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## Merkel cell carcinoma incidence, trends, and survival rates among adults aged 50 years from United States Cancer Statistics

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*To the Editor:* Merkel cell carcinoma (MCC) is a rare form of skin cancer that frequently metastasizes and is associated with low survival rates.<sup>1</sup> A recent examination of data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program—specifically SEER-18 data, which captures 28% of the US population—revealed an increase in MCC incidence rates during 2000–2013.<sup>2</sup> For the current study, we used data from the United States Cancer Statistics, which combines state cancer registry data from the Centers for Disease Control and Prevention's National Program of Cancer Registries and the SEER program (<https://www.cdc.gov/cancer/uscs/about/index.htm>), to examine patterns in MCC incidence and survival by sex, age, race/ethnicity, tumor stage, and anatomic site.

We analyzed data from the United States Cancer Statistics Public Use Database, which covered 100.0% of the US population during 2006–2015.<sup>3</sup> Survival data were only available from 39 states participating in the National Program of Cancer Registries data set and covered 81.1% of the US population during 2005–2014, the most recent years for which survival data is available. Analyses were limited to cases 50 years because few cases are diagnosed before the age of 50 years (438 cases or 2%), limiting statistical reliability of analyses. We calculated MCC incidence rates per 100,000 persons and annual percent change for the years 2006–2015, age-adjusted to the 2000 US population standard. Five-year relative survival rates for the years 2005–2014 were calculated using the actuarial method.

During 2006–2015, there were an average of 1972 MCC cases/year (19,722 cases total) (Table I). MCC incidence rates increased with increasing age among men and women and were higher among non-Hispanic whites (2.5/100,000 persons), localized stage (1.2/100,000 persons), and tumors located on the head and neck (0.9/100,000 persons). The annual

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percent change in incidence rates was highest among 70–74-year-olds (4.1%), non-Hispanic whites (2.7%), distant stage tumors (5.0%), and tumors of the upper extremities (2.6%). Five-year relative survival rate was 55.1% among men and 67.7% among women (Table II). Survival rates decreased with later stage and older age at diagnosis and were lowest among non-Hispanic blacks (54.1%) and tumors of the trunk (49.0%).

Consistent with the findings by Paulson et al,<sup>2</sup> these results indicate an increase in MCC incidence rates during 2006–2015 overall, particularly among men >70 years of age, women aged 65–74 years, and non-Hispanic whites. The 5-year relative survival rates for MCC ranged from 35.2% among men >85 years of age to 82.9% among women 60–64 years of age and was lower for localized stage (72.5%) than malignant melanoma (83.6%–94.1% among age groups and 97.1% for localized stage).<sup>3</sup>

Using cancer registry data that cover the entire US population, we observed an increasing trend of MCC incidence rates across all stages during 2006–2015. The observed increasing trends among older adults might be related to changes in known MCC risk factors over time at a population level.<sup>4</sup> Such factors include ultraviolet exposure and a weakened immune system.<sup>4</sup> Further research into other causes, prevention, and treatment of MCC is warranted to address the increasing trends and lower survival rates in this type of cancer.

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Table 1.

Occurrence of Merkel cell carcinoma, 2006–2015

Category	All			Males			Females		
	N (%)	IR (95% CI) per 100,000 persons	APC*	N (%)	IR (95% CI) per 100,000 persons	APC*	N (%)	IR (95% CI) per 100,000 persons	APC*
Overall, ages 50 y	19,722 (100.0)	2.1 (2.1–2.2)	2.3 <sup>†</sup>	12,615 (100.0)	3.3 (3.2–3.3)	2.5 <sup>†</sup>	7107 (100.0)	1.3 (1.3–1.3)	1.3
Age, y									
50–54	504 (2.6)	0.2 (0.2–0.2)	0.1	315 (2.5)	0.3 (0.3–0.3)	1.0	189 (2.7)	0.2 (0.1–0.2)	‡
55–59	991 (5.0)	0.5 (0.5–0.5)	–1.0	609 (4.8)	0.6 (0.6–0.7)	–2.9 <sup>†</sup>	382 (5.4)	0.4 (0.3–0.4)	2.1
60–64	1529 (7.8)	0.9 (0.9–1.0)	0	1001 (7.9)	1.2 (1.2–1.3)	0.8	528 (7.4)	0.6 (0.6–0.7)	–1.5
65–69	2225 (11.3)	1.7 (1.6–1.8)	3.3 <sup>†</sup>	1478 (11.7)	2.4 (2.3–2.5)	3.1	747 (10.5)	1.1 (1.0–1.2)	3.5 <sup>†</sup>
70–74	2743 (13.9)	2.8 (2.7–2.9)	4.1 <sup>†</sup>	1863 (14.8)	4.2 (4.0–4.4)	4.5 <sup>†</sup>	880 (12.4)	1.7 (1.6–1.8)	2.9 <sup>†</sup>
75–79	3463 (17.6)	4.6 (4.4–4.7)	1.7	2315 (18.4)	7.0 (6.8–7.3)	2.1 <sup>†</sup>	1148 (16.2)	2.7 (2.5–2.9)	0.3
80–84	3681 (18.7)	6.4 (6.2–6.6)	2.7 <sup>†</sup>	2402 (19.0)	10.4 (10.0–10.8)	3.1 <sup>†</sup>	1279 (18.0)	3.7 (3.5–3.9)	1.2
85	4586 (23.3)	8.2 (7.9–8.4)	2.3 <sup>†</sup>	2632 (20.9)	14.2 (13.7–14.8)	2.4 <sup>†</sup>	1954 (27.5)	5.2 (5.0–5.4)	1.3
Stage									
Localized	10,790 (61.9)	1.2 (1.1–1.2)	2.1 <sup>†</sup>	6586 (59.1)	1.7 (1.7–1.8)	2.3 <sup>†</sup>	4204 (66.8)	0.8 (0.8–0.8)	1.4
Regional	4795 (27.5)	0.5 (0.5–0.5)	3.3 <sup>†</sup>	3224 (28.9)	0.8 (0.8–0.8)	3.3 <sup>†</sup>	1571 (25.0)	0.3 (0.3–0.3)	2.8
Distant	1850 (10.6)	0.2 (0.2–0.2)	5.0 <sup>†</sup>	1333 (12.0)	0.3 (0.3–0.4)	5.9 <sup>†</sup>	517 (8.2)	0.1 (0.1–0.1)	0.9
Race/ethnicity <sup>§</sup>									
Non-Hispanic white	18,368 (95.0)	2.5 (2.4–2.5)	2.7 <sup>†</sup>	11,933 (96.3)	3.8 (3.8–3.9)	2.9 <sup>†</sup>	6435 (92.7)	1.5 (1.5–1.5)	1.6
Non-Hispanic black	248 (1.3)	0.3 (0.3–0.3)	3.3	112 (0.9)	0.4 (0.3–0.4)	‡	136 (2.0)	0.3 (0.2–0.3)	‡
Hispanic, all races	721 (3.7)	1.1 (1.0–1.2)	–0.1	351 (2.8)	1.3 (1.1–1.4)	0.3	370 (5.3)	1.0 (0.9–1.1)	–0.6
Anatomic site									
Head and neck	8426 (47.6)	0.9 (0.9–0.9)	2.4 <sup>†</sup>	5515 (49.2)	1.5 (1.5–1.5)	2.4 <sup>†</sup>	2911 (44.9)	0.5 (0.5–0.5)	1.6
Trunk	1889 (10.7)	0.2 (0.2–0.2)	1.0	1372 (12.2)	0.3 (0.3–0.4)	2.0	517 (8.0)	0.1 (0.1–0.1)	–2.4
Upper extremity	4637 (26.2)	0.5 (0.5–0.5)	2.6 <sup>†</sup>	2918 (26.0)	0.7 (0.7–0.8)	2.4 <sup>†</sup>	1719 (26.5)	0.3 (0.3–0.3)	2.3

Category	All			Males			Females		
	N (%)	IR (95% CI) per 100,000 persons	APC*	N (%)	IR (95% CI) per 100,000 persons	APC*	N (%)	IR (95% CI) per 100,000 persons	APC*
Lower extremity	2743 (15.5)	0.3 (0.3-0.3)	2.1 <sup>‡</sup>	1405 (12.5)	0.4 (0.3-0.4)	3.0 <sup>‡</sup>	1338 (20.6)	0.2 (0.2-0.3)	1.3

APC, Annual percent change; CI, confidence interval; IR, incidence rate.

\* A positive number means incidence rates are increasing, and a negative number indicates incidence rates are decreasing over the specified time period.

<sup>‡</sup>The APC is significantly different from zero ( $P < .05$ ).

<sup>‡</sup>The statistic could not be calculated.

<sup>§</sup>Other race/ethnicity combinations (non-Hispanic Asian/Pacific Islander, non-Hispanic American Indian/Alaska Native, non-Hispanic multiple races) excluded due to small case counts.

**Table II.**

Fiver-year relative survival for Merkel cell carcinoma, 2005–2014

Category	All			Males			Females		
	N (%)	Relative survival (95% CI), %	N (%)	Relative survival (95% CI), %	N (%)	Relative survival (95% CI), %	N (%)	Relative survival (95% CI), %	
Overall, ages 50 y	10,036 (100.0)	60.1 (58.5–61.6)	6130 (100.0)	55.1 (53.1–57.1)	3906 (100.0)	67.7 (65.2–70.1)			
Age, y									
50–54	327 (3.3)	67.9 (61.2–73.6)	215 (3.5)	64.7 (56.3–71.8)	112 (2.9)	73.9 (62.1–82.5)			
55–59	625 (6.2)	70.4 (65.7–74.6)	397 (6.5)	64.9 (58.8–70.4)	228 (5.8)	79.9 (72.3–85.7)			
60–64	920 (9.2)	68.5 (64.5–72.1)	605 (9.9)	60.3 (55.1–65.2)	315 (8.1)	82.9 (77.0–87.4)			
65–69	1169 (11.6)	66.8 (62.9–70.4)	754 (12.3)	60.7 (55.6–65.5)	415 (10.6)	77.4 (71.3–82.4)			
70–74	1426 (14.2)	63.8 (60.1–67.4)	935 (15.3)	59.2 (54.4–63.7)	491 (12.6)	72.1 (65.8–77.4)			
75–79	1723 (17.2)	61.3 (57.6–64.7)	1104 (18.0)	56.4 (51.6–60.9)	619 (15.8)	69.4 (63.4–74.5)			
80–84	1765 (17.6)	55.2 (50.9–59.2)	1036 (16.9)	51.8 (46.1–57.2)	729 (18.7)	59.7 (53.4–65.5)			
85	2081 (20.7)	44.7 (39.5–49.6)	1084 (17.7)	35.2 (28.5–41.9)	997 (25.5)	54.1 (46.4–61.2)			
Stage									
Localized	5500 (62.3)	72.5 (70.4–74.6)	3177 (58.8)	68.0 (65.1–70.8)	2323 (67.8)	78.5 (75.2–81.5)			
Regional	2398 (27.2)	51.1 (48.0–54.1)	1576 (29.2)	48.9 (45.3–52.5)	822 (24.0)	54.8 (49.8–59.6)			
Distant	931 (10.5)	21.4 (17.7–25.3)	650 (12.0)	17.7 (13.6–22.3)	281 (8.2)	29.9 (22.5–37.6)			
Race/ethnicity*									
Non-Hispanic white	9225 (94.1)	59.4 (57.7–61)	5727 (95.5)	54.5 (52.5–56.6)	3498 (91.9)	67.1 (64.4–69.6)			
Non-Hispanic black	152 (1.5)	54.1 (41.3–65.3)	70 (1.2)	51.8 (34.6–66.5)	82 (2.2)	54.4 (37.1–68.8)			
Hispanic, all races	431 (4.4)	66.3 (58.7–72.8)	203 (3.4)	59.1 (47.3–69.0)	228 (6.0)	72.6 (62.1–80.6)			
Anatomic site									
Head and neck	4156 (46.7)	58.8 (56.3–61.3)	2541 (47.4)	50.7 (47.5–53.9)	1615 (45.6)	71.4 (67.2–75.2)			
Trunk	926 (10.4)	49.0 (44.2–53.7)	645 (12.0)	49.9 (43.8–55.6)	281 (7.9)	46.9 (38.7–54.7)			
Upper extremity	2407 (27.0)	70.1 (67.1–73.0)	1461 (27.2)	66.0 (62.0–69.7)	946 (26.7)	76.1 (71.2–80.3)			
Lower extremity	1415 (15.9)	64.0 (59.9–67.9)	715 (13.3)	64.8 (58.8–70.1)	700 (19.8)	61.9 (56.1–67.2)			

CI, Confidence interval.

\* Other race/ethnicity combinations (non-Hispanic Asian/Pacific Islander, non-Hispanic American Indian/Alaska Native, non-Hispanic multiple races) excluded due to small case counts.