

Association of Prior Cancer Diagnosis on Guideline-Concordant Receipt of Colorectal Cancer Treatment

Background: Approximately 17.7% of colorectal cancer (CRC) patients have a prior malignancy, an increasing population size due to increased survivorship. Studies have recently demonstrated using the National Cancer Database (NCDB) that prior malignancy is associated with decreased odds of receiving treatment (OR = 0.95), but gaps remain on the types of treatment received and the effect comorbidities on treatment. This study aims to evaluate whether prior malignancy was associated with receipt of stage- and site-specific guideline-concordant treatment for CRC, and whether adjustment for measured comorbidity burden altered these associations.

Methods: This retrospective cohort study utilized the NCDB to identify primary invasive colorectal adenocarcinoma cases diagnosed from 2013 to 2022 with at least 30-day survival. Cases with in situ disease, unknown AJCC stage, incomplete treatment data, or unknown tumor sequence were excluded. Patients were stratified into no prior cancer (colorectal tumor as first or only malignancy) and prior cancer groups. The primary outcome was guideline-concordant treatment, assessed for CRC across NCDB analytic stages I–IV. Two multivariable logistic regression models estimated adjusted odds ratios of treatment presence aligning with guideline concordance: Model 1 adjusted for age, sex, race, insurance, and facility type; Model 2 incorporated Charlson-Deyo comorbidity score.

Results: A total of 582,703 patients were included: 479,844 (82.3%) with no prior cancer and 102,859 (17.7%) with prior cancer. Prior cancer patients were older (72.2 vs. 64.9 years) and presented at earlier stages (Stage I: 26.4% vs. 20.5%; Stage IV: 15.9% vs. 21.4%; $p < 0.0001$). Despite earlier presentation, prior cancer patients had lower odds of guideline-concordant surgical resection for colon (aOR=0.77, 95% CI:0.74–0.80) and rectal cancer (aOR=0.78, 95% CI:0.71–0.86), adjuvant chemotherapy for stage III colon (aOR=0.72, 95% CI:0.69–0.75), and radiation/chemotherapy for stage II–III rectal cancer (aOR=0.78, 95% CI:0.72–0.85). However, prior cancer patients had lower odds of guideline-concordant omission chemotherapy at stage I colon (aOR=0.25, 95% CI:0.22–0.27), indicating more frequent chemotherapy use. Estimates were materially unchanged after additional adjustment for Charlson-Deyo comorbidity score, indicating the treatment disparity is independent of measured comorbidity burden.

Conclusion: Prior malignancy was associated with lower odds of stage-specific guideline-concordant resection and multimodal therapy and higher odds of non-indicated chemotherapy at stage I. These associations were not affected by addition of measured comorbidities in the model, suggesting that these comorbidities alone do not account for the different treatment. Further study is needed to determine if these patterns are related to prior cancer-specific treatment considerations such as toxicities, individualized patient preferences, or inappropriate treatment variation.