

Insurance Status Independently Predicts Mortality after Treatment of Sarcomas

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Introduction

- Prior studies have highlighted the association between insurance status and poor outcomes after surgical management of extremity sarcomas in the United States¹⁻³ including:
 - Metastatic disease on presentation
 - Amputation
 - Mortality
- How much of this disparity is mediated by other confounding factors, and how much can be explained by insurance status alone?

Methods

- SEER-Medicare linkage data was obtained for 7,056 patients undergoing treatment for bone and soft tissue sarcomas in the extremities diagnosed from 2006-2013
- Insurance status was defined as the primary payer of record at the time of the first claim related to the patient's cancer
 - Insurance status was pre-classified by the Centers for Medicare and Medicaid Services (CMS) as:
 - Medicaid
 - Medicare
 - Private
 - Self-Pay
 - Other Government Insurance, or
 - Uninsured
- A Cox proportional hazards model was used to assess the contributions of insurance status and other demographic factors to overall survival

Table 1. Multivariate Cox Hazard Model of Mortality after Sarcoma Diagnosis as a Function of Selected Baseline Patient Characteristics

Factor	HR (95% CI)	p
Age at Diagnosis	1.03 (1.02-1.03)	<0.001*
Insurance (vs. Private)		
Self-Pay	1.02 (0.69-1.51)	0.904
Other Government	1.03 (0.76-1.39)	0.862
Medicare	1.06 (0.96-1.16)	0.243
Uninsured	1.18 (0.71-1.96)	0.528
Medicaid	1.28 (1.03-1.60)	0.026*
Charlson Comorbidity Index (vs. 0)		
1-3	1.13 (1.04-1.22)	0.005*
4-6	1.48 (1.33-1.64)	<0.001*
7+	1.61 (1.38-1.88)	<0.001*
Education (vs. Very High)		
High	1.14 (1.04-1.25)	0.007*
Low	1.04 (0.92-1.16)	0.540
Very Low	1.22 (1.08-1.38)	0.002*
Household Income (vs. >\$63K)		
\$48-\$63K	1.07 (0.97-1.17)	0.171
\$38-\$48K	1.06 (0.94-1.19)	0.342
<\$38K	1.03 (0.90-1.18)	0.654
Urban/Rural Status (vs. Metropolitan)		
Urban	0.95 (0.86-1.07)	0.405
Rural	0.82 (0.61-1.10)	0.177
Race (vs. White)		
Other	1.04 (0.90-1.19)	0.619
Black	1.06 (0.95-1.20)	0.300
Hispanic	1.06 (0.87-1.29)	0.568
Facility (vs. Comprehensive Cancer Center)		
Clinical Cancer Center	1.07 (0.75-1.53)	0.710
Academic Center	1.36 (1.13-1.63)	0.001*
No Cancer Center Designation	1.41 (1.17-1.69)	<0.001*

*p<0.05. HR = Hazard Ratio (>1.0 = higher mortality).

Results

- Patients with Medicaid insurance as their primary insurer had a **28% higher mortality rate**, even when accounting for other confounders, compared to patients with private insurance (HR 1.28, 95% CI 1.03-1.60, p=0.026)
- There was an **18% higher mortality rate in the uninsured** on univariate analysis
- Other independent predictors of mortality on multivariate analysis included: age; Charlson comorbidity index; education level; tumor stage; distance traveled for care; and Cancer Center status of treating hospital
- When insurance status was accounted for, income, race, and metropolitan / urban / rural status were no longer associated with higher mortality

Conclusions

- Medicaid insurance is associated with a **28% higher mortality rate** in sarcoma patients in the U.S., even when accounting for age and comorbidities
- This group included those who were uninsured until qualifying for Medicaid by virtue of their cancer diagnosis
- The results of this study suggest that being uninsured/underinsured is a persistent barrier to care for Americans of all races, income levels, and geographic locations
- Closing the uninsured gap, and expanding Medicaid coverage in order to ensure uniform access to care, are public policy strategies which may help mitigate this disparity in sarcoma care

References

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