Association Between Guideline-Concordant Treatment and Healthcare Resource Utilization and Clinical Outcomes Among US Medicare Fee-for-Service Beneficiaries Newly Diagnosed with Stage III - IV Melanoma

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INTRODUCTION

- The National Comprehensive Cancer Network (NCCN) publishes comprehensive guidelines for cancer treatment based on the latest evidence.[1]
- Failure to receive guideline-concordant treatment leads to poor clinical outcomes and increased healthcare resource utilization, in other types of cancer.[2]
- There is a lack of published literature regarding receipt of guideline-concordant primary treatment and clinical outcomes and healthcare resource utilization in patient's diagnosed with advanced cutaneous melanoma.

OBJECTIVE

To examine the association between guideline-concordant primary treatment on healthcare resource utilization and clinical outcomes, among older Medicare fee-for-service beneficiaries diagnosed with stage III or IV cutaneous melanoma.

METHODS

Study Design, Data Source, and Study Population

- We conducted a retrospective observational cohort study using the Surveillance, Epidemiology, and End Results (SEER)-Medicare-Area Resource File linked dataset.
- We included 1,467 patients (1,190 received guideline-concordant primary treatment, 277 failed to receive guideline-concordant primary treatment), aged ≥66 years at the first primary diagnosis of stage III-IV incident cutaneous melanoma during 2011-2015.

Outcomes

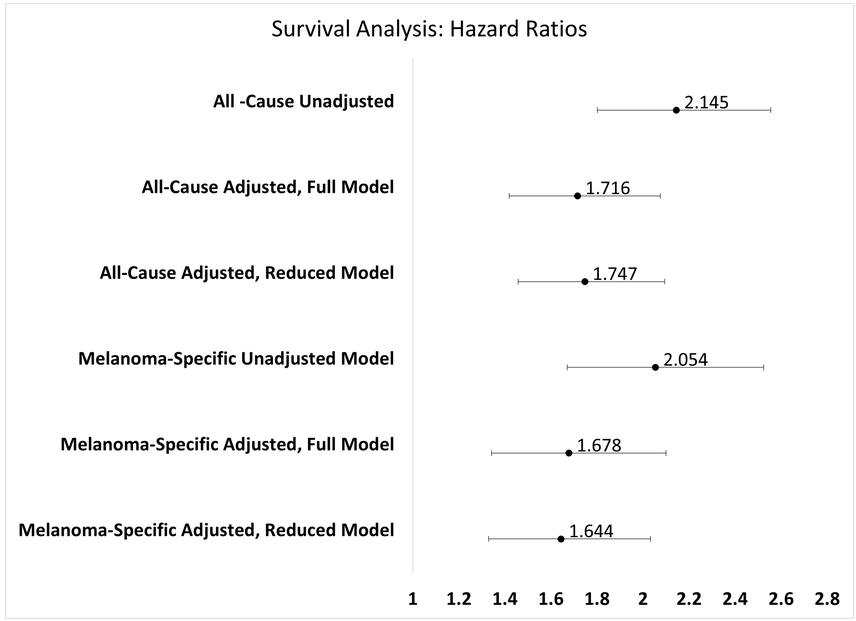
- **Survival:** All-Cause and Melanoma-Specific Mortality
- **Healthcare Resource Utilization:** emergency department visits, inpatient hospitalizations (all-cause and melanoma-specific), outpatient visits (all-cause and melanoma-specific), and office-based physician visits (all-cause and melanoma-specific)

- **Key Independent Variable:** Guideline-Concordant Primary Treatment: defined by the initiation of a NCCN guideline designated treatment regimen for the primary treatment of cutaneous melanoma within six-months of diagnosis.
- **Covariates**:
  - Year of diagnosis, Stage at Diagnosis, Anatomic Site of Cancer, Charlson Comorbidity Index (CCI), Performance Status, Age Group at Cancer Diagnosis, Sex, Race/Ethnicity, Marital Status, Census Tract Median Household Income and Education, SEER Region, and Number of Hospitals Providing Oncology Services in the Area of Patient's Residence

Statistical Analyses

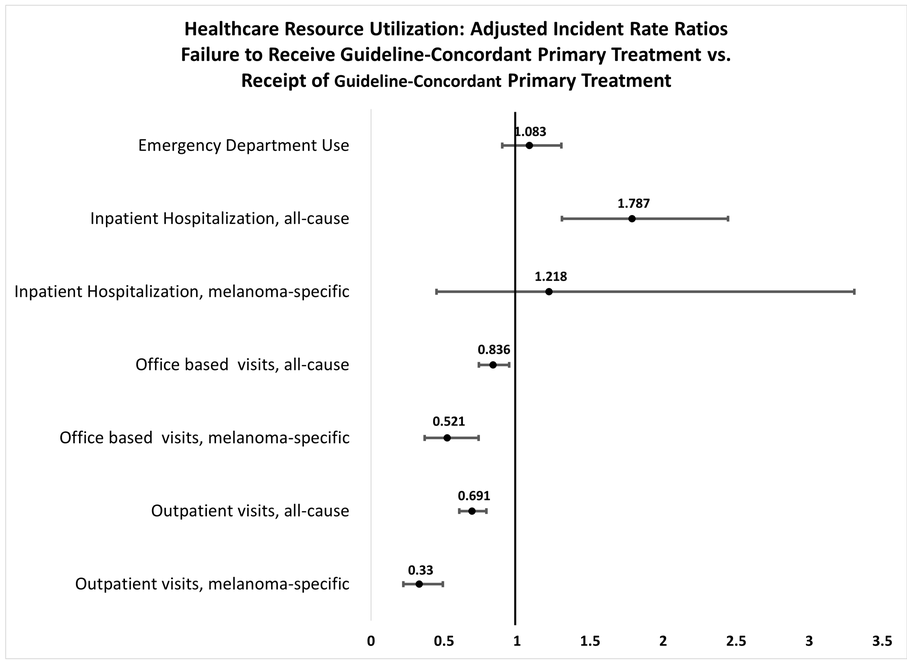
- Generalized linear regressions and Cox proportional hazards model were conducted to examine the association between guideline-concordant treatment and healthcare utilization and mortality, respectively.
- A log offset was applied to each model to account for different measurement periods for each patient.
- To reduce selection bias, a propensity score of the conditional probability of receiving guideline-concordant primary treatment, was estimated.
- The following covariates were used to determine propensity scores: age group, sex, race/ethnicity, marital status, site of cancer at diagnosis, cancer stage at diagnosis, residence region, CCI, proxy performance status, and census tract variables including, number of oncology hospitals, income level, and education level.
- All analysis were completed for the original cohort (OC) and the propensity score matched cohort (PSM).

RESULTS



All models significant at p <0.0001

Full Model:
Adjusted for stage at diagnosis, site of cancer at diagnosis, proxy performance status, Charlson comorbidity index, age group, sex, race/ethnicity, marital status, residence region, household income range, attainment of a bachelor's degree, number of hospitals in region.
Reduced Model: *Adjusted for stage at diagnosis, age group.*



Adjusted for stage at diagnosis, site of cancer at diagnosis, proxy performance status, Charlson comorbidity index, age group, sex, race/ethnicity, marital status, residence region, household income range, attainment of a bachelor's degree, number of hospitals in region.

DISCUSSION

- Failure to receive guideline-concordant primary treatment was associated with:
  - Increased hazard of all-cause and melanoma-specific mortality
  - Increased incidence of acute care services, compared to routine medical care services
  - Decreased incidence of all-cause and melanoma-specific use or office-base providers, and outpatient providers

Limitations

- Unable to illicit rationale for patient or provider treatment choice.
  - A provider may have chosen to deviate from NCCN guidelines based on good clinical judgement, but this is not distinguishable from claims records.
  - Cannot illicit whether a particular procedure or treatment was ordered by a provider but not sought out by a patient.
- Unable to ascertain treatment obtained outside of the usual payer, for example clinical trials.
- Limited designation of receipt of primary treatment to treatment received in the first six months after diagnosis, it is possible that some patients may have received treatment outside of this window.
- Limited the definition of primary treatment, and did not include use of adjuvant treatments, nor did we did measure adherence to treatment, including duration or intensity.

REFERENCES

1. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Melanoma V.3.2016. © National Comprehensive Cancer Network, Inc. 2016. All rights reserved. Accessed February 19, 2019. To view the most recent and complete version of the guideline, go online to NCCN.org.
2. Vyas A, Mantaian T, Kamat S, Kurian S, Kogut S. Association of guideline-concordant initial systemic treatment with clinical and economic outcomes among older women with metastatic breast cancer in the United States. *J Geriatr Oncol.* 2021;12(7):1092–1099. doi:10.1016/j.jgo.2021.05.012

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