

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

Skin Cancer

There are three major types of skin cancer: basal cell carcinoma, squamous cell carcinoma, and melanoma.¹ While all skin cancer is serious, melanoma is the most deadly due to its ability to spread to other organs if not treated early.² People with fair skin, a history of sunburns, moles, a family history of skin cancer, a weakened immune system, or exposure to radiation are at an increased risk of developing skin cancer.¹ The best way to prevent skin cancer is to protect skin from overexposure to the sun, avoid tanning bed use, and perform self-exams to look for irregular or new spots on the skin.³ When diagnosed early, skin cancer is generally very treatable by surgical removal of the cancerous tissue in the outpatient setting, and often curable. When detected early, the five-year melanoma-specific survival rate is greater than 95%.^{4,5} Survival rates in later stage melanoma are lower, but new immunotherapies have improved outcomes.

1 in 5

Americans will develop skin cancer by the age of 70.⁴

Having 5 or more sunburns

doubles

your risk for melanoma.⁴

1% of all

skin cancer cases are invasive melanoma.⁶

Research Delivers Solutions

In the early 2000s, researchers determined that a gene called BRAF, which assists in directing cell growth, was mutated in the majority of melanoma tumors.⁹ This discovery led to the development of a class of life-saving drugs known as BRAF inhibitors for patients whose melanoma harbors this BRAF mutant gene. These drugs, first approved by the FDA in 2011, currently include vemurafenib, dabrafenib, and encorafenib, all of which directly target the BRAF protein.¹⁰

Cancer immunotherapies stimulate a person's immune system in order to fight off cancer.¹¹ These therapies include PD-1 inhibitors, CTLA-4 inhibitors, IL2, oncolytic virus therapy, and others, all of which originated in basic research.¹¹ For example, in 1996, researchers determined that blocking CTLA-4, a protein which suppresses the body's immune response, is able to "release the brakes" on the patient's immune system allowing it to fight the melanoma cells.¹² Researchers used this knowledge to conduct clinical trials for ipilimumab, a drug that blocks CTLA-4.¹³ Ipilimumab improved overall patient survival and the drug was first approved by the FDA in 2011.^{11,13} More recently, another of these checkpoint inhibitors, anti-PD-1, has similarly been shown to effectively "release the brakes" of the immune system. Since 2014, it has also been approved by the FDA for patients with unresectable and metastatic melanoma. Together with targeted therapies, cancer immunotherapies have revolutionized the care of patients with advanced melanoma and have since been studied for many other cancers.

COST

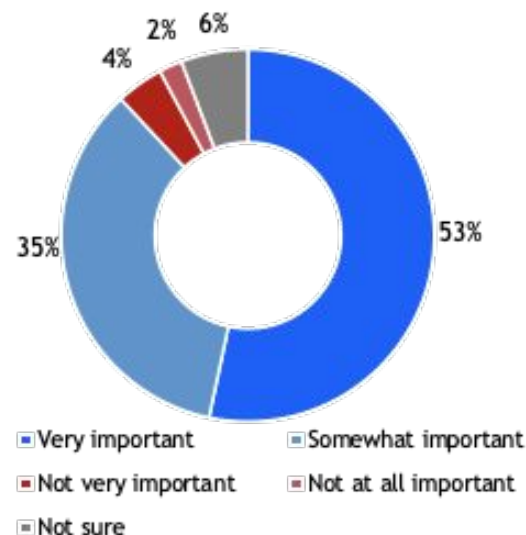
\$8.1 billion:

The average cost of treating skin cancer from 2007 to 2011.⁷

\$343.1 million:

The estimated annual direct cost of medical care for skin cancer attributable to indoor tanning.⁸

How important is it for the President and Congress to assign a high priority to ensuring faster medical progress?



Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2020

Skin Cancer

Then. Now. Imagine.

THEN

Before 2011, the annual rate of melanoma deaths in the U.S. per 100,000 people was 2.7%.¹⁴

NOW

With the advent of immunotherapy drugs approved by the FDA in 2011, the annual rate of melanoma deaths in the U.S. per 100,000 people decreased to 2%.¹⁴

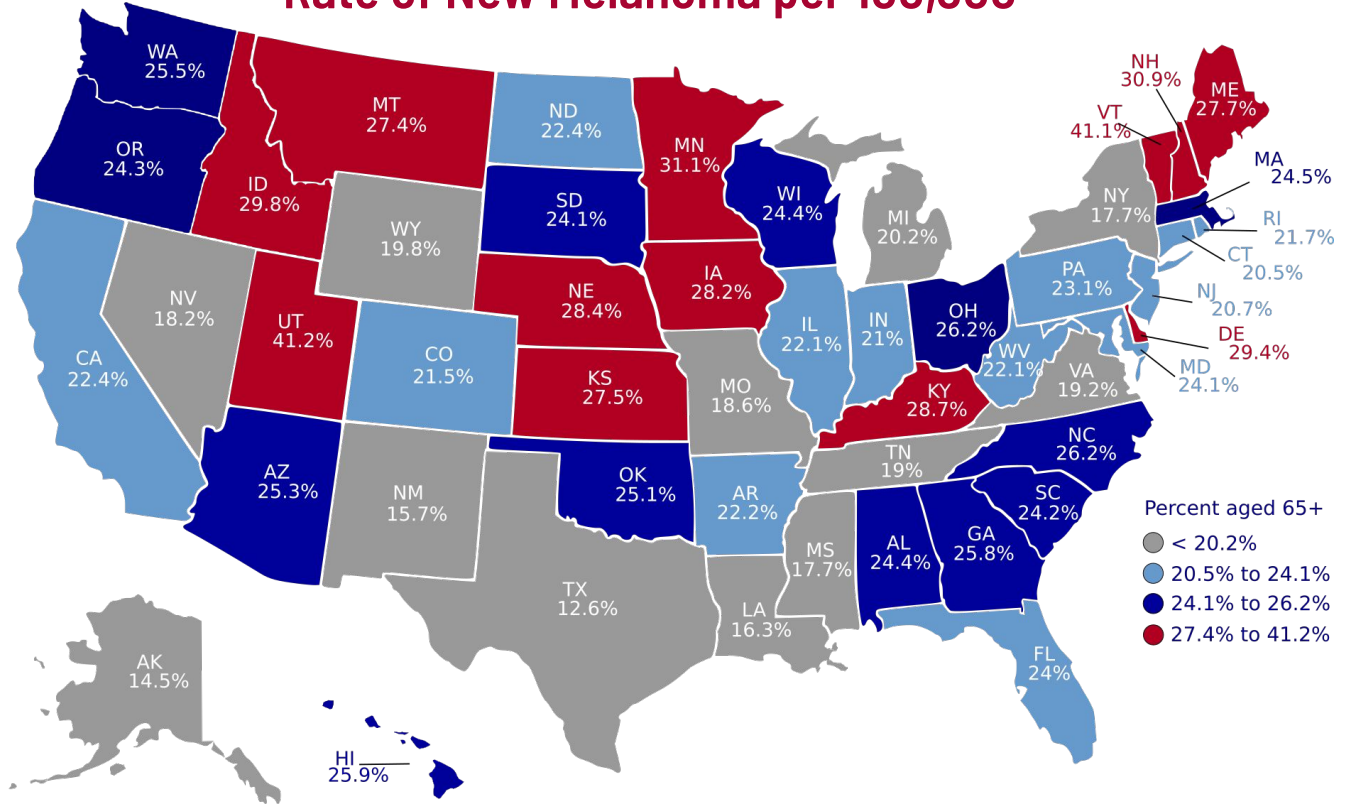
IMAGINE

A 100% survival rate for melanoma.

Spotlight: What distinguishes the different types of skin cancer?

Each of the three main types of skin cancer originates in the skin cell for which the skin cancer subtype is named. Basal cell carcinoma is the most prevalent form of skin cancer followed by squamous cell carcinoma.¹⁵ Melanoma is the least common of the three, yet is potentially the deadliest form of skin cancer.¹⁶ There are also rare forms of skin cancer such as Kaposi sarcoma, Merkel cell carcinoma, and sebaceous gland carcinoma that originate in the skin's blood vessels, Merkel cells (cross between a nerve cell and a hormone-producing cell), and oil glands, respectively.¹⁷ These less common forms of skin cancer account for less than 1% of all skin cancers.¹⁵

Rate of New Melanoma per 100,000¹⁴



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