

# Melanoma

## risk factor information

This document gives a general overview of risk factors. The document covers:

- About cancer and risk factors
- About melanoma
- Types of skin cancer
- Known risk factors
- Possible risk factors
- Other risk factors that have been investigated
- References / more information

### About cancer and risk factors

#### **Cancer is not just one disease.**

Cancer is a group of over 100 different diseases. Cancer occurs when abnormal cells grow out of control and crowd out the normal cells. It can start anywhere in the body and can spread (“metastasize”) to other parts of the body. Cancer types are named for the original location in the body and the type of cell or tissue. Different types of cancer have different causes and risk factors.

#### **Cancer can take a long time to develop.**

The cause of cancer is sometimes related to events that happened many years ago. Most cancer types are thought to take anywhere from 10 to over 50 years to develop. A few types, such as leukemia or lymphoma, are thought to take less than 10 years.

#### **A risk factor is anything that increases your chance of getting cancer.**

Some risk factors can be controlled while others cannot. Risk factors can include:

- Hereditary conditions (e.g., genes passed down from parents)
- Medical conditions or treatments (e.g., a previous cancer diagnosis)
- Infections (e.g., human papilloma virus [HPV])
- Lifestyle factors (e.g., smoking cigarettes)
- Environmental exposures (e.g., certain air pollutants)

### **Most risk factors do not directly cause cancer.**

A risk factor influences the development of cancer but usually does not directly cause cancer. Instead, a combination of risk factors likely drives cancer development. For example, genetic factors can make individuals more likely to get cancer when they are exposed to a cancer-causing chemical.

### **Environmental risk factors depend on how, how much, and how long you are exposed.**

Your risk from exposure to certain chemicals or radiation depends on the type, extent, and duration of exposure. For example, inhaling a certain chemical may increase your risk of getting cancer. However, touching the same chemical may not. In addition, some substances may increase your risk only if you are exposed to high amounts over a long time.

### **It is difficult to identify the exact causes of cancer.**

- Many cancers can develop due to random chance.
- Multiple risk factors can act in combination.
- Risk factors can change over time.
- Cancer might not develop or get diagnosed for a long time after an initiating event (such as exposure or random cell mutation).

### **Knowing your risk factors can help you make more informed choices.**

Discuss your risk factors with your health care provider to make more informed decisions on lifestyle and health care.

## **About melanoma**

### **Most melanomas start in the skin (also called cutaneous melanoma).**

Melanomas develop when melanocytes (the cells that give the skin its tan or brown color) grow out of control. In people with lighter skin color, melanomas are more likely to start on the chest and back in men and on the legs in women. The neck and face are other common sites.<sup>1,7</sup> Though much less common, melanomas can occur in other parts of the body, including inside the eye (uveal melanoma) or inside the nose, mouth, throat, genital, or anal area (mucosal melanomas).<sup>1</sup>

### **Melanoma of the skin accounts for about 5% of all new cancer diagnoses.**

The American Cancer Society (ACS) estimates that 104,960 individuals will be diagnosed with melanoma of the skin in the United States in 2025 (about 70,550 in men and 44,410 in

women).<sup>1</sup> In Massachusetts, the ACS estimates that approximately 1,370 new cases of melanoma will be diagnosed in 2025.<sup>2</sup> On average, rates of new diagnoses of melanoma have been increasing by about 1% each year from 2012-2021.<sup>4</sup>

**Although the risk of melanoma increases with age, it is one of the most common cancers in people younger than age 30 (especially young women).**

Nearly 80% of individuals diagnosed with melanoma of the skin occur in those age 55 and older.<sup>4</sup> The average age at the time of diagnosis is 66.<sup>1,4</sup> In the United States, women are at higher risk than men before age 50, but then men are at higher risk than women after age 50.<sup>1,2,7</sup>

## Types of skin cancer

**Melanoma accounts for about 1% of all skin cancers diagnosed in the United States but causes most skin cancer deaths.**

Most skin tumors are benign (non-cancerous) and rarely, if ever, turn into cancer. For example, moles (nevi) are benign skin tumors that develop from melanocytes.<sup>1</sup>

By far, the most common malignant skin cancers are basal and squamous cell cancers. These non-melanoma skin cancers are usually less concerning than melanoma because they rarely spread (metastasize) to other parts of the body. Although melanoma is much less common, it is more dangerous as it is more likely to spread if not found and treated early.<sup>1</sup>

Other types of non-melanoma skin cancers account for less than 1% of all skin cancers and include Merkel cell carcinoma, cutaneous lymphoma, Kaposi sarcoma, and other types of sarcomas.<sup>1</sup>

**The remainder of this risk factor summary will focus on melanoma of the skin.**

For more information on basal and squamous cell skin cancers, visit the American Cancer Society website at [www.cancer.org](http://www.cancer.org).

**There are different types of skin melanoma.**

About 70% of melanomas are superficial spreading melanoma, which tend to initially grow outward on the surface of the skin and may be noticed as a dark spot that is changing shape or getting bigger. About 20% are nodular melanoma, which tend to grow down into deeper layers of the skin making them harder to find early. Other types include lentigo maligna melanoma, which tends to occur in older people and grow slowly in areas that get a lot of sun, and acral lentiginous melanoma (acral melanoma), which make up a large portion of melanomas in people with darker skin tones and occur in areas that don't get a lot of sun, such as the palms of the hands, soles of the feet, and under the nails.<sup>1,6</sup>

## Known risk factors

### Medical conditions

#### **Having many moles or dysplastic nevi (atypical moles):**

Although most moles will never cause any problems, a person with many moles or atypical moles are more likely to develop melanoma.<sup>1</sup> Atypical moles are often larger than normal moles and have irregular color and shape.<sup>1,5</sup>

#### **Personal history of melanoma:**

Someone who has already had melanoma has an increased risk of developing it again. One study found that melanoma survivors have an approximately 9-fold increased risk of developing subsequent melanoma compared to those who have never been diagnosed.<sup>8</sup> A history of non-melanoma skin cancer also increases your risk of melanoma.<sup>1</sup>

#### **Weakened immune system:**

Individuals with a suppressed immune system from certain diseases or medical treatments have an increased risk of developing melanoma. This may include organ transplant patients being treated with medications to help prevent rejection of the new organ and people infected with HIV.<sup>1</sup>

### Hereditary conditions

#### **Light skin color, freckling, and light hair:**

A major risk factor for all types of skin cancer is light skin color.<sup>1,6</sup> People with red or blond hair, blue or green eyes, or skin that freckles or burns easily are at increased risk. Overall, the lifetime risk of getting melanoma is about 3% (1 in 33) for White people, 0.5% (1 in 200) for Hispanic people, and 0.1% (1 in 1,000) for Black people. However, a person of any race or ethnicity can develop melanoma.<sup>1,5</sup>

#### **Family history of melanoma:**

About 10% of melanoma diagnoses occur in individuals who have a family history. Although the reason is uncertain, this may be due to a shared lifestyle of frequent sun exposure, a similar lighter skin complexion, inherited genetic changes, or a combination of factors.<sup>1,5,7</sup>

#### **Inherited gene mutations and conditions:**

The most common gene mutations that occur in families with high rates of melanoma are tumor suppressor genes, such as CDKN2A (also known as p16), CDK4, and BAP1. These genetic mutations, however, only account for a small proportion of families with a strong

history of melanoma.<sup>1,7</sup> Other, rare inherited conditions associated with an increased risk of melanoma include xeroderma pigmentosum (XP), Bloom syndrome, and Werner syndrome.<sup>7</sup> Individuals with XP have a reduced ability to repair UV damage and a high risk for developing melanoma and non-melanoma skin cancers at a young age.<sup>1,7</sup>

## **Lifestyle factors**

### **Exposure to ultraviolet (UV) rays from sunlight, tanning beds, or sun lamps:**

Most cases of melanoma are caused by overexposure to UV light, primarily from sunlight. The amount of UV exposure depends on the intensity of the radiation, length of time the skin was exposed, and whether the skin was protected with clothing or sunscreen. Tanning beds, tanning salons, and sun lamps are also sources of UV radiation. Individuals exposed to these light sources have an increased risk of melanoma.<sup>1,7</sup>

UV radiation is present from sunlight even in cold weather or on a cloudy day. People who live in areas that get high levels of UV have a higher risk of melanoma. In the United States, the UV index (a measure of the strength of the sun's rays) tends to be higher in southern states, California, and Hawaii as well as states at a high altitude, such as Utah and Colorado.<sup>3</sup>

### **History of sunburns:**

Many studies have linked the development of melanoma in the trunk, legs, and arms to frequent sunburn, especially in childhood. Even one bad sunburn as a child or teenager can increase your risk of melanoma. Individuals with fair skin who burn easily are at increased risk of skin damage.<sup>1</sup>

## **Possible risk factors**

### **Environmental exposures**

#### **Workplace exposure to polyvinyl chloride (PVC) or polychlorinated biphenyls (PCBs):**

Some research suggests that the risk of melanoma may be elevated among people who work with PCBs or vinyl chloride, which is commonly used in PVC manufacturing. Other workplace exposures with some evidence of an association with melanoma include but are not limited to agricultural, electrical, chemical, printing, oil refinery, pulp and paper and firefighting.<sup>7</sup>

## **Other risk factors that have been investigated**

Because sun exposure is a major risk factor for melanoma, it is extremely difficult to isolate other factors that may be associated with melanoma.

## References / more information

*This information sheet should not be considered exhaustive. For more information on other possible risk factors and health effects being researched, please see the resources below. Much of the information contained in this summary has been taken directly from these sources. This material is provided for informational purposes only and should not be considered as medical advice. Consult your physician if you have questions regarding a specific medical problem or condition.*

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