

Temporal Trends and Predictors of First-Line Chemotherapy Among Older Women Diagnosed with Triple-Negative Breast Cancer in the United States

Kehinde Adeyemi PharmD MSc^{1,2}, Coral Omene MD PhD³, Benjamin Bates MD MSc^{1,4}, Kexin Zhu PhD¹, Elisa V. Bandera MD PhD^{2,3}, Farzin Khosrow-Khavar PhD^{1,2,3}

¹Center for Pharmacoepidemiology and Treatment Science, Rutgers Institute for Health, New Jersey, USA; ²Department of Biostatistics and Epidemiology, Rutgers School of Public Health, New Jersey, USA; ³Cancer Prevention and Control Program, Rutgers Cancer Institute, New Jersey, USA; ⁴Division of General Internal Medicine, Robert Wood Johnson Medical School

Background

- Triple Negative Breast Cancer (TNBC) accounts for 15-20% of diagnoses of breast cancer in the United States
- Chemotherapy has been a mainstay treatment in management of TNBC
- Gaps in knowledge:
 - Which chemotherapy regimens are used commonly in clinical practice
 - Temporal trends in administration of guideline-recommended regimens
 - Predictors of receiving any and guideline-recommended first-line chemotherapy regimens

Objectives

- To assess temporal patterns in first-line treatment with NCCN guideline recommended chemotherapy regimens among patients diagnosed with TNBC
- To assess demographic and clinical characteristics of patients diagnosed with TNBC and initiating specific recommended regimens
- To assess the association of patients' characteristics with initiating any and guideline recommended chemotherapy regimens

Data sources

- SEER linked to Medicare Parts A, B, and D (2010-2020)

Eligibility criteria

- Patients diagnosed with TNBC, 2010-2019, ≥66 years
- ≥ 365 days continuous enrollment in Medicare Parts A, B, and D prior to breast cancer diagnosis (cohort entry date)
- Exclusions: benign, in-situ carcinoma, treatment with chemotherapy or targeted agents at any point prior to first diagnosis of TNBC

Study design and methods

- **Outcome definition:** First-line NCCN guideline recommended chemotherapy agents and regimens
- **Follow-up scheme:** Patients were followed from breast cancer diagnosis to earliest of treatment initiation, disenrollment, admission to hospice, death, one year after breast cancer diagnosis, or end of the study period (Dec. 31, 2020)
- **Covariates:** Demographics (age, race and ethnicity, marital status, region, Yost index), tumor data (stage, grade, laterality), cancer treatments, NCI Comorbidity Index
- **Primary analysis:** Poisson models to estimate rates of first-line treatment with chemotherapy and 95% CIs by calendar year (2010-2020), age-standardized to the distribution of females ≥ 66 in the U.S.
- **Secondary analysis:** Cox PH models to assess the association of patients' characteristics with receipt of any chemotherapy and guideline-recommended first-line chemotherapy regimens

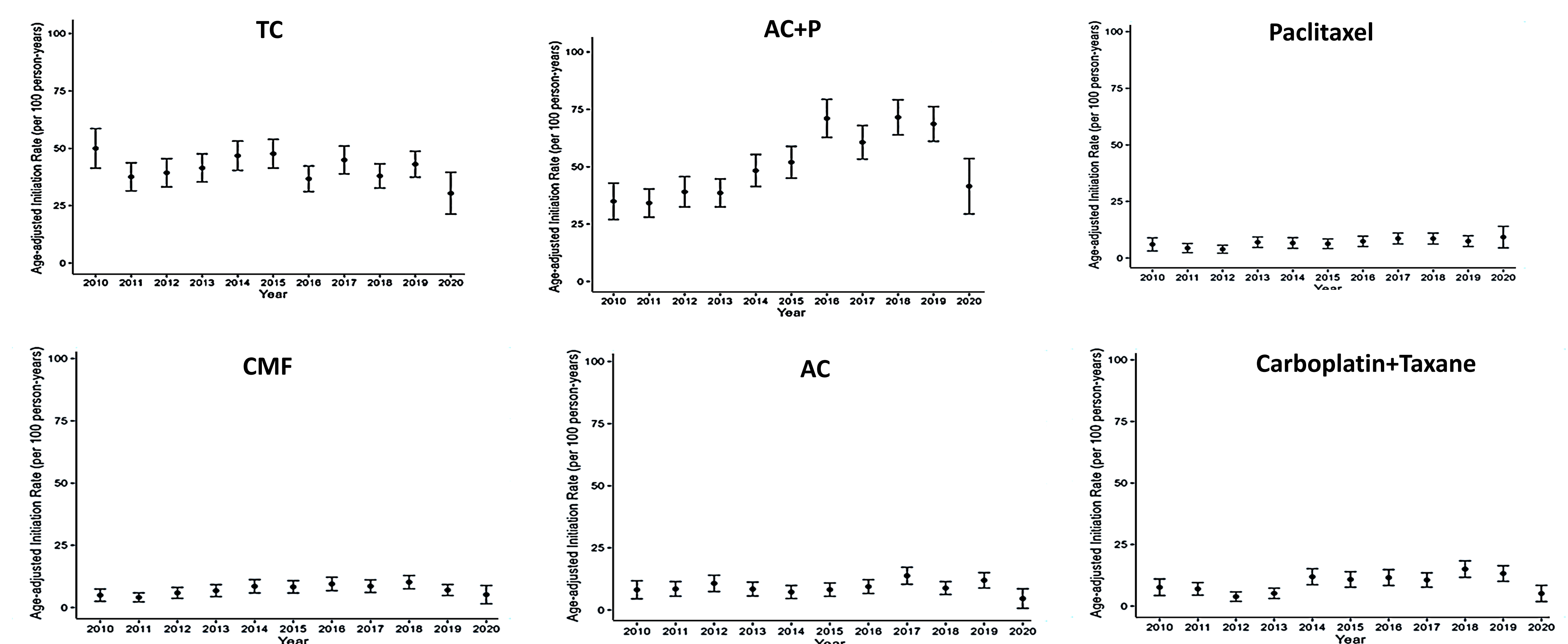
Select baseline characteristics

- Total: 8,598 patients, median age (IQR): 74 (69, 79)
- Race and ethnicity: NHW (75.0%), NHB (13.2%), NHAPI (4.3%), NHAIAN (0.4%), Hispanic (7.1%)
- Stage: localized (64.7%), regional (27.2%), distant (7.2%), unknown (0.9%)
- Breast cancer surgery: mastectomy (33.7%), breast conserving surgery (52.1%)
- NCI Comorbidity index: 0 (48.4%), 1 (24.0%), 2 (11.8%), ≥3 (15.8%)

Common first-line chemotherapy regimens

- First-line regimens: docetaxel+cyclophosphamide (TC): 1,697 (19.7%), doxorubicin+cyclophosphamide followed by paclitaxel (AC+P): 1,191 (13.9%), carboplatin with taxane: 380 (4.4%), doxorubicin with cyclophosphamide (AC): 376 (4.4%), paclitaxel (P): 332 (4.0%), cyclophosphamide+methotrexate+fluorouracil (CMF): 301 (3.5%), other: 591 (6.9%), not-treated: 3,730 (43.3%)

First-line chemotherapy administration patterns over time



Predictors of chemotherapy receipt

- Older age (≥75 vs <75 years; HR 0.33, 95% CI 0.31-0.36), higher comorbidity burden (Charlson comorbidity index [CCI] >3 vs 0: HR 0.65, 0.59-0.71; CCI =2 vs 0: HR 0.87, 0.79-0.95) were associated with lower likelihood of chemotherapy initiation; advanced tumor stage and higher grade were associated with an increased likelihood
- Less frequent use of guideline-preferred AC+P and TC regimens among patients with distant stage and higher comorbidity burden; Non-Hispanic Black patients and those with lower neighborhood socioeconomic status were also less likely to receive these regimens

Conclusions

- Majority of patients diagnosed with TNBC initiated chemotherapy: TC and AC+P were the most common first line regimens
- Ten-year utilization trends were constant for most regimens, first-line AC+P increased over time
- Chemotherapy receipt and regimen selection varied substantially across patient, regional, and socioeconomic factors, underscoring heterogeneity in real-world treatment decision-making

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