MELANOMA CANADA

Melanoma

What you need to know

6th Edition

Have Questions?
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CONTENTS

ABOUT THIS BOOKLET

The purpose of this booklet is to help when you are diagnosed with the most common form of melanoma skin cancer, called **cutaneous melanoma**. This booklet focuses on this form of skin cancer and how it is treated.

It is a good idea to read the whole booklet first, then focus on the sections that apply to you.

What can I learn from this booklet?

This booklet includes:

- **Treatment options** for all stages of melanoma that are available in Canada at the time of publication. Not all treatments apply to every person with melanoma. Please speak to your healthcare team about the treatment options that may be available to you.
- **Questions to ask your doctor** at different stages of your treatment. To help you learn about the disease and be active in your treatment decisions:
  - Ask questions to make sure you understand your condition and your treatment.
  - Take notes so you can remember your questions and the doctor's answers about your condition and treatment.
  - Ask for copies of any test results so you have them for easy reference or to review for questions later. Some treatment centres and hospitals may offer online access to your test results, so check with your facility.
  - Bring a friend or family member to your appointments to take notes, listen, or ask questions. Having someone there as a second pair of eyes and ears is helpful and can be a good support for you.

What doesn't this booklet include?

This booklet includes a short section on rarer types of melanoma, including **mucosal melanoma, uveal melanoma**, and **desmoplastic melanoma**, but it does not describe their treatment options. Please discuss those with your medical team. You can also read our other booklet - *A Guide to Uveal Melanoma*.

The booklet does not discuss other types of more common skin cancers, such as basal cell carcinoma (BCC) or cutaneous squamous cell carcinoma (cSCC). Please visit our website **melanomacanada.ca** to download our BCC and cSCC Patient Guides for further information and treatment of these skin cancers.

What will I gain from learning about melanoma and its treatment?

The more you know, the more you can be active in making choices about your own care. Being part of your care:

- Helps you feel more in control.
- Can lessen the anxiety of a diagnosis.
- May help you be more confident with your treatment and communicating with your healthcare team.

THE SKIN

Importance of the Skin

Your skin plays an important role in your body. In fact, your skin is the largest organ of your body, covering its entire surface. Skin is a protective layer that has many jobs:

- Skin is the first line of defense against injury and infection. Healthy skin is a large part of the immune system and helps prevent infection, recognize allergens, and repair damage as it happens.
- Skin prevents the body from losing water and drying out. This is important as your body is mostly made up of water.
- Skin protects you from heat. Sweat glands release sweat, which cools the skin.
- Skin helps make vitamin D.
- Skin protects you from damage that can be caused by **ultraviolet (UV) radiation**. The sun, sunbeds, and sunlamps make UV radiation.

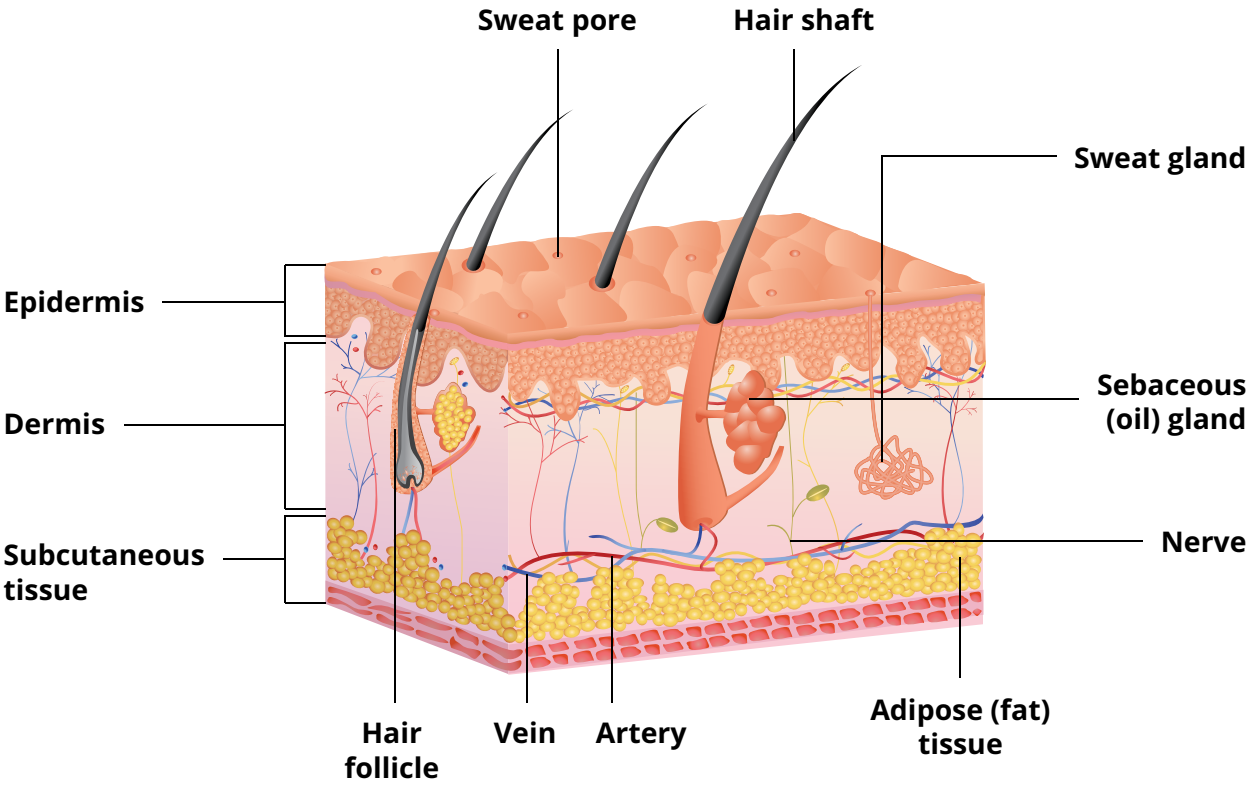
Layers of the Skin

The skin is made up of 3 main layers: the epidermis, the dermis and the subcutaneous tissue.

Epidermis

The **epidermis** is the thin top layer of skin you can see. Several **cell** types make up the epidermis. Cells are the tiny, microscopic building blocks that make up tissues, such as skin.

Melanocytes are pigment cells in the bottom of the epidermis. They make **melanin**, the pigment that gives your skin its colour. When your skin is exposed to UV light, melanocytes make more melanin to try to protect your body from damaging radiation.



Dermis

The **dermis** is a thick layer below the epidermis. The dermis contains several types of cells and structures:

- **Blood vessels** carry nutrients and oxygen to your skin and remove waste products.
- **Lymph vessels** return blood plasma (the liquid part of blood) from your tissues to your heart.
- **Sweat glands** make sweat that helps to cool your body.
- **Sebaceous glands** make sebum, an oily substance that helps protect skin from drying out.
- **Connective tissue** surrounds these structures and holds them in place. It also allows your skin to stretch.
- **Hair follicles** make your hair.

Subcutaneous tissue

The subcutaneous tissue is beneath the dermis and:

- Attaches skin to the muscle underneath.
- Contains connective tissue and fat that stores energy and body heat.
- Absorbs shock to protect your body.

Cell Growth: Normal Cells and Cancer Cells

Cells are tiny structures in the body that group together into tissues such as organs, bone, muscle, fat, and skin. **Genes** are the instructions inside of cells for making new cells and controlling how cells work. Our bodies need new skin cells to replace cells that have died and to heal injuries.

How do normal cells grow?

Normally, your body makes new cells only when they are needed. Cells divide to form new cells until enough cells have been made, then they stop dividing. Our bodies control how many cells are made and where they are made.

How do cancer cells grow?

Cancer is formed when cells grow and divide beyond the body's control. Abnormal changes (mutations) in genes can turn normal cells into cancer cells by accelerating cell division or stopping the normal controls on the system.

Cancer cells can create tumours

Cancer cells continue growing and dividing, even when more cells are not needed (cell proliferation). They can then form a mass called a **tumour**.

The first tumour formed is called the **primary tumour**.

A tumour far from the **primary** tumour is called **metastasis**. Metastases can replace or squeeze normal tissues and prevent them from working as they should.

- A metastasis close to the primary tumour is called a **local or satellite metastasis**.
- A tumour that grows at a distant site from the primary tumour is a **distant metastasis**.
- Melanoma that has spread to a local lymph vessel, but not to lymph nodes, is called an **in-transit metastasis**.

Cancer cells can travel through the body

Cancer cells can break off from the tumour and travel anywhere in the body through blood vessels or lymph vessels and continue to grow and divide. **Lymph nodes** are small immune glands that filter for harmful substances and attack and destroy germs and are located along lymph vessels. Cancer cells often lodge in lymph nodes.

MELANOMA OVERVIEW

Melanoma is a cancer of the **melanocytes**, the pigment cells of skin.

Melanoma can happen anywhere on the skin and commonly starts in an existing or new mole. The mole may change over time. Signs of a problem may include:

- A black or brown stain spreading from the mole.
- Oozing, itching, or bleeding.

What is a mole?

A **mole** (nevus) is a common skin tumour that is not cancer (benign). A mole develops from melanocytes. Almost everyone has some moles. Nearly all moles (nevi) are harmless, but some types can raise your chance of melanoma – see Risk Factors for Cutaneous Melanoma (page 20).

One kind of mole (called a **Spitz nevus**) may look like melanoma. It's more common in children and teens than in adults. These moles are usually benign and don't spread. Doctors may have trouble telling Spitz nevi from melanomas, even under a microscope. They often remove Spitz nevi, just to be safe.

Where does melanoma form?

- Melanoma often forms on parts of the body that often get exposed to the sun.
- For men, melanoma is often found on the head, neck and back, and on women it is often found on the back, arms, and lower legs.
- In people with dark skin, melanoma often forms under the fingernails or toenails, on the palms of the hands, or soles of the feet. Melanoma is less common in people with dark skin but is still a risk.

Does melanoma spread in the body?

Melanoma can spread in the body. It forms in the epidermis and can grow down into the dermis. The deeper a melanoma grows into the dermis, the higher the chance of spreading through lymph vessels or blood vessels.

Once it reaches the dermis, melanoma can easily spread through the blood and lymph vessels to anywhere in the body. Melanoma is more dangerous than other more common types of skin cancer because it is more likely to spread to other parts of the body if not found early.

Luckily, people or their doctors find most melanomas early before they spread (about 84%, or 84 out of 100). These early melanomas are likely to be ‘cured’ by surgical treatment such as a simple excision (a procedure to remove the cancerous tissue and surrounding healthy skin with a scalpel).

How can I prevent melanoma?

You can prevent melanoma by avoiding exposing your skin to UV light from the sun, tanning beds and other artificial UV sources. To help prevent melanoma:

- Monitor your skin for changes.
- Protect your skin and eyes from UV sun damage, such as staying out of the sun and wearing sunscreen with at least SPF 50+.
- See your dermatologist (skin doctor) or family doctor for a check-up at least once a year.
- Those who have had melanoma in the past should be monitored once a year for the rest of their life.

Melanoma rates are increasing

Melanoma happens more often as people spend more time in the sun. In fact, **UV light** from the sun or tanning beds is the leading cause of more than 85 out of 100 of melanomas in Canada (85%), according to the World Health Organization.

In Canada, melanoma is now the 7th most common cancer and is one of the most common cancers in our young people ages 15 to 29 years.[1] In 2022, there were approximately 9,000 new cases of melanoma in Canada, leading to approximately 1,200 deaths.

Signs of melanoma

Normal moles tend to have an even colour and are mostly round or oval. They also tend to be less than 6 mm in size (smaller than the width of a pencil eraser).

The first sign of melanoma may be:

- A change in a mole you already have, such as a change in its shape, colour, size, surface, or texture.
- A new mole that appears.

In some cases, doctors can't find the primary (first) melanoma mole or lesion. Instead, the first sign of a problem is sometimes a swollen lymph node.

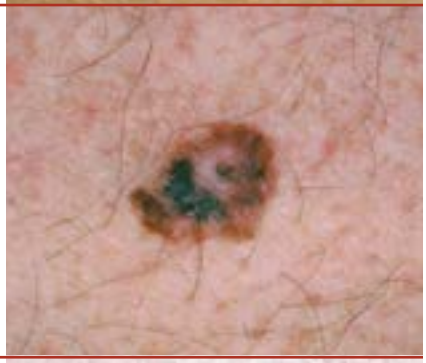
What are the signs of melanoma?

Use the **ABCDE** chart below to learn the common signs of melanoma. Keep in mind:

- Melanomas can look very different from each other:
  - Some melanomas may have all the ABCDE signs.
  - Others may have only 1 or 2 of the ABCDE signs.
  - Some do not follow the ABCDE rule at all (refer to Page 14 for the EFG rule).
- Advanced melanomas may have changes in their texture or feel, and may:
  - Become hard or bumpy.
  - Look scraped or raw, and it may ooze or bleed.
  - Be itchy, sore, or even painful.

Since not all melanomas fit this pattern, also look for the 'ugly duckling' - a mole or lesion that does not look like others you have. If it is changing, itching, bleeding, or scabbing, visit your doctor to have a **biopsy** done.

ABCDE signs of melanoma

A – Asymmetry	The two halves of the mole have different shapes.	
B – Border	The edge of the mole is irregular. It may look blurred, ragged, or notched. Pigment may spread into the skin around the mole.	
C – Colour	The colour of the mole is uneven. The mole may have different shades of tan, brown, and black, sometimes with blue, gray, red, pink, or white.	
D – Diameter	While melanomas are usually greater than 6 mm (the size of a pencil eraser) when diagnosed, they can be smaller.	
E – Evolving	The mole has changed in the past few weeks or months. It may be itchy, scaling or bleeding.	**Example:** 

Source: American Academy of Dermatology **aad.org**

Spread of Melanoma

Metastasis is the spread of cancer. Melanoma can spread (metastasize) in different ways:

- To the skin nearby, but still on the same arm or leg (**in-transit disease**).
- To nearby skin and regional lymph nodes through the lymphatic vessels.
- Through blood vessels to spread to distant organs such as the brain, liver, and lungs.

Once cancer cells spread to lymph nodes or distant organs, they may gather and grow. Once the cells grow large enough, they will be visible during a physical exam or imaging tests.

Melanoma may follow some patterns in spreading to lymph nodes:

- Melanomas in the arms tend to spread to lymph nodes in the armpit.
- Melanomas in the legs tend to spread to lymph nodes in the groin.
- Melanomas starting on the trunk or back are more unpredictable and may spread to the armpit or groin.

Types of Melanoma of the Skin (Cutaneous Melanoma)

Melanoma of the skin (cutaneous melanoma) is by far the most common melanoma. Doctors classify melanoma of the skin into 4 major types based on their colour, shape, location, and how they grow.

Superficial spreading melanoma: Image courtesy of National Cancer Institute

Nodular melanoma: Image courtesy of University of California

Lentigo maligna melanoma: Image courtesy of Skin Cancer Foundation

Acral lentiginous melanoma: Image source: DermNetNZ.org

Superficial Spreading Melanoma

This is the most common type of melanoma, making up almost 70% of melanomas diagnosed.[2] Other names for this cancer include malignant melanoma and cutaneous melanoma. As the name suggests, **superficial spreading melanoma** usually presents as a thin patch often looking like a dark brown or black stain spreading outwards from a new or existing mole (known as radial growth) before it invades vertically into the dermis, the lowest layer of the skin. The time it takes to spread can be fast or it can last for a relatively long time ranging from months to decades.

This type of melanoma is more commonly seen in areas of skin that have been exposed to UV light, especially areas of previous sunburn. Superficial spreading melanoma is often first identified by patients or family members (over 50% are found by patients or family first) using the ABCDEs of melanoma (see page 11).[3] In most situations the early changes are purely visual, and it is the later stages that may result in symptoms like itching or bleeding.

Nodular Melanoma

Nodular melanoma (NM) is a firm, domed bump. It grows quickly down through the epidermis into the dermis. Once there, it can **metastasize**, or spread to other parts of the body. Nodular melanoma is the second most common subtype of melanoma, accounting for 15% to 30% of all melanomas and approximately 40% to 50% of melanomas thicker than 2 mm.[2] Nodular melanoma is typically dark brown or black and may crust or ulcerate. As in all subtypes of melanoma, nodular melanoma can be a pink, red or skin-toned colour (amelanotic) and rarely can also be colourless, especially in people with very fair complexions.

Nodular melanoma does not typically follow the ABCDEs of other melanomas, as it generally has uniform borders and colour, symmetry and small diameter. It is often difficult to diagnose and therefore it is important that physicians and patients be wary of new or changing lesions. A dermatologist will often use a dermatoscope to help in the diagnosis of melanoma.

Nodular melanoma has a more rapid growth rate, more biologically aggressive behaviour, and an increased number of mitoses (which is unchecked cell growth, often referred to as the mitotic rate), compared with other melanoma subtypes. It also is commonly raised and bleeds frequently.[6,7]

The **EFG** acronym to identify NM has been developed, summarizing the most frequent clinical features of NM:

- **Elevation**
- **Firm** Firm on palpation (or to the touch), and
- Continuous **growth** for 1 month.[8]

Lentigo Maligna Melanoma

Lentigo maligna is also called melanoma in situ of the solar type when the melanoma cells are confined to the surface epithelium, the most superficial layer of the skin, with no invasion or penetration of the deeper layer, the dermis. This subtype accounts for 10-15% of all cases.[2] It occurs in chronically sun damaged skin, particularly in the elderly, so is generally found on the upper arms, face, ears or neck, and most often on the nose and cheek. As this is a very early stage of the disease, complete excision with appropriate clear margins is basically curative. Once the melanoma cells invade the dermis, it is called lentigo maligna melanoma. Under this condition the prognosis depends on the depth of invasion, ulceration, mitoses and other parameters listed in the pathology report.

Acral Lentiginous Melanoma

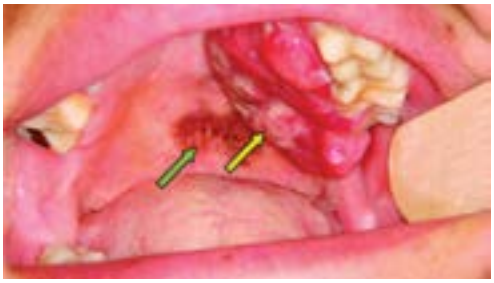
There is less information on Acral Lentiginous and Lentigo Maligna Melanoma compared to the other forms of melanoma. **Acral lentiginous melanoma** can look like a dark spot or a bruise that does not get better. This subtype accounts for less than 5% of all cases.[2] It can occur on the palms of the hands and soles of the feet. Acral lentiginous melanoma under a nail may look like a dark stripe. Like other flat forms of early melanoma, it may be recognized by the CUBED (Colour, Uncertain, Bleeding, Enlargement, Delay) rules, but may also be amelanotic (non-pigmented, usually red in colour). People of African and Asian descent most often develop this melanoma, but it may occur in any skin type.

Learn more about Melanoma and Skin of Colour at **melanomacanada.ca**.

Rare Types of Melanoma

Mucosal Melanoma

Mucosal melanoma is a rare form of melanoma that tends to grow and spread quickly. It is also often diagnosed at a late stage. This form of melanoma is not caused by UV exposure.



Mucosal melanoma
Image Source: The Oncologist Journal

Mucosal melanoma makes up only 1 to 2 out of 100 melanoma cases (1% to 2%).[9] It happens in the melanocytes, the pigment-producing cells which are present in the mucosal surfaces of the body, such as:

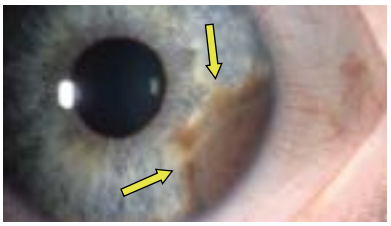
- The lining of the sinuses, nose (nasal passages), mouth, and throat. Over 50% of cases occur here.[9]
- The female genital tract and anal or rectal area. Approximately 24% of cases occur here.
- The urinary tract. Approximately 3% of cases occur here.

The average age at diagnosis is over age 70 and is more common in women than men.[9] Mucosal melanoma has a unique staging system, separate from cutaneous melanoma. It is hard to find early and fully treat because of where it is.

Most patients will experience micro metastatic disease (small cancer cells that spread from the primary location) and multiple recurrences before the cancer metastases to distant parts of the body. Approximately one third of patients will have lymph node involvement when their mucosal melanoma is detected.

The overall 5-year survival rate is only 25%[9] because often it has already spread before it's found, and it often comes back. Additionally, it is not very responsive to surgical resection and adjuvant treatments like immunotherapy and chemotherapy.[9]

Uveal Melanoma



Uveal melanoma
Image Source: Skin Cancer Foundation

Uveal melanoma is a rare but dangerous form of melanoma that affects the uvea of the eye, which includes the iris (It is also called primary intraocular melanoma or choroidal melanoma). It makes up less than 3 out of 100 of all melanoma cases in Canada[1] (3% or 150 cases per year) and about 4,000 cases worldwide.

Uveal melanoma often spreads beyond the eye before it's found, and if it does, only about 40 out of 100 patients (about 40%) will survive for 1 year.[12] About 30-50% of those diagnosed will develop metastatic disease[10,11]. Researchers are looking for effective treatments that work well, but the current treatment options are limited.

Uveal melanoma refers to melanocytes of the uvea that become cancerous. This can occur in any part of the uvea: the iris, the ciliary body and/or the choroid. Uveal melanoma cases occur nearly 85% of the time in the choroid, another 10% in the ciliary body and approximately 5% in the iris.[13] Pathological staging is based mainly on the size of the mass, its location, and the presence or absence of metastases.

Although uveal melanoma (eye) and cutaneous melanoma (skin) both affect melanocytes, they are distinct cancers as they have different genetic mutations, they behave differently, and cutaneous melanoma is much more common (nearly 40 times more common).

The cause of uveal melanoma is unclear. Unlike skin melanoma, there is no evidence that it is caused by UV light. However, these factors are linked to a higher chance for uveal melanoma:

- Light eye colour, such as blue or green eyes
- Fair skin colour
- Being older in age – the average age at diagnosis is age 55

Uveal melanoma can happen in any person regardless of age, gender, or race. See more on uveal melanoma in the booklet *A Guide to Uveal Melanoma* from Melanoma Canada at **melanomacanada.ca**.

Desmoplastic Melanoma

Desmoplastic melanoma (DM) is a rare type of melanoma which makes up less than 4 out of 100 melanomas of the skin (4%).[14] It starts in the thick, inner layer of skin (dermis) or the layer of connective tissue that surrounds mucus tissue (submucosa).

DM tends to grow down into the skin and stay in the local area, without spreading to lymph nodes. Also, it:

- Usually forms on areas of skin that have long-term sun exposure, such as the head and neck (53%), arms and legs (26%), and trunk (20%).[14]
- Often appears as a lump that is the same colour as your skin, but in some cases, it may have colour.
- Happens in men twice as often as women, and is most common in older adults.

Treatment options typically involve surgically removing (excision) the DM and in some advanced cases, following up with radiation. When radiation treatment is used after surgery, this is called **adjuvant therapy**.

DM has had very positive responses to treatment with immune-activating anti-PD-1/PD-L1 therapies, pembrolizumab (brand name Keytruda) or nivolumab (brand name Opdivo). During cancer development, PD-1 and PD-L1 proteins negatively affect your immune system and allow the tumour cells to continue to grow. Drugs like pembrolizumab and nivolumab stop this from happening and encourage your immune system to detect and destroy the cancer cells.[9,15]

Desmoplastic melanoma

Image Source: Fitzpatrick's Color Atlas & Synopsis of Clinical Dermatology Klaus Wolff, Richard Allen Johnson, Dick Suurmond Copyright 2005, 2001, 1997, 1993 by The McGraw-Hill Companies.

HOW TO TEST FOR MELANOMA

If you think you may have melanoma or other skin cancer, visit your doctor right away. Your doctor may refer you to a **dermatologist**, a doctor who specializes in skin diseases. They will ask questions and do a physical exam to check your skin. If they think you may have skin cancer, they will also do tests.

Medical History

Your doctor should ask about your health and health history, such as about:

- Any medical conditions you have had.
- Current skin symptoms such as a change in a mole or other marks on your skin.
- Any history of melanoma or other skin cancers.
- Your risk factors for melanoma (things that give you a higher chance of melanoma).

What makes it more likely for someone to get melanoma?

Scientists have found many things that increase the chance of developing melanoma – these are called **risk factors**. These include:

Exposure to UV light

- **Sun exposure:** Exposure to ultraviolet radiation from the sun (UVA and UVB) is the most important risk factor for melanoma:
  - **Sunburn with blistering:** Even one severe, blistering sunburn raises your risk factor.
  - **Lifetime sun exposure:** The total amount of sun exposure.
  - **Tanning:** Even people who tan without burning have a higher chance of melanoma because of more total sun exposure.
- **Artificial sources of UV radiation:** Sunlamps and tanning beds produce UV light, so they raise the chance of melanoma. Using these artificial sources of UV light before the age of 30 greatly raises the chance of melanoma, but the danger exists for all ages.

History of Melanoma

- **Personal history of melanoma:** People who have had melanoma have a higher chance of developing another melanoma.
- **Family history of melanoma:** Having at least 2 close relatives with melanoma is a risk factor. Close relatives include parents, siblings, and children. Melanoma can run in families.

Physical features

- **Fair skin and light hair:** People with pale skin, who burn easily, have a higher chance of melanoma. These people may have blonde or red hair, blue or grey eyes, or many freckles.
- **More than 50 moles:** Having many moles raises the chance of skin cancer. Normal moles are smaller than a pencil eraser (6mm) and have an even colour. They can be pink, tan, or brown. They are round or oval and smooth.
- **Atypical moles (dysplastic nevi):** These atypical moles often run-in families. A small percent of dysplastic nevi may grow into melanomas, but most never become cancer. These moles:
    - Look a little like normal moles but may look like melanoma, such as being larger than other moles and having an abnormal shape or several colours.
    - Are usually flat with an irregular or scaly surface.
    - They can appear on skin that is or is not exposed to the sun, such as on the buttocks or scalp.
- **Dysplastic nevus syndrome (also called familial atypical multiple mole melanoma syndrome, or FAMMM):** People with this inherited condition have many dysplastic nevi and usually a close relative who has had melanoma. People with this condition have a very high chance of melanoma, so they:
    - Need to have very thorough, regular skin exams by a dermatologist – sometimes the doctor takes full body photos to show if moles are changing and growing.
    - Should learn to check their own skin and moles every month at home.

Other risk factors that can mean a higher chance of melanoma

- **Age:** People with a family history of melanoma may have the disease at a young age. However, about half of melanomas develop in people older than 50 years.
- **Medicines:** Some medicines, like antibiotics, hormones, or antidepressants, increase sensitivity to the sun and as a result can raise the chance of melanoma if you are exposed to the sun.
- **Lowered immune system:** The immune system fights infection and removes damaged cells. Some diseases and some medicines weaken the immune system. This can raise the chance of melanoma.

Physical Exam

The doctor checks your skin for any abnormal moles or lesions (tissue damaged by disease or injury appearing as a wound), or other problems. If a doctor suspects melanoma, they should refer you to a **dermatologist** as quickly as possible. A dermatologist is a doctor who is an expert in skin diseases.

What happens in a physical exam?

For a physical exam, the dermatologist or doctor should:

- Carefully check all your skin, including your scalp, between your toes and fingers, and even around your genitals.
- Look at any suspicious moles or lesions through a **polarized dermatoscope**, a handheld device that uses polarized light to magnify an area to help find melanomas, especially those difficult to identify with the naked eye.
- **Dermoscopy** is a widely used noninvasive diagnostic technique. It improves the accuracy of diagnosis for pigmented lesions in comparison with examination with the naked eye. Dermoscopy helps in early diagnosis because of its accuracy in detecting cancer. [4,5]

Skin Biopsy

If your doctor or dermatologist finds a suspicious mole or lesion, they do a **biopsy** of it (which removes tissue from the mole to check it under a microscope).

What happens in a biopsy?

1. The doctor first numbs the skin with a local anesthetic (a medicine to numb an area of the body, often injected with a needle).
2. They will remove the entire mole or lesion and the border of normal skin around it so a **pathologist** or **dermatopathologist** can correctly diagnose it. A pathologist is a doctor who interprets and diagnoses tissue and body fluids and is responsible for performing lab tests. A dermatopathologist is a pathologist who specializes in studying skin diseases at a microscopic and molecular level. Either can examine your biopsy.

There are several types of biopsies:

- **Excisional biopsy:** This is the preferred and most common type of biopsy. The doctor uses a scalpel to remove the entire growth and some tissue around it. A deep shave biopsy, also called 'saucerization' or 'scallop' biopsy, is commonly used to remove an entire mole or lesion and is different than a superficial shave biopsy (surgery that removes a thin tissue sample from the top of a tumour).
- **Incisional biopsy:** If a mole or lesion is very large or in a place where it can't be easily removed, an incisional biopsy is recommended to remove part of it.
- **Punch biopsy:** The doctor uses a sharp, hollow instrument to remove the mole or lesion and some normal tissue around it. They may use it for specific areas of the body, such as the face.
- **Shave biopsy:** These are not recommended for suspected melanoma but are often used for non-melanoma skin cancers such as basal cell carcinoma or squamous cell carcinoma. A shave biopsy is not recommended as it is only for abnormalities on the top or outer layers of the skin.

Can doctors always find where melanoma started?

No. A doctor may find melanoma somewhere in the body without ever finding a spot on the skin where the cancer started (the primary location).

Rarely, a melanoma may go away on its own without any treatment (**spontaneous regression**) but may leave some cancerous cells to spread to other parts of the body. Certain rarer forms of melanoma can also start in internal organs (mucosal melanoma for example), and if melanoma has spread widely throughout the body, it may not be possible to tell exactly where it started.

Questions to ask your doctor before having a biopsy:

- What type of biopsy do you suggest for me?
- How will you do the biopsy?
- Where will the biopsy be done? In your office?
- How long does a biopsy take?
- Will the biopsy hurt?
- Will you remove the entire growth?
- What are the risks of a biopsy? What about infection or bleeding?
- Will the biopsy leave a scar? What will it look like?
- Will the tissue be examined by a dermatopathologist? Dermapathology is a subspeciality of pathology that focuses on diseases of the skin.
- When will I find out the results?
- If I have cancer, what are the next steps and who will talk to me about treatment?

DIAGNOSING MELANOMA

Once the doctor does a biopsy, the tissue sample will be sent off to a pathology lab for review by a **pathologist**. A pathologist is a doctor who uses a microscope and other tools to closely look at tissues and cells to diagnose disease.

To check a biopsy sample for melanoma, the pathologist:

- Uses a careful process that may take a few days up to a couple weeks.
- They may consult a dermatopathologist, a pathologist who specializes in diagnosing diseases of the skin. This may take extra time.
- The pathologist will send a report of their findings (**pathology report**) to your dermatologist or doctor to confirm the initial findings.

What's in a pathology report?

Pathology results determine staging of disease and help guide treatment options. Depending on the depth of the lesion and other features listed below, additional surgery may be required. Melanoma pathology reports include:

Features of the melanoma:

- **Melanoma type:** Based on the microscopic exam.
- **Breslow thickness or depth:** To describe how many millimeters (mm) deep the melanoma cells have grown down into the skin by measuring the distance between the upper layer of the epidermis and the deepest point of the tumour. The thinner the melanoma, the better the chance of a cure. Breslow thickness is very important in determining your treatment options.
- **Ulceration:** Tells if the tumour's top skin layer is intact or is broken or missing (ulcerated). Often the melanoma bleeds when it is ulcerated.
- **Spread:** If melanoma cells have spread into the lymph vessels or blood vessels (angiolymphatic invasion).
- **Growth of melanoma around nerves** (perineural invasion or neurotropism): This is associated with a higher chance of recurrence.
- **Presence of white blood cells**: Presence or absence of white blood cells (tumour-infiltrating lymphocytes, i.e. TILs) that may be in primary melanomas – TILs are able to recognize and attack cancer cells and can help with better treatment outcomes.
- **Rate of growth:** How fast the melanoma cells are growing and dividing (**mitotic rate**).

- **Angiolymphatic invasion:** melanoma cells that have invaded into the lymph vessels or blood vessels.
- **Microsatellitosis:** Microscopic tumours that have spread nearby the primary melanoma tumour.
- **Growth of melanoma inside blood vessels or lymphatics** (lymph vascular invasion).
- **Tumour regression:** When there is evidence that TILs in the immune system are attacking the cancer cells and reducing the size of a tumour.

Success of removing the cancer cells:

- Completeness of removal (excision) or **peripheral margin status**: The presence or absence of cancer cells in the normal tissue around the sides of a tumour that was removed during the initial biopsy or follow-up surgery.

Ask for a copy of the pathology report so you can partner with your doctor to decide on next steps, including treatment. If there is anything you do not understand, ask your doctor or cancer doctor (oncologist).

Luckily, most melanomas are found early, and the initial biopsy and a first surgical removal is often all that is needed.

Surgical Tests to Stage Cancer

When someone has cancer, doctors will assign your cancer a “stage” to understand where the cancer is throughout the body and if it has spread.

Many people may need surgical tests after the initial biopsy so doctors can determine your stage.

First surgical procedure on the skin

Patients who have a very thin and early-stage melanoma that has not spread (in situ) will likely need a small surgical excision that removes the lesion and the 5 mm of seemingly healthy tissue around it (margin). A healthy margin means that there are no cancer cells at the border where tissue was removed. Deep margin is used to refer to normal-looking tissue underneath a tumour, and deep margin status, is the presence or absence of cancer cells in the normal looking tissue under a tumour.

Second surgical procedure on the skin

Some patients with melanomas need to have a second procedure called a **wide local excision (WLE)**, even though it appears that the melanoma lesion has been removed. A WLE removes more seemingly healthy tissue (a 1 to 2 cm margin) to ensure there is little chance that tiny cancer cells (microscopic disease) remain in the tissue around the melanoma. The doctors will use factors such as the depth of the lesion and its location to determine how much tissue needs to be removed.

The WLE:

- May take place in hospital, where doctors can use either a local anesthesia to numb the area or a general anesthetic to put you to sleep if they are also doing a biopsy on lymph nodes near the melanoma (sentinel node biopsy).
- May use a plastic surgeon if the surgery may cause a large scar or skin defect. To help prevent a scar, they can patch an area of skin using a skin flap or a graft, usually from the thigh. This procedure is done during surgery.

Additional Biopsies that may be Needed

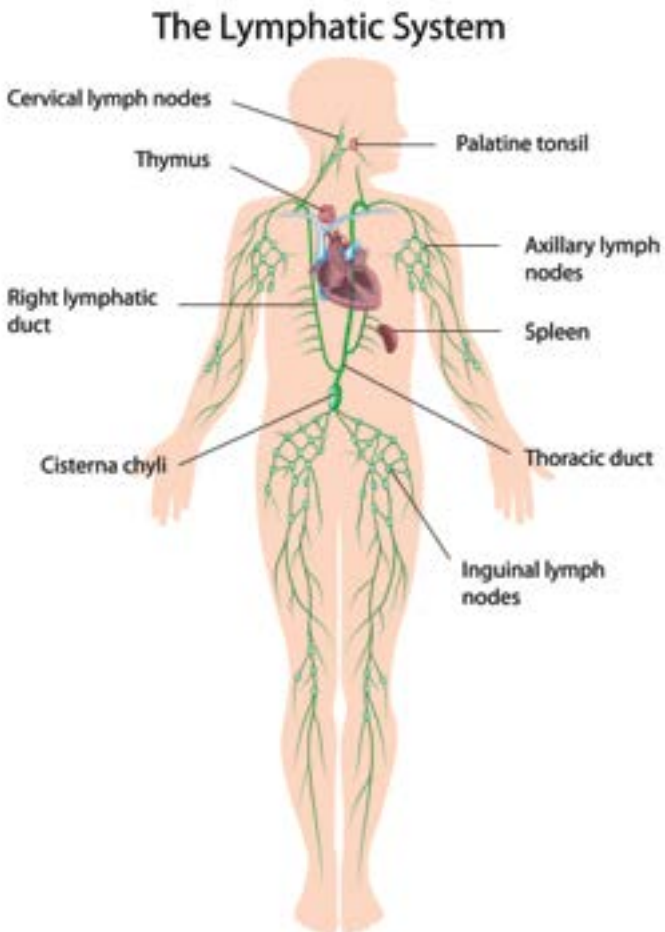
Sentinel Lymph Node Biopsy (SLNB)

The first lymph node or nodes that cancer is likely to spread to from a primary tumour is called the **sentinel lymph node (SLN)**. Doctors do a sentinel lymph node biopsy (SLNB) to find out if the melanoma has spread to the major lymph node basins, usually in the neck (cervical), armpit (axillary), or groin (inguinal).

For SLNB, the doctor will:

- Inject a radioactive tracer dye and possibly a blue dye into your body. The dye stains your lymph nodes which helps your doctor to see them clearly.
- Do surgery under general anesthesia to remove 2 to 3 sentinel nodes.
- Send the lymph nodes to the pathologist for review.

Doctors do a sentinel lymph node biopsy when there is a higher chance the melanoma has spread, such as if the melanoma is a certain size (1 mm to 4 mm), as it has proven beneficial for patient survival and disease progression. They may recommend this type of biopsy even if they can't see proof of its spread through a physical exam or imaging tests such as CT scan.



The biopsy may have temporary side effects that include:

- Numbness
- Pain
- Bruising
- Lymph fluid buildup at the surgery site
- Rarely **lymphedema** (swelling of a limb caused by removal of lymph nodes)

What happens next:

- If there are no melanoma cells in the sentinel nodes, no more lymph node surgery is needed because it is very unlikely the melanoma would have spread beyond this point.
- If there are melanoma cells in the sentinel node, the surgeon may offer ultrasound monitoring of that group of lymph nodes (lymph node basin) for the next 5 years.

Fine Needle Aspiration (FNA) Biopsy

If a doctor can feel your lymph nodes (they are palpable) or they think your lymph nodes are suspicious (if they are swollen or you have additional symptoms) they may do a fine needle aspiration (FNA) of the lymph node to look for cancer cells. This type of biopsy is less invasive than other types of biopsies because doctors use a needle instead of cutting into your body. However, a FNA may not always collect enough of a sample to tell if a suspicious area has melanoma.

For an FNA biopsy:

1. The doctor may use local anesthetic to numb the area of skin.
2. The doctor uses a thin, hollow needle and syringe to remove a small sample of tissue of a lymph node or a tumour. The needle is smaller than a needle used in blood tests.
3. If the lymph node is just under the skin, the doctor can often feel it well enough to guide the needle into it. For a suspicious lymph node deeper in the body or a tumour in an organ such as the lung or liver, doctors use an imaging test such as ultrasound or a CT scan to help guide the needle into place.
4. The doctor sends the tissue to the pathologist for review.

This test rarely causes much discomfort and does not leave a scar.

Excisional Lymph Node Biopsy

Doctors may do an excisional lymph node biopsy if a lymph node's size suggests the melanoma has spread to the lymph node, but an FNA biopsy wasn't done or didn't find any melanoma cells.

For this type of biopsy:

1. The doctor may use a local anesthetic to numb the area if the lymph node is just under the skin, but they may put a patient to sleep with general anesthesia if the lymph node is deeper in the body.
2. The doctor makes a small cut (incision) in the skin to remove lymph node tissue.
3. They send the tissue to the pathologist for review.

Radical Lymphadenectomy

If a sentinel lymph node biopsy shows that a patient has melanoma in more than 1 node, rarely a doctor may recommend a radical lymphadenectomy. A radical lymphadenectomy (also called a lymph node dissection) is a surgery that removes all the lymph nodes grouped (lymph node basin) where the tumour has spread.

For this type of surgery:

1. Doctors usually use general anesthesia to put the patient to sleep.
2. The patient is usually able to go home on the same day.
3. The doctor cuts the skin above the area of the affected lymph nodes and removes the lymph nodes, nearby lymphatic tissue, and some underlying soft tissue.
4. They send the lymph nodes and tissue to the pathologist for review.
5. For several weeks, the patient has a tube that drains fluid from the area of the surgery, so it doesn't build up. If lymph nodes in the groin or under the arm are removed, fluid may build up because they normally help drain fluid from the limbs.

This procedure may cause:

- Lymphedema (buildup of fluid in an arm or leg)
- Numbness
- Tingling
- Pain in the area of surgery

Lymphedema (a buildup of fluid in limb causing swelling) could be a permanent side effect in up to 50% of patients who have a groin dissection and 20% of patients who have an axillary dissection. If severe enough, it can cause skin problems and a higher chance of infections in the limb. Bandaging, professional lymphatic drainage massage and compression garments can help some people with this condition. For more information, see our booklet called *Managing Lymphedema for the Melanoma Patient*.

You may wish to ask your doctor these questions about surgery:

- What surgery do you recommend for me? Why?
- What is involved in the surgery?
- Do I need to stay in the hospital?
- Will I have pain after the surgery? How will you manage my pain?
- Am I likely to need antibiotics to prevent infection?
- What problems do I need to watch for after surgery?
- Will there be a scar?
- Are there any long-term side effects?
- Will I need home care assistance, and if so, how is that set up?
- Who will I call if I have problems after surgery?

Surgery Side Effects

- **Pain medicine side effects:** Your healthcare team will give you pain medicines after all types of surgeries. Since the pain medicines commonly cause trouble passing stool (constipation), they will probably give you medicines to help you pass stool.
- **Bleeding**
- **Infections:** Infections are treated with antibiotics or opening of the wound to allow pus and bacteria to drain.
- **Wound-healing problems and lymphedema:** Lymph node surgeries sometimes have wound healing problems and can commonly cause fluid buildup in the arm or leg near the lymph nodes (lymphedema). Lymphedema can happen soon after the surgery or much later. The long-term effects of lymphedema can be temporary or permanent.

Talk to your healthcare team if side effects after surgery are bothering you. If you have lymphedema, they can help you manage your symptoms. Please also refer to our booklet *Managing Lymphedema for the Melanoma Patient,* which is available to download from our website at **melanomacanada.ca.**

DIAGNOSTIC TESTS

Once melanoma has been confirmed, your doctor may wish to do other tests, especially if you have symptoms or if the melanoma may have spread.

Diagnostic tests are used to help figure out what disease or condition a person has based on their signs and symptoms. They can also be used to:

- Find out how serious the disease or condition is.
- Help plan treatments.
- Find out how well treatments are working.

Blood Tests

Blood tests are used because abnormal levels of certain enzymes (a type of protein) in the blood can be a sign that the melanoma has spread to other parts of the body (metastasis). One of these enzymes is **Lactate dehydrogenase (LDH)**. If you have high levels of LDH in your blood, it may be a sign of certain issues or possible metastasis and your doctor may order more tests.

Imaging

Different types of imaging allow doctors to see internal tissues and organs. This helps them find if melanoma has spread anywhere in the body.

- For stage 0 or low-risk stage I melanoma, imaging is not used.
- For intermediate-risk stage I (1) and stage II (2) melanoma, imaging is not always done except to assess certain symptoms, such as pain.
- For stage III (3) and stage IV (4) melanoma, imaging is used to assess certain symptoms and to assess how much melanoma has spread.

The type of imaging depends on symptoms and the likely location of where the melanoma has spread:

- **Chest x-ray:** X-rays use a type of radiation called electromagnetic waves to make images of your body. A chest x-ray will focus on the structures and organs in your chest. A chest x-ray may be done for intermediate-risk stage I and II melanomas. It is often done for stage III and IV melanomas.
- **Ultrasound:** Ultrasound uses sound waves to make images of parts of your body. An ultrasound may be used when the sentinel node had melanoma metastases. It is used to check the remaining lymph nodes (in the head and neck or axilla and groin) for signs of cancer.

- **Computed tomography (CT) scan:** After the injection of a contrast agent, a CT scan takes multiple x-rays of parts of the body from different angles, highlighting areas of concern. This makes a 3-dimensional image. A CT scan is often used to find melanoma in the lungs.
- **Magnetic resonance imaging (MRI):** An MRI uses radio waves and magnets to take pictures of organs and other parts of the body. An MRI is often used to find melanoma in the brain.
- **Positron emission tomography (PET) scan:** A PET scan involves an injection of radioactive glucose, or sugar, into a vein. A scanner then takes pictures of areas inside the body where glucose is being used. Cancer cells show up brighter in the picture because they take up more glucose than normal cells do. PET scans are used to find cancer cells in the body.

Questions to ask your doctor about tests for melanoma:

- What tests do you suggest for me?
- Can I get these tests if I'm pregnant?
- What should I bring with me to these tests?
- Where will the tests take place?
- How long do the tests take?
- Will it hurt? Will I be given a local anesthetic?
- Do I need to prepare for tests?
- Do I need to bring a list of my medications?
- Can I bring someone with me?
- How long does it take to recover? Do I need any medication after the tests?
- When will I know the results? Who will explain them to me?
- Will I be able to see the results of my tests online?
- If a biopsy is done, will I get a copy of the pathology report?
- If I have cancer, who will talk with me about the next steps? When?
- Will I be able to access the results of my tests online?

MELANOMA STAGES

Staging is part of the diagnosis process after all surgical, imaging tests and pathology reports have been completed. It helps you and your doctor:

- Know how advanced the melanoma is (if it has spread).
- Decide how to move forward with treatment and follow-up care.
- Talk about prognosis and survival statistics.

A preliminary **clinical stage** is given after the physical exam and initial biopsy and may change. The final pathology report determines the **pathologic stage** as well as your treatment options.

How is the stage determined?

Melanoma stages are based on several factors. The staging system used for melanoma is the American Joint Committee on Cancer (AJCC) TNM system. This system is based on 3 parts (TNM) and each letter is assigned a numerical.

T: The thickness of the main (primary) tumour

This describes how thick or deep the cancer is, and if it is ulcerated (broken skin).

- **Tumour thickness**: The thickness of the melanoma is called the **Breslow** measurement. It measures how deep below the surface of the skin the melanoma cells have reached. In general, melanomas less than 1 millimetre (mm) thick (about 1/25 of an inch) have a very small chance of spreading. As the melanoma becomes thicker, it has a greater chance of spreading.
- **Ulceration**: Ulceration means there is broken skin or no skin at all covering the melanoma. A melanoma with ulceration is higher risk than a melanoma of the same thickness but with no ulceration.

The T category is divided into levels 1 - 4, based on how deep the tumour has grown into the skin, measured in millimeters (mm).

- Tis, melanoma in situ.
- T1, less than 1.0 mm.
- T2, greater than 1.0 but less than 2.0 mm.
- T3, greater than 2.0 but less than 4.0 mm.
- T4, greater than 4.0 mm.

N: The spread (metastasis) to nearby lymph nodes

This describes if the cancer has spread to regional or nearby lymph nodes. The N category is divided into levels 0-3.

- N0, no regional lymph node metastases.
- N1, one tumour-involved node or in-transit, satellite, and/or microsatellite metastases.
- N2, two or three tumour-involved nodes or in-transit, satellite, and/or microsatellite metastases with one tumour-involved node.
- N3, four or more tumour-involved nodes or in-transit, satellite, and/or microsatellite metastases with two or more tumour-involved nodes, or any number of nodes with or without in-transit satellite, and/or microsatellite metastases.

M: The spread (metastasis) to distant sites

This describes the spread of the cancer throughout the body to lymph nodes or organs.

- M0, no evidence of distant metastasis.
- M1, evidence of distant metastasis.

Overall stage

Each part (T, N, and M) is determined and then combined to give an overall stage. There are 5 overall stages: 0, I, II, III, and IV (0-4).

- **Early melanoma** is stage I and stage II disease.
- **Advanced melanoma** is stage III and stage IV disease.

What are the stages of melanoma?

The staging system below is a simplified version of the latest TNM system, as of January 2018. Melanoma cancer staging can be complex – if you have any questions about the stage of your cancer or what it means for your treatment, ask your doctor to explain it in a way you understand.

In general, melanomas less than 1 mm thick are unlikely to spread. Deeper melanomas are more likely to have spread. They are also more likely to **recur** or come back after treatment.

For more details on the staging system, please visit our website **melanomacanada.ca**.

Table. TNM Pathological Staging Overview

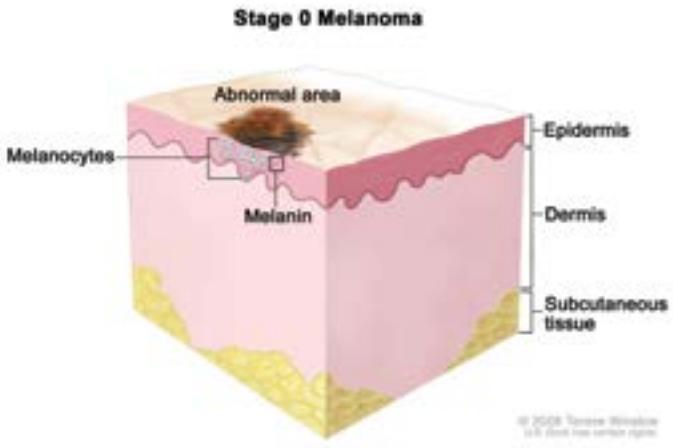
Stage	Tumour	Node	Metastasis
0	Tis	N0	M0
IA	T1a or T1b	N0	M0
IB	T2a	N0	M0
IIA	T2b or T3a	N0	M0
IIB	T3b or T4a	N0	M0
IIC	T4b	N0	M0
IIIA	T1a/b or T2a	N1a or N2a	M0
IIIB	T0 T1a/b or T2a T2b or T3a	N1b or N1c N1b/c or N2b N1a/b/c or N2a/b	M0
IIIC	T0 T1a/b or T2a/b or T3a T3b or T4a T4b	N2b/c or N3b/c N2c or N3a/b/c Any N ≥N1 N1a/b/c or N2a/b/c	M0
IIID	T4b	N3a/b/c	M0
IV	Any T, Tis	Any N	M1

N, number of tumour-involved lymph nodes; M, number of metastases at distant site; T, primary tumour thickness.
Source: Melanoma Research Alliance

Stage 0 (Melanoma In Situ)

In stage 0, melanoma is in the thin outer layer of the skin (epidermis). It has not spread to the next layer of skin (dermis) or to other parts of the body or lymph nodes. Stage 0 melanoma is highly curable and has a very low chance of spreading or coming back (recurring).

Stage 0 is also often called melanoma in situ and Lentigo maligna.

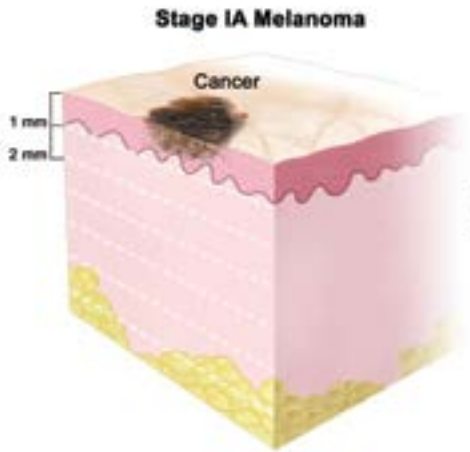


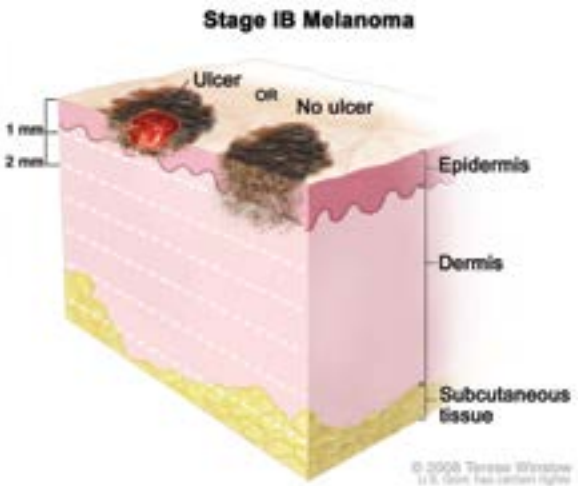
Stage I (1)

In stage I, cancer has formed, and the melanoma becomes invasive. It has grown below the epidermis into the dermis. It has not spread to nearby lymph nodes or distant sites.

Stage I is divided into stages IA and IB:

- **Stage IA:** The tumour is up to 1 mm thick, with or without ulceration
- **Stage IB:** The tumour is more than 1 mm thick but not more than 2 mm thick, with no ulceration



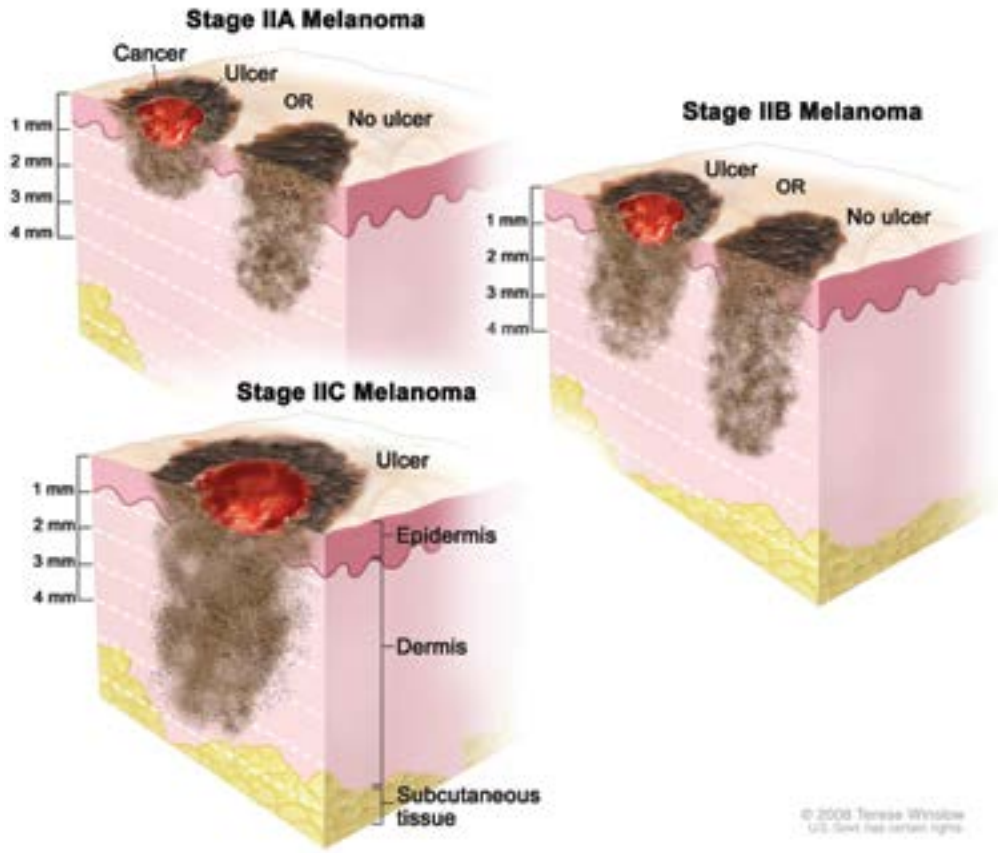


Stage II (2)

In stage II, the cancer cells have grown below the epidermis into the dermis. It has not spread to nearby lymph nodes or distant sites.

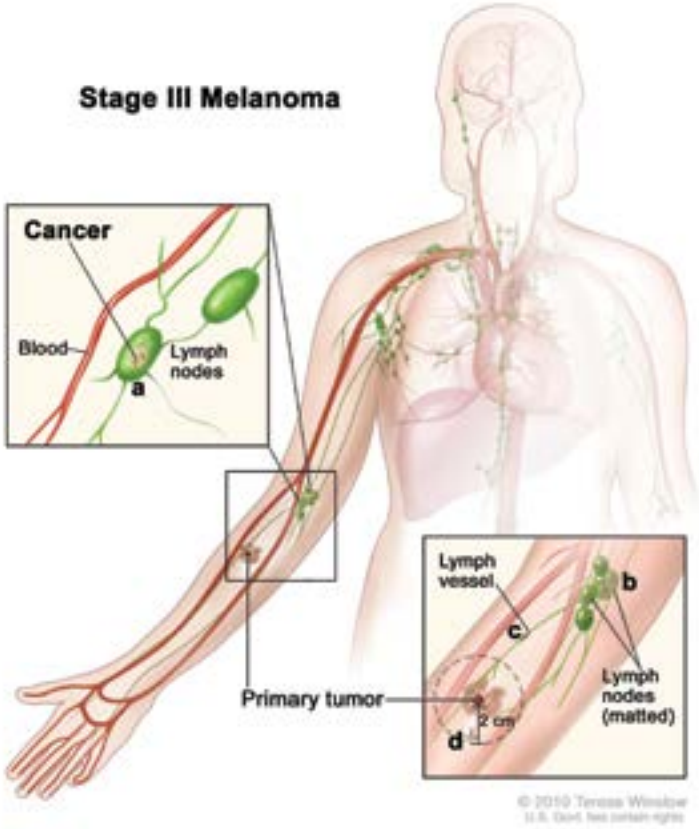
Stage II is divided into levels IIA, IIB, and IIC:

- **Stage IIA:** The tumour is either:
  - More than 1 mm thick but less than 2 mm thick, with ulceration, OR
  - More than 2 mm thick but less than 4 mm thick, with no ulceration
- **Stage IIB:** The tumour is either:
  - More than 2 mm thick but less than 4 mm thick, with ulceration, OR
  - More than 4 mm thick, with no ulceration
- **Stage IIC**: The tumour is more than 4 mm thick, with ulceration



Stage III (3)

In stage III, melanoma has spread to nearby lymph vessels or lymph nodes. The tumour may be any thickness, with or without ulceration. Stage III is divided into 4 levels - A, B, C and D. In all levels of Stage III, the tumour has not spread to distant parts of the body.

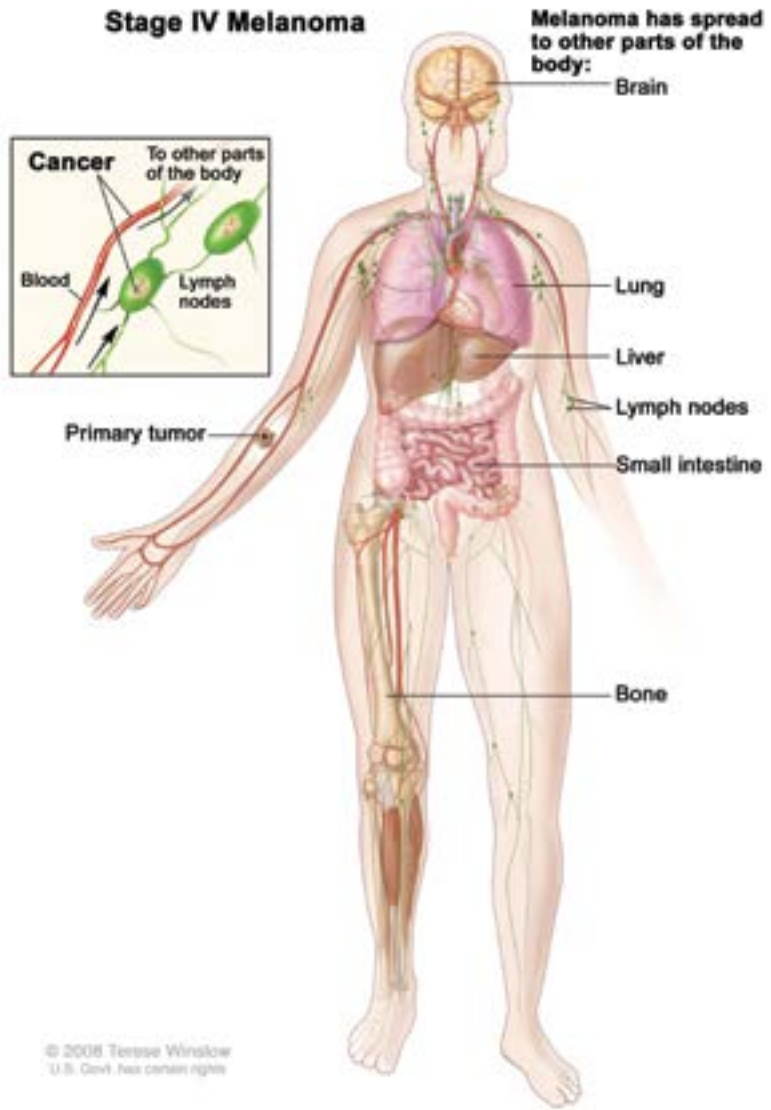


Stage IIIA	The primary (main) tumour is no more than 2 mm thick. It may or may not be ulcerated. It has spread to 1 - 3 nearby lymph nodes, but it is so small that it is only seen under a microscope.
Stage IIIB	There is no sign of the primary tumour ***AND*** • It has spread to only 1 nearby lymph node ***OR*** • It has spread to very small areas of nearby skin (satellite tumours) or lymphatic vessels (a thin tube that carries lymphatic fluid and white blood cells through the lymphatic system) ***OR*** The primary melanoma is less than 4 mm thick and may or may not be ulcerated ***AND***: • It has spread to up to 3 lymph nodes ***OR*** • It has spread to very small areas of nearby skin (satellite tumours) or lymphatic vessels
Stage IIIC	There is no sign of the primary tumour ***AND*** • It has spread to up to 4 or more lymph nodes ***OR*** • It has spread to 2 or more lymph nodes and to very small areas of nearby skin or lymphatic vessels ***OR*** The primary melanoma is less than 4 mm thick and may or may not be ulcerated ***AND*** • It has spread to 1 or more lymph nodes or to very small areas of nearby skin, (satellite tumours) or lymphatic vessels, or lymph nodes clumped together ***OR*** The tumour is more than 2 mm thick but less than 4 mm thick and may or may not be ulcerated ***AND*** • It has spread to 1 or more lymph nodes ***OR*** • It has spread to very small areas of nearby skin, (satellite tumours) or lymphatic vessels, or lymph nodes clumped together ***OR*** The tumour is thicker than 4 mm thick, is ulcerated ***AND*** • It has spread to 1 - 3 lymph nodes ***OR*** • It has spread to very small areas of nearby skin (satellite tumours) or lymphatic vessels
Stage IIID	The tumour is thicker than 4 mm thick, is ulcerated ***AND*** • It has spread to 4 or more lymph nodes ***OR*** • It has spread to very small areas of nearby skin (satellite tumours) or lymphatic vessels

Stage IV (4)

There is less information on Stage IV melanoma. In stage IV:

- The tumour can be any thickness and may or may not be ulcerated.
- It may or may not have spread to nearby lymph nodes.
- It has spread to other distant sites in the body, such as the lung, liver, brain, bone, soft tissue, or gastrointestinal (GI) tract (digestive tract).
- There may be satellite tumours on the skin, far away from the primary location.



Persistent or Recurrent Disease

Melanoma can recur or return after treatment. Deeper melanomas are more likely to recur than thinner melanomas.

Persistent melanoma is a tumour that was not completely removed by treatment. It is found in the surgical scar. Persistent melanoma has not gone beneath the epidermis.

Recurrent melanoma is when the cancer comes back after treatment. There are different types of recurrent melanoma, based on where it returns:

- **Local recurrence** is when the cancer has come back on the skin close to where it first started, or in nearby lymph vessels.
- **Regional recurrence** is when the cancer comes back in nearby lymph nodes near the first melanoma.
- **Distant recurrence** is when the cancer comes back, but it has spread beyond the nearby lymph nodes.

If you have signs of persistent or recurrent melanoma:

- Your doctor will do a biopsy.
- You may have further tests to check if the melanoma has spread to other parts of your body.
- The results of these tests will help find the stage of the melanoma. These stages are the same as the ones described above.
- The stage of the recurrent melanoma will help determine your treatment and the follow-up schedule. Doctors may offer a clinical trial if you have recurrent melanoma.

TREATING MELANOMA

Overview

The main things that help doctors and patients choose treatment options are:

- Depth of the tumour
- Presence of ulceration (broken skin)
- If it has spread to the lymph nodes

Treatment for melanoma can include:

- **Surgery:** Removing the melanoma from the skin (excision).
- **Immunotherapy:** Treatment that stimulates the immune system to find and fight cancer cells.
- **Targeted therapy:** Treatment with drugs that target and disable cancer cells that have certain DNA mutations (changes).
- **Chemotherapy:** Treatment with drugs that kill cancer cells.
- **Radiation:** Treatment that uses a high-energy beam to kill cancer cells.
- **Adjuvant therapy:** Additional treatment given after surgery to lower the risk of the cancer coming back, typically using immunotherapy or targeted therapy drugs.

Treatment Team

Cancer treatment involves a team of healthcare professionals. Your treatment team may include:

- A **dermatologist**, a doctor who treats diseases of the skin.
- A **surgical oncologist** (or **oncologic surgeon**), a doctor who uses surgery to treat cancer.
- A **radiation oncologist**, a doctor who uses radiation to treat cancer.
- A **medical oncologist**, a doctor who uses drug therapy to kill cancer cells that have spread from the primary melanoma.

Treatment Plan

A **treatment plan** is a useful tool to help you understand your therapy and feel in control. Making a treatment plan can ease some of the anxieties you may have after a diagnosis. It can be a relief to know how your team will address your melanoma and give you an idea of what to expect.

A treatment plan includes:

- Your treatment goals – for example, to prolong your survival, improve quality of life, to elevate symptoms, to prevent complications, etc.
- Information about your melanoma.
- The treatments your doctors have planned.
- Any possible side effects.
- Information about any physical and emotional concerns.
- General health advice, such as quitting smoking or limiting alcohol.

A treatment plan helps anyone with melanoma but is even more important for anyone with stage IV disease. A treatment plan helps you and your treatment team be clear about your goals and wishes. Ask your treatment team for a written treatment plan.

Second opinions

In can be a good idea to get a second opinion from another doctor about your diagnosis and suggested treatment if you are at all uncertain about the options you have been given. The second doctor may agree with the first treatment plan, or they may suggest a different approach. Either way, you will have learned more and may feel more confident about your treatment options.

It may take a few weeks to see a second doctor. This possible delay usually does not affect the treatment outcome. However, you may want to ask your doctor if your treatment needs to start right away.

Questions to ask your doctor about melanoma treatment:

- What stage is my melanoma?
- What treatments are recommended for my stage of melanoma?
- Does my age, health, and other medical conditions affect my treatment options?
- What are the risks, benefits, and side effects of each of my treatment options?
- Are there any clinical trials that may offer a better option for me?
- What should I do to prepare for treatment?
- When can I start treatment?
- Where will I be treated? Do I need to stay in hospital, or can I go home after each treatment?
- How will this treatment affect my daily life?
- What is my chance of being free of melanoma after treatment?
- What side effects should I watch for during treatment?
- When can I resume my normal activities?
- What is the chance my cancer will return or spread after the treatment?

Treatment by Stage

For stage 0:

Treatment of stage 0 includes:

- Surgery to remove the melanoma and the surrounding border of normal skin. The prognosis (likely outcome) is excellent at this stage.
- After treatment, doctors recommend you do monthly skin self-checks and see a dermatologist at least once a year for life.

For stage I (1):

Treatment of stage I includes:

- A sentinel lymph node biopsy if the tumour is over 1 mm thick to find if the melanoma has spread to lymph nodes.
- After the first surgery (to remove melanoma and surrounding border of normal skin) a second surgery is performed to remove a **wider border** of normal skin around the biopsy site (a wide local excision).
- After treatment, doctors recommend you do monthly skin self-checks and see a dermatologist at least once a year for life.

For stage II (2):

Treatment of stage II includes:

- A sentinel lymph node biopsy is recommended for stage IIB and IIC patients.
- After the first surgery (to remove melanoma and surrounding border of normal skin) a second surgery to remove a wider border of normal skin around the biopsy site (wide local excision).
- **Adjuvant therapies** after surgery for stages IIB or IIC (treatment after the first treatment to lower the chance of cancer coming back) since the risk of recurrence is high in these stages.

Stage IIA has a moderate chance of cancer spreading to another part of the body or returning.

Stage IIB or IIC have a higher chance of returning, so may benefit from additional treatments.

For stage III (3):

Treatment of stage III may include:

- A sentinel lymph node biopsy, which can help inform treatment options, such as radiation treatment or clinical trials or who may benefit from adjuvant therapy.
- Removing a wider border of normal skin around the biopsy site (wide local excision).
- **Adjuvant therapies** (treatment after melanoma is removed in surgery to lower the chance of cancer coming back).

For stage IV (4):

Treatment of stage IV involves talking with your oncologist about available treatments and the possibility of joining a clinical trial.

TREATMENT OPTIONS

Adjuvant treatment

Adjuvant therapy is an additional cancer treatment given after the primary treatment (surgery) to lower the chance that the cancer will come back. This may include immunotherapy or targeted therapy drugs. Adjuvant therapy is common for stage IIB, IIC or III patients who may be at a higher risk for recurrence.

Interferon (intron-a) is a type of immunotherapy given as adjuvant therapy that is offered to patients with a high chance of recurrence.

Localized therapy

Localized therapy is treatment that is injected directly into the skin tumours, if the cancer:

- Can't be removed with surgery (unresectable), and
- Has spread through a lymph vessel (in-transit metastasis)

For melanoma with smaller thickness:

A drug therapy called aldesleukin (or IL-2, interleukin 2, or Proleukin) is used, which can help boost the immune system to attack tumours where it is injected. This involves injections in the cancer centre every 2 weeks for usually up to 8 sessions.

For melanoma with greater thickness:

Other therapies such as isolated limb infusion or isolated limb perfusion are used. This involves local recirculation of chemotherapy which means that the chemotherapy drug is injected into the part of the body with melanoma. This happens in the operating room and requires general anesthesia. People usually stay in the hospital for a few days after the procedure.

Systemic therapy

Systemic therapy treats the entire body to kill melanoma cells. It may be given as pills or through a vein (called intravenous or IV). This is for melanoma that:

- Has spread to other parts of the body.
- Is not treatable by surgery.
- Is unresectable stage IIIC to stage IV.

There are 2 major types of systemic therapy:

- Biological therapy, which includes immunotherapies, targeted therapies, and cytokines
- Chemotherapy

Radiation therapy is sometimes used as a systemic therapy, especially if the melanoma has spread to the brain.

Doctors may give a single type of treatment or a combination of treatments. Combination treatments are complex and usually given in specialized cancer centres. Doctors may give a second systemic therapy **(second-line therapy)** if the first one did not work, or if it stopped working.

Immunotherapy (a biological therapy)

Immunotherapies are a type of drug that stimulates a person's own immune system (the body's natural defense against disease) to find and destroy cancer cells. The most common immunotherapy drugs are called **checkpoint inhibitors**.

Checkpoint inhibitors are drugs that "turn off the brakes" of the immune system. They can often shrink tumours and lengthen the life of people with advanced melanoma. Here's how this works:

- Checkpoints are molecules in our bodies that act as "brakes" on the immune system (specifically T cells, which are white blood cells that protect our body from infection). Our bodies use checkpoint molecules to make sure our immune system (and our T cells) only attacks bacteria and viruses, and not the body itself.
- Checkpoint inhibitor drugs stop (or inhibit) these molecules, which lets the immune system release more T cells to attack and kill cancer cells.

These drugs have been approved in Canada since 2012 to treat melanoma that cannot be removed (unresectable) or has spread to other parts of the body (metastatic), most often stages IIIC to stage IV.

Current immunotherapy drugs:

Ipilimumab (brand name Yervoy) is a drug that targets and blocks a checkpoint molecule called **CTLA-4**, which is a protein on T cells that controls the release of T cells. Ipilimumab is given through the vein as an intravenous (IV) infusion every 3 weeks, for 4 treatments. Ipilimumab is used for stage IIIC-stage IV melanoma.

PD-1 inhibitors

Pembrolizumab and **Nivolumab** are both immune checkpoint inhibitors that target the PD-1 protein. The PD-1 protein is in T cells (white blood cells that help your body fight disease) and normally keeps the T cells from attacking other cells in the body. By blocking the PD-1 protein, these drugs boost the immune system to attack and kill melanoma cells in your body and shrink tumours.

Pembrolizumab (brand name Keytruda) is used to treat unresectable or metastatic melanoma by shrinking tumours and helping to increase survival. It is given as an IV infusion every 3-6 weeks.

Nivolumab (brand name Opdivo) is used to treat unresectable or metastatic melanoma by shrinking tumours and helping to increase survival. Nivolumab is given as an IV infusion every 2 weeks. It can also be used as an adjuvant therapy.

Combination immunotherapy

Nivolumab (brand name Opdivo) + Ipilimumab (brand name Yervoy):

Sometimes doctors use a combination of Ipilimumab and Nivolumab (Yervoy and Opdivo). Together, these drugs stop PD-1 and CTLA-4, which increases the body's immune response. This treatment works better to shrink tumours and lengthen life than either drug on its own.

Side effects of checkpoint inhibitors

Side effects of these drugs can include:

- Fatigue (feeling weak and tired)
- Cough
- Itching or skin rash
- Lower appetite
- Constipation
- Joint pain
- Diarrhea

Other more serious side effects happen less often. Because these drugs work by increasing the immune system response, sometimes the immune system starts attacking other parts of the body. This can cause serious or even life-threatening problems in the lungs, intestines, liver, hormone-making glands, kidneys, or other organs.

It's very important to report any new side effects to your health care team right away. If serious side effects do happen, you may need to stop treatment, and you may get prescribed corticosteroids (anti-inflammatory medicines) to suppress your immune system.

Targeted therapies (a biological therapy)

Melanoma tumour cells usually have many mutations (changes) in their DNA (genetic information inside our body's cells). Targeted therapies are treatments that target and kill cells with these specific mutations, therefore they **specifically target** melanoma cells. This can cause tumours to shrink or grow more slowly.

Targeted therapies can kill cancer cells without harming healthy cells. This is different from chemotherapy, which acts on all quickly dividing cancer cells and normal cells. Targeted therapy is systemic (the drugs travel throughout the bloodstream to all parts of your body).

These drugs are used for advanced melanoma that cannot be removed or has spread to other parts of the body.

BRAF inhibitors

About half of melanoma patients have a genetic mutation in the BRAF (pronounced bee-raf) protein. Genes give our cells instructions on how to make proteins, which help our cells and body work. The BRAF gene tells cells how to make the BRAF protein. Here is how BRAF inhibitors work:

1. The BRAF protein usually regulates skin cells, allowing them to multiply only when needed.
2. However, when there is a mutation in the BRAF gene, it causes the protein to not work properly, and cells grow out of control.
3. BRAF inhibitors are drugs that target the mutated BRAF proteins and stops (inhibits) them from multiplying, slowing the growth and spread of melanoma.

They are taken as a pill 1 or 2 times a day and include:

- Vemurafenib (brand name Zelboraf)
- Dabrafenib (brand name Tafinlar)
- Encorafenib (brand name Braftovi)

To see if this treatment will work for you, a biopsy of your tumour will be tested to see if the cells have a BRAF mutation.

MEK inhibitors

The BRAF protein works together with another protein called MEK. Drugs that block MEK proteins can also help treat patients with mutated BRAF proteins.

MEK inhibitors are taken as a pill 1 or 2 times a day and include:

- Cobimetinib (brand name Cotellic)
- Trametinib (brand name Mekinist)
- Binimetinib (brand name Mektovi)

These drugs are **only used** if you have a BRAF mutation.

Combination targeted therapies

If your cancer has the BRAF V600 mutation and your melanoma is stage IIIC to stage IV and unresectable or metastatic, you will most likely be treated with a combination of BRAF and MEK inhibitors. Together, these drugs shrink or eliminate tumours for longer than using either drug alone. All these combinations are pills that are taken daily.

The approved combinations of BRAF and MEK inhibitors are:

- Vemurafenib (brand name Zelboraf) targets the BRAF protein and cobimetinib (brand name Cotellic) targets the MEK protein
- Dabrafenib (brand name Tafinlar) targets the BRAF protein and trametinib (brand name Mekinist) targets the MEK protein
- Encorafenib (brand name Braftovi) targets the BRAF protein and binimetinib (brand name Mektovi) targets the MEK protein. Together they target key enzymes in the MAPK signaling pathway.

Side effects of targeted therapies

Side effects of **BRAF inhibitors** include:

- Skin thickening
- Rash
- Itching
- Sensitivity to sunlight
- Headache
- Fever
- Joint pain
- Fatigue (feeling weak and tired)
- Hair loss
- Nausea

Less common but serious side effects of BRAF inhibitors may include:

- Heart rhythm problems
- Liver problems
- Kidney failure
- Severe allergic reactions
- Severe skin or eye problems
- Bleeding
- Higher blood sugar levels
- Growth of squamous cell skin cancers (a different type of skin cancer than melanoma, it affects a cell in the skin called squamous cells)

Side effects of **MEK inhibitors** include:

- Rash
- Nausea
- Diarrhea
- Swelling
- Sensitivity to sunlight

Less common but serious side effects of MEK inhibitors may include:

- Heart, lung, or liver damage
- Bleeding or blood clots
- Vision problems
- Muscle damage
- Skin infections

Some side effects (such as developing other skin cancers) are less common with combination therapy.

Questions to ask your doctor about immunotherapies or targeted therapies

Because everyone is different, not all these therapies work for all melanoma patients. Here are some questions you may want to ask your doctors:

- Am I eligible for targeted therapy or immunotherapy? What are the alternatives if not?
- What is your experience using targeted therapies or immunotherapies?
- Is there a combination therapy that is a good option for my melanoma treatment?
- How successful has this treatment been for patients like me?
- What are the risks, benefits, and side effects of this treatment?
- Will I have to go to the hospital for this treatment, and if so, how often?
- Are there any clinical trials for one of these therapies that I should consider?
- What other treatments are Health Canada-approved for treating advanced melanoma?
- What are the goals for my treatment?
- How long will I stay on this treatment?
- Is there a clinical trial option that may be of better benefit for me compared to what is currently available for treatment?
- Will any of these therapies affect my fertility?
- Is the treatment covered by provincial government or on private insurance? If not, is it available for purchase and is there any help with the cost of therapy?

Cytokines (a biological therapy)

Cytokines are a type of protein that is made by certain immune and non-immune cells and influences the immune system. Some cytokines stimulate the immune system and others slow it down. They can also be made in a laboratory and used to help the body fight cancer, infections and other diseases. Examples of cytokines are interleukins, interferons, and colony-stimulating factors (filgrastim, sargramostim).

Chemotherapy (a systemic therapy)

Chemotherapy (chemo) uses powerful drugs to kill quickly dividing cells, like cancer cells. However, it also damages normal cells that divide quickly. Cancer cells cannot recover from chemotherapy, but normal cells can repair the damage.

Chemotherapy does not work as well for melanoma as it does for other types of cancers. It is not often used because immunotherapy and targeted drugs usually work better. It may be used after other treatments have failed.

Chemotherapy drugs include:

- Carboplatin
- Paclitaxel
- Dacarbazine

These drugs may be given as pills or injected into a vein (IV). They may be given alone, or in combination with other drugs.

Chemotherapy is usually given in cycles, with each treatment followed by a rest period to give the body time to recover. These cycles usually last 2 to 4 weeks.

Side effects of chemotherapy

Side effects of chemotherapy depend on the type and dose of drugs and how long they are used. Side effects may include:

- Mouth sores
- Hair loss
- Fatigue (feeling weak and tired)
- Nausea and vomiting (throwing up)
- Diarrhea or constipation

These side effects usually go away after treatment has finished.

Radiation

Radiation therapy uses high-energy x-ray beams to kill cancer cells. Radiation, when recommended, is usually used after surgery to kill any potential remaining cancer cells. To minimize damage to normal tissue, many beams of radiation may be aimed from different angles to meet at the tumour. This delivers more radiation to the tumour than to the healthy cells around it.

Radiation after surgery may be used when:

- The melanoma has spread from the lymph nodes, or the lymph nodes are enlarged.
- Melanoma remains after surgery or surgery does not remove all the disease.
- A lot of melanoma is present in lymph nodes, and surgery is unlikely to remove all the cancer cells.
- To manage and control pain for **palliative care**.

In other cases, radiation may be used before surgery to make the tumour smaller for a more successful surgery.

Radiation and Brain Metastases

Melanoma has a high tendency to spread to the brain. In people with a limited number of brain tumours, the treatment options are surgery alone, or with radiation therapy.

There are 2 types of radiation therapy used for brain tumours:

- **Stereotactic radiosurgery (SRS):** Focused radiation to the tumours alone.
- **Whole brain radiotherapy (WBRT):** Radiation to the entire brain.

SRS has a lower chance of neurocognitive side effects, like memory loss, compared to WBRT.

The type of radiation treatment doctors use depends on many things, including:

- How long the person might live (life expectancy)
- The number of tumours in the brain
- The size of the tumours
- The amount of cancer outside the brain

Side effects of radiation

Radiation therapy is painless, but there may be side effects. They depend on how much radiation you receive, and the part of the body treated.

In the area treated, side effects include:

- Red, burning, dry, tender, and itchy skin
- Hair loss
- Scar tissue and loss of feeling (this usually goes away in 6 to 12 months)
- Fatigue (feeling weak and tired)

Rarely, radiation may lead to a different tumour. Your treatment team can help you manage radiation side effects.

Questions to ask your doctor about radiation:

- How long does treatment last?
- How often will I have radiation?
- Will I feel any pain?
- What are the side effects of radiation? Are there long-term side effects? What problems do I need to watch for after radiation?
- Will I have a scar?

Other treatment options

Clinical Trials

Clinical trials are research studies of new treatments to find if a medicine is safe and works well. Usually, clinical trials compare a new treatment with current treatments.

Clinical trials may include new medicines and new combinations of treatments. This may include combinations of medicines, and combinations of radiation, biological therapy, chemotherapy, and targeted therapy.

Your care team may offer you a clinical trial if you have:

- High-risk stage II (stage IIB and IIC), stage III, or stage IV melanoma
- Persistent or recurrent melanoma

There may be clinical trials for melanoma available in your area. Talk to your doctor if you are interested in a clinical trial. For more information on the phases of clinical trials and what to consider, please visit our website **melanomacanada.ca**.

Questions to ask your doctor about clinical trials:

- Are any clinical trials available for me?
- Will taking part in the study raise my chance of recovery?
- What is the goal of the study?
- What will they ask me to do while I'm in the study?
- How will being in this study affect my daily life?
- What tests and treatments are part of the study?
- What does the treatment do?
- Has the study treatment been tested before?
- Will there be side effects? Can they be prevented or treated?
- Will I know which treatment I will receive?
- What is likely to happen to me with, or without, this new treatment?
- What are my other options? What are their benefits and risks?
- Do I have to stay at the hospital during the study? If so, how often and for how long?
- Will the study give me follow-up care?
- What is the phase of this clinical trial? (Phase 0-III)

Palliative Non-Curative Therapies

Palliative medicine provides medical treatments that focus on symptoms rather than curing illness when the illness is not expected to be cured. Palliative care offers people a better quality of life, lessens anxiety, and focuses on helping symptoms. Palliative therapy helps with:

- Symptoms
- Pain
- Physical stress
- Mental stress
- Any of your and your family's concerns, needs, hopes, and fears

For people with melanoma, this may include any of the treatments discussed above, plus pain management. If available treatments are unable to stop or get rid of your cancer, palliative care and support is available through your treatment centre.

YOUR FOLLOW-UP PLAN

Your follow-up plan depends on the stage of the melanoma and the guidelines of your province or cancer centre. Follow-up appointments let your doctor check if the cancer has returned (recurrence).

These follow-up plans are general guidelines for people with treated melanoma who have no current symptoms or evidence of disease.

Melanoma stage	Follow-up Plan
In situ melanoma	• You do not need to see an oncologist (cancer doctor) for a follow-up after surgery. • You should get a full skin exam with a dermatologist (skin doctor) once a year, or as recommended by your oncology team doctor.
Stage I to IIA	• You do not need to see an oncologist for a follow-up after surgery. • You should see a dermatologist every 6 to 12 months, or as recommended by your doctor.
High-risk stage IIB and IIC (i.e., those with larger tumours) and stage IIIA	• You should see an oncologist every 6 months for the first 3 years, then once a year until year 5. You may be referred to a dermatologist or family doctor after 5 years. • You should see a dermatologist every 6 to 12 months, or as recommended by your doctor.
Stage IIIB, IIIC, IIID, and resected stage IV (melanoma has been completely removed with surgery)	• You should see an oncologist every 3 to 6 months for the first 3 years, then every 6 months until year 5, or as recommended by your doctor. • You should see a dermatologist every 6 to 12 months, or as recommended by your doctor.

These guidelines come from Cancer Care Ontario-Program in Evidence-Based Care (PEBC) and may differ by province. To learn more about guidelines in your province, please visit your provincial or territorial cancer care organization or health authority's website.

COPING WITH YOUR NEW DIAGNOSIS

Being diagnosed with melanoma can be stressful. You may feel disbelief, shock, fear, or anger. This is normal. Many people diagnosed with cancer feel many emotions during this time. You may also feel overwhelmed by the information, medical terms, decisions, and treatment options. We hope this booklet has helped you understand melanoma and its treatment options.

How can I cope with a melanoma diagnosis?

After a diagnosis, finding ways to cope is an important part of healing, along with treatment. Here are some healthy ways to cope with a melanoma diagnosis:

- Learn about your cancer and treatment options
- Communicate with your family and healthcare team
- Prepare for doctor visits
- Care for your emotional and mental health
- Care for your physical health
- Join or create a support group

Learn about your cancer and treatment options

The more you learn, the more you'll understand your tests and treatments. Knowing your options and what to expect may help you feel more in control and confident when making decisions.

Ask questions: Ask your healthcare team if you don't understand something – it's your right to understand your health. Melanoma and its treatment can be complex. Good communication with your healthcare team can make you feel more satisfied with your care. Read questions to ask your doctor in the *"Treatment plan"* section of this booklet or on the Melanoma Canada website **(melanomacanada.ca).**

Communicate with your family and healthcare team

Talk to your family about your diagnosis: One of the first thoughts you may have after hearing you have melanoma is, "How am I going to tell my family?" It is understandable to want to protect your loved ones from worry, but experts recommend speaking openly. You can talk to your family about:

- Your treatment plans.
- Available resources.
- Your concerns and hopes.

Although this is a stressful time, it can make families stronger by working together to get through this time. When we talk things out, it is easier to solve problems and make healthy decisions.

Express your feelings: Expressing how you feel can lower your stress level and help you process what you're going through. You can try:

- Talking to a trusted friend or family member.
- Keeping a journal or blog.
- Being creative by making music, painting, or drawing.

Ask for and accept help: Going through and recovering from treatment can be hard. While you're going through treatment, it may not be realistic to manage all the responsibilities and tasks you did before your diagnosis. Friends and family often feel a sense of purpose and enjoy helping when you need them. This doesn't mean you're helpless or weak. It means you are using all your energy to get well!

Ask for practical support: You may also need help with:

- Financial questions
- Understanding drug coverage
- Parenting
- Sorting out work

Ask your healthcare team how to connect to a social worker. A social worker can help you find resources and join support programs you may be eligible for.

Prepare for doctor visits

Be well prepared for your doctor visits: To prepare for your doctor visits, bring:

- A list of all medicines, vitamins, and supplements you take.
- A list of any symptoms you have.
- A list of questions to ask your doctor - list your questions from most important to least important in case you run out of time.
- Someone with you for support, such as a friend or family member. Your support person can help you remember things you may have missed or forgotten.

Get organized: Find a system that works for you to keep track of your:

- Appointments
- Test results
- Questions for your healthcare team
- Prescriptions
- Side effects

There are some good mobile apps out there, but a binder can work well too.

Care for your emotional and mental health

Professional support is there if you need it. It is common to worry or feel anxious and discouraged. If these emotions start to interfere with your relationships and life in general, it may help to seek professional support.

Ask your healthcare team about counseling and support services if:

- You're having a hard time concentrating.
- You're having trouble sleeping.
- You have little or no appetite (less hunger).
- You have lost interest in your usual activities.

Many cancer centres have social workers, psychiatrists, and psychologists who are covered through your provincial health insurance.

Try to stay hopeful: Focusing on hope can improve the quality of your life throughout your cancer treatment. Hope is a concept that can change over time – it does not mean you have to be happy and positive all the time. It can be:

- Simple and short-term like hoping for a good day with friends.
- Or long term, such as hoping to be cancer free.

It is about balance and being aware of and accepting all your feelings.

Find a stress outlet: This may be a good time to find a hobby, activity, or pastime that allows you to take a break and lets you forget about your worries for a little while. No one can think about cancer all the time. This could be a time to try out or learn some new stress relief strategies such as mindfulness meditation.

Dealing with uncertainty: This can be a time of much uncertainty and many unknowns. It can be frustrating and exhausting to try to control things out of our control, such as getting an infection after surgery, or setting expectations about how things will turn out. Try:

- Having a flexible mindset. This will help you cope with unexpected changes.
- Giving yourself permission to not have all the answers right now - this can be hard and uncomfortable at first, but it is possible.
- Focusing on acceptance. This can help with adjusting to life with cancer and focusing on what is most important to you.

Care for your physical health

Move your body: Make time for gentle exercise on days you feel up to it. When you are active, your body and brain make chemicals that help improve your mood and energy levels. This can also help with restlessness and sleep problems. Try:

- Going for a walk
- Riding a bike
- Yoga
- Yard work

Eat healthy foods: Eat lots of fruits, vegetables, and whole grains. Try to eat less fast food, salt, and sugar as these may cause your blood sugar to rise and fall. Low blood sugar can cause sleep problems and anxious feelings.

Make sleep a priority: Go to bed and wake up around the same time each day. Some apps can help you build a healthy sleep schedule. Making sure you get enough sleep can help improve your mood and memory.

Join or create a support group

Consider joining a support group or connecting with others who have had melanoma: For some people, it's helpful to talk to others who have gone through similar experiences and melanoma treatment. Cancer affects you as a whole person and your loved ones, so create a support network as part of your care.

See the "Melanoma Canada support services" section below to learn about the Melanoma Canada support group and peer-to-peer support program.

Complementary and Alternative Medicines

Complementary and alternative medicine (CAM) includes:

- Vitamins
- Supplements (i.e., minerals, herbs, or botanicals)
- Herbal remedies (i.e., plant-based medicine)
- Stress reduction (i.e., hypnotherapy, aromatherapy, massage)

Most CAMs have not been studied as cancer treatments, but these CAMs have been:

- Acupuncture, for pain relief in some conditions
- Yoga
- Meditation

These CAMs may make you feel better, but your healthcare team can tell you which ones may help the most. Always tell your healthcare team about any CAMs you are taking because some CAMs may interact with some cancer treatments.

PREVENTING MELANOMA AND SKIN CANCERS

Practice sun safety

People with melanoma have a higher chance of having melanoma again. It is important to take action to help prevent melanoma or other forms of skin cancer.

About 85 of 100 (85%) melanoma cases are caused by ultraviolet (UV) rays. UV rays can go through clouds, windows, car windshields, and lightweight clothing. Sunlight is made up of both UVA and UVB rays, both of which penetrate the skin and cause damage.

To protect yourself from the sun and UV rays, you can:

Limit the time you spend in UV rays:

- Do not tan outdoors in the sun.
- Do not use tanning beds and sunlamps. The chance of melanoma rises after using a tanning bed one time.
- Do not do outdoor activities when the sun is strongest, between 11 a.m. and 3 p.m. If you are outdoors during these times, stay in the shade as much as you can.
- Protect yourself from sunlight reflected by water, ice, snow, sand, and pavement. UV rays reflected off snow and ice are up to 8 times stronger than UV rays reflected off water.

Wear protective clothes, such as:

- Clothes made of tightly woven fabrics that cover your arms and legs (for example, see-through materials are not tightly woven).
- Special sun protective clothes with ultraviolet protection factor (UPF) 50 or more.
- A hat with a wide brim that shades your face, neck, and ears.
- Sunglasses with 100% UVA and UVB protection.

Use sunscreen the right way:

- Apply a broad-spectrum, water-resistant sunscreen with a minimum SPF of 30, ideally SPF 50, 30 minutes before sun exposure.
- Reapply every 2 hours, or more often after sweating or swimming.
- Wear it all year round.

Checking Your Skin

Check all your skin at least once a month – it only takes about 10-15 minutes. A good time is after you shower or bathe.

How do I check my skin?

- Make sure the room has enough light.
- Use a full-length and hand-held mirror to learn where your moles, birthmarks, and other skin marks are. Take note of how they look and feel, so you can tell if they change and understand what is “normal” for you. Look at:
  - Your face, neck, ears, and scalp. Because it is hard to check your scalp yourself, you may want to have a friend or relative help with this task.
  - Your body from the front and back.
  - Your arms and both sides of your body.
  - Your elbows and hands, including the palms and nails, and both arms.
  - The front, back, and sides of your legs.
  - Your genital area and between your buttocks.
  - Your feet, including the nails, soles, and between the toes.
- Take a picture of any unusual moles with a ruler next to it as a scale of measure. You can use those pictures to check for any changes over time and to show your doctor.
- There are websites and apps available to help you monitor your moles.

Look for the following:

- A new mole that looks different (The ugly duckling).
- A new red or dark flaky patch that may be raised.
- A new, firm flesh-coloured bump.
- A sore that does not heal.
- A change in any mole (remember ABCDE’s).

Why should I check my skin?

- People who check their skin at least once a month find 53% of melanomas.
- 9 out of 10 people (90%) who find melanoma at an early stage can be cured.

Research shows that checking your skin regularly can find melanomas at an early stage and lower the chance of death by 63%.[3]

Checking your skin regularly helps you learn how your skin looks normally. If you find anything new and unusual, call your doctor. Annual visits to your family doctor or dermatologist are also recommended.

Tip: The ugly duckling sign

Generally, most moles on a person's body look the same or similar. Melanomas, however, look different from all other moles. Usually, only 1 melanoma develops at a time. A mole that looks or feels different from other moles – the ugly duckling sign – needs to be checked by your doctor.

MELANOMA CANADA SUPPORT SERVICES

Phone & Email Support

Available Monday - Friday, 9 a.m. to 5 p.m. (EST). We aim to respond to all calls and emails within 48 hours. All calls and emails are confidential (private). For support call **1-877-560-8035** or email **support@melanomacanada.ca**.

Peer-to-Peer Melanoma Support

Connecting with a former patient or caregiver can provide a lot of support. This program connects a trained volunteer who has had a melanoma diagnosis with new and ongoing patients or their caregivers. Patients can ask questions and relieve some of their stress, worries, and fears that come from a diagnosis of melanoma.

This program can connect patients anywhere in Canada and is offered over the phone or email.

If you'd like to become a peer-to-peer volunteer or would like to be matched with a fellow patient or caregiver, please email **support@melanomacanada.ca**, call **1-877-560-8035** or visit **melanomacanada.ca**. (Note that peer-to-peer support does not replace professional counseling or medical advice.)

Melanoma Canada Support Group

Join the Melanoma Canada patient support group to meet other patients who have a similar diagnosis. These informal meetings are a great opportunity to share information, understanding, challenges, questions, and insights. The group is free to join, and meetings are held the first Wednesday of every month. For more information or to register, visit **melanomacanada.ca** or email **support@melanomacanada.ca**.

Melanoma Information Sessions

Melanoma information sessions give information and updates on the latest melanoma treatments and support. Patients, their families and friends, and healthcare providers can join these sessions. These sessions are free and are held throughout the year. To learn more, visit: **melanomacanada.ca.**

Cancer Coaching

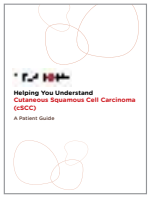
A cancer coach can help with emotional, physical, and practical issues that come up during cancer diagnosis, treatment, and management. A cancer coach gives you one-on-one support to identify areas of desired change (i.e., stress reduction or better sleeping habits), set goals, and develop a plan to work towards that change. To learn more, visit: **melanomacanada.ca.**

Scan QR code for our full list of support programs

MELANOMA CANADA RESOURCES

Melanoma Canada designed and produced these free materials for melanoma and skin cancer patients, caregivers, and doctors. You can download any material as a PDF to your computer. To view all Melanoma Canada resources, visit **melanomacanada.ca** or scan the QR code.

Helping You Understand Basal Cell Carcinoma (BCC) A Patient Guide
This guide offers more information about Basal Cell Carcinoma (BCC).



Helping You Understand Cutaneous Squamous Cell Carcinoma (cSCC) A Patient Guide
This guide offers more information about cutaneous Squamous Cell Carcinoma (cSCC).

A Guide to Uveal Melanoma
This guide is a useful overview of a rare form of eye cancer called uveal melanoma.

Lymphedema for the Melanoma Patient
This guide is a helpful resource to understand the care and treatment of lymphedema after surgery.

Melanoma Patient Education Video Library

We have videos on our website and YouTube channel, including Patient Information Sessions with leading melanoma experts. These experts include oncologists, social workers, psychologists, and drug navigators (people who help patients assess their drug coverage and explore other drug coverage options). Visit our YouTube channel at **youtube.com/MelanomaCanada.**

GLOSSARY

ABCDE
An acronym for characteristics of moles that might be cancer.
A=Asymmetry
B=Border
C=Colour
D=Diameter
E=Evolving or changing.

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 therapy
Additional cancer treatment is given after the primary treatment (usually surgery), to lower the chance that the cancer will come back. Adjuvant therapy may include biological therapies (such as cytokines, immunotherapies, targeted therapies), chemotherapy, or radiation therapy.

Advanced melanoma
Cancer that has spread beyond the area near the main tumour.

Aldesleukin (IL-2, Interleukin 2, Proleukin)
A type of interleukin, a chemical messenger or substance that can improve the body's response to disease. It boosts the growth of certain disease-fighting blood cells in the immune system. A type of protein molecule produced by lymphocytes that activates other lymphocytes in the immune system.

Anesthesia
The use of medicines to prevent pain during surgery and other procedures by reducing feeling with or without putting you to sleep.

Anesthetic
The medicine or drug that is used to prevent pain during surgery and other procedures.

Angiolymphatic invasion
Melanoma that has invaded lymph or blood vessels.

Asymmetry
Part of the ABCDE acronym. Asymmetry of a skin spot where one half does not match the other.

Biological therapy (biotherapy)
A treatment that uses the body's immune system to fight infection and disease or to protect the body from some of the side effects of treatment.

Biopsy
A medical procedure that collects tissue.

Blood vessel
A tube that carries blood throughout the body.

BRAF
A gene that makes a protein involved in cell growth. In about 50% of patients with melanoma, this gene is mutated (abnormal). When the gene is mutated, the protein doesn't function properly, and the cells continue to divide and grow, leading to a tumour.

BRAF inhibitor
BRAF inhibitors are drugs that shrink or slow the growth of tumours for people whose melanoma has spread or cannot be removed completely.

Binimetinib (brand name Mektovi)
Mektovi is an MEK inhibitor which targets key enzymes in the MAPK signaling pathway (RAS-RAF-MEK-ERK) and used in combination with Encorafenib (brand name Braftovi) as a targeted therapy for patients with a BRAF mutation.

Breslow depth (thickness)
A measure of how deep a melanoma tumour has grown below the surface of the skin in millimetres. The tumour thickness (depth) is usually measured from the top of the tumour to the deepest tumour cells. If the tumour is ulcerated (the skin is broken), it is measured from the base of the ulcer to the deepest tumour cells. Breslow thickness is used to help determine the stage of cancer. Thicker tumours are linked with lower survival rates.

Cancer

An abnormal growth of cells which tends to quickly multiply in an uncontrolled way and, in some cases, metastasize (spread to different parts of the body). Mutations in genes can cause cancer by speeding up cell division or stopping normal controls on cell growth. As a mass of cancerous cells grows, it can develop into a tumour.

Cell
The individual unit that makes up all the tissues of the body.

Checkpoint inhibitor
Checkpoint inhibitors are a form of immunotherapy that targets the PD-1 protein. This allows T-cells to attack cancer cells better and boost the body's immune response to cancerous cells.

Chemotherapy
Drugs that kill cancer cells.

Clinical trial
A research study comparing new and current treatments to find out which is better.

Cobimetinib (brand name Cotellic)
A MEK inhibitor medicine for patients with a BRAF mutation (BRAF V600E or V600K). It is often used in combination with vemurafenib (brand name Zelboraf). Used for unresectable or metastatic melanoma.

Computed tomography (CT) scan
A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The pictures are taken from different angles and are used to create 3-dimensional (3-D) views of tissues and organs. A CT scan may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called CAT scan.

Connective tissue
Supportive and binding fibers such as muscles, blood vessels, bones, and nerves.

CTLA-4 inhibitor
CTLA-4 is a protein found in T-cells. CTLA-4 inhibitors, also called checkpoint inhibitors, are drugs that are used to block the CTLA-4 protein. When the protein is blocked, it means that the immune system and T cells are better able to kill and attack cancer cells.

Cytokine
A type of protein that is made by certain immune and non-immune cells and influences the immune system. Some cytokines stimulate the immune system and others slow it down. Used as a form of biological therapy.

Dabrafenib (brand name Tafinlar)
A BRAF inhibitor medicine for patients with a BRAF V600 mutation taken as a tablet by mouth. It is often used in combination with trametinib (brand name Mekinist).

Deep margin
Normal-looking tissue underneath a tumour.

Deep margin status
Presence or absence of cancer cells in the normal-looking tissue under a tumour.

Dermatologist
A doctor who specializes in diseases of the skin.

Dermatopathologist
A doctor who has special training in diagnosing disease based on microscopic exams of the skin.

Dermis
The second layer of skin that is beneath the epidermis.

Dermoscopy
Dermoscopy is a common noninvasive tool that helps doctors diagnose certain melanomas early, such as nodular melanoma. Dermoscopy is highly accurate when compared to examinations done with the naked eye.

Desmoplastic melanoma
Desmoplastic melanoma is a rare subtype of melanoma that is commonly found on sun-exposed areas, such as the head and neck, and is usually seen in older patients. It makes up less than 4% of melanomas that penetrate deep into the skin (invasive melanomas).

Diagnosis
Finding and naming a disease.

Distant metastasis
Cancer cells that have spread to a part of the body far away from the first (primary) melanoma tumour.

Dysplastic nevus
A mole that is large or has irregular borders or inconsistent colours and looks like a fried egg.

Early stage
Cancer that has had little growth in nearby tissues.

Encorafenib (brand name Braftovi)
Braftovi is a BRAF inhibitor. Used in combination with Binimetinib (brand name Mektovi) as a targeted therapy for patients with a BRAF mutation.

Epidermis
Outer layer of skin.

Excisional biopsy
A technique in which a melanoma lesion is removed from the skin by cutting out the affected area as well as a portion of normal skin around the lesion. This technique is also used to remove larger melanoma lesions.

Excisional lymph node biopsy
Surgery to remove an entire, enlarged lymph nodes.

Family history
The family structure and relationships within the family, including information about diseases in family members.

Fine-needle aspiration
Use of a thin needle to remove fluid or tissue from the body.

Gland
An organ that makes fluids or chemicals the body needs.

Glucose
A natural sugar in the body used by cells for energy.

Hormones
Chemicals in the body that activate cells or organs.

Imaging tests
Medical tests that take pictures of the inside of the body.

Immune system
The body's natural defense against disease.

Immunotherapy
Treatment that uses the immune system to fight disease.

In Situ
In situ melanoma is the earliest type of melanoma (considered stage 0). It is the easiest to treat (by removing) and almost always curable. In situ means that the tumour has not grown beyond the epidermis, the outermost layer of the skin.

In-transit metastases
Cancer that has spread into lymph vessels near the first tumour but not into lymph nodes (groups of special disease-fighting cells).

Incisional biopsy
Surgery to remove part of a tumour.

Interferon (intron-a)
A type of immunotherapy given as adjuvant therapy is offered to patients with a high chance of recurrence to lower the chance of melanoma returning.

Ipilimumab (brand name Yervoy)
A type of immunotherapy known as a checkpoint inhibitor or an anti-CTLA-4 inhibitor, which helps your own immune system attack cancer cells. It is prescribed for melanoma that is unresectable or metastatic and given intravenously. It is often used in combination with nivolumab (brand name Opdivo).

Lactate dehydrogenase (LDH)
An enzyme (type of protein) in the blood and other body tissues.

Lentigo maligna melanoma
A type of melanoma that gets mistaken for a sunspot. It is an early type of melanoma in which the malignant cells are confined to the epidermis, so it is often called an in-situ melanoma. It happens in sun-damaged skin so is usually found on the face or neck, particularly the nose and cheek, and commonly seen in older adults.

Lesion
Tissue that has been damaged by disease or injury. Melanoma can develop from an existing mole or from a lesion.

Local recurrence
Cancer that has come back after treatment in or near the same place as the first tumour. A satellite recurrence is a type of local recurrence.

Lymph
A clear fluid with white blood cells, which fight disease as part of the immune system.

Lymph node
A collection of immune cells grouped together in a special way.

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 vessels
Tubes that carry lymph (a clear fluid with white blood cells that fight disease and infection) throughout the body and connect lymph nodes to one another. Also called lymphatic channels.

Lymphedema
A condition in which extra lymph fluid builds up in tissues and causes swelling. It may happen in an arm or leg if lymph vessels are blocked, damaged, or removed by surgery.

Magnetic resonance imaging (MRI)
A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than other scanning techniques, such as CT or x-ray. MRI is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones.

Malignant
Cancerous, or growing out of control.

Medical history
All health events and medicines taken to date.

Medical oncologist
A doctor who specializes in drug treatments for cancer.

MEK protein
A molecule that helps regulate cell growth. The MEK gene works together with the BRAF gene, so drugs that block MEK proteins can also help treat patients with mutated BRAF proteins.

MEK inhibitor
These drugs are used to treat melanomas that have spread or cannot be removed completely. The MEK gene works with the BRAF gene. Therefore, drugs that block MEK proteins can be used to treat melanomas with BRAF gene changes.

Melanin
A pigment that gives colour to skin and eyes and helps protect them from damage by ultraviolet light.

Melanocytes
Skin cells of the epidermis. These cells make the pigment melanin which gives the skin its colour.

Melanoma
A type of skin cancer that begins in melanocytes. It may begin in a mole (skin melanoma), but can also begin in other pigmented tissues, such as in the eye or in the intestines.

Metastases
Tumours that have spread from the first tumour to other parts of the body.

Metastasis, or metastasize
The spread of cancer cells from the first tumour to another body part.

Metastatic
Containing cancer cells that have spread from the first tumour.

Microsatellitosis
Tiny tumours near the main tumour seen with a microscope.

Mitotic rate
A measure of how many tumour cells are actually growing.

Mole
A skin growth. It often looks like small, dark brown spots and are caused by clusters of pigment-forming cells (melanocytes).

Nevus
Medical term for mole.

Nivolumab (brand name Opdivo)
A drug therapy known as a checkpoint inhibitor - a type of immunotherapy that helps make cancer cells easier to attack by the body's own immune system. Often used as an adjuvant therapy and in combination with Ipilimumab (brand name Yervoy).

Nodular melanoma
A type of melanoma that has a dome shape and quickly grows into the dermis (the second layer of skin).

Palliative non-curative therapy
Medical treatments that focus on symptoms rather than curing illness when the illness is not expected to be cured. This can include helping with symptoms and reducing suffering caused by cancer and other life-limiting diseases.

Pathologic stage
A cancer stage given by a pathologist based on tissue samples.

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

Pathologist
A specialist who interprets and diagnoses the changes caused by disease in tissues and body fluids.

PD-1 inhibitor
PD-1 is a checkpoint protein on T-cells that normally keeps T-cells from attacking other cells in the body. PD-1 inhibitors are drugs that boost the immune systems response and instead encourages T-cells to attack cancer cells to help fight cancer.

Pembrolizumab (brand name Keytruda)
A drug therapy known as a checkpoint inhibitor - a type of immunotherapy that helps make cancer cells easier to attack by the body's own immune system. It is used to treat advanced melanoma that is unresectable or metastatic.

Peripheral margin
Normal-looking tissue from around the sides of a tumour.

Peripheral margin status
Presence or absence of cancer cells in the normal-looking tissue around the sides of a tumour.

Persistent (recurrent) 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.

Pigment
Substance with colour.

Positron emission tomography (PET) scan
A procedure in which a small amount of radioactive glucose (sugar) is injected into a vein, and a scanner is used to make detailed, computerized pictures of areas inside the body where the glucose is taken up. Because cancer cells often take up more glucose than normal cells, the pictures can be used to find cancer cells in the body.

Primary tumour
Initial tumour or the body site where it forms.

Prognosis
The likely course and outcome of a disease.

Punch biopsy
A procedure in which a small round piece of tissue about the size of a pencil eraser is removed using a sharp, hollow, circular instrument, commonly used to check for melanoma.

Radiation oncologist
A doctor who specializes in the treatment of cancer with radiation.

Radiation therapy (radiotherapy)
The use of high-energy rays to damage cancer cells, stopping them from growing and dividing. Like surgery, radiation therapy is a local treatment that affects cancer cells only in the treated area.

Radioactive
Containing a powerful energy called radiation.

Recurrence
Cancer that has recurred (come back), usually after the cancer could not be detected for a certain amount of time. The cancer may come back to the same place as the original (primary) tumour or to another place in the body. Also called recurrent cancer.

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 tumour.

Risk factor
Something that raises the chance of getting a disease.

Screening
Regular tests that are used to find disease.

Second-line therapy
The treatment given after the first treatment fails.

Sentinel lymph node
The first major node that cancer travels to after leaving the tumour area.

Sentinel lymph node biopsy (SLNB)
A procedure in which the sentinel lymph node is found, removed, and examined to find if cancer cells are present.

Shave biopsy
Surgery to remove a thin tissue sample from the top of a tumour.

Side effect
An unplanned physical or emotional response to treatment.

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

Stage (of cancer)
The extent of cancer in the body. It is based on the features of the primary tumour and if it has spread to other parts of the body (metastasized).

Subcutaneous tissue
Layer of fat and connective tissue under the dermis (the second layer of skin).

Subtype
Grouping of cancer types based on cancer cell qualities.

Superficial spreading melanoma
The most common type of melanoma. It generally spreads from a new or existing mole.

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

Surgical oncologist
A surgeon who has special training in performing biopsies and other surgical procedures in cancer patients.

Systemic therapy
Drugs used throughout the entire body to kill cancer cells that have spread far.

T-Cells
A type of white blood cell that is found in the immune system. T-cells help the body to fight infection.

Targeted therapy
Treatment that stops cancer cell growth by attacking a specific or unique feature of the cancer.

Trametinib (brand name Mekinist)
Trametinib is a type of oral targeted therapy called a MEK inhibitor. It is used alone (monotherapy) or in combination with dabrafenib (brand name Tafinlar) to treat melanoma in patients whose cancer has a mutated (changed) form of the BRAF gene called a BRAF V600 mutation. Trametinib blocks proteins called MEK1 and MEK2. This may help keep cancer cells from growing and may kill them.

Tumour
A tissue mass made from an abnormal growth of cells.

Tumour location
The area of the body that contains the tumour.

Tumour regression
An inflammation response to tumour cells, resulting in a decrease in the size of the tumour.

Ulceration
Broken skin covering the melanoma.

Ultraviolet radiation (UV rays)
Light energy with a wavelength shorter than visible light but longer than x-rays. Too much UV radiation from the sun or sunbeds can damage the DNA in our skin cells. DNA tells our cells how to function. If enough DNA damage builds up over time, it can cause cells to start growing out of control, which can lead to skin cancer.

Vemurafenib (brand name Zelboraf)
Vemurafenib is an oral drug known as a BRAF enzyme inhibitor, developed for the treatment of adult patients with BRAF V600 mutation-positive unresectable or metastatic melanoma. Vemurafenib blocks the activity of the mutated BRAF protein which has signaled cells to develop abnormally and divide out of control. It is often prescribed in combination with cobimetinib (brand name Cotellic).

Vertical growth phase
When the direction of tumour growth is down into the skin.

White blood cells
A type of blood cell that fights disease as part of the immune system.

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

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NOTES

MELANOMA CANADA

Our Mission:
Melanoma Canada advocates for and supports Canadians living with melanoma and skin cancer with helpful resources, education, psychosocial support services, and more.

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