recurrence or metastasis. A recurrence is when cancer comes back (recurs) after a period of time. Metastasis is when cancer spreads from the first (primary) tumor to other sites in the body. Your doctor may suggest more or less frequent follow-up testing based on your risk for recurrence.

A complete skin exam by your doctor is recommended every year for life. In addition, you should examine your own skin and lymph nodes on a regular basis. You should also have regular medical history check-ups and physical exams. During the physical exam, your doctor will carefully examine your lymph nodes and skin. The chart above lists the recommended exam schedule.

An ultrasound of nearby (regional) lymph nodes may be used for follow-up in certain situations. One situation is when the physical lymph node exam

findings are unclear. The second situation is if you did not undergo the sentinel lymph node biopsy that was offered. The third situation is if you did not have a complete lymph node dissection after the sentinel lymph node biopsy found cancer.

Imaging tests are recommended to check out specific signs or symptoms of cancer. You may also have imaging tests to screen for cancer recurrence or metastases. Screening means testing to detect a disease when there are no signs or symptoms present. You may have imaging tests for screening every 4 to 12 months and a brain MRI every year. These tests may be done for up to 5 years after treatment has ended. Imaging tests are not recommended after 5 years if there has been no recurrence and you don't have any symptoms. Routine blood tests to check for recurrence are not recommended. (See Part 2 on page 16 for more test details.)

If follow-up tests show that the cancer has come back (recurred), treatment options will depend on the type

5.4 Persistent melanoma and nonmetastatic recurrence

Chart 5.4.1 Tests for persistent melanoma and nonmetastatic recurrence

Stage	Tests
Persistent melanoma or true local scar recurrence	<ul style="list-style-type: none"> • Skin biopsy to confirm, and • Other tests based on the features and stage of the primary tumor
Local, satellite, and/or in-transit recurrence	<ul style="list-style-type: none"> • FNA or excisional biopsy, and • Baseline imaging tests (CT, PET/CT, MRI) for staging and to check out specific signs or symptoms
Regional lymph node recurrence	<ul style="list-style-type: none"> • FNA biopsy (preferred) or excisional biopsy of enlarged lymph nodes, • Baseline imaging tests (CT, PET/CT, MRI) for staging and to check out specific signs or symptoms, and • CT of pelvis if lymph nodes in groin are enlarged

Part 5.4 describes the recommended tests and treatments for melanoma that came back after treatment at or near the site of the first (primary) melanoma.

Persistent melanoma, or true local scar recurrence, refers to cancer cells that remain after surgery or to cancer cells not destroyed by other treatments. Persistent melanoma is found in or right next to the scar from the surgery to remove the primary melanoma. It is defined by the presence of melanoma in the most superficial layers of the skin (epidermis or superficial dermis).

Local recurrence means the cancer returned in the surgical scar where the primary melanoma tumor was removed. However, as opposed to persistent disease, the cancer cells are found in the scar tissue within the deep tissue of the dermis or subcutaneous fat.

Satellite recurrence means the cancer has come back and formed tumors in small areas of skin less than 2 cm away from the first melanoma tumor, but outside the scar.

In-transit recurrence means the cancer has come back and formed tumors in lymph vessels more than 2 cm away from the first tumor, but not in the lymph nodes. These are called “node-negative” recurrences because there is no cancer in the lymph nodes.

Regional lymph node recurrence means the cancer has come back in the lymph nodes near the first melanoma. This is also referred to as a “node-positive” recurrence.

Distant recurrence means the cancer has come back in tissues or organs far beyond the first melanoma and regional lymph nodes. For distant metastatic recurrence, see Part 5.5.

Chart 5.4.1 shows the recommended tests for cancer that came back after treatment and is at or near the site of the first (primary) melanoma. Read Part 2 on page 16 for more details on the tests listed in the chart.

For persistent melanoma or true local scar recurrence, the first recommended test is a skin biopsy to confirm the diagnosis. A biopsy is the removal of small amounts of tissue from your body to test for disease. The next tests you will receive are based on the stage and features of the primary melanoma tumor.

For local, satellite, and/or in-transit recurrence, the first recommended test is a biopsy to confirm the diagnosis. Options include an [FNA biopsy](#) or [excisional biopsy](#). During the biopsy, your doctor may remove another tissue sample for [genetic testing](#) if you might join a [clinical trial](#) of [targeted therapy](#). (See page 38 for details.) Baseline [imaging tests](#) are recommended for [staging](#) and to check out specific signs or symptoms. A baseline is a starting point to which future test results are compared.

For regional lymph node recurrence, the first recommended test is a biopsy of the enlarged lymph nodes to confirm the diagnosis. An FNA biopsy is preferred, but an excisional biopsy is another option. Baseline imaging tests are recommended for staging and to check out specific symptoms. A [CT scan](#) of your pelvis is recommended if the regional lymph node recurrence is in your groin.

Next steps: 

For persistent melanoma or true local scar recurrence, see Chart 5.2.1 for the next tests that are recommended. For node-negative recurrence, see Chart 5.4.2 for recommended treatments. For regional lymph node recurrence, see Chart 5.4.3 for recommended treatments.

Chart 5.4.2 Node-negative recurrence treatment

Stage	Initial treatment for recurrence	Adjuvant treatment
Persistent melanoma or true local scar recurrence	Wide excision with possible sentinel lymph node biopsy	Options based on the pathologic stage of the recurrence
Local, satellite, and/or in-transit recurrence	<ul style="list-style-type: none"> → Clinical trial (preferred), → Wide excision, → BCG, interferon alfa, or IL-2 injection in tumor, → Imiquimod cream, → Laser/ablative therapy, → Consider palliative radiation if unresectable, → Heated melphalan injection confined to limb, or → Systemic therapy 	<ul style="list-style-type: none"> → Clinical trial, → Observation, or → Interferon alfa

Chart 5.4.2 shows the recommended treatments for cancer that came back in or near the site of the first melanoma. Node-negative means that there are no cancer cells in the lymph nodes. See page 66 for recurrence definitions. The initial or main treatment is called the primary treatment. Adjuvant treatment is additional treatment given after the main one to try to kill any remaining cancer cells and lower the chance of recurrence. Read Part 4 on page 34 for details on each type of treatment listed in the chart.

For persistent melanoma, or true local scar recurrence, a wide excision is recommended. A wide excision is surgery to remove the whole tumor along with some normal-looking tissue around its edge. The

normal-looking tissue is called the surgical margin. The size of the surgical margin depends on the thickness of the tumor as shown in Chart 2 on page 35. You may also have a sentinel lymph node biopsy during surgery to remove the tumor. Any additional treatment recommendations will be based on the pathologic stage of the recurrence as described in Chart 5.2.2 on page 56.

For local, satellite, and/or in-transit recurrence, treatment within a clinical trial is preferred in all cases if one is available. A wide excision with negative margins is recommended if all of the cancer can be removed. Negative margins means there are no cancer cells in the normal-looking tissue around

the edge of the tumor removed during surgery. Your doctor may consider doing a sentinel lymph node biopsy during the surgery. (See page 35 for details.) If surgery isn't possible, local therapy options include BCG, interferon alfa, or IL-2 injections into the tumor, imiquimod cream rubbed onto the tumor, and laser/ablative therapy. Your doctor may consider palliative radiation to relieve symptoms if the cancer can't be removed by surgery. A regional therapy option is isolated limb infusion/perfusion with the chemotherapy drug melphalan. Systemic therapy options are listed in Chart 6 on page 81.

If there are no signs of cancer after initial recurrence treatment, you may have adjuvant treatment. There are three options for adjuvant treatment. You can join a clinical trial—a type of research on a test or treatment to assess its safety or how well it works. You can begin observation with follow-up tests. Or, you can receive interferon alfa, a type of immunotherapy. (Read Part 4 on page 34 for details on each type of treatment.)

Next steps: 

Recommended follow-up tests are based on the cancer stage—see Chart 5.2.3 for stage 0, I, or II, and see Chart 5.3.3 for stage III. For metastatic melanoma, see Part 5.5 for recommended tests and treatments.

Chart 5.4.3 Regional lymph node recurrence treatment

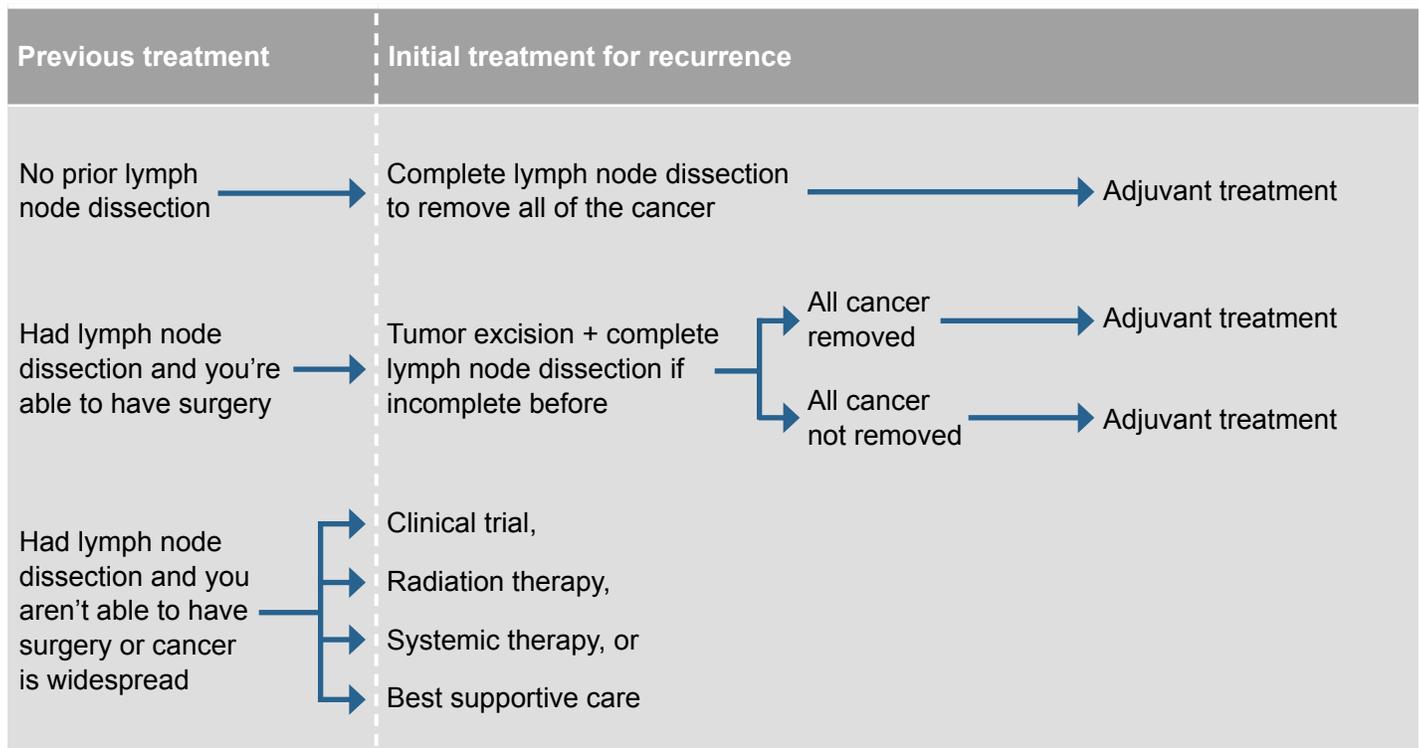


Chart 5.4.3 shows the recommended treatments for cancer that came back in the lymph nodes near the first (primary) melanoma. This is called regional lymph node recurrence. The initial or main treatment is called primary treatment. Adjuvant treatment is additional treatment given after the main one to try to kill any remaining cancer cells and lower the chance of recurrence. The treatment options for regional lymph node recurrence depend on whether or not you had a lymph node dissection with treatment before. A lymph node dissection is surgery to remove some or all of the lymph nodes in the area near the tumor. Read Part 4 on page 34 for details on each treatment.

If you didn't have a lymph node dissection before, then a complete lymph node dissection is recommended to remove all of the cancer.

If you already had a lymph node dissection and you are able to have surgery, then surgery to remove the cancer (tumor excision) with negative margins is recommended. All of the lymph nodes in the affected area should also be removed if you didn't have a "complete" lymph node dissection before.

If you already had a lymph node dissection and you are unable to have surgery or the cancer is widespread, you have several options. One option is to receive treatment within a clinical trial. Other options include radiation therapy, systemic therapy, and supportive care. Systemic therapy options are listed in Chart 6 on page 81. For more details, read *Principles of systemic therapy* on page 80 and *Principles of radiation therapy* on page 79.

Chart 5.4.4 Lymph node recurrence adjuvant treatment

Initial treatment results	Adjuvant treatment
All cancer was removed with complete lymph node dissection and/or tumor excision	<ul style="list-style-type: none"> Clinical trial, Observation, or Interferon alfa, and/or Possible radiation therapy to nodal basin
All of the cancer was not removed	<ul style="list-style-type: none"> Clinical trial, Radiation therapy, Systemic therapy, or Best supportive care

Chart 5.4.4 shows the adjuvant treatment options that are recommended after surgery for regional lymph node recurrence. Adjuvant treatment is additional treatment given after the main one to try to kill any remaining cancer cells and lower the chance of recurrence. Read Part 4 on page 34 for more details on each treatment listed in the chart.

If all of the cancer was removed with surgery, then you have four adjuvant treatment options. You can join a clinical trial—a type of research that studies a test or treatment to assess its safety or how well it works. You can begin observation—a period of scheduled follow-up tests to watch for cancer metastases or recurrence. Or, you can receive interferon alfa, a type of immunotherapy, if you haven't had it before. Your doctor may also consider radiation therapy to the nodal basin—the area near the tumor where the group of lymph nodes was removed. For more details, read about radiation therapy on page 40 or read *Principles of radiation therapy* on page 79.

If all of the cancer wasn't removed with surgery, then you also have four adjuvant treatment options. You can join a clinical trial—a type of research that studies a test or treatment to assess its safety or how well it works. Or, you can have radiation therapy, systemic therapy, or best supportive care. Supportive care is treatment to relieve the symptoms caused by the cancer or side effects of cancer treatment. Systemic therapy options are listed in Chart 6 on page 81. For more details, read *Principles of radiation therapy* on page 79 or *Principles of systemic therapy* on page 80.

5.5 Metastatic melanoma

Chart 5.5.1 Metastatic melanoma tests

Stage	Tests
Stage IV →	<ul style="list-style-type: none"> • FNA or excisional biopsy of distant tumor, • LDH levels, and • Baseline imaging tests for staging and to check out specific signs or symptoms: <ul style="list-style-type: none"> - MRI of the brain, - CT scan of the chest, abdomen, and pelvis, and - Possible PET/CT with CT scans

Part 5.5 explains the recommended tests and treatments for melanoma that has spread far away from the first (primary) tumor. This is called metastatic melanoma. Melanoma with distant metastases when first found (diagnosed) is stage IV cancer. However, cancer may come back in a distant site after previous melanoma treatment. This is called a distant metastatic recurrence. The recommended tests and treatments are the same for an initial diagnosis of metastatic melanoma and for metastatic recurrence.

Chart 5.5.1 shows the recommended tests for metastatic melanoma. The first step is to confirm the metastatic cancer with a biopsy of one of the distant tumors. An FNA biopsy or excisional biopsy may be used. (Read page 17 for details on each type of biopsy.) Your doctor may remove another tissue sample for genetic testing if you're thinking about entering a clinical trial of targeted therapy. In this case, an excisional biopsy is preferred.

A blood test to measure your LDH levels is recommended. This test will give information about your prognosis—the likely course or outcome of a disease. Your doctor may also order other blood tests. Baseline imaging tests are recommended for staging and to check out specific symptoms. A baseline is a starting point to which future test results are compared. An MRI or CT scan with contrast of your brain should be done when stage IV melanoma is first found or if you have any signs or symptoms of cancer in your brain or spinal cord. (Read Part 2 on page 16 for more test details.)

Chart 5.5.2 Metastatic melanoma treatment

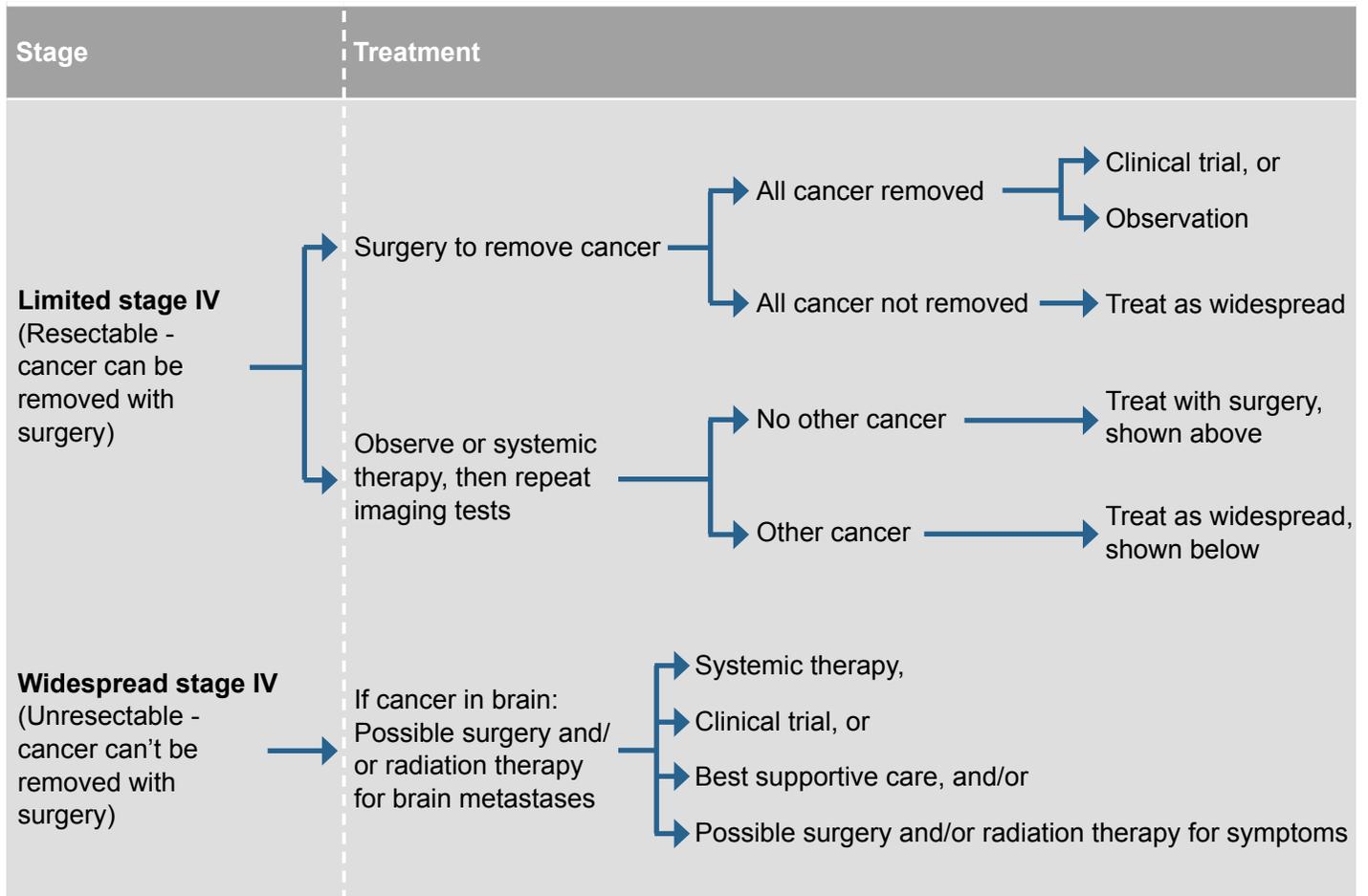


Chart 5.5.2 shows the recommended treatments for metastatic melanoma. The treatment options depend on whether or not all of the cancer can be removed by surgery. Limited metastatic disease is when cancer has spread to only one or a few distant sites. It is resectable, which means it can be treated with surgery. Widespread metastatic disease is when cancer has spread to many distant sites. It is unresectable, which means it can't be treated with surgery.

For limited metastatic disease, there are two treatment options to choose from. The preferred treatment option is surgery to remove the whole tumor if possible. The other options are to begin

observation with follow-up tests or receive systemic therapy. This may help your doctor decide if surgery is a good option for you. After a period of observation or systemic therapy, your doctor will repeat imaging tests to show if there are any other metastatic cancer sites. If the imaging tests don't show any other cancer, then you may have surgery to remove the metastatic tumor. If they do show other cancer, then you will have treatment for widespread metastatic disease.

If you have surgery, then the next treatment options depend on whether or not all of the cancer was removed. If all of the cancer was removed by surgery, then you may receive additional (adjuvant) treatment, possibly within a clinical trial. Or, you can begin

observation with follow-up tests. If all of the cancer wasn't removed by surgery, then you will receive treatment for widespread metastatic disease, which is described next.

For widespread metastatic disease, the first step is to assess for metastases in your brain. If you have brain metastases, then you will likely receive treatment for the cancer in your brain first to try to prevent other serious medical conditions. This may include surgery and/or radiation therapy. (For more information on treating cancer in the brain and spinal cord, see the NCCN Guidelines for Central Nervous System Cancers. These guidelines are online at NCCN.org. They were written for your doctor, so he or she will likely be able to answer your questions about treatment.)

After treating the brain metastases, you can move on to the main treatment options for widespread metastatic disease. These options are the same regardless of brain metastases.

There are four main options for treating widespread metastatic disease. Options include systemic therapy, treatment within a clinical trial, or best supportive care. Systemic therapy options are listed in Chart 6 on page 81. Your doctor may also consider surgery or radiation therapy to treat any symptoms caused by the cancer. Treatment for symptoms—called palliative treatment—can be given alone or in addition to the other options.

For more treatment details, read Part 4 on page 34, *Principles of radiation therapy* on page 79, or *Principles of systemic therapy* on page 80.

Next steps: 

For recommended follow-up tests after completing treatment for metastatic melanoma, see Chart 5.5.3.

Chart 5.5.3 Metastatic melanoma follow-up testing

Stage	Follow-up tests
Stage IV →	<ul style="list-style-type: none"> • Complete skin exam every year for life, • Regular self-exam of skin and lymph nodes, • Medical history and physical exam with focus on skin and lymph nodes <ul style="list-style-type: none"> - Every 3 to 6 months for 2 years, then - Every 3 to 12 months for 3 years, then - Every year as needed, • Possible regional lymph node ultrasound, • Imaging tests for specific symptoms, • Possible chest x-ray, CT, PET/CT scans every 4 to 12 months to screen for recurrence or metastases, and • Possible brain MRI each year

Chart 5.5.3 shows the follow-up tests that are recommended after completing treatment for metastatic melanoma. Follow-up tests are used to monitor you after treatment to check for cancer return (recurrence) or spread (metastasis). These tests are important if you were treated for stage IV melanoma and have no current signs of cancer.

A complete skin exam by your doctor is recommended every year for life. In addition, you should also examine your own skin and lymph nodes on a regular basis. You should also have regular medical history check-ups and physical exams. During the physical exam, your doctor will carefully examine your lymph nodes and skin. The chart above lists the recommended exam schedule.

An ultrasound of nearby (regional) lymph nodes may be used for follow-up in certain situations. One situation is when the physical lymph node exam findings are unclear. The second situation is if you did not undergo the sentinel lymph node biopsy that

was offered. The third situation is if you did not have a complete lymph node dissection after the sentinel lymph node biopsy found cancer.

Imaging tests are recommended if specific signs or symptoms of cancer appear. You may also have imaging tests to screen for cancer recurrence or metastases. Screening means testing to detect a disease when there are no signs or symptoms present. You may have imaging tests for screening every 4 to 12 months and a brain MRI every year. These tests may be done for up to 5 years after treatment has ended. Imaging tests are not recommended after 5 years if there has been no recurrence and you don't have any symptoms. Routine blood tests to check for recurrence are not recommended. (Read Part 2 on page 16 for more test details.)

Principles of radiation therapy

Radiation therapy is the use of high-energy rays to destroy cancer cells. For melanoma, radiation therapy is most commonly used as palliative treatment or to treat brain metastases. Stereotactic radiosurgery is a type of radiation often used for brain metastases. (Read Part 4 on page 40 for details.) Palliative treatment is treatment given to relieve the symptoms caused by cancer. Palliative radiation therapy may be used to treat the symptoms caused by metastatic melanoma. Palliative radiation therapy may also be used for lymph node, satellite, or in-transit metastases that can't be treated with surgery. A wide range of radiation doses and schedules are effective.

In selected patients, adjuvant radiation therapy may be used to treat the tissue around the first (primary) melanoma tumor after wide excision based on certain factors. These factors include desmoplastic melanoma removed with narrow surgical margins, local recurrence, or extensive neurotropism. Neurotropism is when the melanoma cells are able to invade nerves.

Adjuvant radiation therapy may also sometimes be used for regional melanoma if it's likely that the cancer will return in the area where nearby (regional) lymph nodes were removed. This area is called the nodal basin. Adjuvant radiation may be considered for selected patients after lymph node surgery based on certain features of the lymph node metastases.

Adjuvant radiation may reduce the risk of lymph node recurrence. However, it can cause serious long-term side effects that may have a negative impact on quality of life. It is important to fully understand these risks and weigh them against the benefits when considering this treatment.

Principles of systemic therapy

Ipilimumab is an immunotherapy drug used as systemic therapy for advanced and metastatic melanoma. Immunotherapy is treatment that activates the body's natural defense against disease (immune system) to fight cancer cells. However, ipilimumab can cause serious side effects involving the immune system. You should take part in your treatment center's REMS program while taking ipilimumab. A REMS program is a system for tracking and treating side effects. Ipilimumab should be used with extreme caution, if at all, if you have a serious autoimmune disorder—a health condition that causes the immune system to attack healthy tissue in the body. Examples of autoimmune disorders include ulcerative colitis and active rheumatoid arthritis.

Vemurafenib, dabrafenib, and trametinib are targeted therapy drugs used as systemic therapy for certain advanced and metastatic melanomas. Targeted therapy drugs are designed to specifically target cancer cells. These three targeted therapies treat melanoma tumors that have a damaged *BRAF* gene.

Vemurafenib can cause serious side effects such as non-melanoma skin cancer, extreme sensitivity to sunlight, and joint pain and swelling. You should have regularly scheduled skin exams with your doctor while taking vemurafenib. You

should also see a dermatologist if you have any symptoms. A dermatologist is a doctor who's an expert in diseases of the skin.

Dabrafenib can also cause serious side effects such as non-melanoma skin cancer and severe fevers. Therefore, you should have regularly scheduled skin exams with your doctor while taking dabrafenib and see a dermatologist if you have any skin symptoms. For severe or frequent fevers, you should briefly stop treatment with dabrafenib and take medicine to lower the fever. You can take acetaminophen (Tylenol) or a nonsteroidal anti-inflammatory drug such as ibuprofen (Motrin).

Biochemotherapy is combination treatment with immunotherapy and chemotherapy. You and your doctor may consider biochemotherapy to control symptoms or so that you can receive other treatment. However, a special warning is needed when treatment with high-dose IL-2 (interleukin-2) or biochemotherapy is being considered because each can cause serious side effects. You should not take high-dose IL-2 if your organs aren't working well, your overall health isn't good, or you have untreated or active brain metastases. Biochemotherapy and high-dose IL-2 should be given by medical staff experienced with these treatments.

Chart 6. Systemic therapy for advanced or metastatic melanoma

Drug name	Type of drug
<i>Preferred regimens</i>	
Ipilimumab	Immunotherapy
Vemurafenib	Targeted therapy
Dabrafenib	Targeted therapy
Dabrafenib + trametinib	Targeted therapy
Clinical trial	--
High-dose interleukin-2	Immunotherapy
<i>Other regimens</i>	
Trametinib	Targeted therapy
Imatinib (for <i>c-kit</i> mutated tumors)	Targeted therapy
Dacarbazine	Chemotherapy
Temozolomide	Chemotherapy
Nab-paclitaxel	Chemotherapy
Paclitaxel	Chemotherapy
Paclitaxel and carboplatin	Chemotherapy
Dacarbazine- or temozolomide-based combination chemotherapy/biochemotherapy (including cisplatin and vinblastine ± interleukin-2 or interferon alfa)	Chemotherapy/ Biochemotherapy



National
Comprehensive
Cancer
Network®

6

Making treatment decisions



6 Making treatment decisions

84 Have a treatment plan

87 Your role in planning

88 Getting a 2nd opinion

89 Websites | Review



Cancer can be stressful. While absorbing the fact that you have cancer, you must also learn about tests and treatments. And, the time you have to decide on a treatment plan may feel short. Parts 1 through 5 aimed to teach you about melanoma, its treatment, and other challenges. Part 6 aims to help you talk with your doctor and make treatment decisions that are right for you.

Have a treatment plan

Learning you have cancer starts an unplanned journey to an unknown place. A treatment plan is like having a roadmap for your journey. It is a written course of action through treatment and beyond. It can help you, your loved ones, and your treatment team.

Parts of a treatment plan

A treatment plan addresses all cancer care needs while respecting your beliefs, wishes, and values. It is likely to change and expand as you go through treatment. The plan will include the role of your doctors and how you can help yourself. A treatment plan often has the following parts:

Cancer information

Cancer can greatly differ even when people have cancer in the same organ. Test results that describe the cancer are reported in the treatment plan. Such test results include the cancer site, cell type, and cancer stage. See Part 2 to read more about the tests used for melanoma skin cancer.

Your treatment team

Treating melanoma takes a team approach. A medical oncologist is a doctor who's an expert

in treating cancer with drugs. A surgeon is an expert in operations to remove or repair a part of the body. A radiation oncologist is an expert at treating cancer with radiation. A dermatologist is an expert in diseases of the skin. A pathologist is an expert in testing cells and tissue to find disease. A dermatopathologist is a doctor who's an expert in testing skin cells and tissues for disease.

Your primary care doctor can also be part of your team. He or she can help you express your feelings about treatments to the team. Treatment of other medical problems may be improved if he or she is informed of your cancer care. Besides doctors, you may receive care from nurses, social workers, and other health experts. Ask to have the names and contact information of your health care providers included in the treatment plan.

Cancer treatment

There is no single treatment practice that is best for all patients. There is often more than one treatment option, including clinical trials. Clinical trials study how well a treatment works and its safety. Treatment planning for melanoma takes into account many factors, such as:

- The cancer stage,
- Location(s) of the cancer,
- Your general health,
- Treatment side effects,
- Costs of treatment,
- Changes to your life,
- What you want from treatment, and
- Your feelings about side effects.

A guide to melanoma treatment options can be found in Part 5. The cancer treatment that you and your doctors agree on should be reported in the treatment plan. It is also important to note the goal of treatment and the chance of a good treatment outcome. In addition, all known side effects should be listed and

the time required to treat them should be noted. See Part 4 for a list of some of the possible side effects of melanoma treatments.

Your treatment plan may change because of new information. You may change your mind about treatment. Tests may find new results. How well the treatment is working may change. Any of these changes may require a new treatment plan.

Stress and symptom control

Cancer and its treatments can cause bothersome symptoms. The stress of having cancer can also cause symptoms. Such symptoms may include pain, sleep loss, and anxiety. Helping you to be comfortable and stay active are key goals of the treatment plan. There are ways to treat many symptoms, so tell your treatment team about any symptoms you have. Some of the challenges you may face are discussed next.

You may lose sleep before, during, and after treatment. Getting less sleep can affect your mood, conversations, and ability to do daily tasks. If possible, allow yourself to rest, let people do things for you, and talk with your doctor about sleep medication. Behavioral sleep medicine—a type of talk therapy—may also help.

Feelings of anxiety and depression are common among people with cancer. You may feel anxious before testing and while waiting for the results. Likewise, you may have a passing depression during a hard part of treatment. Feeling distressed may be a minor problem or it may be more serious. Serious or not, tell your treatment team so that you can get help if needed. At your cancer center, cancer navigators, social workers, and other experts can help. Help can include support groups, talk therapy, or medication. Some people also feel better by exercising, talking with loved ones, or relaxing.

Financial stress is common. You may be unemployed or miss work during treatment. Or, you may have too little or no health insurance. Talk to your treatment team about work, insurance, or money problems. They will include information in the treatment plan to help you manage your finances and medical costs.

Survivorship care

Cancer survivorship begins on the day you learn of having melanoma. For many survivors, the end of active treatment signals a time of celebration but also of great anxiety. This is a very normal response. You may need support to address issues that arise from not having regular visits with your cancer care team. In addition, your treatment plan should include a schedule of follow-up cancer tests, treatment of long-term side effects, and care of your general health.

Advance care planning

Talking with your doctor about your prognosis can help with treatment planning. If the cancer can't be controlled or cured, a care plan for the end of life can be made. However, such talks often happen too late or not at all. Your doctor may delay these talks for fear that you may lose hope, become depressed, or have a shorter survival. Studies suggest that these fears are wrong. Instead, there are many benefits to advance care planning. It is useful for:

- Knowing what to expect,
- Making the most of your time,
- Lowering the stress of caregivers,
- Having your wishes followed,
- Having a better quality of life, and
- Getting good care.

Advance care planning starts with an honest talk between you and your doctors. You don't have to know the exact details of your prognosis. Just having a general idea will help with planning. With this information, you can decide at what point you'd want to stop chemotherapy, immunotherapy, or other treatments, if at all. You can also decide what treatments you'd want for symptom relief, such as radiation therapy, surgery, or medicine.

Another part of the planning involves hospice care. Hospice care doesn't include treatment to fight the cancer but rather to reduce symptoms caused by cancer. Hospice care may be started because you aren't interested in more cancer treatment, no other cancer treatment is available, or because you may be too sick for cancer treatment. Hospice care allows you to have the best quality of life possible. Care is given all day, every day of the week. You can choose to have hospice care at home or at a hospice center. One study found that patients and caregivers had a better quality of life when hospice care was started early.

An advance directive describes the treatment you'd want if you weren't able to make your wishes known. It also can name a person whom you'd want to make decisions for you. It is a legal paper that your doctors have to follow. It can reveal your wishes about life-sustaining machines, such as feeding tubes. It can also include your treatment wishes if your heart or lungs were to stop working. If you already have an advance directive, it may need to be updated to be legally valid.

Glossary

Dictionary
Acronyms

Dictionary

ABCDE rule

A memory device for characteristics of moles that might be cancer.

abdomen

The belly area between the chest and pelvis.

ablative therapy

Treatment used to destroy a tumor or organ.

abnormal

Not normal.

acral lentiginous melanoma

An uncommon type of melanoma that looks like a bruise on the palms of the hands or soles of the feet or like a dark stripe in a nail.

adjuvant treatment

Treatment given after the main (primary) treatment.

advanced melanoma

Cancer that has spread beyond the area near the main tumor.

anesthesia

A controlled loss of feeling with or without loss of wakefulness.

anesthetic

A drug or other substance that causes a controlled loss of feeling or awareness with or without loss of wakefulness.

angiolymphatic invasion

Melanoma has grown into (invaded) lymph or blood vessels.

asymmetry

One half or side of the mole does not match the other half or side.

atypical mole

A mole that looks different from a normal or common mole.

autoimmune disorder

A condition in which the body's natural defense against infection and disease (immune system) attacks healthy tissue in the body.

Bacillus Calmette-Guérin (BCG)

A germ similar to the one that causes tuberculosis that is given to activate the immune system (the body's natural defense against disease).

baseline

A starting point to which future test results are compared.

biochemotherapy

Combination treatment with immunotherapy (drugs that boost the body's natural response to fight disease) and chemotherapy (drugs that kill fast-growing cells).

biological therapy

Treatment that boosts the body's natural defense against disease.

biopsy

Removal of small amounts of tissue from your body to test for disease.

blood test

A test that checks for signs of disease in the blood.

blood thinner

A medication given to prevent or treat blood clots.

blood vessel

A tube that carries blood throughout the body.

border irregularity

The edges (border) of the mole are ragged or notched.

Breslow thickness

A measure of how deep the melanoma tumor has grown into the skin.

broad-spectrum sunscreen

A substance that protects the skin from the sun by blocking 2 types of harmful ultraviolet (UV) rays—UVA and UVB.

cancer stage

Rating or description of the growth and spread of cancer in the body.

carbon dioxide

A natural chemical gas that has no odor or color.

cells

The “building blocks” of tissues in the body.

central nervous system (CNS)

The brain and spinal cord.

chemotherapy

Drugs that kill fast-growing cells, including normal cells and cancer cells.

Clark level

A scale of tumor depth with 5 scores based on which layer of skin the tumor has grown into.

clinical stage

A rating of the extent of melanoma in the body based on the physical exam, imaging tests, and biopsy of the first (primary) melanoma tumor.

clinical trial

Research on a test or treatment to assess its safety or how well it works.

combination regimen

The use of two or more drugs.

computed tomography (CT) scan

A test that uses x-rays from many angles to make a picture of the inside of the body.

connective tissue

Supporting and binding tissue that surrounds other tissues and organs.

contrast dye

A dye put into your body to make clearer pictures during imaging tests (tests that take pictures of the inside of the body).

cytokines

Substances made in the body that boost or activate the immune system (the body’s natural defense against disease). Cytokines can also be made in a lab.

deep margin status

Presence or absence of cancer cells in the normal-looking tissue under a tumor removed during surgery.

dermal mitotic rate

A measure of how many cancer cells are actually growing and dividing.

dermatologist

A doctor who’s an expert in diseases of the skin.

dermatopathologist

A doctor who’s an expert in testing skin cells and tissues for disease.

dermis

The second layer of skin that is beneath the top layer (epidermis).

desmoplastic melanoma

A melanoma tumor with dense connective tissue.

diagnosis

Identification of a disease.

enlarged

Bigger in size than normal.

epidermis

The outer layer of skin.

excision

Removal by surgery.

excisional biopsy

Surgery that removes the entire skin tumor or abnormal-looking area (lesion) to test for cancer cells.

excisional lymph node biopsy

Surgery that removes the entire enlarged lymph node(s) through a surgical cut in the skin to test for cancer cells.

external beam radiation therapy

Radiation therapy (use of high-energy rays to destroy cancer cells) received from a machine outside the body.

fatigue

Severe tiredness despite getting enough sleep that limits one’s ability to function.

fine-needle aspiration (FNA) biopsy

Use of a thin needle to remove fluid or tissue from the body to be tested for disease.

follow-up tests

Tests done after treatment to check for signs of cancer return (recurrence) or spread (metastasis).

genes

A set of coded instructions in cells for making new cells and controlling how cells behave.

general anesthesia

A controlled loss of wakefulness from drugs.

genetic test

Tests of the instructions in cells for making and controlling cells.

gland

An organ that makes fluids or chemicals the body needs.

groin

The area of the body where the thigh meets the lower belly area (abdomen).

histologic subtype

Grouping of cancer types based on cancer cell qualities.

hormones

Chemicals in the body that activate cells or organs.

imaging tests

Tests that make pictures (images) of the inside of the body.

imiquimod cream

A drug made as a cream that boosts the immune system (the body's natural defense against disease) response against skin cancer cells.

immune cells

Cells that are part of the body's natural defense against infection and disease.

immune system

The body's natural defense against infection and disease.

immunotherapy

Treatment that activates or boosts the body's natural defense against disease (immune system) to fight cancer.

in situ

In its original place.

incisional biopsy

Surgery that removes part of the skin tumor or abnormal-looking area (lesion) to test for cancer cells.

interferon alfa

A drug used to activate the body's natural defense against disease (immune system) to fight cancer cells.

interleukin-2 (IL-2)

A drug used to activate the body's natural defense against disease (immune system) to fight cancer cells.

intestine

The organ that eaten food passes through after leaving the stomach.

in-transit metastases

Cancer that has spread into lymph vessels more than 2 centimeters away from the first tumor but not into lymph nodes (groups of special disease-fighting cells).

in-transit recurrence

Cancer that has come back after treatment in lymph vessels more than 2 centimeters away from the first tumor but not in lymph nodes (groups of special disease-fighting cells).

ipilimumab

A drug used to activate the body's natural defense against disease (immune system) to fight cancer cells.

isolated limb infusion/perfusion

Anticancer drugs are given directly into an arm or leg in a way that they don't reach or affect the rest of the body.

kidneys

A pair of organs that filter blood and remove waste from the body through urine.

lactate dehydrogenase (LDH)

A substance found in the blood that is involved in energy production in cells.

laser therapy

Use of intense, narrow beams of light or carbon dioxide to cut into the surface of the skin and kill cancer cells.

lentigo maligna melanoma

The slowest growing type of melanoma; it starts in sun-exposed skin and is commonly mistaken for a sunspot.

lesion

An area of abnormal tissue that has been damaged by disease or injury.

limited metastatic disease

Cancer that has spread to one or a few distant sites.

liver

An organ that removes waste from the blood.

local anesthesia

A controlled loss of feeling in a small area of the body due to drugs being given in that area.

local melanoma

Cancer cells haven't spread beyond the skin near the first (primary) tumor.

local metastasis

The spread of cancer cells from the first tumor to a nearby site.

local recurrence

Cancer that has come back after treatment in or near the same place as the first tumor.

local therapy

Treatment that affects cells in one small, specific part of the body only, such as the tumor and nearby area.

long-term side effect

An unplanned or unwanted physical or emotional response to treatment that continues for months or years after finishing treatment.

lymph

A clear fluid containing white blood cells that fight infection and disease.

lymph node

Small groups of special disease-fighting cells located throughout the body.

lymph node biopsy

Removal of all or part of a lymph node (groups of special disease-fighting cells located throughout the body) to test for disease.

lymph node dissection

Surgery to remove some or all lymph nodes (groups of special disease-fighting cells) from the area near the tumor.

lymph node recurrence

Cancer that has come back after treatment and has spread to lymph nodes (groups of special disease-fighting cells).

lymph vessels

Tubes that carry lymph—a clear fluid containing white blood cells that fight disease and infection—throughout the body and connect lymph nodes to one another.

lymphedema

Swelling due to buildup of a clear fluid containing white blood cells (lymph).

magnetic resonance imaging (MRI) scan

A test that uses radio waves and powerful magnets to make pictures of the inside of the body showing the shape and function of body parts.

medical history

All health events and medications taken to date.

medical oncologist

A doctor who's an expert in treating cancer with drugs.

medical skin exam

A careful examination of your skin by a doctor to check for any areas that look abnormal.

melanin

A substance that gives color to the skin.

melanocytes

Cells that are located in the lower part of the top layer of the skin (epidermis) and make a substance that gives skin its color.

melanoma

Cancer that starts in melanocytes—cells that give skin its color and are located in the top layer of the skin (epidermis).

melanoma in situ

Cancer cells are only in the outer layer of the skin (epidermis).

metastases

Tumors formed by cancer cells that have spread from the first tumor to other parts of the body.

metastasis

The spread of cancer cells from the first tumor to another body part.

metastatic

Containing cancer cells that have spread from the first tumor.

microsatellitosis

Tiny tumors (satellites) that have spread to skin within 2 centimeters of the first melanoma tumor and can only be seen with a microscope.

microscope

A tool that uses lenses to see things the eyes can't.

microscopic

Something so small it can't be seen by the naked eye.

mole

A spot on the skin formed by a cluster of cells that make melanin (substance that gives skin its color).

monoclonal antibody

A type of immune system protein made in a lab that can attach to substances in the body such as cancer cells.

negative margins

There are no cancer cells in the normal-looking tissue around the edge of the tumor removed during surgery.

neoadjuvant treatment

Treatment given before the main or primary treatment.

neurotropism

Melanoma cells are able to grow into (invade) nerves.

nodal basin

A group or cluster of lymph nodes (groups of special disease-fighting cells) located close to one another in a certain area of the body such as near a tumor.

node-negative

Cancer cells are not found in lymph nodes (groups of special disease-fighting cells located throughout the body).

node-positive

Cancer cells are found in lymph nodes (groups of special disease-fighting cells located throughout the body).

nodular melanoma

A type of melanoma that has a dome shape and may grow more quickly into the second layer of skin (dermis) than other melanomas.

non-melanoma skin cancer

Cancer of the skin that starts in cells other than melanocytes (cells that give skin its color).

nonmetastatic recurrence

Cancer that has come back after treatment but has not spread to parts of the body far away from the first tumor.

observation

A period of scheduled follow-up testing to watch for signs of cancer spread (metastasis) or return (recurrence).

palliative treatment

Treatment given to relieve symptoms caused by cancer or side effects caused by cancer treatment. Also called supportive care.

pathologic stage

A rating of the extent of melanoma in the body based on tests of lymph nodes and other tissue removed during surgical treatment.

pathologist

A doctor who's an expert in testing cells and tissue to find disease.

pathology report

A document with information about cancer cells and tissue that were removed from the body and examined with a microscope for disease.

peginterferon alfa-2b

A long-acting type of interferon—a drug used to activate the body's natural defense against disease.

pelvis

The body area between the hipbones.

peripheral margin status

Presence or absence of cancer cells in the normal-looking tissue around the sides of a tumor removed during surgery.

persistent melanoma

Cancer not completely removed or destroyed by treatment; persistent melanoma is found in or right next to the surgical scar where the first melanoma was removed. Also called true local scar recurrence.

physical exam

A review of the body by a health expert for signs of disease.

positive margins

There are cancer cells in the normal-looking tissue around the edge of the tumor removed during surgery.

positron emission tomography (PET) scan

A test that uses radioactive material to see the shape and function of organs and tissues inside the body.

primary treatment

The main treatment used to rid the body of cancer.

primary tumor

The first mass of cancer cells in the body.

prognosis

The likely or expected course and outcome of a disease.

protein

A chain of chemical compounds important to every cell in the body.

punch biopsy

Removal of tissue using a sharp, hollow, round-shaped knife in order to test it for disease.

pure desmoplasia

Presence or absence of dense connective tissue.

radiation oncologist

A doctor who's an expert in treating cancer with radiation.

radiation therapy

Use of high-energy rays to destroy cancer cells.

radioactive

Containing a powerful energy called radiation.

radiotracer

Matter with energy that is put into the body to make pictures clearer.

recurrence

The return of cancer after treatment.

regimen

A treatment plan that specifies the dosage, schedule, and duration of treatment.

regional lymph node recurrence

Cancer that has come back after treatment in lymph nodes (groups of special disease-fighting cells) near the first melanoma.

regional lymph nodes

Groups of special disease-fighting cells located near the tumor.

regional melanoma

Cancer cells have spread from the first tumor to nearby lymph vessels, lymph nodes (groups of special disease-fighting cells), and/or nearby skin.

regional therapy

Treatment with cancer-killing drugs directed to a specific area of the body such as an arm or leg.

rheumatoid arthritis

An autoimmune disorder that causes pain, swelling, and stiffness in the joints.

risk evaluation and mitigation strategy (REMS) program

A program to monitor and manage serious side effects (unplanned physical or emotional effects) of cancer treatments.

risk factor

Something that increases the chance of getting a disease.

satellite metastases

Small melanoma tumors (satellites) in the skin within 2 centimeters from the first (primary) tumor.

satellite recurrence

Cancer that came back after treatment and formed small melanoma tumors in the skin within 2 centimeters from the first (primary) tumor, but outside of the surgical scar.

scar

A permanent mark on the skin after an injury or surgery.

screening tests

Testing done on a regular basis to detect a disease that isn't causing symptoms.

self-exam of skin

A careful review of your own skin for abnormal-looking spots that may be signs of skin cancer.

sentinel lymph node

The first lymph node (groups of special disease-fighting cells) to which lymph, and possibly a cancer cell, travels after leaving the first (primary) tumor.

sentinel lymph node biopsy

Surgery to remove the first lymph node to which lymph, and possibly a cancer cell, travels after leaving the first (primary) tumor.

shave biopsy

Surgery that removes a thin tissue sample from the top of a tumor to test for cancer cells.

short-term side effect

An unplanned or unwanted physical or emotional condition caused by treatment that goes away after treatment ends.

side effect

An unplanned or unwanted physical or emotional condition caused by treatment.

single agent

The use of one drug.

skin biopsy

Removal of a sample of tissue from the skin to test for disease.

skin exam

A careful review of the skin to check for abnormal-looking spots that may be signs of skin cancer.

spleen

An organ to the left of the stomach that helps protect the body against disease.

staging

The process of rating and describing the extent of cancer in the body.

stereotactic radiosurgery (SRS)

A type of radiation therapy that delivers a high dose of radiation to a small, specific area.

subcutaneous

Below the skin.

sun protection factor (SPF)

A rating of the level of protection sunscreen products provide against the UV rays from the sun.

superficial

At, on, or near the top or surface.

superficial spreading melanoma

The most common type of melanoma; it grows slowly and spreads from a mole.

supportive care

Treatment given to relieve the symptoms caused by cancer or side effects caused by cancer treatment. Also called palliative treatment.

surgery

An operation to remove or repair a part of the body.

surgical margin

The normal-looking tissue around the edge of a tumor removed during surgery.

systemic therapy

Drugs used to treat cancer cells throughout the body.

targeted therapy

Drugs that specifically target and kill cancer cells.

treatment plan

A written course of action through cancer treatment and beyond.

true local scar recurrence

Cancer not completely removed or destroyed by treatment, with cancer cells found in or right next to the surgical scar where the first melanoma was removed. Also called persistent melanoma.

tumor

An overgrowth of cells.

tumor regression

A decrease in the size of the tumor.

ulceration

The tumor's top skin layer is broken or missing.

ulceration status

Whether or not the tumor's top skin layer is present and intact (not ulcerated) or is broken or missing (ulcerated).

ulcerative colitis

Long-lasting inflammation that causes tears (ulcers) in the lining of the colon (organ that changes eaten food from liquid to solid).

ultrasound

A test that uses sound waves to take pictures of the inside of the body.

ultraviolet (UV) energy

Invisible light energy that comes from the sun and tanning beds. UV energy has a wavelength shorter than visible light but longer than x-rays.

ultraviolet-A (UVA) energy

Long-wave invisible light energy that comes from the sun and tanning beds.

ultraviolet-B (UVB) energy

Short-wave invisible light energy that comes from the sun and in small amounts from tanning beds.

upstage

Changing the rating of the extent of cancer in the body—the cancer stage—from a lower, less extensive stage to a higher, more extensive stage.

vaccine therapy

A treatment used to help the immune system (the body's natural defense against disease) prevent a disease.

vemurafenib

A drug that treats melanoma by targeting a certain abnormal change in the instructions in cells for making and controlling cells.

vertical growth phase

Direction of tumor growth is down into the skin.

white blood cells

A type of blood cell that fights disease and infection.

wide excision

Surgical treatment that removes the whole tumor and some normal-looking tissue around its edge.

widespread metastatic disease

Cancer that has spread from the first tumor to many distant sites in the body.

x-ray

Use of small amounts of radiation to make pictures of organs and structures inside the body.

Acronyms

ABCDE rule

Asymmetry, Border irregularity, Color, Diameter, Evolving

BCG

Bacillus Calmette-Guerin

cm

centimeter

CT

computed tomography

FDA

U.S. Food and Drug Administration

FNA

fine-needle aspiration

IL-2

interleukin-2

LDH

lactate dehydrogenase

mm

millimeter

MRI

magnetic resonance imaging

PET

positron emission tomography

PET/CT

positron emission tomography/computed tomography

SPF

sun protection factor

SRS

stereotactic radiosurgery

TNM

Tumor, Node, Metastasis

UV

ultraviolet

UVA

ultraviolet-A

UVB

ultraviolet-B

NCCN Abbreviations and Acronyms

NCCN®

National Comprehensive Cancer Network®

NCCN Patient Guidelines®

NCCN Guidelines for Patients®

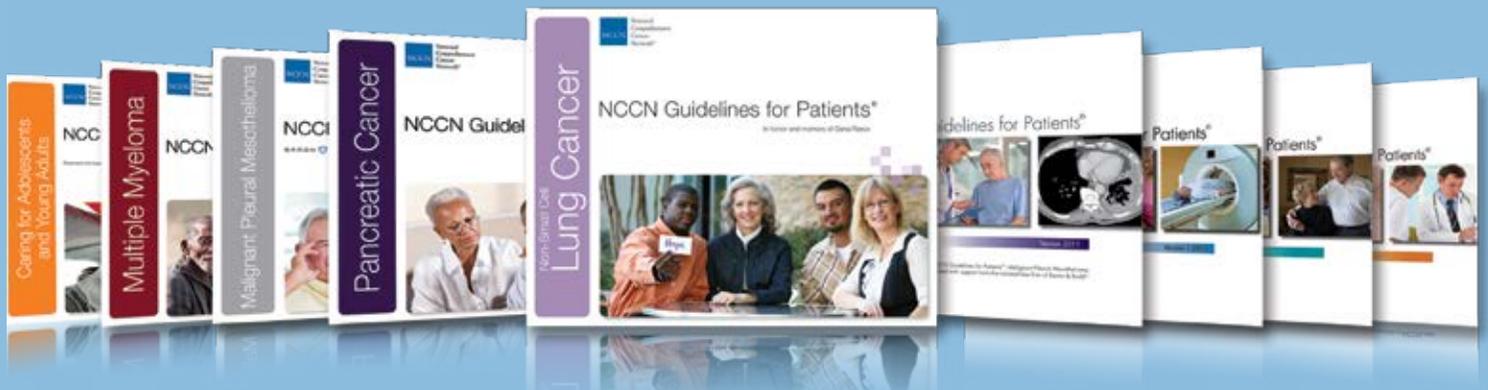
NCCN Guidelines®

NCCN Clinical Practice Guidelines in Oncology®

NCCN Guidelines for Patients®

The same authoritative sources referenced by physicians and other health care professionals are available for patients:

- Caring for Adolescents and Young Adults
- Chronic Myelogenous Leukemia
- Colon Cancer
- Esophageal Cancer
- Lung Cancer Screening
- Malignant Pleural Mesothelioma
- Melanoma
- Multiple Myeloma
- Non-Small Cell Lung Cancer
- Ovarian Cancer
- Pancreatic Cancer
- Prostate Cancer
- Stage 0 Breast Cancer
- Stages I and II Breast Cancer
- Stage III Breast Cancer
- Stage IV Breast Cancer



Available at NCCN.org/patients

To request a printed copy, e-mail: patientguidelines@nccn.org



NCCN.org/patients – For Patients | NCCN.org – For Clinicians

State Fundraising Notices

Florida: A COPY OF THE OFFICIAL REGISTRATION AND FINANCIAL INFORMATION OF NCCN FOUNDATION MAY BE OBTAINED FROM THE DIVISION OF CONSUMER SERVICES BY CALLING TOLL-FREE WITHIN THE STATE 1-800-HELP-FLA. REGISTRATION DOES NOT IMPLY ENDORSEMENT, APPROVAL, OR RECOMMENDATION BY THE STATE. FLORIDA REGISTRATION #CH33263. **GEORGIA:** The following information will be sent upon request: (A) A full and fair description of the programs and activities of NCCN Foundation; and (B) A financial statement or summary which shall be consistent with the financial statement required to be filed with the Secretary of State pursuant to Code Section 43-17-5. **KANSAS:** The annual financial report for NCCN Foundation, 275 Commerce Drive, Suite 300, Fort Washington, PA 19034, 215-690-0300, State Registration # 445-497-1, is filed with the Secretary of State. **MARYLAND:** A copy of the NCCN Foundation financial report is available by calling NCCN Foundation at 215-690-0300 or writing to 275 Commerce Drive, Suite 300, Fort Washington, PA 19034. For the cost of copying and postage, documents and information filed under the Maryland charitable organizations law can be obtained from the Secretary of State, Charitable Division, State House, Annapolis, MD 21401, 1-410-974-5534. **MICHIGAN:** Registration Number MICS 45298. **MISSISSIPPI:** The official registration and financial information of NCCN Foundation may be obtained from the Mississippi Secretary of State's office by calling 888-236-6167. Registration by the Secretary of State does not imply endorsement by the Secretary of State. **NEW JERSEY:** INFORMATION FILED WITH THE ATTORNEY GENERAL CONCERNING THIS CHARITABLE SOLICITATION AND THE PERCENTAGE OF CONTRIBUTIONS RECEIVED BY THE CHARITY DURING THE LAST REPORTING PERIOD THAT WERE DEDICATED TO THE CHARITABLE PURPOSE MAY BE OBTAINED FROM THE ATTORNEY GENERAL OF THE STATE OF NEW JERSEY BY CALLING (973) 504-6215 AND

IS AVAILABLE ON THE INTERNET AT www.njconsumeraffairs.gov/ocp.htm#charity. REGISTRATION WITH THE ATTORNEY GENERAL DOES NOT IMPLY ENDORSEMENT. **NEW YORK:** A copy of the latest annual report may be obtained from NCCN Foundation, 275 Commerce Drive, Suite 300, Fort Washington, PA 19034, or the Charities Bureau, Department of Law,

120 Broadway, New York, NY 10271. **NORTH CAROLINA:** **FINANCIAL INFORMATION ABOUT THIS ORGANIZATION AND A COPY OF ITS LICENSE ARE AVAILABLE FROM THE STATE SOLICITATION LICENSING BRANCH AT 888-830-4989 (within North Carolina) or (919) 807-2214 (outside of North Carolina). THE LICENSE IS NOT AN ENDORSEMENT BY THE STATE.** **PENNSYLVANIA:** The official registration and financial information of NCCN Foundation may be obtained from the Pennsylvania Department of State by calling toll-free within Pennsylvania, 800-732-0999. Registration does not imply endorsement. **VIRGINIA:** A financial statement for the most recent fiscal year is available upon request from the State Division of Consumer Affairs, P.O. Box 1163, Richmond, VA 23218; 1-804-786-1343. **WASHINGTON:** Our charity is registered with the Secretary of State and information relating to our financial affairs is available from the Secretary of State, toll free for Washington residents 800-332-4483. **WEST VIRGINIA:** West Virginia residents may obtain a summary of the registration and financial documents from the Secretary of State, State Capitol, Charleston, WV 25305. Registration does not imply endorsement.

Consult with the IRS or your tax professional regarding tax deductibility. REGISTRATION OR LICENSING WITH A STATE AGENCY DOES NOT CONSTITUTE OR IMPLY ENDORSEMENT, APPROVAL, OR RECOMMENDATION BY THAT STATE. We care about your privacy and how we communicate with you, and how we use and share your information. For a copy of NCCN Foundation's Privacy Policy, please call 215-690-0300 or visit our website at nccn.org.

NCCN Panel Members for Melanoma

Daniel G. Coit, MD / Chair

Memorial Sloan Kettering Cancer Center

John A. Thompson, MD / Vice-Chair

*Fred Hutchinson Cancer Research Center/
Seattle Cancer Care Alliance*

Robert Andtbacka, MD

*Huntsman Cancer Institute
at the University of Utah*

Christopher J. Anker, MD

*Huntsman Cancer Institute
at the University of Utah*

Christopher K. Bichakjian, MD

*University of Michigan
Comprehensive Cancer Center*

William E. Carson, III, MD

*The Ohio State University
Comprehensive Cancer Center -
James Cancer Hospital and
Solove Research Institute*

Gregory A. Daniels, MD, PhD

UC San Diego Moores Cancer Center

Adil I. Daud, MD

*UCSF Helen Diller Family
Comprehensive Cancer Center*

Dominick DiMaio, MD

*Fred & Pamela Buffett Cancer Center at
The Nebraska Medical Center*

Martin D. Fleming, MD

*The University of Tennessee
Health Science Center*

Rene Gonzalez, MD

University of Colorado Cancer Center

Valerie Guild

AIM at Melanoma

Allan C. Halpern, MD

Memorial Sloan Kettering Cancer Center

F. Stephen Hodi, Jr. MD

*Dana-Farber/Brigham and Women's
Cancer Center*

Mark C. Kelley, MD

Vanderbilt-Ingram Cancer Center

Nikhil I. Khushalani, MD

Roswell Park Cancer Institute

Ragini R. Kudchadkar, MD

Moffitt Cancer Center

Julie R. Lange, MD ScM

*The Sidney Kimmel Comprehensive
Cancer Center at Johns Hopkins*

Mary C. Martini, MD

*Robert H. Lurie Comprehensive Cancer
Center of Northwestern University*

Anthony J. Olszanski, MD

Fox Chase Cancer Center

Merrick I. Ross, MD

*The University of Texas
MD Anderson Cancer Center*

April Salama, MD

Duke Cancer Institute

Susan M. Swetter, MD

Stanford Cancer Institute

Kenneth K. Tanabe, MD

*Massachusetts General Hospital
Cancer Center*

Vijay Trisal, MD

City of Hope Comprehensive Cancer Center

Marshall M. Urist, MD

*University of Alabama at Birmingham
Comprehensive Cancer Center*

For disclosures, visit [NCCN.org/about/disclosure.aspx](https://www.nccn.org/about/disclosure.aspx)

NCCN Member Institutions

Fred & Pamela Buffett Cancer Center at The Nebraska Medical Center
Omaha, Nebraska
800.999.5465
nebraskamed.com/cancer

City of Hope Comprehensive Cancer Center
Los Angeles, California
800.826.4673
cityofhope.org

Dana-Farber/Brigham and Women's Cancer Center Massachusetts General Hospital Cancer Center
Boston, Massachusetts
877.332.4294
dfbwc.org
massgeneral.org/cancer

Duke Cancer Institute
Durham, North Carolina
888.275.3853
dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427
foxchase.org

Huntsman Cancer Institute at the University of Utah
Salt Lake City, Utah
877.585.0303
huntsmancancer.org

Fred Hutchinson Cancer Research Center/ Seattle Cancer Care Alliance
Seattle, Washington
206.288.7222 • seattlecca.org
206.667.5000 • fhcrc.org

The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins
Baltimore, Maryland
410.955.8964
hopkinskimmelcancercenter.org

Robert H. Lurie Comprehensive Cancer Center of Northwestern University
Chicago, Illinois
866.587.4322
cancer.northwestern.edu

Mayo Clinic Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
800.446.2279 • Arizona
904.953.0853 • Florida
507.538.3270 • Minnesota
mayoclinic.org/departments-centers/mayo-clinic-cancer-center

Memorial Sloan Kettering Cancer Center
New York, New York
800.525.2225
mskcc.org

Moffitt Cancer Center
Tampa, Florida
800.456.3434
moffitt.org

The Ohio State University Comprehensive Cancer Center - James Cancer Hospital and Solove Research Institute
Columbus, Ohio
800.293.5066
cancer.osu.edu

Roswell Park Cancer Institute
Buffalo, New York
877.275.7724
roswellpark.org

Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine
St. Louis, Missouri
800.600.3606
siteman.wustl.edu

St. Jude Children's Research Hospital/ The University of Tennessee Health Science Center
Memphis, Tennessee
888.226.4343 • stjude.org
901.683.0055 • westclinic.com

Stanford Cancer Institute
Stanford, California
877.668.7535
cancer.stanford.edu

University of Alabama at Birmingham Comprehensive Cancer Center
Birmingham, Alabama
800.822.0933
www3.ccc.uab.edu

UC San Diego Moores Cancer Center
La Jolla, California
858.657.7000
cancer.ucsd.edu

UCSF Helen Diller Family Comprehensive Cancer Center
San Francisco, California
800.689.8273
cancer.ucsf.edu

University of Colorado Cancer Center
Aurora, Colorado
720.848.0300
coloradocancercenter.org

University of Michigan Comprehensive Cancer Center
Ann Arbor, Michigan
800.865.1125
mcancer.org

The University of Texas MD Anderson Cancer Center
Houston, Texas
800.392.1611
mdanderson.org

Vanderbilt-Ingram Cancer Center
Nashville, Tennessee
800.811.8480
vicc.org

Yale Cancer Center/ Smilow Cancer Hospital
New Haven, Connecticut
855.4.SMILOW
yalecancercenter.org

Index

- ablative therapy** 34, 40, 62, 63, 68, 69
- adjuvant treatment** 36, 37, 40, 56, 57, 62–64, 68–72, 76, 79
- biopsy** 17–20, 22, 26, 34, 35, 42, 50–52, 54–64, 66–69, 74, 78
- blood test** 16, 21, 24, 43, 54, 59, 64, 74, 78
- cancer stage** 26, 31, 69, 73, 84, 85
- chemotherapy** 36, 39, 44, 46, 63, 69, 80, 81, 86
- clinical stage** 26, 30, 52, 54, 56, 60, 62, 63
- clinical trial** 38, 41, 56, 57, 62, 63, 67–70, 72, 74, 76, 77, 81, 85
- dermis** 6–9, 13, 18, 30, 54, 66
- epidermis** 6–9, 13, 18, 27, 30, 54, 66
- follow-up test** 57–59, 63, 64, 69, 72, 73, 76–78
- imaging test** 20–22, 26, 28, 35, 54, 58–62, 64, 66, 67, 74, 76, 78
- immunotherapy** 36, 37, 43, 44, 46, 63, 69, 72, 80, 81, 86
- in situ** 30, 35, 48, 54–59
- in-transit** 9, 28, 40, 60, 62, 63, 66–68, 79
- local melanoma** 30, 48, 54–59
- local therapy** 36, 37, 63, 69
- lymph node** 8, 9, 16, 17, 20–22, 24, 26, 28–31, 34, 35, 40, 42, 48, 52, 54–64, 66–72, 78, 79
- lymph node dissection** 22, 34, 35, 42, 59, 62–64, 70–72, 78
- lymph vessel** 7–9, 20, 28, 30, 40, 48, 60, 62, 66
- melanin** 7–9, 12
- melanocyte** 7–9, 13
- metastases** 18, 28–30, 40, 58, 59, 63, 64, 72, 74, 76–80
- metastasis** 8, 9, 18, 28, 56–58, 63, 64, 78
- metastatic melanoma** 30, 40, 48, 59, 65, 69, 73–81
- National Comprehensive Cancer Network** 1, 2
- palliative** 62, 63, 68, 69, 77, 79
- pathologic stage** 26, 29, 30, 57, 60, 62, 68
- pathology report** 18–20, 50, 52
- persistent melanoma** 48, 59, 65–73
- prevention** 6, 11, 12
- primary treatment** 34, 36, 37, 56, 62, 63, 68, 70
- radiation therapy** 40, 44, 46, 57, 62, 63, 70, 72, 76, 77, 79, 86
- recurrence** 28, 48, 56–59, 62–70, 72–74, 78, 79
- regional melanoma** 30, 48, 60–65, 79
- regional therapy** 36, 39, 63, 69
- risk factor** 11, 16, 52, 54
- satellite** 9, 19, 28, 30, 40, 66–68, 79
- sentinel lymph node biopsy** 20, 22, 34, 35, 42, 54–60, 62–64, 68, 69, 78
- side effect** 18, 20, 21, 34, 37, 41–44, 72, 79, 80, 85, 86
- skin biopsy** 17, 18, 20, 26, 34, 50, 66, 67
- staging** 19, 25–31, 60, 61, 66, 67, 74
- supportive care** 70, 72, 76, 77
- surgery** 19, 20, 28, 34–37, 40, 42, 46, 50, 52, 54–57, 59, 63, 65, 66, 68–70, 72, 76, 77, 79, 86
- survivorship** 86, 89
- symptom** 6, 10, 16, 17, 21, 40, 43–45, 50, 52, 54, 58–61, 63, 64, 66, 67, 69, 72, 74, 76–80, 85–87
- systemic therapy** 36–39, 43, 62, 63, 68–70, 72, 76, 77, 80, 81
- targeted therapy** 36–38, 43, 46, 67, 74, 80, 81
- treatment plan** 84–86, 88, 89
- wide excision** 34, 35, 42, 56, 62, 63, 68, 79



NCCN Guidelines for Patients®

Melanoma

Version 1.2014

The NCCN Foundation® gratefully acknowledges Genentech and Harborside Press LLC for their support for the availability of these NCCN Guidelines for Patients®. Our supporters did not participate in the development of the NCCN Guidelines for Patients and are not responsible for the content and recommendations contained therein.



National
Comprehensive
Cancer
Network®

275 Commerce Drive
Suite 300
Fort Washington, PA 19034
215.690.0300

NCCN.org/patients – For Patients | NCCN.org – For Clinicians