Association of health insurance with outcomes in adults ages 18 to 64 years with melanoma in the United States

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Background: Studies evaluating insurance status and melanoma outcomes are limited.

Objective: We investigated whether health insurance correlates with more advanced disease, receipt of treatment, and survival in melanoma.

Methods: This was a cross-sectional analysis of 61,650 patients with cutaneous melanoma using the Surveillance, Epidemiology, and End Results database.

Results: Under multivariate analysis, patients with either Medicaid insurance (hazard ratio, 1.83; 95% confidence interval [CI], 1.65-2.04; $P < .001$) or uninsured status (hazard ratio, 1.63; 95% CI, 1.44-1.85; $P < .001$) were more likely to die of any cause, including melanoma. Uninsured compared with non-Medicaid insured cases more often presented with increasing tumor thickness (odds ratio [OR], 2.19; 95% CI, 1.76-2.73; $P < .001$) and presence of ulceration (OR, 1.64; 95% CI, 1.40-1.92; $P < .001$), and less often received treatment (OR, 1.87; 95% CI, 1.60-2.19; $P < .001$). Compared with non-Medicaid insured, Medicaid cases more often had increasing tumor thickness (OR, 2.36; 95% CI, 1.91-2.91; $P < .001$), advanced stage (OR, 1.59; 95% CI, 1.37-1.85; $P < .001$), and presence of ulceration (OR, 1.40; 95% CI, 1.19-1.63; $P < .001$), and less often received treatment (OR, 1.61; 95% CI, 1.37-1.89; $P < .001$).

Limitations: This was a retrospective study.

Conclusion: Patients with melanoma and Medicaid or uninsured status were more likely to present with advanced disease and were less likely to receive treatment, likely contributing to an overall and cause-specific survival detriment. Addressing access to care may help improve these outcomes. (J Am Acad Dermatol 2016;74:309-16.)

Key words: Affordable Care Act; health care disparities; health insurance; malignant melanoma; treatment outcomes.

An estimated 74,000 new cases of malignant melanoma will be diagnosed in the United States in 2015.[1] The incidence of melanoma is expected to grow.[2] Detection of early-stage melanoma has led to higher cure rates.[3] In addition, several advancements over the last few years, including immune modulators and targeted therapies, such as *BRAF* and mitogen-activated

Abbreviations used:

CI:	confidence interval
CSS:	cause-specific survival
HR:	hazard ratio
OR:	odds ratio
OS:	overall survival
SEER:	Surveillance, Epidemiology, and End Results
SES:	socioeconomic status

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extracellular signal regulated kinase (*MEK*) inhibitors, have significantly changed treatment paradigms.[4] The backbone of melanoma treatment involves systemic therapies, which can be costly. Seidler et al[5] reviewed Surveillance, Epidemiology, and End Results (SEER)-Medicare data and found annual costs of melanoma to be upward of $249 million in patients 65 years of age or older, representing a substantial financial burden for these individuals. Socioeconomic factors, including health insurance status, are therefore of particular interest.

Access to health care facilitates, early detection of disease, and the ability to afford or receive the necessary care upon diagnosis allows for treatment using cutting-edge therapies such as immune modulators. Prior studies using both state and nationwide cancer databases found Medicaid and uninsured patients in the United States had worse outcomes in breast, cervical, colorectal, lung, non-Hodgkin lymphoma, prostate, bladder, head and neck, liver, pancreas, ovarian, and esophageal cancers.[6,7] Data from the US National Cancer Database found uninsured and Medicaid patients presented with more advanced disease in the majority of sites; this was especially prominent in cancers that could be detected early by screening or symptom presentation, including melanoma.[8] Another study using SEER data demonstrated similar findings; melanoma was not included in their analysis.[7]

The primary goal of this study was to evaluate the association of insurance status with disease presentation, treatment, and overall survival (OS) in patients with cutaneous melanoma using the SEER database.

CAPSULE SUMMARY

- Data on health insurance and its impact on melanoma outcomes are limited.
- Medicaid and uninsured patients presented with more advanced disease, less often received treatment, and had worse outcomes.
- Providing health care coverage for all patients can help but may not be sufficient to reduce disparities in melanoma treatment and survival.

METHODS

Patient selection

The National Cancer Institute—sponsored SEER database, including 18 registries, was queried using SEER*Stat-v8.2.1 (seer.cancer.gov). A total of 112,581 patients given a diagnosis of cutaneous malignant melanoma between January 1, 2007, and December 31, 2012, were initially selected. The year 2007 was selected as this was the first year insurance status was collected within the SEER database. Melanoma in situ were excluded. Patients were excluded if age at diagnosis was younger than 18 years or if survival data were missing. In addition, patients age 65 years or older were also excluded as this was the age that most patients are eligible for Medicare, which presently is not clearly recorded for patients in SEER and not recommended to be used in this age population.[9] A total of 61,650 patients met inclusion criteria.

Patient demographics and treatment variables

Potentially relevant patient and treatment characteristics were included. Tumor and nodal stage was based on the American Joint Committee on Cancer staging atlas (sixth edition).[10] SEER summary stage was defined by TNM staging and Clark level, and recorded as localized, regional, or distant.[10] Insurance status was defined as insured (including non-Medicaid, no specifics), Medicaid coverage (any Medicaid), and uninsured. Insured designation included private insurance (fee-for-service, managed care, health maintenance organization, preferred provider organization, TRICARE), Medicare, military coverage at the time of initial diagnosis and treatment, and insured/no specifics. Those with unknown insurance status were excluded from further analysis in this study. Receipt of radiation was defined as beam radiation or combination of beam with implants or isotopes, delivered alone or in sequence with surgery. Receipt of surgery was defined by melanoma site-specific SEER coding and excluded biopsy only. Primary end point of the study was cause-specific survival (CSS) and OS.

Statistical analysis

All statistical analyses were performed using software (SPSS V22.0, IBM Corp, Armonk, NY). Pearson χ^2 tests were used to assess associations between categorical variables and insurance status (all patients, non-Medicaid insurance, Medicaid, uninsured, and unknown). Proportionality was evaluated for covariates included in multivariate analysis and returned no significant results.[11] OS and CSS intervals were calculated from the date of diagnosis to the date of death. OS and CSS were first examined using the Kaplan-Meier method. Univariate and multivariate Cox regression analysis was performed using OS and CSS as outcomes with a significance level of P less than .05.