

**Breast cancer specific survival in patients with node-positive hormone receptor positive invasive breast cancer and Oncotype DX recurrence score results in the SEER database.**

Author(s): Megan Roberts, Valentina I. Petkov, Dave P. Miller, Steven Shak, Nadia Howlader, Kathleen Cronin, Lynne Penberthy

Background: The 21-tumor gene expression assay has been shown to predict breast cancer recurrence and adjuvant chemotherapy benefit in lymph node positive (LN+), hormone receptor positive (HR+), HER2- breast cancer (BC). We assessed 5-year breast cancer specific survival (BCSS) in LN+ patients with Oncotype DX Recurrence Score (RS) in SEER data. Methods: SEER breast cancer cases (diagnosed 2004-2012) were linked to Oncotype DX tests performed by the Genomic Health Clinical Laboratory during 2004-2013. The analysis was restricted to single primary invasive BC, LN+, no distant metastases, HR+ (per SEER), HER2- (per RT-PCR). BCSS was assessed by Oncotype DX RS category and by the number of positive lymph nodes using the actuarial method in SEER\*Stat. Results: The proportion of women with LN+, HR+ BC who had a Recurrence Score (n = 7695) , increased between 2004 (0.3%, n = 33) and 2012 (13.8%, n = 2010), and decreased as lymph node involvement increased from micrometastases only (36.0%, n = 792) to 4+ lymph nodes (2.6%, n = 81) in 2012. 5-year BCSS outcomes for those with RS < 18 ranged from 99.4% (95%CI = 97.4-99.9) in those with micrometastases to 85.7% (95%CI = 33.4-97.9) among those with 4+ lymph nodes. Similar patterns were found for those with RS = 18-30 and RS ≥ 31 (see Table). Conclusions: Overall, 5-year survival is excellent in patients with RS < 18 and fewer positive lymph nodes and worsens as the number of involved lymph nodes increases. Further analyses that account for treatment are warranted. Annual updates will be important to better characterize utilization of Oncotype DX and survival outcomes.

# of Positive Lymph Nodes	RS < 18	RS 18-30	RS ≥ 31
	BCSS (95% CI)N	BCSS (95% CI)N	BCSS (95% CI)N
<b>Micro-metastasis only</b>	99.4 (97.4-99.9) 1207	99.3 (98.2-99.7) 732	84.2 (69.2-92.2) 135
<b>1</b>	99.2 (97.2-99.8) 1084	96.3 (91.8-98.4) 675	91.3 (79.5-96.4) 135
<b>2</b>	97.9 (92.7-99.4) 300	96.0 (84.6-99.0) 192	73.2 (20.4-94.1) 36
<b>3</b>	94.7 (77.4-98.9) 103	94.0 (75.9-98.6) 70	85.4 (51.6-96.3) 22
<b>4+</b>	85.7 (33.4-97.9) 82	79.5 (58.0-90.8) 93	75.1 (39.2-91.6) 31