The Oncologist
The official journal of the Society for Translational Oncology

Supplemental Methods for:
Sorafenib Effectiveness in Advanced Hepatocellular Carcinoma
Hanna K Sanoff et al.

Supplemental Methods

Cohort Definition: From SEER-Medicare we identified patients diagnosed with HCC between 2008 and 2011. The diagnosis of HCC was determined by SEER Site code ICD-0-3 C220 (primary liver cancer). The histology codes of these patients (n=1,582) were reviewed by the study team and 50 were subsequently excluded as incompatible with HCC (excluded codes were: 8012, 8013, 8041, 8046, 8190, 8240, 8246, 8550, 8801, 8970, 8160, 9120, 9133), leaving 1,532 patients. Cases diagnosed at autopsy or death certificate only were excluded. Patients with preceding invasive cancer within 5 years were excluded to avoid misclassification of liver metastases. To ensure availability of complete claims for analysis, patients without continuous enrollment in Medicare parts A and B in the 6 months before and after diagnosis were excluded (27%). Because managed care plans are not required to submit claims to Centers for Medicare and Medicaid Services, patients enrolled in Medicare managed care plans in the 6 months before and after diagnosis or until death were also excluded (29%); this is consistent with the approximately 30% of Medicare beneficiaries in the U.S. who participate in managed care plans.[1] Finally, in order to evaluate sorafenib use, patients without Medicare part D were excluded (40%); this is consistent with the approximately 50% of patients with fee-for-service Medicare within the SEER-Medicare database who have enrolled in part D between 2008-2011.[2] Finally, because sorafenib is indicated only in advanced HCC, we restricted to patients with multifocal tumors or extrahepatic spread.

Propensity Score Matching:
We used propensity score (PS) matching to evaluate the treatment effect among patients balanced on key confounders. A propensity score was generated for each patient's likelihood of having initiated sorafenib prior to the landmark via a multiple logistic regression model. A patient's demographic factors (age, sex, race, etc.), comorbidity (Charlson score, liver- and nonliver-comorbidity, etc.), and pathological factors (tumor extent and size) were included in the logistic model. Included variables are listed in Supplemental Table 1. Using greedy 5-to-1 matching without replacement, patients treated with sorafenib were 1:1 matched to those who did not receive treatment based on their PS. Standardized difference was calculated for all covariates included in the logistic regression to evaluate covariate balance in the PS matched sample. The PS matched sample was well balanced on all covariates with standardized differences < 0.1, a point considered as a negligible difference in the mean or prevalence of a covariate between two groups.[3]

References

1. Centers for Medicare and Medicaid Services. 2014 CMS Statistics. 2014; https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMS-Statistics-Reference-Booklet/Downloads/CMS_Stats_2014_final.pdf. Accessed 24 September, 2015.
2. Healthcare Delivery Research in NCI's Division of Cancer Control and Population Sciences. Data Resources and Initiatives: Number of Part D
Enrollees. http://healthcaredelivery.cancer.gov/seermedicare/aboutdata/enrollees.html. Accessed 24 September, 2015.
3. Austin PC. An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies. *Multivariate behavioral research.* May 2011;46(3):399-424.