

Compliance with guidelines and factors associated with ordering the 21-gene breast cancer assay.

Author(s): Valentina I. Petkov, Nadia Howlader, Kathleen Cronin, Allison W. Kurian, Lynne Penberthy

Background: The 21-gene Recurrence Score result estimates the likelihood of distant recurrence and predicts the benefit of chemotherapy in early stage, hormonal receptor positive (HR+), HER2 negative (HER2-) invasive breast cancer. It has been recommended by oncology practice guidelines since 2008. We evaluated compliance with guidelines and factors associated with ordering the test at the population level using Surveillance Epidemiology and End Results (SEER) data. Methods: We augmented manually collected Oncotype DX results from SEER with all test results from Genomic Health Clinical Laboratory for cancer cases diagnosed 2004-2012. Patients were eligible for this analysis of test ordering practices if diagnosed between 2010 and 2012 with node negative, hormone receptor positive, HER2 negative invasive breast cancer, and met the NCCN guideline criteria for 21-gene assay testing during the study period. Logistic regression was used to identify demographic and tumor characteristics associated with testing. Results: A total of 31,790 (42%) of 75,366 eligible patients had the 21-gene assay ordered. Univariate and multivariate analysis indicated that there were many factors that significantly influenced the proportion of tests ordered. In multivariable analysis, significant factors that were associated with test ordering included, age, race, socioeconomic status, marital status, insurance, geographic location, tumor grade, tumor size (p-value < 0.01 for each covariate) . The large magnitude of the variation in test ordering by age, geographic area, and tumor size are illustrated in the univariate results in the Table. Conclusions: Despite guideline recommendations important demographic and socioeconomic factors are associated with testing in node negative breast cancer, suggesting important disparities in who receives the test. Understanding these disparities may help improve patient care and outcomes by increased awareness and targeted interventions.

Most Commonly Tested Groups		Least Commonly Tested Groups	
Age 45-54	60%	Age 75+	11%
Married	48%	Widowed	21%
Grade 2	45%	Grade 1	37%
11-20 mm	49%	6-10 mm	33%
New Jersey	55%	California	35%