

# *How to Avoid the Burn*

A Skin Cancer Technical Manual  
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## **ATTENTION:**

The contents of this manual are for information purposes only and should not be used as a means for diagnosis.

If you are concerned that you may have skin cancer, please make an appointment with a dermatologist as soon as possible for a professional medical opinion and treatment options.



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# 1

## Introduction

Background

History

Risk Factors

Warning Signs





Young adults, particularly young women, are at a high risk of skin cancer due to exposure to ultraviolet radiation. Skin cancer very commonly develops at a young adult age. In fact, it is the most common cancer among young people. That being said, it can affect men and women of all ages.

This high incidence rate has inspired our hope to educate young women on skin cancer and increase their knowledge on prevention, screening, and treatment in order to combat the high prevalence of skin cancer.



SKIN CANCER  
BACKGROUND



# WHAT IS SKIN CANCER?

Skin cancer is the most common form of cancer in America. It occurs when the cells of the outermost layer of skin, known as the epidermis, begin to grow and multiply at an uncontrolled rate, resulting in malignant tumors.

Skin cancer is the result of unrepaired DNA damage and mutations, typically caused by UV light from the sun, as well as UV light from tanning beds.



# SKIN CANCER HISTORY AND STATISTICS

**1** in **5** Americans will develop skin cancer by age 70

More than 2 people die in the U.S. from skin cancer  
**every hour**

Having **5** or more sunburns doubles your risk of melanoma

The annual cost for treating skin cancers in the U.S. is  
**\$8.1 billion**

From 1994 to 2014, the diagnosis and treatment of nonmelanoma skin cancers has increased by **77%**

From 2009 to 2019, cases of invasive melanoma diagnosed annually have increased by **54%**

**90%** of nonmelanoma skin cancers are attributable to exposure

People who first use tanning beds before age 35 increase their risk of melanoma by **75%**



TYPES OF SKIN  
CANCER



## THREE MAJOR TYPES OF SKIN CANCER

### BASAL CELL CARCINOMA

Basal Cell Carcinoma (BCC) is the most common form of skin cancer, with an estimated 4.3 million cases diagnosed in the United States per year.

The basal cell layer is towards the bottom of the epidermis. Basal cells constantly divide to form new cells and replace squamous cells. The basal cells become squamous cells as they flatten out and move up the epidermis (American Cancer Society, 2019).

BCC is typically found on areas on the body with heavy sun exposure, such as the scalp, face, ears, shoulders, and back.

Specific risk factors for BCC:

- UV exposure
- History of skin cancer
- Age 50+
- Fair skin
- Male gender
- Chronic infections and skin inflammation from burns or scars

BCCs are slow-growing and therefore curable and cause minimal damage when caught early; however, if not treated early, BCC can grow deep and wide into the skin. While it is possible, it is rare for BCC to metastasize or become fatal (Skin Cancer Foundation, 2019).



## SQUAMOUS CELL CARCINOMA

Squamous Cell Carcinoma (SCC) is the second most common form of skin cancer, with an estimated 1 million cases diagnosed in the United States per year and over 15,000 deaths annually.

Squamous cells are flat cells found on the outermost layer of the epidermis and are constantly being shed and replaced (American Cancer Society, 2019).

SCC is typically found on sun-exposed areas on the body where wrinkles or age spots are also commonly found as a result of sun damage, such as the ears, face, scalp, neck, and hands.

Specific risk factors for SCC:

- UV exposure
- Weakened immune system
- History of skin cancer
- Age 50+
- Fair skin
- Male gender
- Sun-sensitive medical conditions
- Skin precancers
- History of HPV
- Chronic infections and skin inflammation from burns or scars

SCCs can be successfully treated if caught early; however, if not treated early SCC can be disfiguring. In addition, untreated SCC is invasive and can metastasize, or spread to other parts of the body, eventually becoming fatal (Skin Cancer Foundation, 2019).

## MELANOMA

Melanoma is the most dangerous and invasive form of skin cancer and develops from melanocytes. Melanocytes produce melanin, which is the pigment responsible for skin color and protects the deeper skin layers from the sun's harmful effects (American Cancer Society, 2019). In 2019, it was predicted that there would be 192,000 new cases in the United States, of which 96,000 would be invasive. Melanomas can be found on any part of the body, even areas with minimal sun exposure.

Specific risk factors for melanoma:

- UV exposure
- Weakened immune system
- Many moles
- Fair skin
- History of skin cancer
- Genetics (can run in families)

When treated early, melanomas are very treatable and have a 5-year survival rate of 98%. That being said, melanoma has the greatest ability of all of the common skin cancers to metastasize, making it extremely difficult to treat and possibly fatal if detected too late.

Melanoma cancers can appear in different shapes, colors, and sizes, but they typically resemble moles and can sometimes even arise from moles. There are four subtypes of melanoma that it is important to be familiar with (Skin Cancer Foundation, 2019).

## 4 SUBTYPES OF MELANOMA

### 1. Superficial spreading melanoma:

- Most common form
- Can arise from an existing mole or from a new lesion
- Grows on the surface for a while before penetrating more deeply
- Can appear anywhere on the body, but is most commonly found on the torso for men, on the legs for women, and on the upper back for both men and women
- Appears as a discolored asymmetrical patch with uneven borders and can be either flat or slightly raised
- Colors include tan, brown, black, red/pink, blue, white, or skin-tone

### 2. Lentigo maligna:

- Often develops in older people
- Grows on the surface for a while before penetrating more deeply
- Found on sun-damaged areas of the body, typically on the face, ears, arms, or upper torso
- Appears as a blotchy patch with uneven borders and can be either flat or slightly raised
- Color is typically blue-black but can also range anywhere from tan to dark brown

## 4 SUBTYPES OF MELANOMA

### 3. Acral lentiginous melanoma:

- Most common form in people of color
- Usually appears in places where it is difficult to see, such as underneath nails, on the soles of feet, or on the palms of hands
- Appears as a brown or black area

### 4. Nodular melanoma:

- Most aggressive form of melanoma
- Accounts for 10-15% of all melanoma cases
- Grows deeper into the skin and grows more rapidly as compared to other forms of melanoma
- Usually invasive and has already penetrated deeply by the time it is detected
- Typically found on the torso, legs, and arms, or on the scalp in older men
- Appears as a bump on the skin
- Color is typically blue-black but can also be pink-red



## MERKEL CELL CARCINOMA



Source: Skin Cancer Foundation

Merkel cell carcinoma (MCC) typically develops in older people and is a very rare and aggressive form of skin cancer. In fact, it is 40 times more rare than melanoma. Aside from typical risk factors such as UV exposure and older age, MCC is strongly linked to immunosuppression and the Merkel cell polyomavirus. MCC typically appears as a red or blue-red nodule on the face, neck or head. This cancer very quickly spreads to other parts of the body and often returns, making it extremely dangerous (Skin Cancer Foundation, 2019).

### MCC Staging



#### STAGE 0

Tumor has not advanced beyond the outermost layer of skin. This stage is also called carcinoma *in situ*, which means “in its original place.”



#### STAGE III

Tumor cells have advanced beyond the original tumor and may have traveled as far as the nearby lymph nodes, but not beyond.



#### STAGE I AND II

Tumor has not spread to nearby lymph nodes. Stage I includes smaller tumors and stage II includes larger and/or higher-risk tumors.



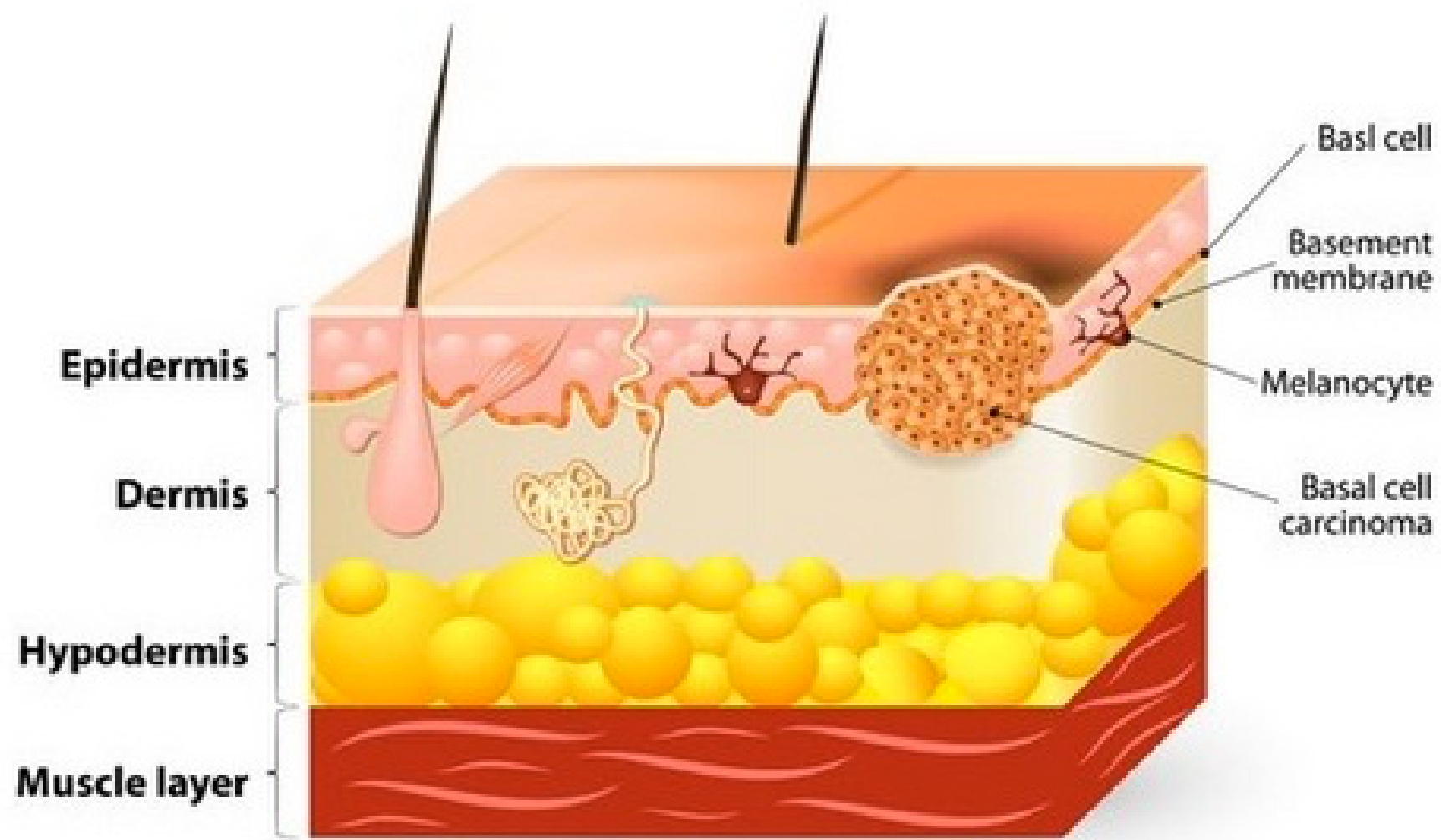
#### STAGE IV

Tumor cells have spread to distant body areas, lymph nodes or organs.

Source: Skin Cancer Foundation

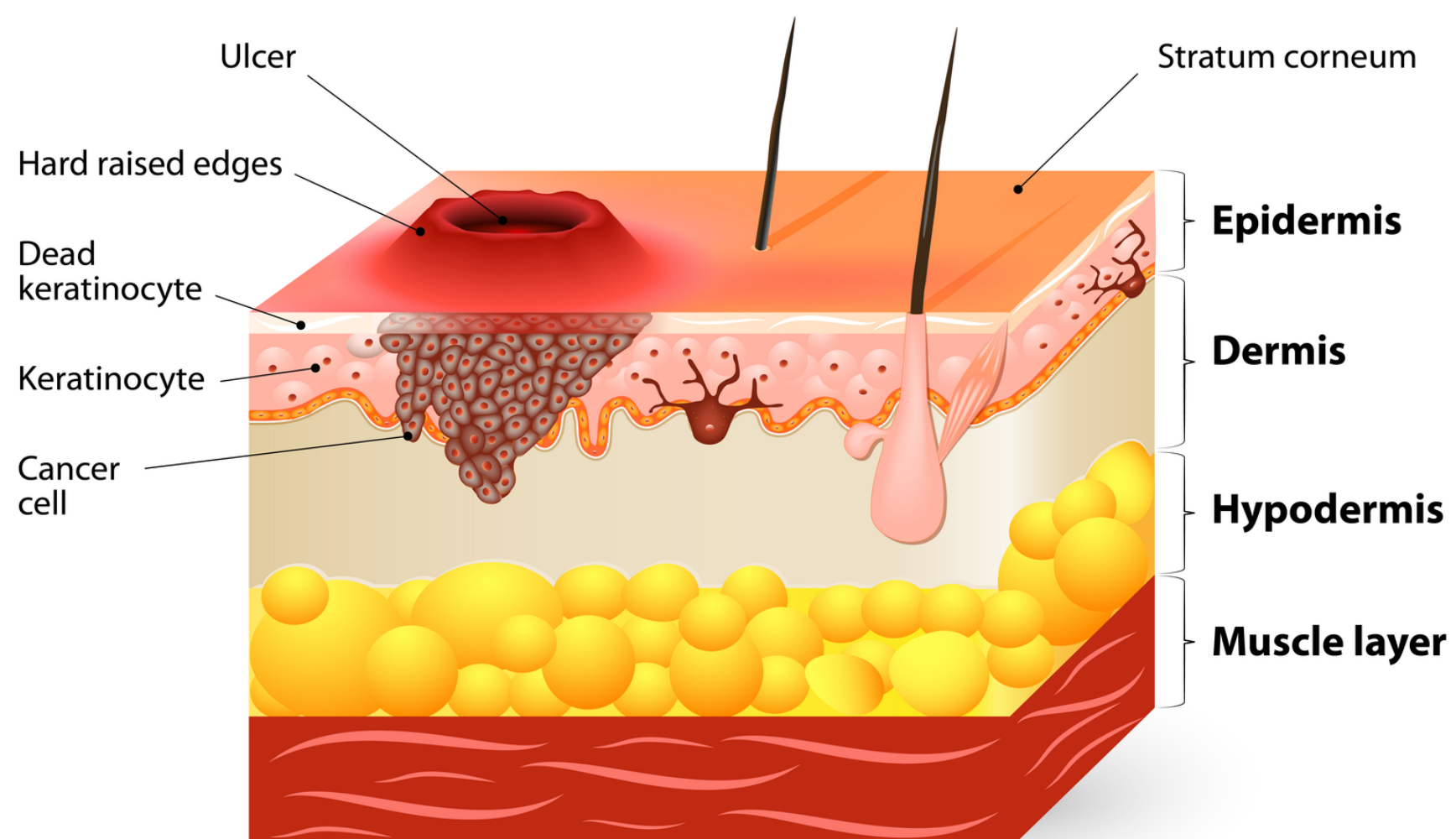
## VISUAL COMPARISON

### BASAL-CELL CARCINOMA



Source: Health Navigator New Zealand

### Squamous-cell carcinoma

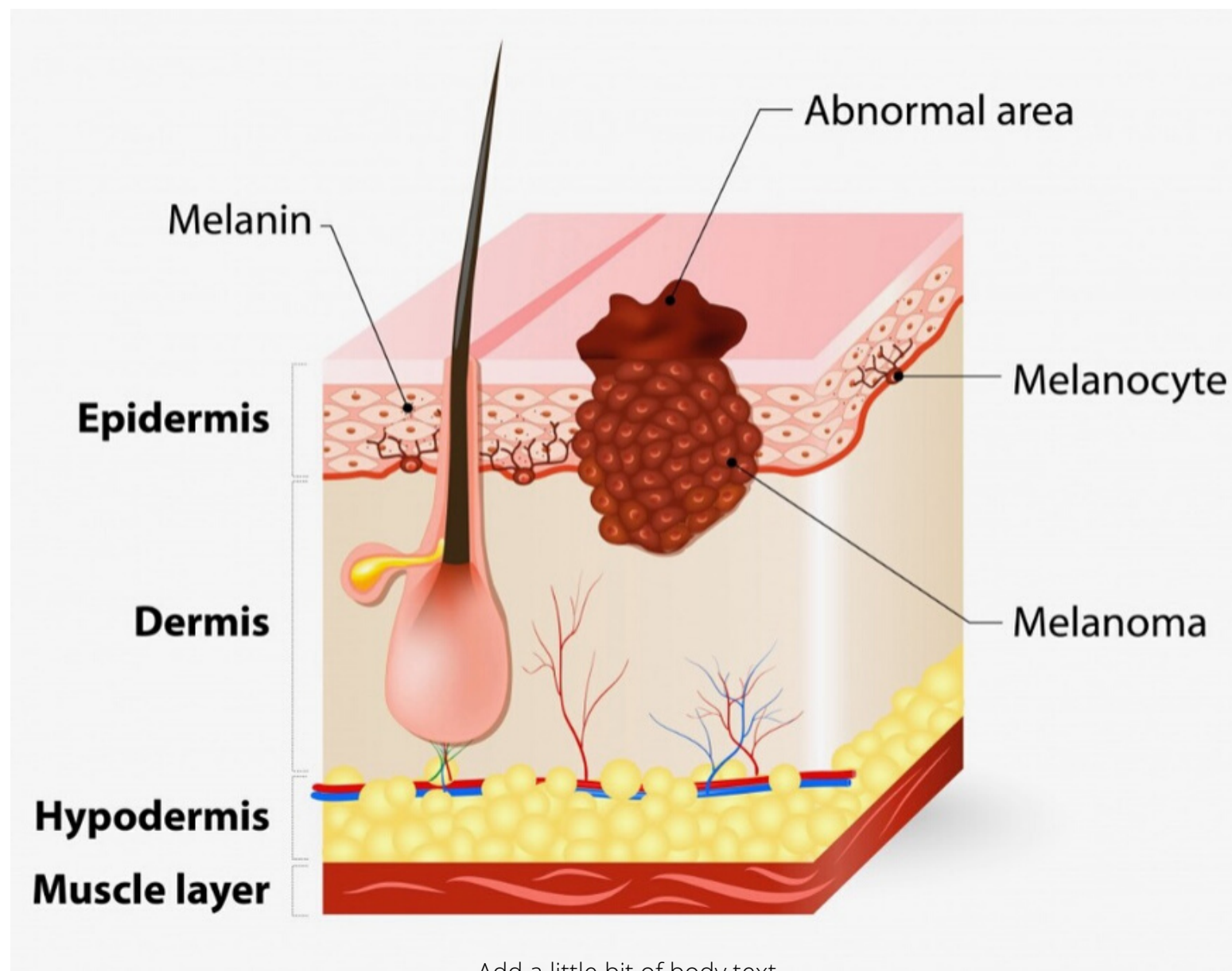


Source: Ausmed

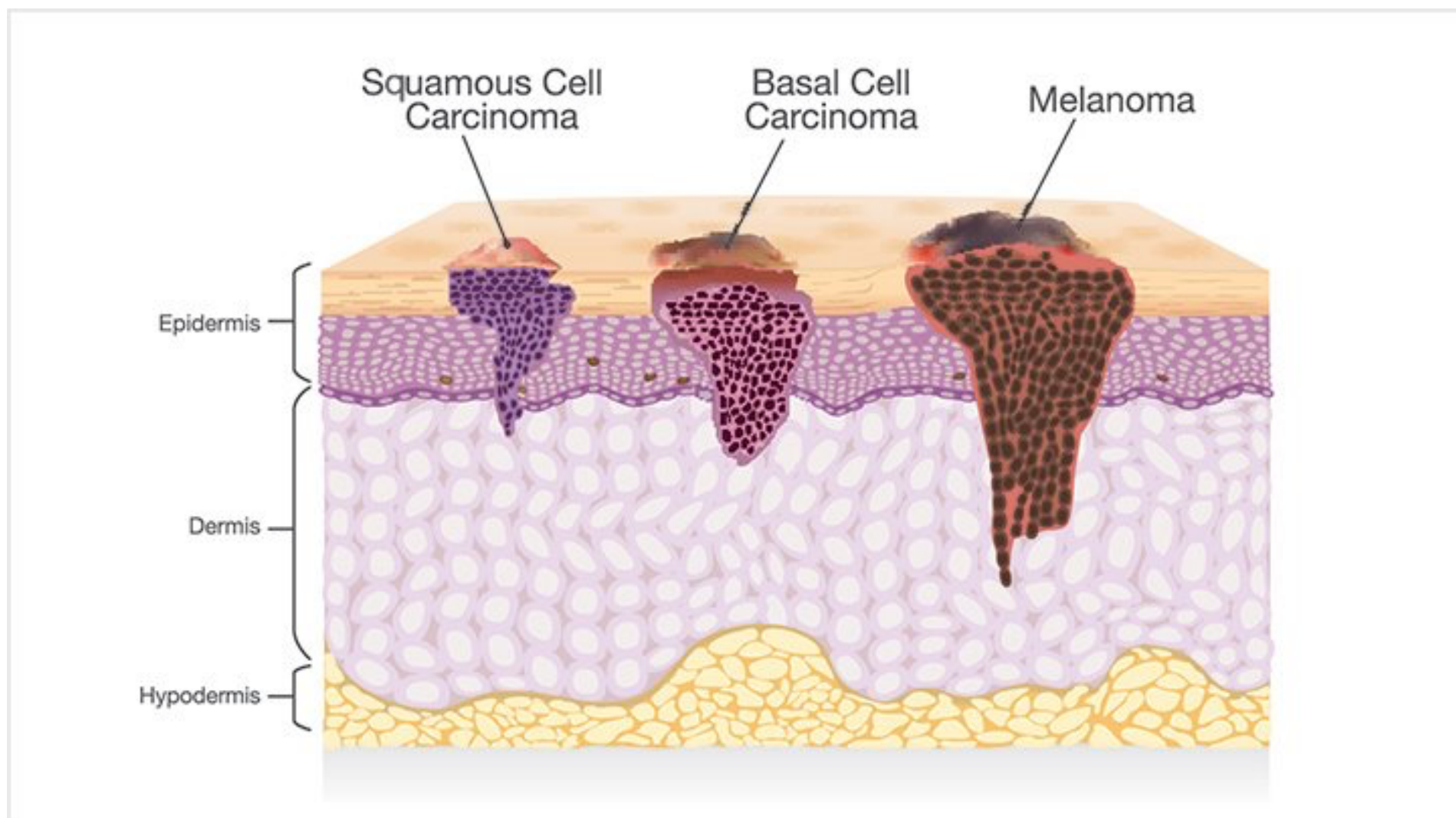


## VISUAL COMPARISON

### MELANOMA



Add a little bit of body text  
Source: Everyday Health



Source: Everyday Health





SKIN CANCER  
RISK FACTORS



## WHAT IS A RISK FACTOR?

A risk factor is anything that affects an individual's chance of getting a disease, in this case skin cancer. Although risk factors affect an individual's chance of disease, simply having a risk factor or multiple risk factors does not guarantee that one will get the disease. On the contrary, an individual is able to develop a disease without having any known risk factors.



Source: hairmotive.com

**Who is at risk for developing skin cancer?**

According to the Centers for Disease Control, anyone can develop skin cancer. However, here are some factors that increase risk.

- UV exposure**  
Whether from tanning beds or the sun, ultraviolet rays increase risk.
- Past sunburns**  
Severe, blistering sunburns can increase risk.
- Fair complexion**  
People with blond or red hair, light-colored eyes and freckles are at greater risk.
- Weakened immune system**  
Organ transplant recipients, those with autoimmune disease are at risk.
- Family history**  
If a sibling or parent had skin cancer, your chances increase.

Graphics by Susan Szuch  
Source: Mayo Clinic

Source: nptelegraph.com

## WHAT ARE ANATOMICAL RISK FACTORS FOR SKIN CANCER?

There are numerous factors pertaining to a person's physical make-up and body that can increase their risk for skin cancer. Having fair or light skin is a risk factor for skin cancer because these people do not have adequate amounts of melanin in their skin. Melanin in an individual's skin is what protects them from UV radiation. Additionally, individuals who have freckles and light or fair skin are at an even increased risk for skin cancer. An individual's sex also is a risk factor for skin cancer. Men are twice as likely to have basal cell skin cancers and three times as likely to have squamous cell skin cancers than women. Individuals who have or had severe skin problems are at an increased risk for skin cancer as well. This means that people with scars from bad burns or skin damage from skin diseases are more likely to get skin cancer. People with green or blue eyes are also at an increased risk for skin cancer. Furthermore, blonde and red hair individuals have a heightened risk. Having a large number of moles and certain types of moles on your skin can also be a skin cancer risk factor (American Society of Clinical Oncology, 2018).

NATURAL SKIN COLOUR	Very fair, pale white, often freckled	Fair, white skin	Light brown	Moderate brown	Dark brown	Deeply pigmented dark brown to black
	1	2	3	4	5	6
UV SENSITIVITY & TENDENCY TO BURN	Highly sensitive Always burns, never tans	Very sensitive Burns easily, tans minimally	Sensitive Burns moderately, usually tans	Less sensitive Burns minimally, tans easily	Minimal sensitivity Rarely burns	Minimal sensitivity Never burns
SKIN CANCER RISK	Greatest risk of skin cancer	High risk of skin cancer		At risk of skin cancer	Skin cancers are less common, but are often detected at a later, more dangerous stage. Increased risk of low vitamin D levels.	

Source: redriverderm.com

## HOW IS ARTIFICIAL TANNING A RISK FACTOR FOR SKIN CANCER?



Source: consumerreports.org

**75%**  
Increased risk of developing life threatening melanoma from just one use of the tanning bed before age 35

A widely known risk factor for skin cancer is artificial tanning. Artificial tanning refers to the use of tanning beds, sun lamps, or tanning parlors. The more frequently an individual partakes in artificial tanning, the higher their risk of skin cancer. Tanning beds work by emitting very concentrated radiation within inches of your skin. In addition to this, the UV rays emitted by tanning beds penetrate deeper into the skin than the UV rays emitted via sunlight. The farther into the skin the rays an individual is exposed to go, the more damage they are able to cause to one's body. Research has shown that tanning beds increase a person's risk for developing the most serious form of skin cancer, melanoma by 75 percent. In fact, these tanning habits are so harmful that the World Health Organization has labeled tanning beds as a "carcinogenic" (Skin Cancer Foundation, 2019).

## HOW IS LOCATION A RISK FACTOR FOR SKIN CANCER?

Another factor that increases an individual's risk for developing skin cancer is where they live or spend the majority of their everyday life. Individuals who live in warm climates are more frequently exposed to sunlight, and thus more radiation, than individuals living in cooler or cold climates. For example, a person living in the warm climate of Florida is exposed to sunlight more than someone living in the cold climate of Vermont. Additionally, high-altitude climate locations are a risk factor because sunlight is strongest in these areas. The higher the altitude a person lives at, the closer they are to the sun and the less protective layers there are in the atmosphere between the person and the sun. The stronger the sunlight, the more radiation a person's skin is exposed to (National Council on Skin Cancer Prevention, 2016).

### **HIGH ALTITUDE CITIES IN THE UNITED STATES:**

**Boulder, Colorado**

**Albuquerque, New Mexico**

**Bozeman, Montana**

**Colorado Springs, Colorado**

**Park City, Utah**



## **WHAT AGE GROUPS ARE AT RISK FOR SKIN CANCER?**

Everyone, regardless of their age, risks developing skin cancer in their lifetime. However, certain age people have a particularly high risk of skin cancer development. The risk of skin cancer increases as an individual's age increases. This is because older individuals have been exposed to more sun in their lifetime than younger individuals. The majority of basal cell and squamous cell carcinomas typically occur after age 50. However, rates of skin cancer in young people have been continually rising as these individuals are spending more and more of their time exposed to the sun (National Council on Skin Cancer Prevention, 2016).

## **HOW ARE WEAKEND IMMUNE SYSTEMS A RISK FACTOR FOR SKIN CANCER?**

People who have suppressed or weakened immune systems have may be at an increased risk of skin cancer. The immune system of the body is the system that works to fight off infections and invaders to the body, such as cancer. Weakened immune systems can result from prescribed medications, medical treatments such as surgery, prior diseases or infections, and more. Individuals who live with HIV/AIDS also have weakened immune systems. When a person's immune system is weakened, their body is less able to fight off skin cancers. Additionally, skin cancer has been found to grow more rapidly and have proved to be more fatal in individuals with these immune systems (American Society of Clinical Oncology, 2018).

## **WHAT ARE OTHER RISK FACTORS FOR SKIN CANCER?**

In addition to the numerous risk factors mentioned in prior pages, there are other things that can influence an individual's risk for skin cancer. One of these is having an outdoor job. People who have outdoor jobs spend a lot more time exposed to sunlight and UV radiation than those who work indoors. Because of this, these people may be more at risk for developing skin cancer. Another risk factor is people who take frequent beach trips. These people are spending more of their time with their skin directly exposed to sunlight. Attitudes and feels regarding use of sunscreen, artificial tanning methods, and outdoor tanning also can impact one's risk for skin cancer. People who have negative feelings about tanning beds or tanning in general are less likely to engage in these activities. Furthermore, people who have negative feelings about the effectiveness of sunscreen are also less likely to use sunscreen to protect their skin when they are in the sun (Mayo Clinic, 2019).

## **WHY IS THIS INFORMATION PARTICULARLY IMPORTANT TO YOUNG ADULTS?**

It is important that young adults to be particularly aware of the risk factors for skin cancer, so they are able to best protect their skin starting at a young age in order to prevent skin cancer developing later on. Young adults also engage in many outdoor activities, outdoor sports, and outdoor jobs like lifeguarding. All of these behaviors increase their exposure to sunlight.





WARNING SIGNS OF  
SKIN CANCER



## BASAL CELL CARCINOMA

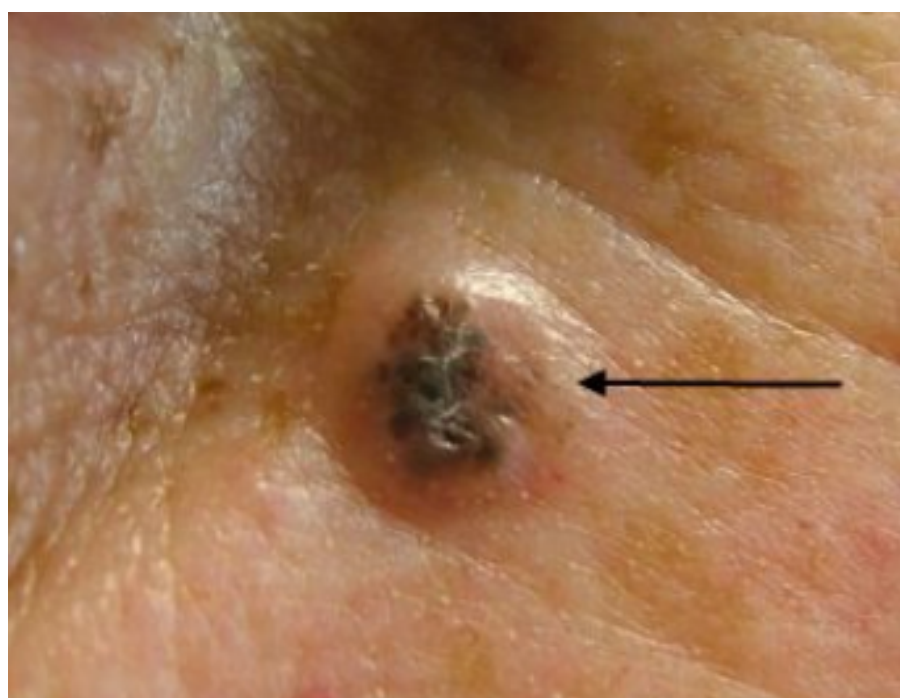
This skin cancer develops in areas that have the highest exposure to the sun. These areas consist mainly of the **head and neck** region. Lesions can be visible at the original tumor site due to its translucent appearance (Dermatology & Skin Center).

### APPEARANCE

The most common appearance of Basal Cell Carcinoma is a **pearly white, skin colored bump that appears translucent**. The tiny blood vessels that are providing the tumor nutrients to grow are visible within this bump (Dermatology & Skin Center, 2018).



Source: dermandskincancer.com



Source: pcids.org.uk

A **brown, black or blue lesion** is also common, but still contains a translucent border (Cunliffe, 2019).

A **flat, scaly, reddish patch** is a sign of the development of Basal Cell Carcinoma. These patches are typically seen on the back or chest region. They usually start small, but can grow to be very large (University of California San Francisco, 2018).



Source: skincancer.ucsf.edu



Source: skincancer.org

These **white, waxy scar like regions** are known as Morphaform BCC. They lack defined borders, but can be incredibly invasive and aggressive. They are however, the least common symptom of BCC (Swanson & Jeffrey L, Melton, 1996).

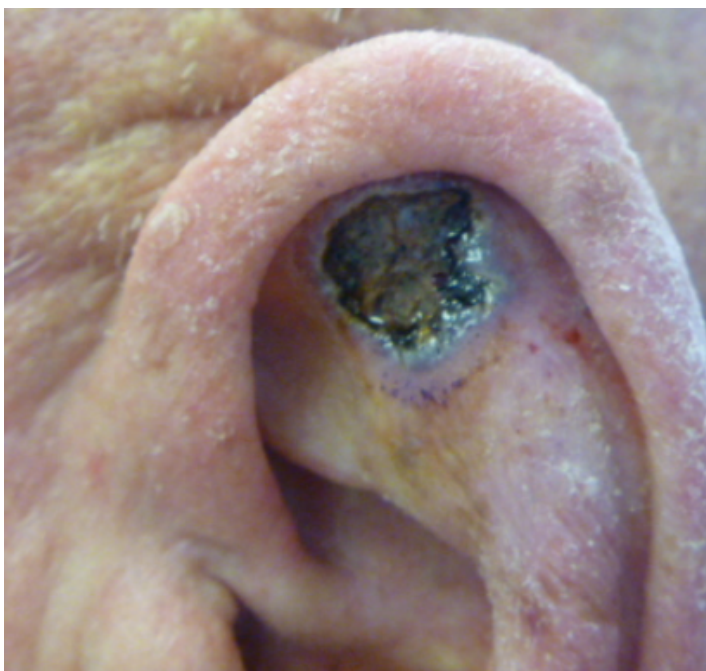


## SQUAMOUS CELL CARCINOMA

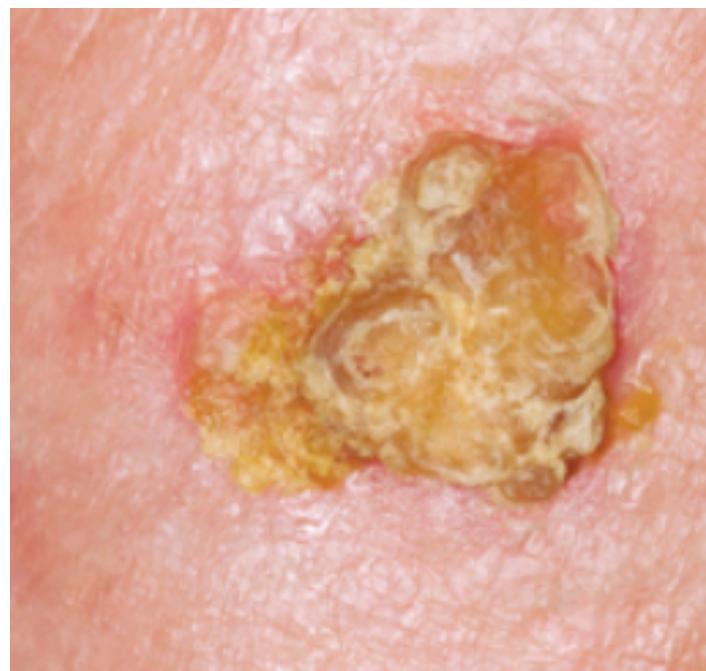
Squamous Cell Carcinoma (SCC) is most commonly found on the **scalp, back of the hands, ears and lips**. SCC regularly occurs in these locations, but may also develop inside the **mouth** and on the **genitals** (The Skin Cancer Foundation, 2019)..

### APPEARANCE

SCC is recognized for its persistent, **rough, scaly red patches** on the skin that may bleed. These patches appear as **open sores, rough-like skin, or even resemble warts** that will begin to crust over. There is usually evidence of sun damage surrounding the patch, such as wrinkling, and changes in skin pigmentation. If this cancer develops in the mouth, it will resemble an ulcer that is unable to heal (The Skin Cancer Foundation, 2019).



Source: cancer.net



Source: healthdirect.gov



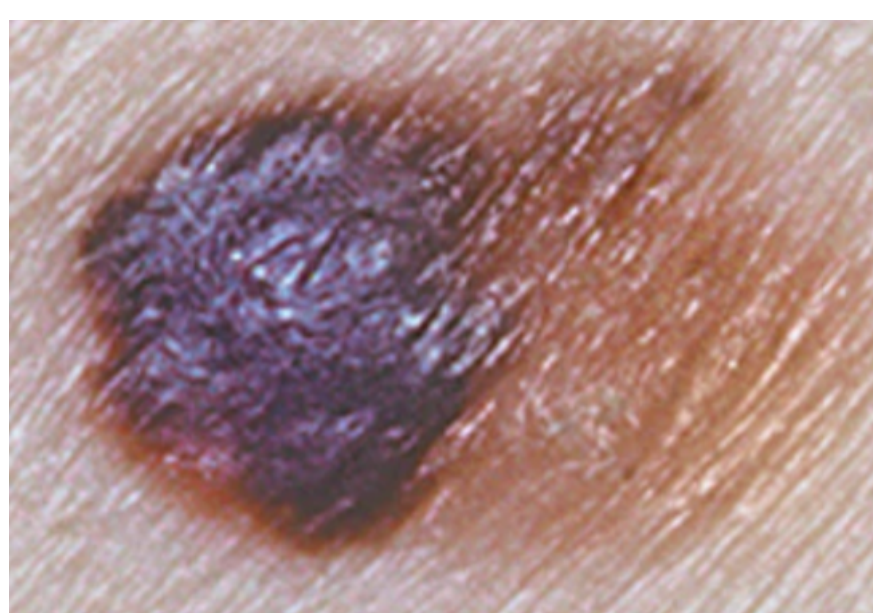
Source: medicinenet.com

## MELANOMA

Melanoma is typically seen on areas that are regularly exposed to the sun such as your **back, legs, arms and face**. Melanoma may also develop in the **internal organs, under your fingernails, in the palms of your hands and soles of your feet**. Melanoma that occurs in areas of the skin that are less exposed to the sun are typically seen in persons with darker skin pigmentation (Mayo Clinic, 2019a).

### APPEARANCE

Melanoma is often first recognized as a **change in appearance in a preexisting mole**. However, melanoma mostly develops as **new, unusual pigmented growths** on skin that appeared to be normal. Melanoma can be identified by five unique characterizations consisting of: asymmetrical shape, irregular borders, multiple colors, larger than 1/4 inch, and rapid growth (Mayo Clinic, 2019a)..



Source: mayoclinic.org



Source: skincancer.org



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# 2

## Prevention

Self-Screening

Sunscreen

Sun Exposure





PREVENTION  
METHODS



## WHY IS SELF-SCREENING IMPORTANT?

It is incredibly important for individuals to examine their bodies monthly to look for irregularities that could possibly be skin cancer. People should do this because if skin cancer is detected early, it is very curable by medical professionals. The Skin Cancer Foundation reports that 99 percent of skin cancer cases are curable if they are caught and treated early. Skin cancer is easiest to treat in its early stages. Skin cancer is a cancer on the outside of the body, so you are able to see it. By practicing self-screening, people are more likely to catch it in its early stages (Skin Cancer Foundation, 2019).

## WHAT ARE THE ABCDE'S OF SKIN CANCER?

The ABCDE'S of skin cancer is an acronym used to describe what one should look for when examining their body for skin cancer. The **A** refers to looking for asymmetry. For this, look for one half of the mole not matching the other. The **B** stands for border irregularity. The **C** stands for color. For this, you want to make sure the coloring of the mole is uniform and not varying. The **D** stands for diameter. A mole is considered irregular and worrisome if it is greater than 6 mm in diameter, which is about the size of a pencil eraser. The **E** stands for evolving. This means if the mole is changing shape, color, or size then you should have it checked. Overall, if you see anything **NEW, CHANGING, or UNUSUAL** looking on your body you should get it checked by a dermatologist immediately (Vigil, 2019).

### How to self-screen

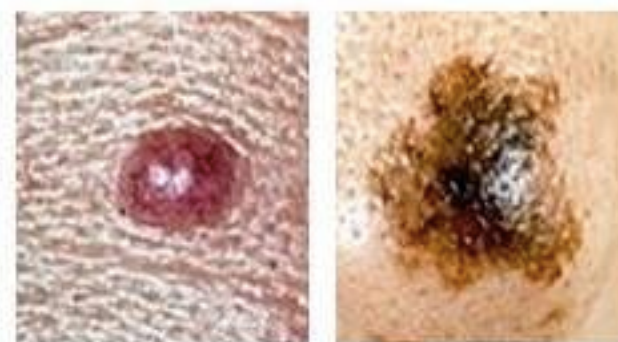
The American Academy of Dermatology recommends using the acronym ABCDE when screening for melanoma. These stand for:

- A Asymmetry**  
One half has a different border or color.
- B Border**  
The edges are irregular or poorly defined.
- C Color**  
The color varies in the mole.
- D Diameter**  
The spot is larger than 6 mm, the size of a pencil eraser.
- E Evolution**  
The mole or lesion is changing color or size.

Source: American Academy of Dermatology

Source: nptelegraph.com

### Asymmetry



Normal Mole – Abnormal Mole  
Borders



Normal Mole – Abnormal Mole  
Colors



Normal Mole – Abnormal Moles  
Diameter

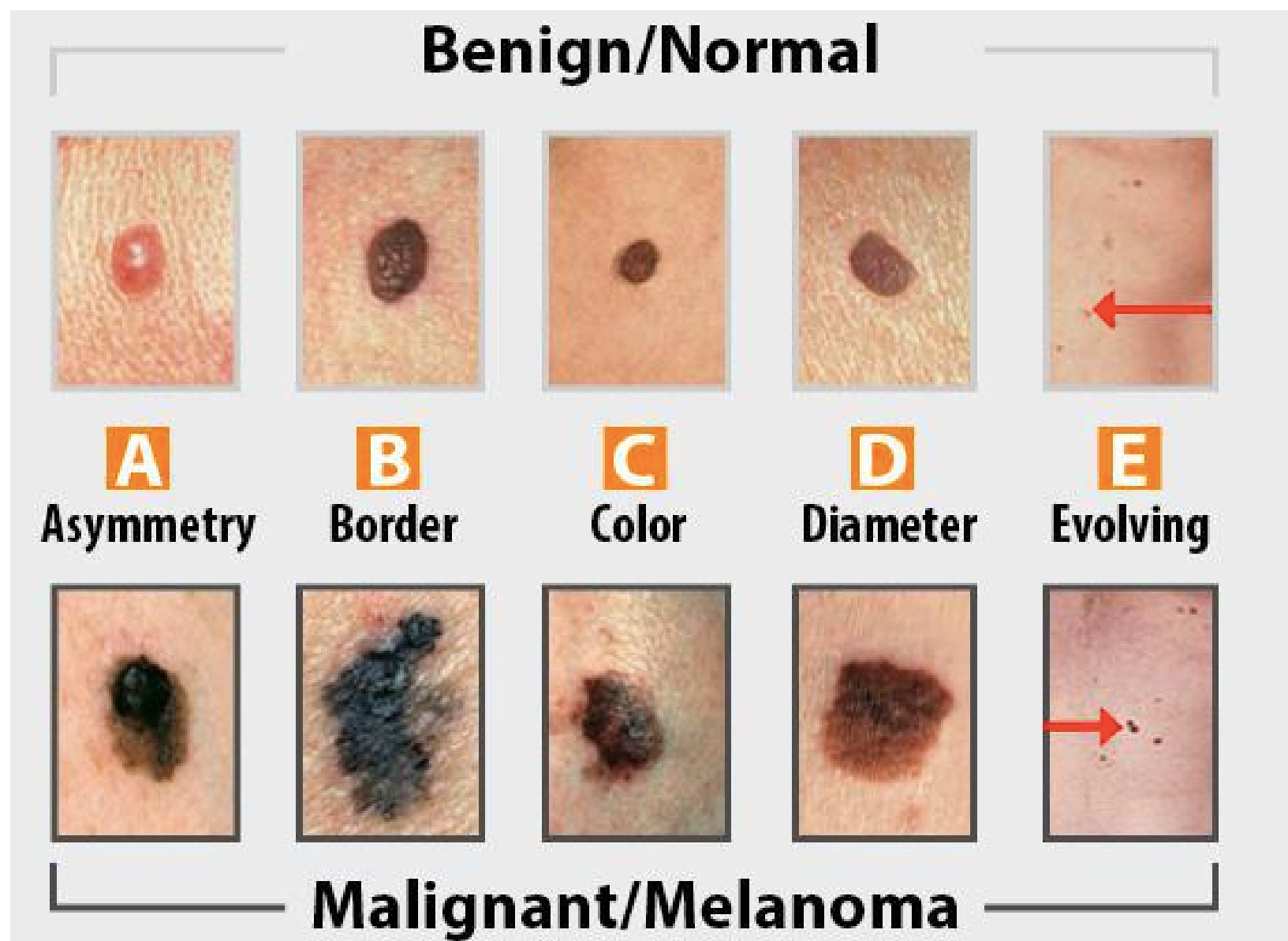


Normal Mole – Abnormal Mole

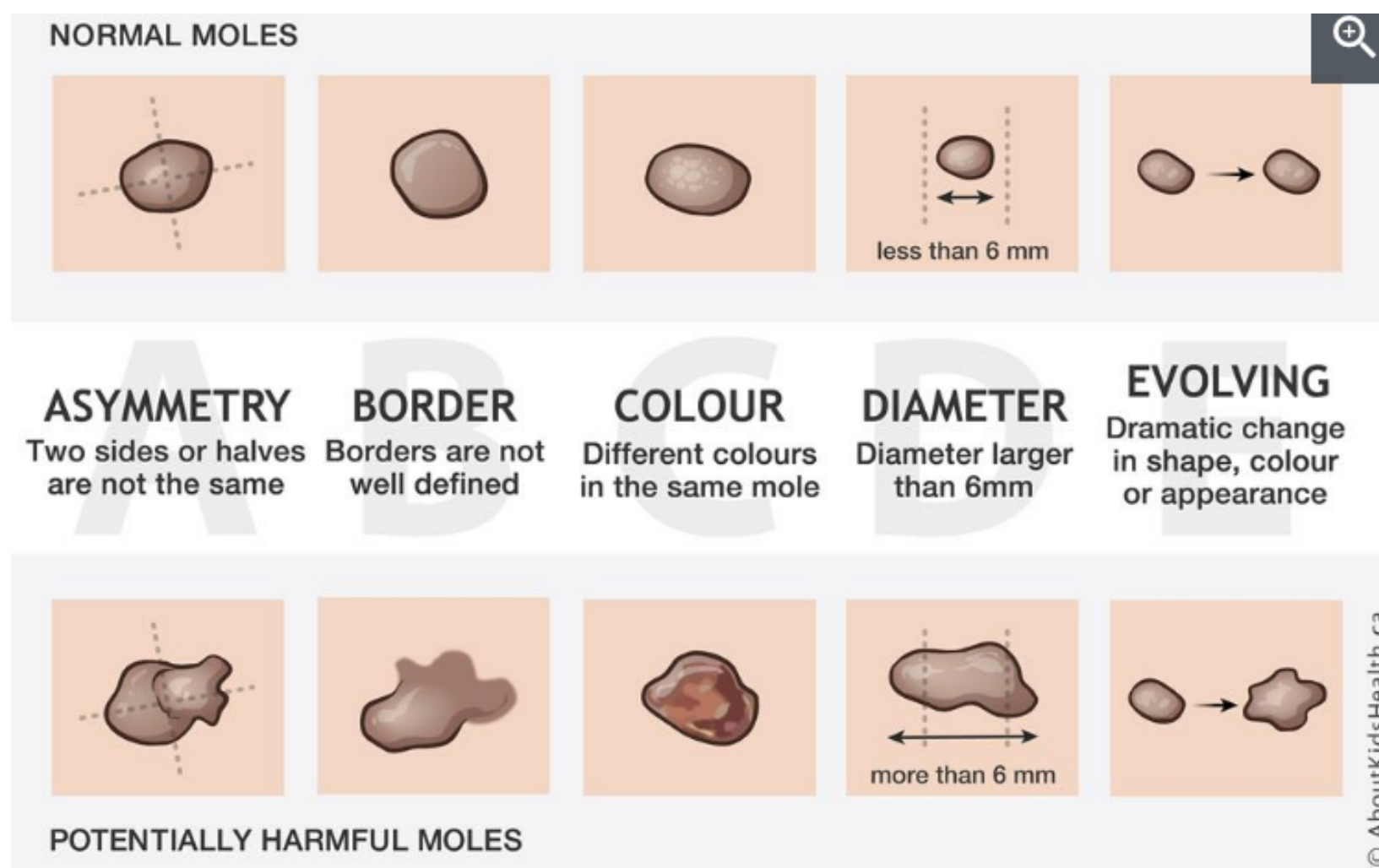
Source: preventcancer.org



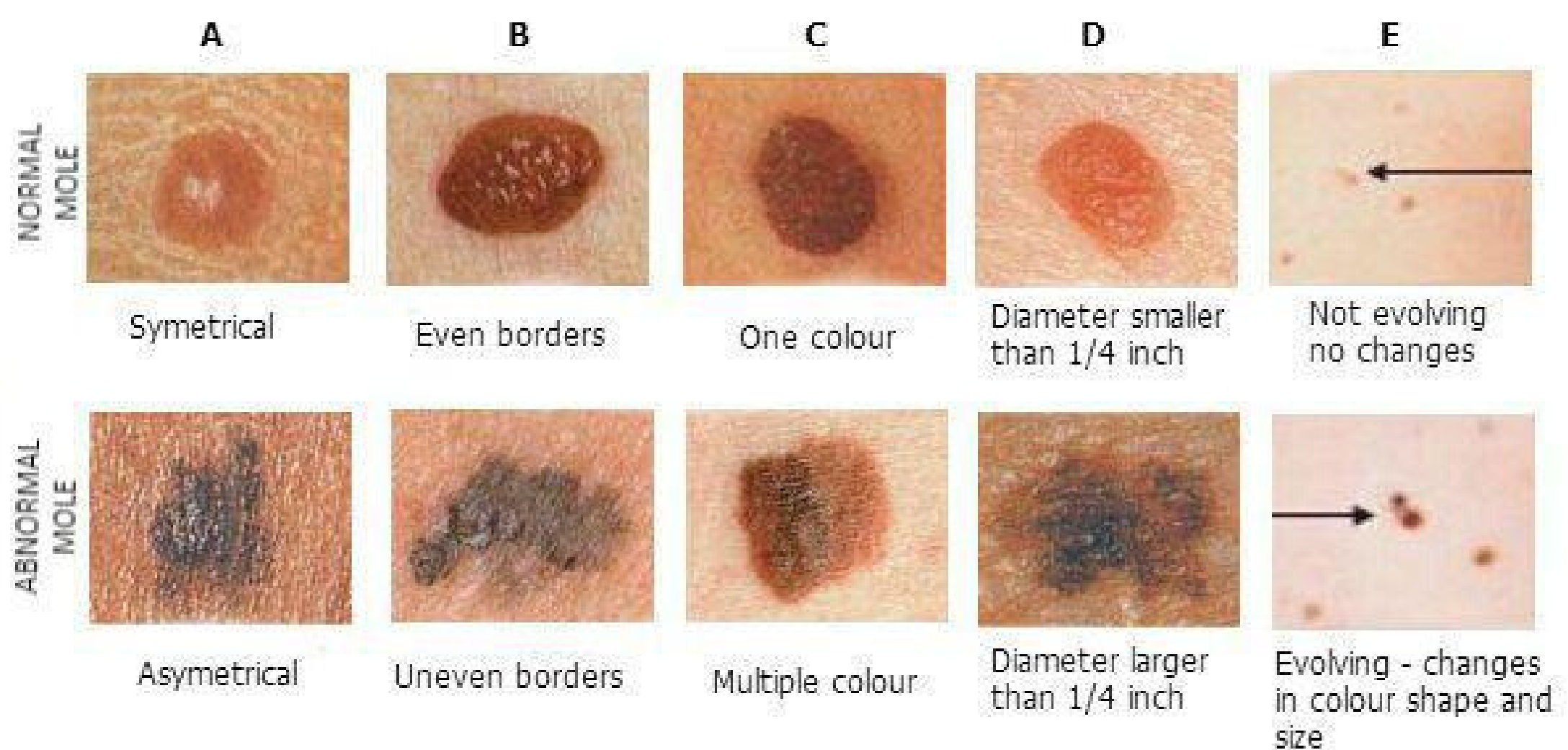
## IRREGULAR MOLES VS. NON-CANCEROUS MOLES:



Source: aboutkidshealth.ca



Source: aboutkidshealth.ca



Source: pinebeltderm.com



## WHERE ON YOUR BODY SHOULD YOU EXAMINE YOURSELF FOR SKIN CANCER?

1

Start with your face! Look at your nose, lips, mouth and ears - front and back. This is much easier when done with two mirrors.

2

Inspect your scalp, and make sure you use a blow dryer to move hair out of the way and check out each inch! You can manage to do this for your loved one pretty easily.

3

Next, check your hands and palms, under the fingernail, and slowly work your way up towards the arms, front and back!

4

Standing in front of a long mirror, lift up your arms, and check your elbows and sides of your upper arm, front and back. Be sure to check the armpit!

5

Next, check the neck, chest, and hips. Women should check their breast and the underside of the breast.

6

Next, stand with your back to the full-length mirror. Use a hand held mirror to examine the back of the neck, shoulders, upper back, and any part of your arms you weren't able to see.

7

Use both mirrors to scan your lower back, buttocks and the backs of the leg.

8

Lastly, sit on a chair, and put your leg up on a chair opposite to it. Be sure to check the genitals, front and back of legs, feet and toes, in between toes, and the soles of the feet.

Source: [homecare4u.com](http://homecare4u.com)



© Healthwise, Incorporated

Source: [askanesthetician.wordpress.com](http://askanesthetician.wordpress.com)



## WHY SHOULD YOU USE SUNSCREEN?

Sunscreen reduces your overall UV exposure and can reduce your risk of developing squamous cell carcinoma (SCC) by about **40%** and lower your melanoma risk by **50%**. It also prevents premature skin aging caused by the sun including wrinkles, sagging, and age spots (Skin Cancer Foundation, 2019).

## CHOOSING THE RIGHT SUNSCREEN FOR YOU

Before purchasing sunscreen, ask yourself a few questions:

### 1. How much time do I spend in the sun each day?

- If you're inside most of the day with just short intervals in the sun
- If you spend a lot of times outdoors, especially when the sun in the strongest



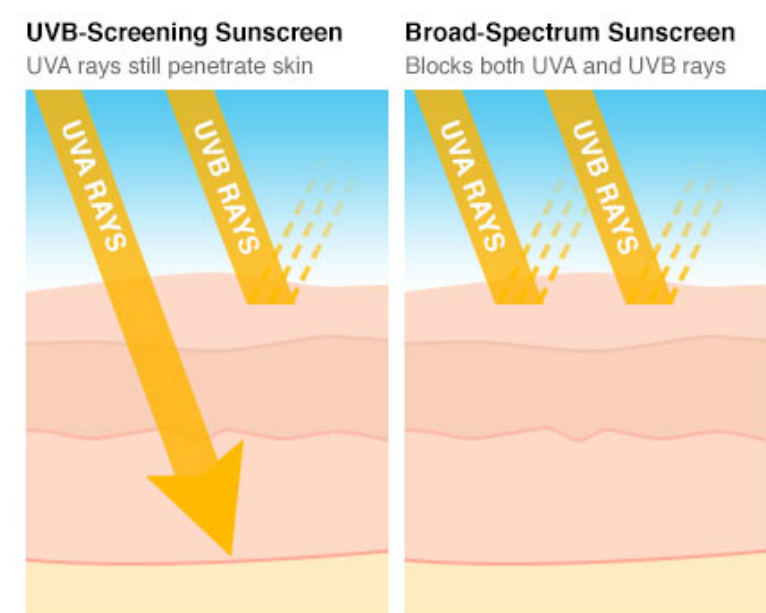
**SPF 15 OR HIGHER**



**SPF 30 OR HIGHER**

### 2. Does the label say "Broad Spectrum" on it?

- Broad spectrum sunscreens have the ability to protect against both harmful UV rays: UVA and UVB rays. Both of these are responsible for skin cancer. If a sunscreen is not broad spectrum, it only protects against UVB rays, allowing the UVA to penetrate the skin (Melanoma Research Alliance, 2019).



Source: aad.org

### 3. Does the label say "Water Resistant"?

- First things first, **no sunscreen is actually water proof**. Sunscreens are only water resistant for 40 or 80 minutes. This tells you that the sunscreen will stay on wet or sweaty skin for a while before you need to reapply. Even if you are not swimming or sweating excessively, your skin will absorb non-water resistant sunscreens much quicker (American Academy of Dermatology, 2019).

The American Academy of Dermatology recommends choosing a sunscreen that states the following on the label:



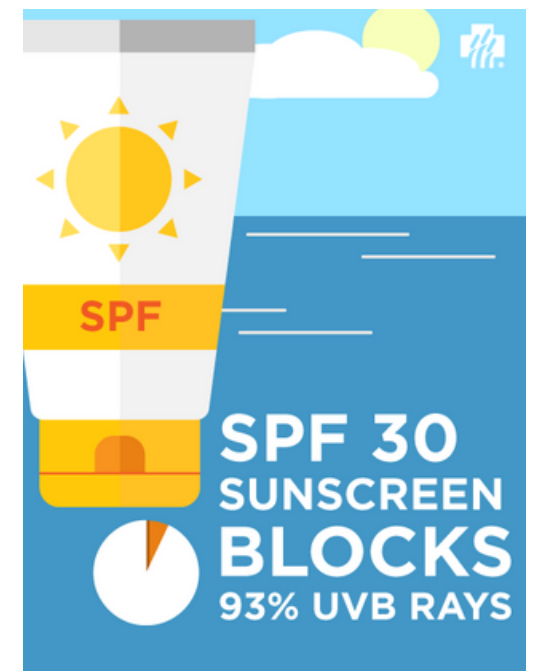
Source: aad.org



## WHAT DOES SPF MEAN?

**S**un  
**P**rotective  
**F**actor

SPF stands for Sun Protection Factor. The number tells you how long the sun's UVB rays would take to redden your skin if you apply the sunscreen exactly as directed compared to the amount of time without sunscreen. If you use an SPF 30 product properly, it would take you 30 times longer to burn than if you used no sunscreen (Skin Cancer Foundation, 2019).



## HOW TO USE YOUR SUNSCREEN

**Who should you use sunscreen?** Everyone! Men, women, and children over 6 months of age should use sunscreen every day. This includes people who tan easily and those who do not. Remember that your skin is damaged by sun exposure over your lifetime, whether or not you burn.

**When should you apply sunscreen?** Every day! The best practice is to apply 30 minutes before going outdoors to let the sunscreen bind to your skin. Reapply every two hours of exposure and immediately after swimming or excessive sweating.

**Where should you apply sunscreen?** Experts recommend applying sunscreen to your entire body before you dress for the day. This ensures that your skin will be protected if your clothing shifts or you remove layers. At the very least, you should apply sunscreen to every part of your body that is exposed to the sun, including the easily-missed parts of your body exposed to the sun like the tops of your ears, back of your neck, your scalp on the part line, the tops of your feet and behind your knees.

**How much sunscreen should you use?** To get the full protection out of your sunscreen, apply one ounce-about one shot glass full- to your entire body. When reapplying throughout the day, the one ounce rule still applies (Skin Cancer Foundation, 2019).

## IF YOU STILL GET A SUNBURN WHILE USING SUNSCREEN

Don't panic. Although burns are painful, they won't immediately cause skin cancer. Treat the burn with aloe vera and avoid sun exposure until it is healed. It can be frustrating to get burned after believing proper precautions were taken, but there are likely some reasons you may still be getting burned.

- **Using spray sunscreen.** Although it is more convenient, it is difficult to ensure every inch of your skin is evenly protected and burns may occur more frequently.
- **Using too low of SPF.** If you apply sunscreen with too low of an SPF for your skin type and sun exposure, burns might still occur.
- **Waiting until you're in the sun to apply.** Sunscreen needs 30 minutes to bind to the skin, so if you apply when you're already in the sun, your skin will absorb rays for 30 minutes.
- **Not reapplying often enough.** If you don't reapply every two hours, the sunscreen will wear off, exposing your skin to the harmful rays (Melanoma Research Alliance, 2019).



## AVOIDING SUN EXPOSURE

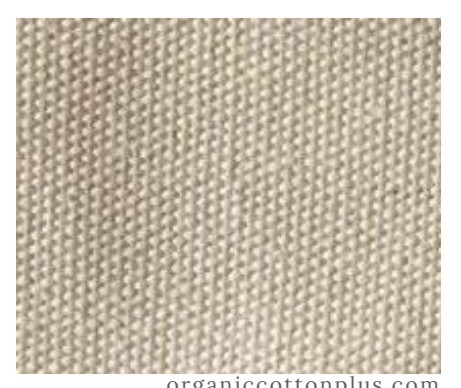
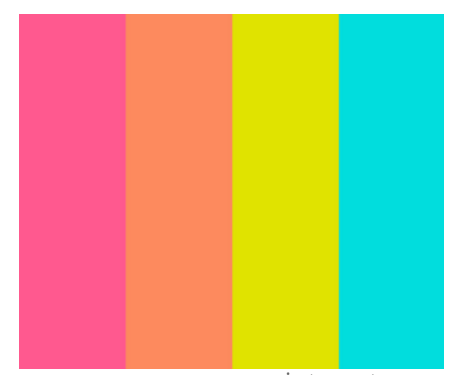
Although sunscreen is an important factor in the sun protection strategy, it alone is not enough to keep you safe from the sun. Other protection strategies in combination with sunscreen is more effective in protecting the skin from harmful UV rays. The Skin Cancer Foundation recommends that you:

- **Seek the shade**, especially when the UV rays are the most harmful between 10AM and 4PM
- **Cover up with clothing** including broad-brimmed hats and UV-blocking sunglasses
- **Avoid tanning** while in the sun and never use UV tanning beds

## WHAT MAKES CLOTHING SUN SAFE?

Although all clothing shields you from the sun, not all fabrics and colors provide equal protection. When shopping for apparel to effectively shield you from the sun, keep a few factors in mind

- **Color:** Dark or bright colors keep UV rays from reaching your skin by absorbing them instead of allowing them to penetrate. Light shades are less protective and may allow some UV rays to reach the surface of your skin
- **Fit:** Loose-fitting clothing provides better protection against UV rays than tight clothing. Tight clothing can stretch and reduce the level of protection by pulling the fibers apart and allowing more sunlight to pass through
- **Construction:** Densely woven cloth like denim, canvas, wool, or synthetic fibers provide better protection than sheer, thin or loosely woven cloth. Check a fabric's sun safety by holding it up to the light. If you can see through, UV radiation can easily penetrate the fabric and reach your skin.
- **Content:** Unbleached cotton contains natural lignins that act as UV absorbers. Shiny polyesters and lightweight satin or silk are great protectors because they reflect the radiation. Some clothing are treated with chemical UV absorbers or dyes to prevent UV penetration
- **Layer and accessorize:** Although one layer of fabric can be suitable, multiple layers will ensure greater protection. Wear large-brimmed hats and sunglasses to protect the face and neck from sun exposure





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# 3

## Treatment

Importance of Treatment

Types of Treatment

Finding a Physician



THE IMPORTANCE OF  
TREATMENT





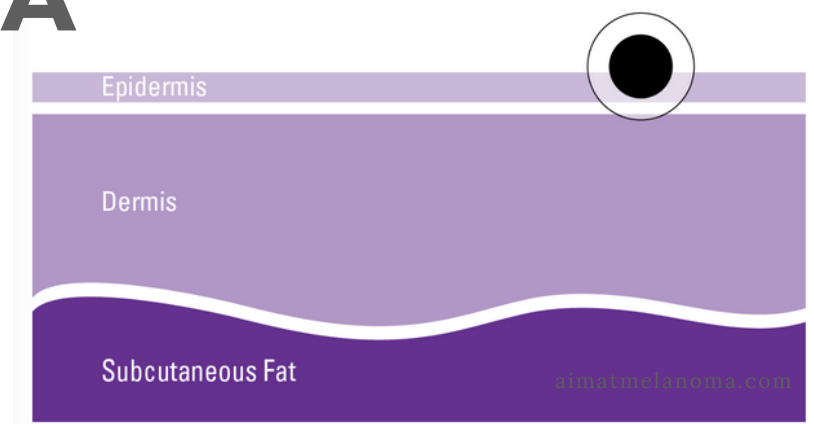
## IF MELANOMA IS LEFT UNTREATED

Absolutely, under no circumstances should you leave melanoma alone. If melanoma is not identified in its early stages, it may grow deeper into the skin and spread to other parts of the body. Once it spreads beyond the skin, it becomes hard to treat and may be fatal. It is incredibly important to detect melanoma early so it can be treated effectively. Later stages of melanoma may invade vital organs such as the brain, lungs, abdominal organs, and bone, hindering their function and often resulting in death (Bisgaard, et. al., 2016).

### STAGES OF MELANOMA

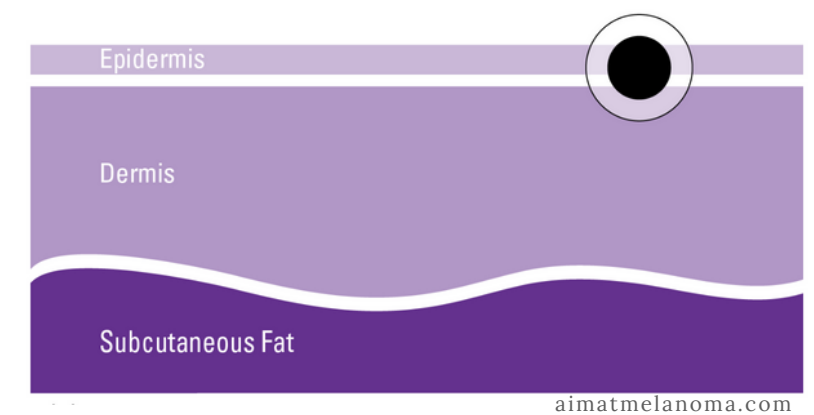
#### STAGE 0:

In stage 0 melanoma, the malignant tumor is still confined to the upper layers of the skin. The cancer has not spread to lymph nodes, and can be easily treated.



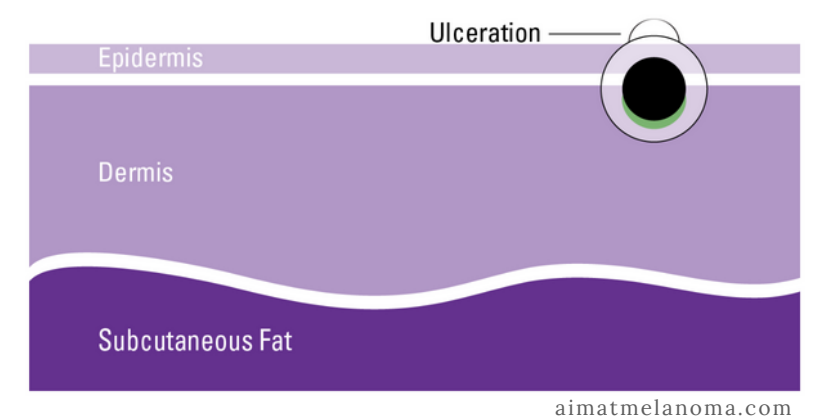
#### STAGE I:

In stage I, the melanoma is up to 2mm thick with no ulceration of the tumor. It has not spread to lymph nodes and can be easily treated.



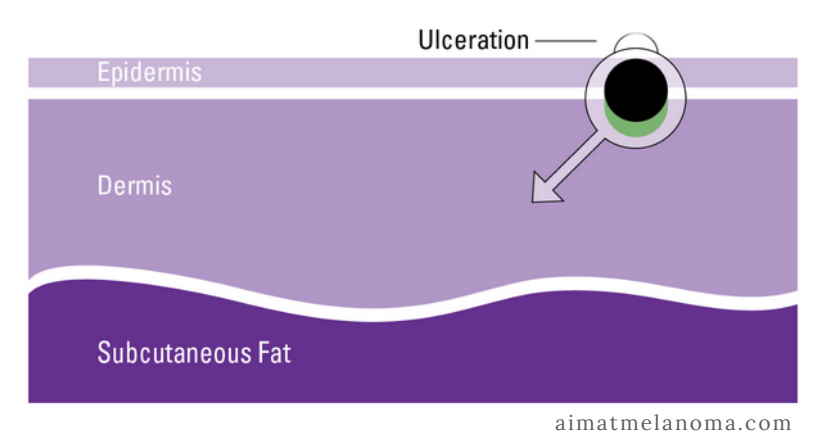
#### STAGE II:

In stage II, the melanoma is either up to 2mm thick with signs of ulceration, or up to 4mm thick with no ulceration. There is a high risk for local recurrence.



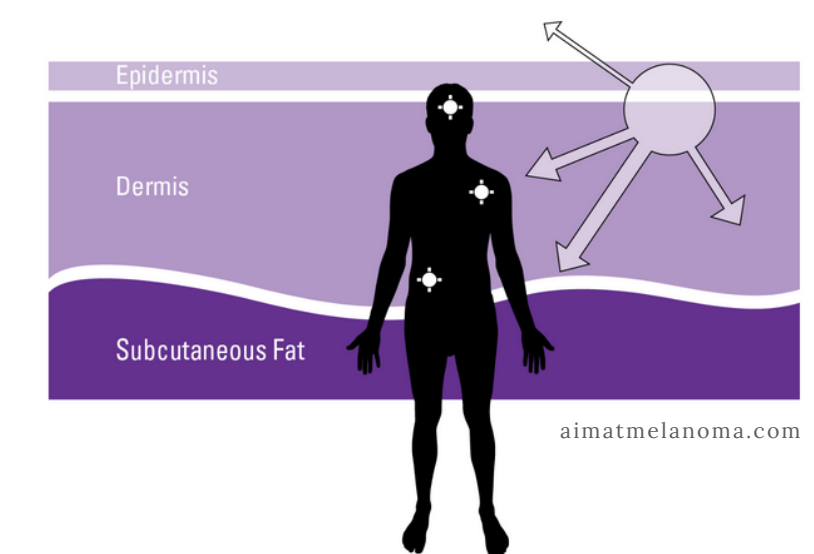
#### STAGE III:

In stage III, the thickness no longer matters. The cancer has spread to the regional lymph nodes and often has ulcerations. Treatment is more difficult.



#### STAGE IV:

In stage IV, the melanoma has spread beyond the original site and regional lymph nodes to other regions of the body. The cancer often spreads to vital organs like lungs, abdominal organs, brain, and bone. Treatment may involve chemotherapy and radiation. Death is more frequent in this stage (Aim at Melanoma Foundation, 2019).



### UNTREATED CASES



Bisgaard, et. al.



National Cancer Institute



DermNet New Zealand



## DEATH FROM MELANOMA

Although skin cancer is often cured and does not result in death, if melanoma remains untreated and reaches stage IV, death may occur. According to the American Cancer Society, the 5-year survival rate for stage IV melanoma is only 15-20 percent. This means that only 15 to 20 percent of those diagnosed with stage IV melanoma will be alive 5 years after diagnosis. This further supports why it is so important to detect melanoma in its early stages, and regular self exams as well as annual checkups with your physician are crucial in avoiding death from this potentially aggressive cancer. Although treatment of early stages is fairly easy, once it progresses to stage IV, treatment becomes extremely difficult and often requires chemotherapy and radiation, as the cancer takes over other areas of the body. Those dying from stage IV melanoma experience devastating symptoms as they approach death, including:

- **Decreased Breathing:** Patients gravely ill from melanoma can experience metastasis to the lungs. They may experience rapid periods of breathing, followed by no breathing at all. They may have episodic coughing involving sounds of rattling when they breathe.
- **Central Nervous System Changes:** Patients with melanoma that spread to their brain may show changes in their mental state, cognitive abilities, and ability to converse with others. They may not respond to conversations and typically sleep quite a bit.
- **Pain:** Some patients experience intense pain in their last stages of melanoma if the cancer spreads to their bones (British Association of Dermatologists, 2013).

## DEATH CAN BE AVOIDED

Death from melanoma can be painful and frightening, but luckily melanoma is often caught in early stages and the spread of the cancer to other vital organs can be avoided. If you have any suspicion of melanoma being present on your body, **see your doctor immediately!** It is likely that you noticed the suspicious area before it has progressed to more serious stages. If you identify it while it is in stages 0-III, treatment is often simple and the tumor will probably be removed by surgery or treated by other methods like injections, creams, targeted therapy, and if it is in further stages of stage III, immunotherapy, chemotherapy or radiation might be used. The survival rates are very promising up to stage IV, so try not to panic if a doctor diagnoses you with melanoma (American Cancer Society, 2019).

## SURVIVAL RATES BY STAGE

98%

STAGE I

98%

STAGE II

64%

STAGE III

23%

STAGE IV





TREATMENT  
OPTIONS



## TREATMENTS FOR BASAL CELL CARCINOMA (BCC)

If you are diagnosed with a small version of basal cell carcinoma, there are many treatments available that can be performed with a local anesthetic resulting in very little to no pain. Generally, most wounds heal and leave minimal scarring.

The following methods may be used:

### CURETTAGE AND ELECTRODESICCATION (ELECTROSURGERY)

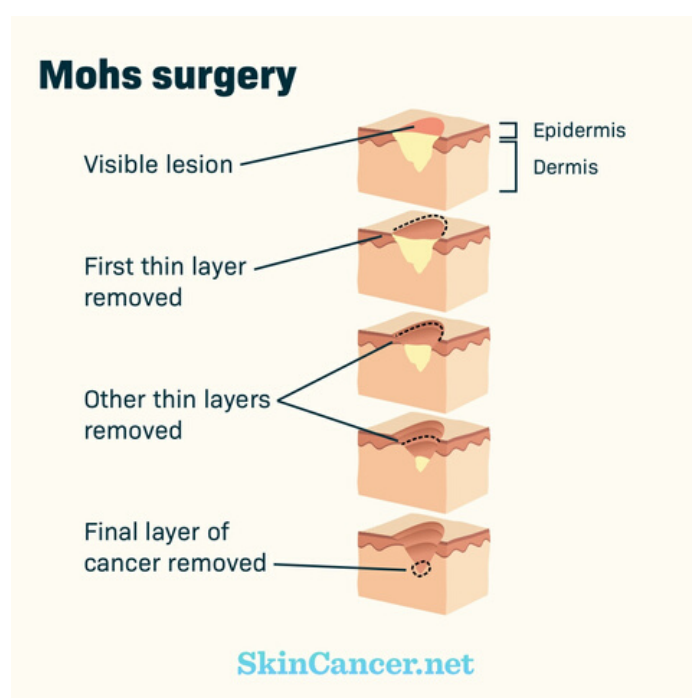


Source: amazon.com

95% effective (used for smaller BCC lesions)

- For this method, the dermatologist scrapes off the area of BCC using a curette, which is the instrument pictured to the left. Then, heat or a chemical agent is used to get rid of any remaining cancer cells, eliminate bleeding, and close the wound.
- The procedure may be completed a few times until all of the cancer has been eliminated.
- This method usually leaves a round shaped, white colored scar at the site of the procedure.

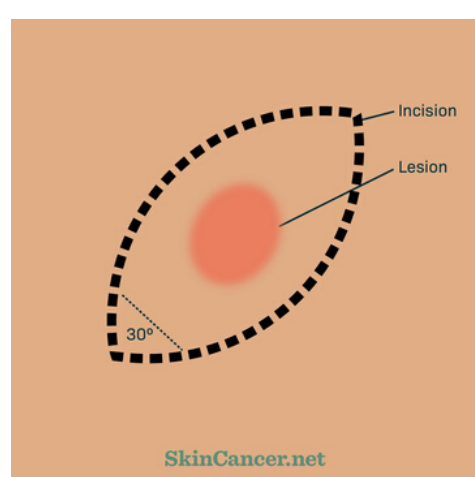
### MOHS SURGERY



99% effective

- This method is the golden standard for BCC treatment.
- This method is usually used for BCC lesions on the eyes, lips, scalp, nose, ears, genitals, fingers, or toes.
- Also used for lesions that are large in size, aggressive, quickly growing, or recurring tumors.
- This surgery is performed in a single visit, in multiple stages.
- Tissue is removed, analyzed, and removed again if any cancer remains. This process is repeated until no cancer is left.

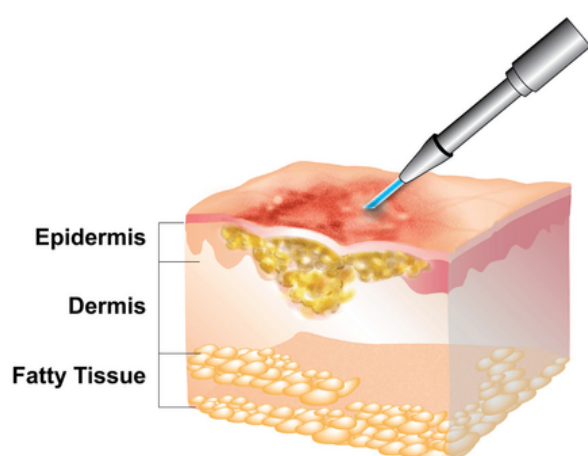
### EXCISIONAL SURGERY



95% effective

- Usually used for small, early BCC lesions that have not spread to other areas. Generally, for these lesions this is the only treatment needed.
- Using a scalpel, the surgeon removes the tumor and a "safety margin" of tissue around the lesion. Then, the removed tissue is tested in a lab.
- If the lab finds cancer outside of the margins, more tissue may be removed and tests may be performed until there is no more remaining cancer.

### LASER SURGERY



Laser Surgery

Source: ahns.info

- Not currently FDA-approved for superficial BCC's, but it is often used as a secondary therapy when other methods have not been successful.
- For this method, a beam of intense light is pointed at the tumor to target the BCC lesion.
- Some lasers vaporize the cancer while some utilize heat (which does not injure the surface of the skin).



## TREATMENTS FOR BASAL CELL CARCINOMA (BCC) (CONTINUED)

### RADIATION THERAPY



Source: sensushealthcare.com

90% effective

- Low energy x-ray beams are used to destroy the tumor.
- May require several treatments over a duration of multiple weeks, or daily treatments for a certain duration of time.
- Unfortunately, with this treatment method there is no way to know for sure that all of the cancer has been eradicated.
- This method is less precise, and is usually used for BCC lesions that are too difficult to treat with surgery.
- Often used for elderly patients, or patients with a poor health status in which surgery would be a health risk.
- Radiation therapy can also be used in combination with other treatment methods.

### CRYOSURGERY



Source: belmontshorevet.com

85-90% effective

- Most effective for smaller and more superficial BCC's.
- Good for patients with bleeding disorders or issues using anesthesia.
- Used less often for more invasive BCC's because it may miss the deeper areas of the tumor. Additionally, the scar tissue from this method may make future detection difficult.
- For this method, a cotton-tipped applicator or spray device is used to apply liquid nitrogen to the lesion to freeze and destroy it.
- After treatment, the lesion and skin surrounding it may blister, become crusted, and fall off, which allows healthy skin to grow in its place.

### PHOTODYNAMIC THERAPY (PDT)



Source: medgadget.com

- Generally used for superficial BCC's rather than invasive BCC's.
- For this method, a topical agent is applied to the area to make the lesion sensitive to light.
- Then blue light or a pulsed-dyed laser is used to create a reaction and destroy the BCC.
- After the procedure, the patient must avoid direct sunlight for at least 48 hours, or activation of the medication may be increased, resulting in severe sunburn.

### TOPICAL MEDICATIONS



Source: burtsrx.com

80-90% effective

- These are creams or gels that are applied to superficial BCC's, and result in minimal scarring.



## TREATMENTS FOR SQUAMOUS CELL CARCINOMA (SCC)

Most squamous cell carcinomas, when caught and treated early, can be easily cured. There are many treatment options available. Treatment methods for SCC's are almost identical to BCC's.

The following methods may be used:

- Excisional surgery
- Mohs surgery
- Curettage and electrodesiccation (electrosurgery)
- Cryosurgery
- Laser surgery
- Radiation
- Photodynamic therapy (PDT)
- Topical medications

Hale, E. K., & Hanke, C. W. (2019). Squamous Cell Carcinoma Treatment. Retrieved from <https://www.skincancer.org/skin-cancer-information/squamous-cell-carcinoma/scc-treatment-options/>

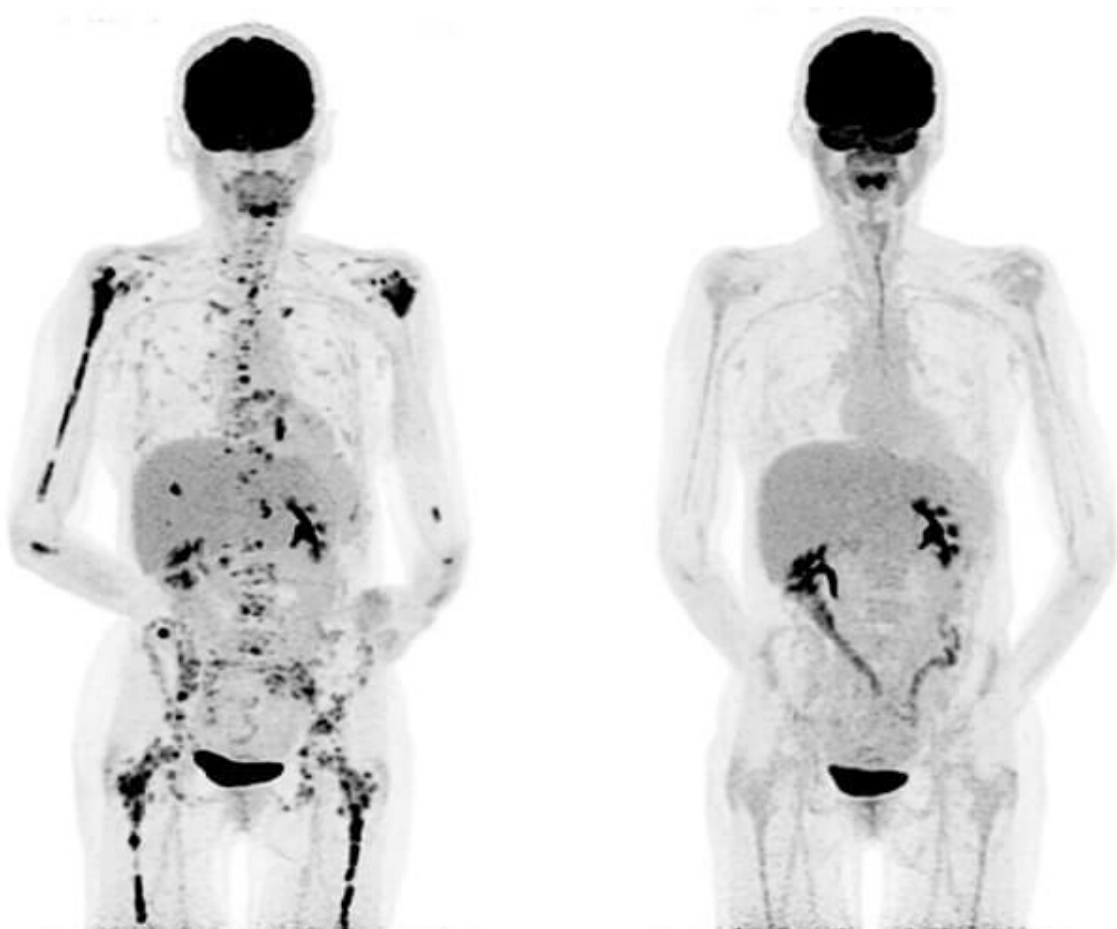
## TREATMENTS FOR MELANOMA

Melanoma is one of the most dangerous types of skin cancer. However, if diagnosed early, there are many effective treatment options available. Treatment methods are very dependent on the stage, size, and location of the lesion.

The following methods may be used:

- Surgical removal (may be deeper and more invasive depending on the stage of the lesion)
- Immunotherapy
- Targeted Therapy
- Chemotherapy
- Radiation

## WHAT IS TARGET THERAPY?



Source: cancer.gov

- Target therapy is essentially a type of personalized cancer treatment.
- This type of treatment allows for the elimination of melanoma with limited damage to healthy cells of the patient.
- This method uses drugs to attack melanoma by stopping defective cells that increase the growth of melanoma.
- When successful, this treatments stops or slows the progression of the disease.
- Different kinds of inhibitors may be used to achieve desired results. One popular inhibitor is known as "BRAF."

Halpern, A. C., Marghoob, A. A., & Reiter, O. (2019). Melanoma Treatment. Retrieved from <https://www.skincancer.org/skin-cancer-information/melanoma/melanoma-treatments/>



## TREATMENTS FOR MERKEL CELL CARCINOMA (MCC)

Merkel cell carcinomas are very rare and dangerous but they are treatable. However, it is very beneficial to diagnose MCC's as early as possible, in order to make the treatments more effective. Since MCC's are so rare, treatment should be sought out at specialized facilities equipped with individuals with expertise in this type of skin cancer.

The treatment options depend on the stage of the cancer and the health of the patient. Treatment usually includes surgical removal of the lesion followed by one of the following treatment methods:

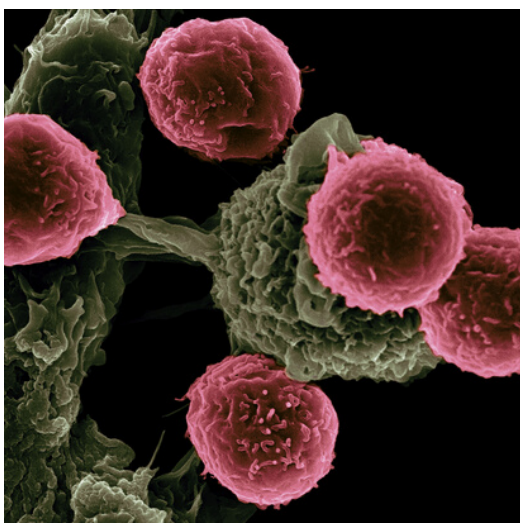
### RADIATION



Source: sanovadermatology.com

- This method is very effective in treating MCC's.
- Radiation is a localized method that uses x-rays to infiltrate the tumors and stop them from growing.

### IMMUNOTHERAPY



Source: genengnews.com

- Immunotherapy essentially boosts the body's ability to fight cancer. This is done by utilizing manmade versions of immune system proteins, or by releasing attack cells that target the tumors.
- This type of therapy works well alone, or paired with other therapies.
- This type of treatment is still very new and innovative. There is a lot of room for growth and future discovery.

### CHEMOTHERAPY



Source: news.sky.com

- Chemotherapy uses certain drugs to either kill cancer cells or stop them from multiplying in order to stop cancer growth.
- This method is often used to treat MCC's, but unfortunately the results are not sustainable and the MCC usually reappears. The MCC typically gains a resistance to the chemotherapy and regrows.
- Chemotherapy can also suppress the patient's immune system and cause some serious side effects.



The first step toward taking care of your skin cancer is choosing a doctor you feel a high level of confidence. Your doctor should be competent and comforting, an accomplished doctor who is easy to work with. Many dermatologists tend to focus on dealing with acne or the effects of aging and were not experts in skin cancer. Although it might feel like a daunting task to locate a doctor who fits your needs, there are a few tips to ease your search.

## ASK YOUR PRIMARY CARE PHYSICIAN

- When having an initial concern for a possible cancerous spot, contact your primary care physician first. He/She should be familiar with spotting skin cancer and should be able to provide a trustworthy referral to a skin cancer specialist that has a good reputation in their field. It is not guaranteed that this doctor will be the one for you, but if you don't know where to begin, your PCP will guide you in the right direction.

## ASK SOMEONE WHO HAS HAD SKIN CANCER BEFORE

- A great way to find a dependable doctor is to ask someone who has suffered from skin cancer previously. They had to go through the same trouble you are when finding a doctor that will provide exceptional care, and they will likely have some good knowledge on which dermatologists provide quality care.

## ASK YOUR INSURANCE REPRESENTATIVE

- Your insurance representative will help you narrow down qualified doctors by helping you understand your coverage and learn which doctors can provide care for a reasonable price.

## GO TO A COMPREHENSIVE CANCER CENTER

- A comprehensive cancer center may provide access to a number of doctors whom you could reach out to and learn treatment options and alternatives for you to consider

## QUESTIONS TO ASK YOURSELF

- When searching for a doctor, some questions to ask yourself include
  - Does this doctor have the appropriate education and training to address my type of cancer?
  - Will this doctor listen to my needs and treat me with respect?
  - Does this doctor clearly explain treatment options to me that I understand and encourage me to ask questions about my diagnosis and treatment?
  - Do I feel as if I am an important part of the medical team?



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