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Trends in Melanoma Incidence Among Non-Hispanic Whites in the United States, 2005 to 2014

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Skin cancer is a major public health concern in the United States.[1] Melanoma, the third most common type of skin cancer, is diagnosed in over 70000 individuals and causes more than 9000 deaths each year.[2] Melanoma is often caused, in part, by over-exposure to ultraviolet (UV) radiation from the sun and indoor tanning devices, and incidence rates are highest among non- Hispanic whites (NHW).[1] Previous reports[3] have indicated that melanoma incidence rates were increasing among NHW adults of all ages, but analyses of more recent data by age group are warranted. This study provides the latest national data on melanoma incidence trends among NHWs by 10-year age groups.

Methods

We analyzed data from the Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries (NPCR) and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program that met United States Cancer Statistics publication criteria.[2] The data covered approximately 99.1% of the US population. We limited analyses to NHWs 15 years or older. We calculated melanoma incidence rates and average annual counts by 10-year age groups from January 2010 to December 2014 and presented rates per 100000 persons, age-adjusted to the 2000 US standard population using 19 age groups.[4] We calculated average annual percent change in melanoma incidence rates by 10-year age groups from January 2005 to December 2014; CDC Human Subject institutional review

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Study concept and design: All authors.
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board (IRB) approval was not required for this analysis because the project met the CDC NPCR research analysis requirements, which are approved by the CDC's IRB.

Results

From January 2010 to December 2014, a total of 192 979 melanomas were diagnosed among NHW males 15 years or older, and 131 976 melanomas were diagnosed among NHW females 15 years or older. More than 70%of melanomas were diagnosed among individuals 55 years or older. Melanoma incidence rates among NHW males ranged from 2.0 per 100000 among those aged 15 to 24 years to 198.3 per 100000 among those older than 85 years (Table). Among NHW females, incidence rates ranged from 4.5 per 100000 among those aged 15 to 24 years to 60.9 among those older than 85 years.

Among both NHW males and females 15 years or older, we observed statistically significant increases in melanoma incidence from January 2005 to December 2014. Among males and females combined and among males only, melanoma incidence decreased significantly among those aged 15 to 24, 25 to 34, and 35 to 44 years and increased significantly among those aged 55 to 64, 65 to 74, 75 to 84, and older than 85 years. Among females only, melanoma incidence decreased significantly among those aged 15 to 24 and 25 to 34 years and increased significantly among those aged 45 to 54, 55 to 64, 65 to 74, 75 to 84, and older than 85 years.

Discussion

Melanoma incidence rates have increased in recent years among NHWs, particularly men older than 54 years and women older than 44 years. In contrast, rates have decreased slightly among younger NHWs (men younger than 45 years and women younger than 35 years). National surveillance data indicate that use of indoor tanning, which exposes users to intense levels of UV radiation, and the prevalence of sunburn, a biological indicator of over exposure to UV radiation, have decreased in recent years, particularly among adolescents and young adults.[5,6] Decreases in indoor tanning and sun burn would be expected to result in decreases in melanoma incidence rates over time. Although primary skin cancer prevention efforts have often focused on children, adolescents, and young adults, the steady increase in melanoma incidence rates among older adults indicates a need for efforts that promote skin cancer preventive behaviors throughout adulthood. Such efforts could focus on groups at high risk, such as outdoor workers and intentional tanners. Ongoing surveillance of melanoma incidence is warranted to monitor progress toward national skin cancer prevention goals and guide prevention strategies.

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Table

Average Annual Counts and Incidence Rates[a] of Melanoma From January 2010 to December 2014 and Trends Over Time From January 2005 to December 2014 by Age Among Non-Hispanic White Males and Females

	Males and Females			Males			Females		
Age, y	AAC, No. (%)	Rate (95% CI)	AAPC	AAC, No. (%)	Rate (95% CI)	AAPC	AAC, No. (%)	Rate (95% CI)	AAPC
≥15	64 991.0 (100)	33.3 (33.2–33.5)	1.4[b]	38 595.8 (59.4)	41.7 (41.5–41.9)	1.6[b]	26 395.2 (40.6)	27.2 (27.0–27.3)	1.0[b]
15–24	832.6 (1.3)	3.2 (3.1–3.3)	−5.1[b]	256.6 (0.7)	2.0 (1.9–2.1)	−4.0[b]	576.0 (2.2)	4.5 (4.4–4.7)	−5.5[b]
25–34	2923.4 (4.5)	12.1 (11.9–12.3)	−1.7[b]	1007.2 (2.6)	8.3 (8.0–8.5)	−1.9[b]	1916.2 (7.3)	15.9 (15.6–16.3)	−1.5[b]
35–44	5023.4 (7.7)	20.5 (20.2–20.7)	−0.5[b]	2113.4 (5.5)	17.1 (16.8–17.4)	−0.7[b]	2910.0 (11.0)	23.8 (23.5–24.2)	−0.4
45–54	9836.2 (15.1)	32.4 (32.1–32.7)	0.4	4979.4 (12.9)	32.8 (32.4–33.3)	−0.2	4856.8 (18.4)	32.0 (31.6–32.4)	1.0[b]
55–64	14 371.8 (22.1)	50.4 (50.1–50.8)	1.3[b]	8803.8 (22.8)	63.2 (62.6–63.8)	0.7[b]	5568.0 (21.1)	38.3 (37.9–38.8)	2.3[b]
65–74	15 056.0 (23.2)	82.0 (81.5–82.6)	2.5[b]	10 148.8 (26.3)	117.3 (116.3–118.4)	2.3[b]	4907.2 (18.6)	50.5 (49.9–51.2)	2.7[b]
75–84	11 726.8 (18.0)	109.9 (109.0–110.8)	3.6[b]	8038.4 (20.8)	174.6 (172.9–176.3)	3.4[b]	3688.4 (14.0)	60.8 (59.9–61.7)	2.9[b]
>85	5220.8 (8.0)	107.0 (105.7–108.3)	4.6[b]	3248.2 (8.4)	198.3 (195.3–201.4)	4.4[b]	1972.6 (7.5)	60.9 (59.7–62.1)	3.5[b]

Abbreviations: AAC, average annual count; AAPC, average annual percent change.

[a] Incidence data are from population areas that met United States Cancer Statistics publication criteria (https://www.cdc.gov/cancer/npcr/uscs/technical_notes/criteria.htm) for January 2010 to December 2014 (for counts and rates) and January 2005 to December 2014 (for AAPCs) and were reported to the National Program of Cancer Registries (Centers for Disease Control and Prevention) and the Surveillance, Epidemiology, and End Results Program (National Cancer Institute), which cover about 99.1%of the US population. Rates are per 100 000 and age-adjusted to the 2000 US standard population.

[b] APC is statistically significant ($P < .05$).