

Skin cancer prevention across diverse skin types

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Conflict of Interest

- Member, AAD Skin of Color and Skin Cancer Work Group

Skin cancer prevention in skin of color is challenging

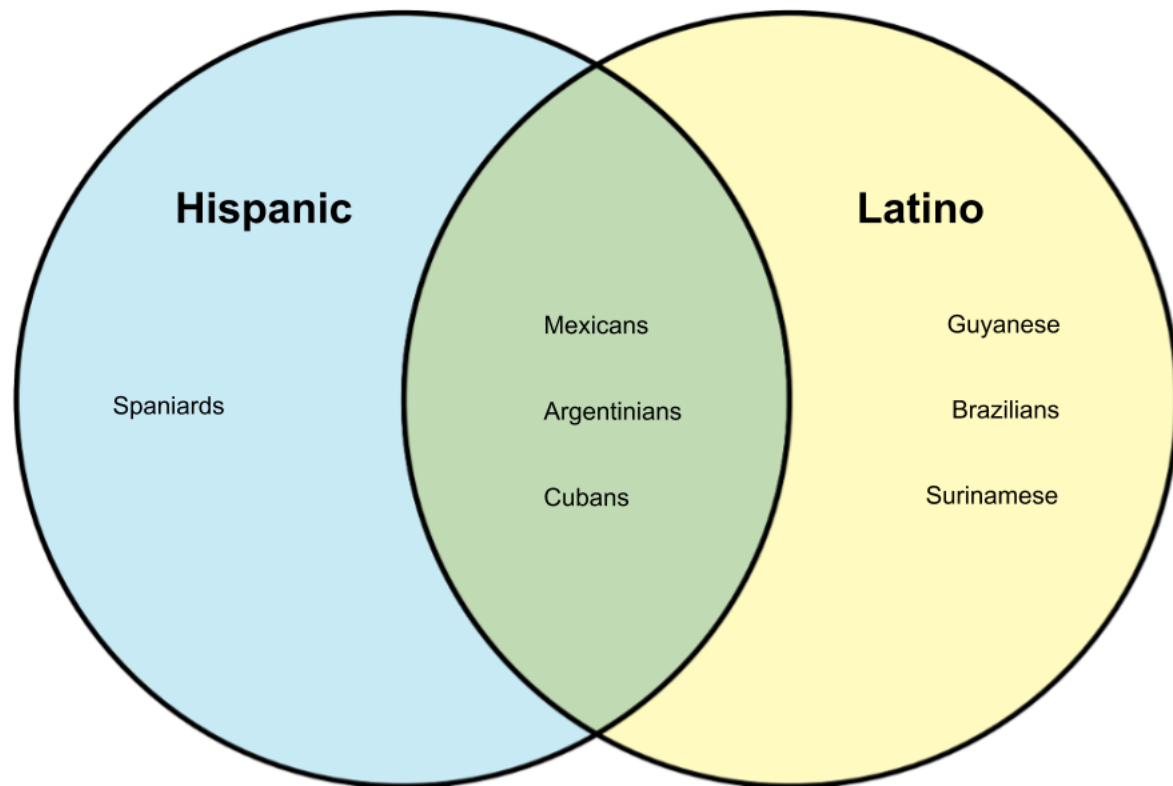
1. Incidence is much, much lower in darker skin types.
2. When skin cancer develops it is often later, and clinical outcomes much worse.

What is “Skin of Color”?

- Identifies individuals of racial groups darker than Caucasian.
- Patients with skin of color have distinctive cutaneous/hair characteristics, disorders, and skin practices.
- Their diversity makes it hard for skin cancer messaging.



Race \neq Ethnicity



Indian



Indian

Cancer registries don't collect skin type data

Compare Statistics by Data Type

Step 1: Select a data type, statistic and population of interest

Statistic Type Age-Adjusted Rates

Year Range 1992-2015

Cancer Site Melanoma of the Skin

Sub-site N/A

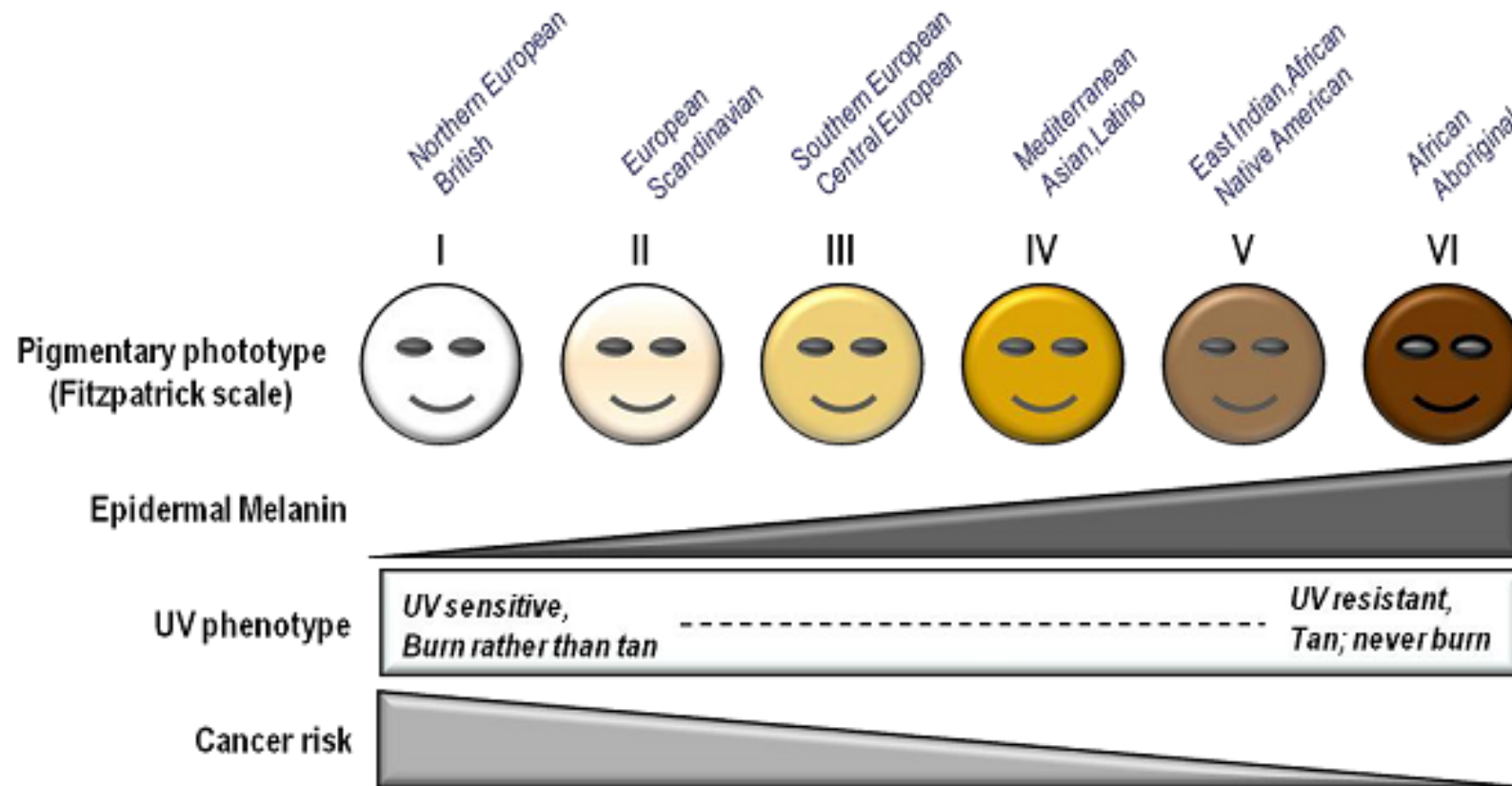
Race/Ethnicity

Sex

Age Range All Ages

- ✓ Choose Race/Ethnicity
- All Races (includes Hispanic)
- White (includes Hispanic)
- Black (includes Hispanic)
- Amer. Indian / AK Native (includes Hispanic)
- Asian / Pacific Islander (includes Hispanic)
- Hispanic (any race)
- Non-Hispanic White

Fitzpatrick skin type is related to skin cancer risk



Basic skin cancer facts in skin of color

- Whites are 70x more likely to develop skin cancer.
- Low incidence is likely due to increased epidermal melanin.
- Inherent protection in dark skin up to SPF 15.
- UV dose required to produce erythema is up to 33x greater in Blacks than whites.

These have implications for epidemiology/prevention of skin cancer in skin of color!

Epidemiology of Skin Cancer in Skin of Color



BCC incidence rates vary by racial group

- Rate per 100,000 population:
 - 1-2 Blacks
 - 5-6 Chinese
 - 15-17 Japanese
 - 50-90 Hispanics
 - 1500-2000 Non-Hispanic White

Risk Factors for developing BCC in Skin of Color

- Albinism
- Scars
- Ulcers
- Chronic infections
- Arsenic ingestion
- Immunosuppression
- Previous radiation treatment
- Genetic disorders xeroderma pigmentosum
- Trauma (physical and thermal)
- UV Radiation

SCC incidence rates vary by racial group

- Rate per 100,000 population:
 - 3 African American
 - 18-19 Chinese
 - 23 Japanese (Hawaii)
 - 15-30 Hispanics
 - 1000-1500 Non-Hispanic White



Risk Factors for developing SCC in Skin of Color



- Albinism
- Chronic leg ulcers
- Chronic nonhealing wounds
- Discoid lupus
- Lichen Planus
- UV light
- Ionizing radiation
- Genetic syndrome
- Immunosuppression (transplant, AIDS)

Melanoma incidence rates vary by racial group

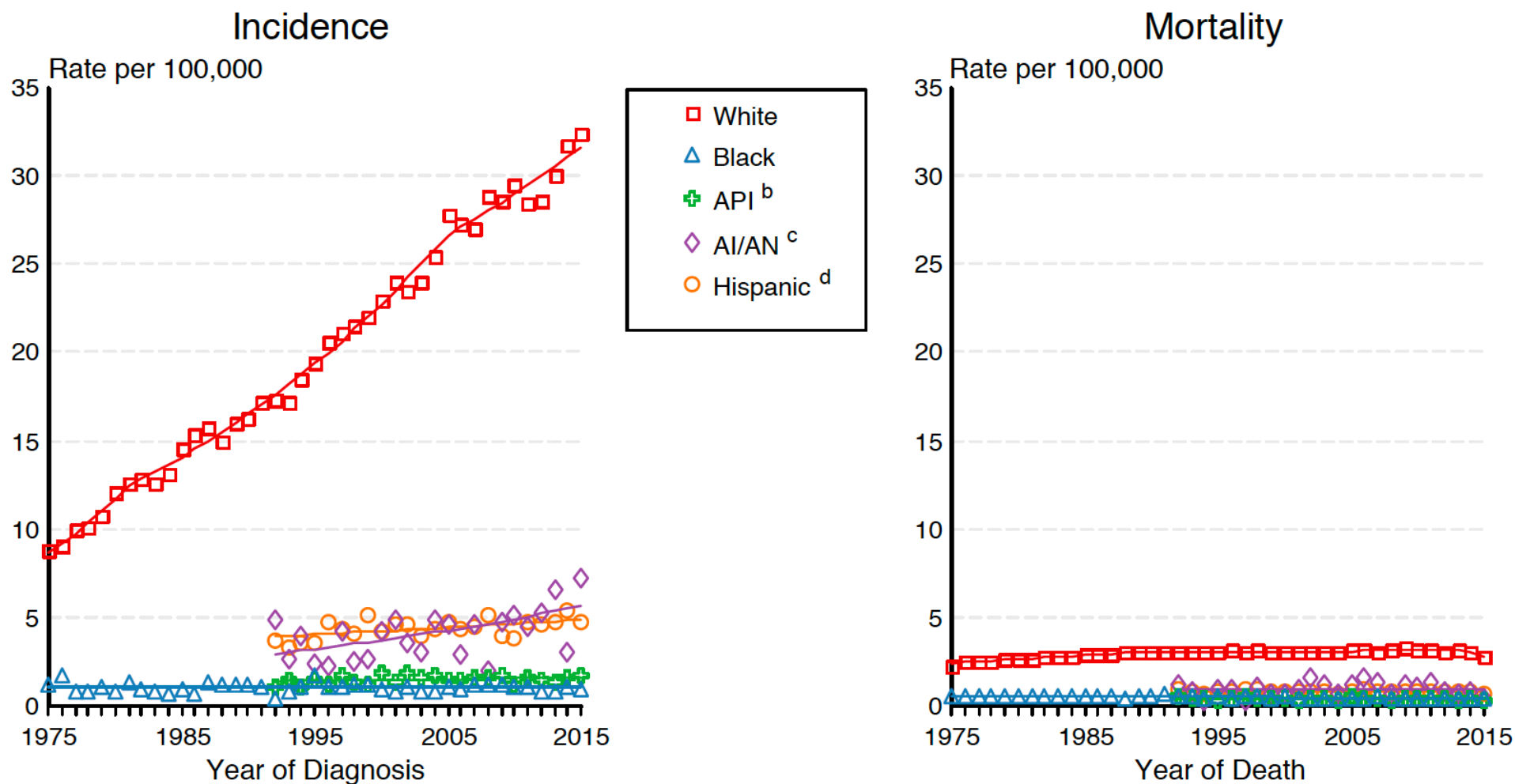


- Rate per 100,000 population:
 - 0.9 African American
 - 1.3 Asian/Pacific Islander
 - 4.9 Hispanics
 - 5.5 American Indian/Alaska Native
 - 32.3 Non-Hispanic White

SEER Incidence and US Death Rates^a Melanoma of the Skin, Both Sexes

Joinpoint Analyses for Whites and Blacks from 1975-2015

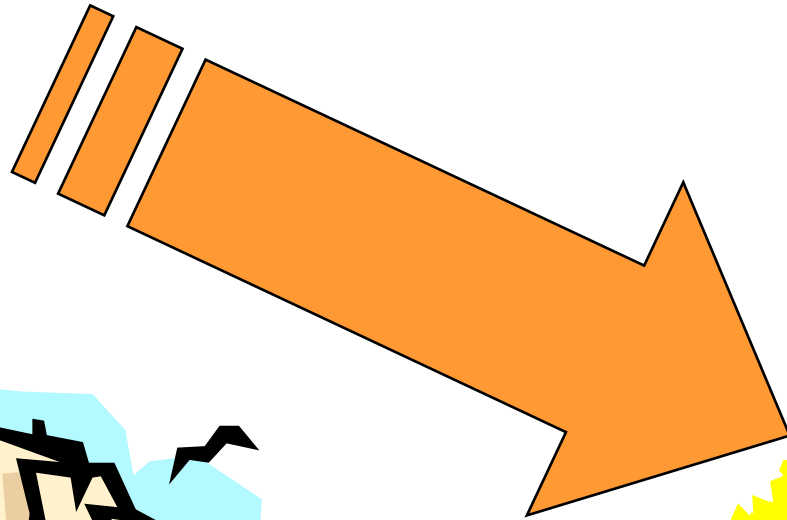
and for Asian/Pacific Islanders, American Indians/Alaska Natives and Hispanics from 1992-2015





High levels of **ambient sunlight are associated with higher rates of skin cancer**

Colonial Migration



1800s



Is there a relationship between
UV exposure and skin cancer in
skin of color?



UV Exposure and Nonmelanoma Skin Cancer

(Basal Cell Carcinoma and Squamous Cell Carcinoma)

There are very few studies of the association of sun exposure and NMSC

- Halder et al reviewing 43 cases of SCC over 40 years found most (65%) in non-sun exposed sites in Blacks.
- McCall et al reviewed 35 cases of SCC over 5 years found most (69%) in non-sun exposed sites in Blacks.
- Mora et al reviewed 148 cases of BCC over 31 years found most on the head and neck in Blacks.
- Asuquo et al (in Nigeria) reviewed 5 cases of BCC over 4 years found most (67%) on the head and neck.

UV association with NMSC continued...

- Incidence of BCC is 2 times higher among ethnic Japanese in Hawaii, than of Japanese in Japan, suggesting UVR.
- A small study of 23 Blacks with BCC and 291 Blacks chosen randomly:
 - 60% of BCC group had fair or olive skin.
 - 10% of control group had fair or olive skin.
 - Poor study design.

Nonmelanoma Skin Cancer in Nonwhite Organ Transplant Recipients

Ellen N. Pritchett, MD, MPH; Alden Doyle, MD, MPH; Christine M. Shaver, MD; Brett Miller, MD;
Mark Abdelmalek, MD; Carrie Ann Cusack, MD; Gregory E. Malat, PharmD; Christina Lee Chung, MD

Table 4. Skin Cancer Type and Location by Race

Type	No. (%)		
	Black	Asian	Hispanic
SCCIS			
Total No.	7	3	3
HPV associated	6 (85.7)	1 (33.3)	2 (66.7)
Sun-exposed site	0	2 (66.7)	1 (33.3)
Non-sun-exposed site	7 (100)	1 (33.3)	2 (66.7)
SCC			
Total No.	0	1	0
Sun-exposed site	NA	1 (100)	NA
Non-sun-exposed site	NA	NA	NA
BCC			
Total No.	2	1	1
Sun-exposed site	1 (50.0)	1 (100)	NA
Non-sun-exposed site	1 (50.0)	NA	1 (100)

Among 259 total patients

Average 7.8 years (2-21) post transplant

- Black 190 (73.4)
- Hispanic 33 (12.7)
- Asian 35 (13.5)
- Pacific Islander 1 (0.4)

Even among these high-risk individuals UV exposure seems less important.

UV Exposure and Melanoma

Meta-analysis of risk factors for cutaneous melanoma: II. Sun exposure

Sara Gandini ^{a,*}, Francesco Sera ^b, Maria Sofia Cattaruzza ^c, Paolo Pasquini ^d,
Orietta Picconi ^d, Peter Boyle ^e, Carmelo Francesco Melchi ^f

- 57 published studies (before 2002) on the association of UV exposure and melanoma.
- 2 included Black people
- 1 included Hispanic people

Its hard to make a case of a relationship without inclusion of darker skin types!

More studies have been done
since this meta-analysis...

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UV Exposure and the Risk of Cutaneous Melanoma in Skin of Color

A Systematic Review

Fabiana C. P. S. Lopes, MD¹; Marc G. Sleiman, BS^{2,3}; Kate Sebastian, RN, MPH¹; Roxanne Bogucka, MLIS, AHIP⁴; Elizabeth A. Jacobs, MD, MAPP⁵; Adewole S. Adamson, MD, MPP^{1,2,6}

- 13 studies met inclusion criteria
- 2 studies showed an association (one among Black men, one among Hispanic men)
- Moderate to low quality evidence

Association of Surface Ultraviolet B Radiation Levels with Melanoma and Nonmelanoma Skin Cancer in United States Blacks

Gene Pennello,¹ Susan Devesa, and Mitchell Gail

United States Food and Drug Administration, Center for Radiological Devices and Health, Rockville, Maryland 20850 [G. P.], and National Cancer Institute, Division of Cancer Epidemiology and Genetics, Rockville, Maryland 20892 [S. D., M. G.].

Abstract

with UVB radiation exposure from sunlight, decreasing latitude, and decreasing level of skin pigmentation (1–5). Furthermore, blacks have much lower melanoma, BCC, and SCC incidence rates than whites (6, 7), and the dose of UV radiation required to produce a minimum perceptible erythema has been estimated to be 6–33 times greater in blacks than in whites (8, 9).

Some previous work suggests that sunlight exposure and

- Using SEER database examining the association of surface-levels of UVB with melanoma incidence and mortality in blacks between 1973 and 1994.
- **No association** between melanoma incidence and UVB exposure.

UV Radiation, Latitude, and Melanoma in US Hispanics and Blacks

Shasa Hu, MD; Fangchao Ma, MD, PhD; Fernando Collado-Mesa, MD; Robert S. Kirsner, MD

Table 3. Correlation Between Age-Adjusted (2000 US Population) Melanoma Incidence Rates and Mean Annual UV Index and Latitude of Residency by Race/Ethnicity and Sex

	Female			Male		
	Black	Hispanic	White	Black	Hispanic	White
Correlation coefficient with UV index (<i>P</i> value)	0.35 (.49)	0.56 (.24)	0.57 (.32)	0.93 (.01)	0.41 (.42)	0.65 (.24)
Correlation coefficient with latitude (<i>P</i> value)	-0.44 (.38)	-0.22 (.68)	-0.21 (.74)	-0.8 (.05)	-0.33 (.52)	-0.32 (.61)

Only significant association was among black men

Association of UV Index, Latitude, and Melanoma Incidence in Nonwhite Populations— US Surveillance, Epidemiology, and End Results (SEER) Program, 1992 to 2001

Melody J. Eide, MD, MPH; Martin A. Weinstock, MD, PhD

Table 3. Correlation of Age-Adjusted Melanoma Incidence (2000 US Standard) in the SEER-11 Program From 1992 to 2001 With the Registry's Mean Annual UV Index (1997) or Latitude by Race, Ethnicity, and Sex

Variable	Pearson Correlation Coefficient (P Value)	
	Melanoma Incidence With UV Exposure	Melanoma Incidence With Latitude
Men and Women		
White, non-Hispanic	0.85 (.001)	−0.85 (.001)
White, Hispanic	−0.43 (.19)	0.37 (.27)
Black	−0.53 (.10)	0.53 (.09)
Native American	0.42 (.20)	−0.38 (.25)
Asian/Pacific Islander	−0.28 (.41)	0.19 (.57)
Men*		
White, non-Hispanic	0.86 (<.001)	−0.88 (<.001)
White, Hispanic	−0.46 (.15)	0.35 (.29)
Black	−0.42 (.19)	0.40 (.22)
Women*		
White, non-Hispanic	0.80 (.003)	−0.80 (.004)
White, Hispanic	−0.38 (.25)	0.34 (.31)
Black	−0.16 (.63)	0.17 (.61)

No association
between melanoma
and UV Index in skin
of color.

Research Article

Risk Factors for Malignant Melanoma in White and Non-White/Non-African American Populations: The Multiethnic Cohort

Sungshim Lani Park¹, Loïc Le Marchand¹, Lynne R. Wilkens¹, Laurence N. Kolonel¹, Brian E. Henderson², Zuo-Feng Zhang^{3,4}, and Veronica Wendy Setiawan²

A multiethnic cohort study examined risk factors for melanoma in whites compared to “nonwhite/multiracials,” defined as a group that includes Latino American, Japanese American, or Native American, but excludes African American.

**Risk Factors NOT
Associated with melanoma**

- Ever-sunburned
- Lifetime number of sunburns
- Age at sunburn
- Family history of melanoma

High Birth Weight, Early UV Exposure, and Melanoma Risk in Children, Adolescents, and Young Adults

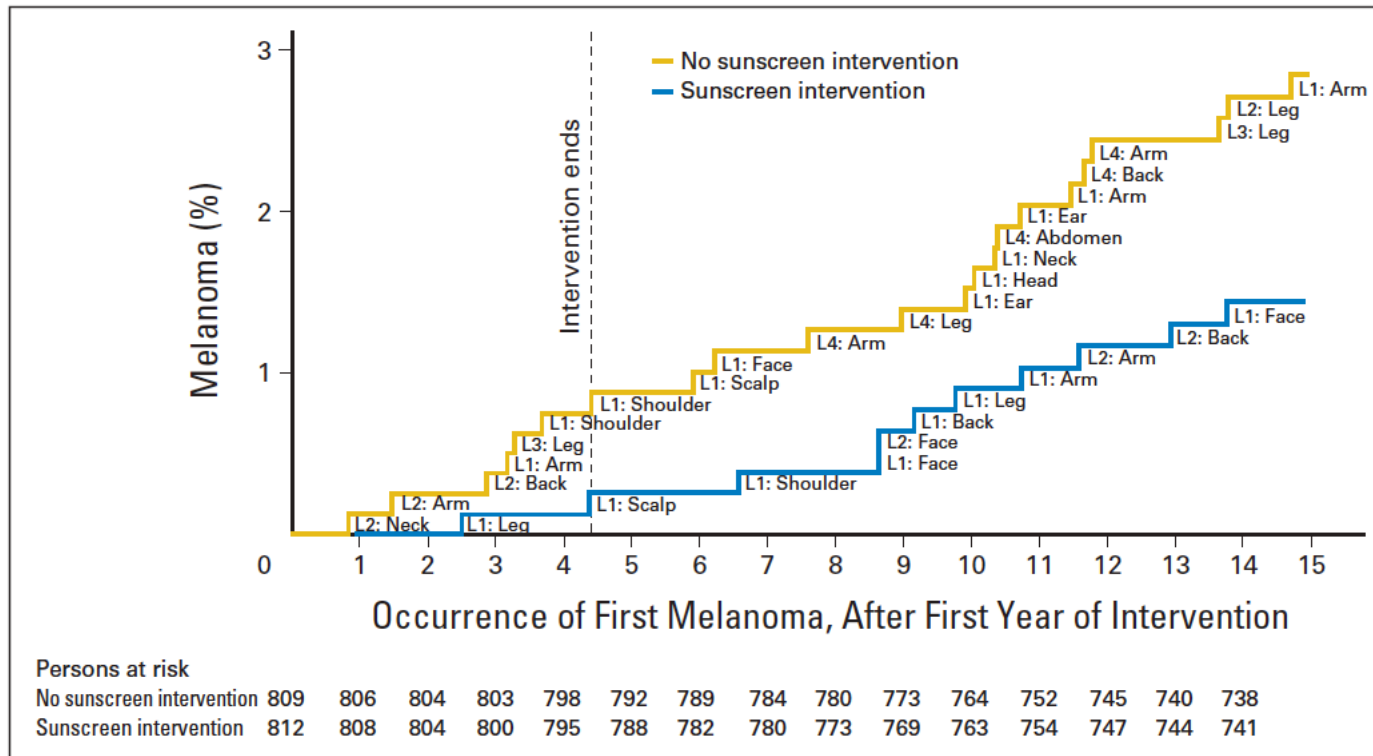
*Katherine Y. Wojcik,^a Loraine A. Escobedo,^b Ashley Wysong,^c Julia E. Heck,^d Beate Ritz,^d
Ann S. Hamilton,^a Joel Milam,^a and Myles G. Cockburn^{a,e-g}*

- Population based study in California using state cancer registry
- Early UV exposure was associated with melanoma risk in non-Hispanic white children, adolescents, and young adults
- **No association among Hispanics**

Does Sunscreen reduce melanoma risk in skin of color?

- Only one clinical trial examined the role of sunscreen and melanoma.
 - 1,621 Queensland, Australia residents (age 25 – 75) randomized to sunscreen daily (arms and face) vs discretionary sunscreen use.
 - They were followed from 1992 – 2006.

Randomized Trial of Sunscreen for Melanoma prevention



- Melanoma incidence was reduced by 50%.
- However, not statistically significantly.
- At 10 year follow-up (HR 0.5 95% CI 0.24-1.02, p=0.051)
- Sunscreen application was only to face, arms.

No dark-skinned people this study!!!

USPSTF Recommendations (2018): Behavioral Counseling

Population	Recommendation	Grade
Young adults, adolescents, children, and parents of young children	Counsel young adults, adolescents, children, and parents of young children about minimizing exposure to ultraviolet (UV) radiation for persons aged 6 months to 24 years with fair skin types	B
Adults older than 24 years with fair skin types	Selectively counsel patients over 24 years old depending upon risk factors for skin cancer	C
Adults	Insufficient evidence to inform a recommendation	I

Behavioral Counseling is not recommended for skin of color!

Summary

- A significant proportion of skin cancers in skin of color occur on non-sun exposed areas of the body.
- Sun protection is uncertain to reduce the burden of skin cancer in most people with skin of color.
- Need better research into predisposing factors.

Thank you



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