

A Retroactive Single Institution Study of Three-Year Survival of HER-2/neu Positive Breast Cancer Treated with Adjuvant Chemotherapy, A Quality Improvement Project.

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A Retroactive Single Institution Study of Three-Year Survival of HER-2/neu Positive Breast Cancer Treated with Adjuvant Chemotherapy, A Quality Improvement Project

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Background

- Breast cancer is the most common cancer in women in the United States.
- More than 210,000 women were estimated to be diagnosed in 2005 in the United States and over 40,000 were predicted to die from the disease.¹
- Amplification of the HER-2/neu gene occurs in about 20%–25% of all breast cancers.^{1,3}
- HER-2/neu breast cancer is an aggressive type of breast cancer that has a high rate of recurrence and short disease-free intervals after adjuvant chemotherapy.^{4,5}
- Trastuzumab is a type of adjuvant therapy known to improve survival outcomes in patients with HER-2/neu positive cancer.^{9,10}
- HER-2/neu positive breast cancer has a poor prognosis compared to other types of breast cancer.
- This project investigates 3-year survival outcomes for patients with HER-2/neu positive tumors treated with adjuvant therapy in the LVHN system.

Methodology

- This is a retrospective study in which patient data was collected from the Tumor Registry Board and EHMR chart review.
- There were 163 charts reviewed of patients with HER-2/neu positive breast cancer.
- Patient information collected: Age, gender, stage of cancer, ER/PR receptor status, treatment modalities and 3-year survival outcomes.

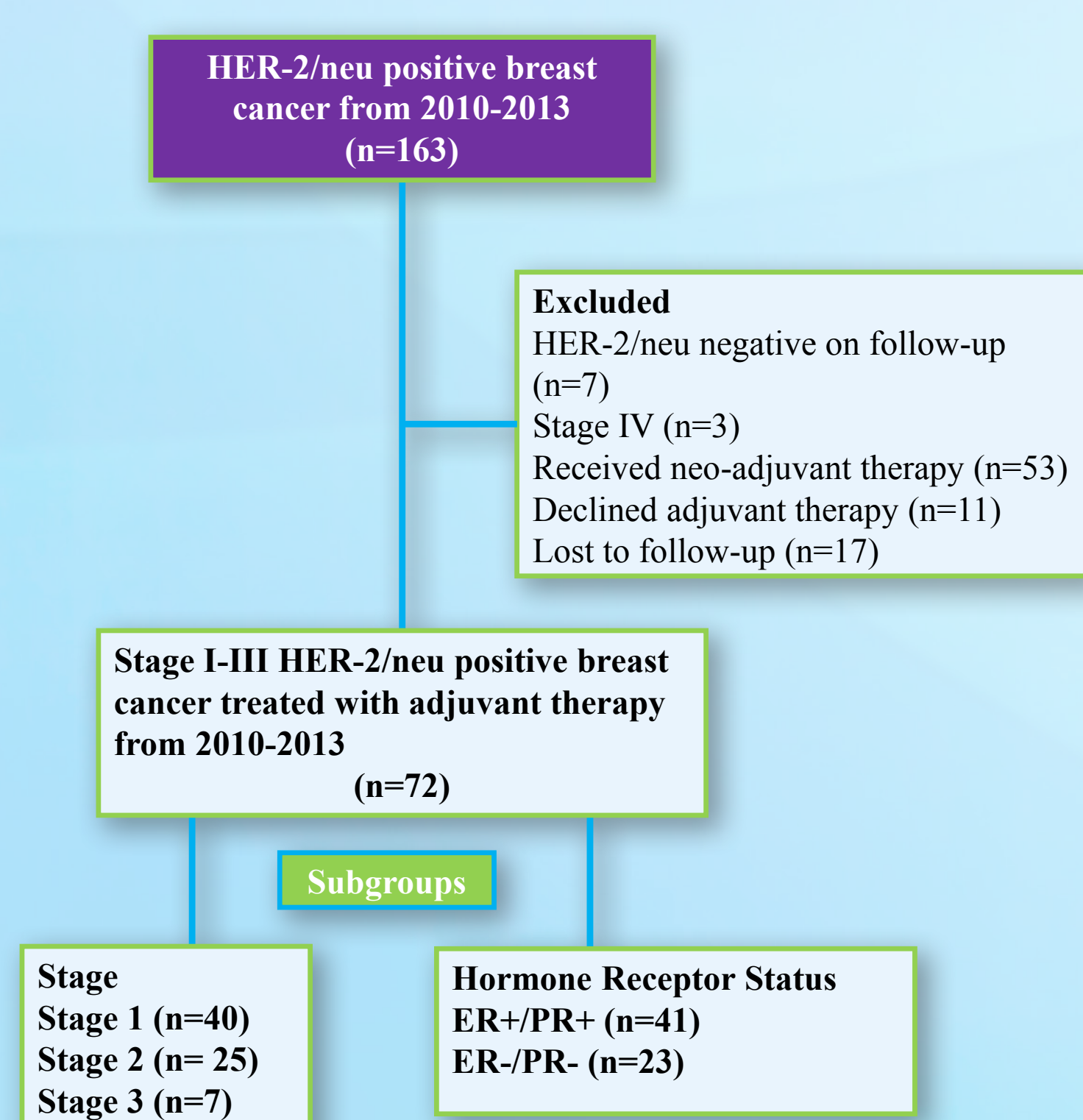


Figure 1. Consort diagram of the patient selection procedure and subgroup allocation for HER-2/neu positive breast cancer patients from 2010-2013.

Results

- Out of 163 patients, 72 patients met the inclusion criteria.
- The 3-year overall survival was 35.4 months and the 3-year progression-free survival was 35 months for all patients (Figure 2).
- The 3-year overall survival and progression-free survival were, respectively, 35.4 months and 35.4 months for Stage I cancer, 36 months and 34.9 months for Stage II cancer, and 33.7 months and 33.7 months for Stage III cancer (Figure 2).
- 3-year survival outcomes for patients with hormone positive disease compared to hormone negative disease (3-year overall survival: 35.6 months vs. 34.9 months; 3-year progression-free survival: 35.8 months vs. 34.9 months) (Figure 3).

Survival Outcomes in Stage I-III HER-2/neu Positive Breast Cancer

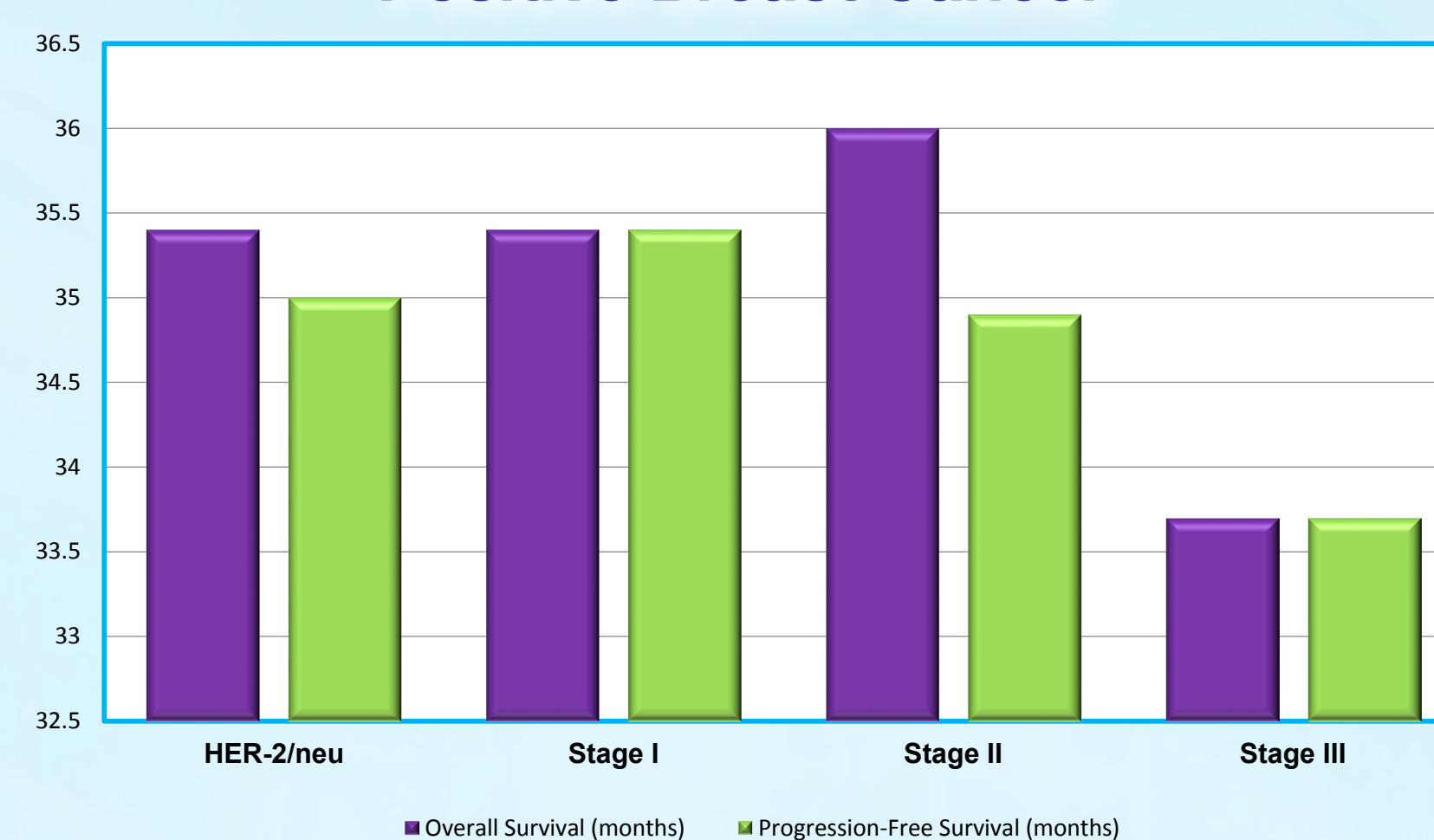


Figure 2. Three-year overall survival and progression-free survival in patients with HER-2/neu positive breast cancer treated with adjuvant therapy at LVHN from 2010-2013.

Survival Outcomes in Hormone Positive and Hormone Negative HER-2/neu Positive Breast Cancer

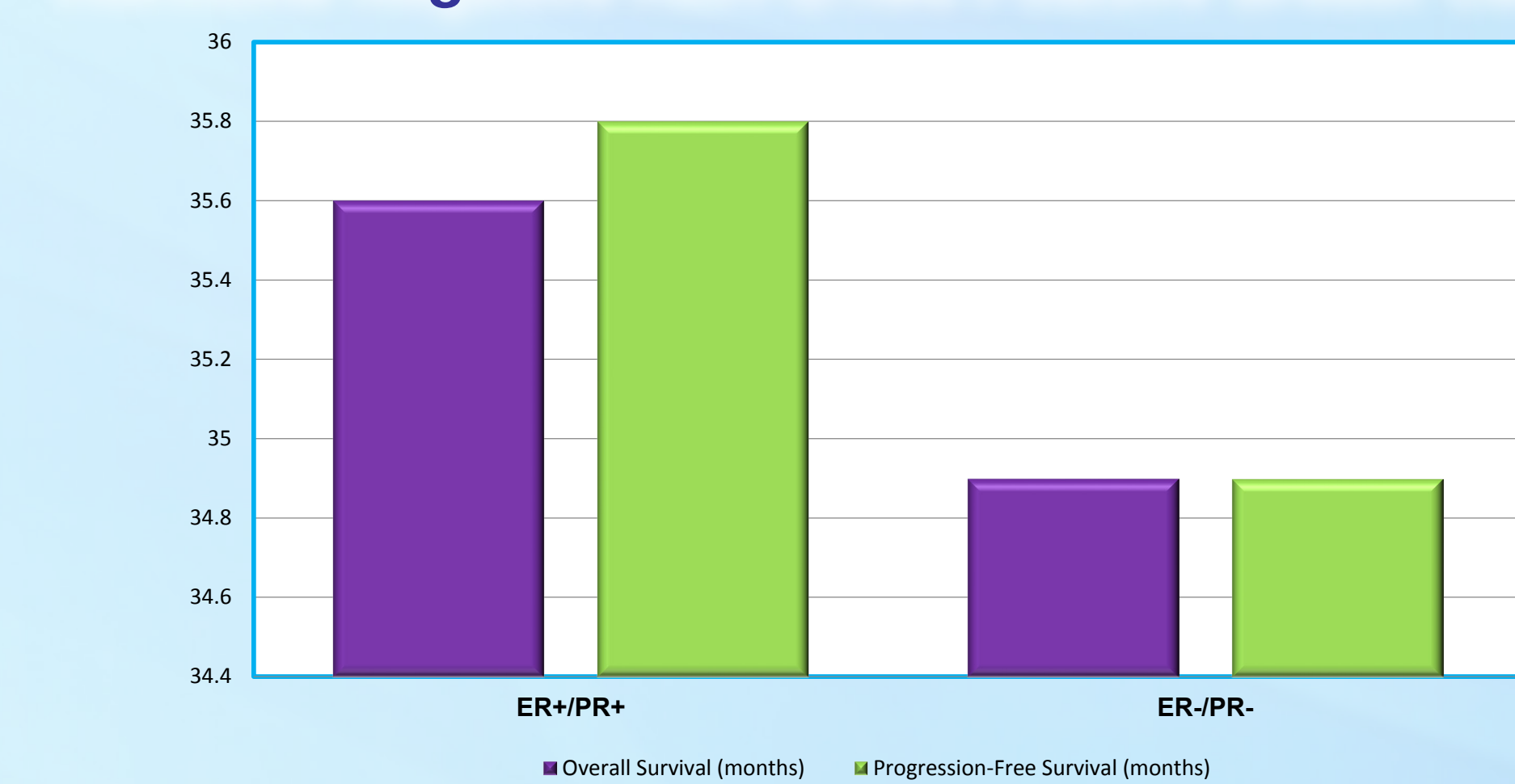


Figure 3. Three-year overall survival and progression-free survival in patients with ER+/PR+ vs. ER-/PR- HER-2/neu positive breast cancer treated with adjuvant therapy at LVHN from 2010-2013.

Discussion

- The progression-free survival was highest in Stage 1 cancer, followed by Stage 2 and Stage 3 cancer. Both overall survival and progression-free survival were lowest in Stage 3 cancer. This is expected as survival outcomes worsen with advancing stage. Overall Survival was highest in Stage II cancer, which can be explained by the small sample size.
- 3-year overall survival and progression-free survival were better for patients with hormone positive disease compared to hormone negative disease. This is likely due to the additional effect of hormonal agents.
- Additional research is needed to calculate 5 year survival rates to compare to national standards.
- As a Quality Improvement Project, this initiative embodies the SELECT principles of patient centered care, shared decision-making and healthcare improvement.

Conclusions and Future Implications

- The results of this project suggest that patients with HER-2/neu positive breast cancer who receive adjuvant therapy in the Lehigh Valley system had an overall survival of 35.4 months and a progression-free survival of 35 months.
- Patients with Stage II cancer had the highest overall survival and patients with Stage I cancer had the highest progression-free survival.
- Patients with Stage III cancer had the lowest overall survival and progression-free survival.
- Patients with hormone positive cancer had higher overall survival and progression-free survival than those with hormone negative cancer.
- The next step will be to compare survival outcomes in patients undergoing different adjuvant treatments to guide oncologists at Lehigh Valley choose the best treatment regimen for their patients.

References:

- Gonzalez-Angulo AM. Adjuvant therapy with Trastuzumab for HER-2/neu-positive breast cancer. *The Oncologist*. 2006;11(8):857-867. doi:10.1634/theoncologist.11-8-857.
- Maher M. Current and emerging treatment regimens for HER2-Positive breast cancer. 2014;39(3). <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4005117/>. Accessed July 3, 2016.
- Abdel-Razeq H, Marei. Current neoadjuvant treatment options for HER2 positive breast cancer. *Biologics: Targets and Therapy*. August 2011;87. doi:10.2147/btt.s22917.
- Lemieux J, Clemens M, Provencher L, et al. The role of Neoadjuvant HER2-Targeted therapies in HER2 Overexpressing breast cancers. *Current Oncology*. 2009;16(5). doi:10.3747/co.v16i5.510.
- Mauri D, Pavlidis N, Ioannidis JPA. Neoadjuvant versus Adjuvant systemic treatment in breast cancer: A Meta-Analysis. *JNCI Journal of the National Cancer Institute*. 2005;97(3):188-194. doi:10.1093/jnci/dji021.
- Pernas Simon S. Neoadjuvant therapy of early stage human epidermal growth factor receptor 2 positive breast cancer: Latest evidence and clinical implications. *Therapeutic Advances in Medical Oncology*. 2014;6(5):210-221. doi:10.1177/1758834014535650.
- Sevcikova K, Vertakova-Krakovska B, Spanik S. Neoadjuvant treatment in patients with HER2-Positive breast cancer. *ISRN Oncology*. 2013;2013:1-8. doi:10.1155/2013/362467.
- Mitri Z, Constantine T, O'Regan R. The HER2 receptor in breast cancer: Pathophysiology, clinical use, and new advances in therapy. *Chemotherapy Research and Practice*. 2012;2012:1-7. doi:10.1155/2012/743193.
- Singh JC, Jhaveri K, Esteve FJ. HER2-positive advanced breast cancer: Optimizing patient outcomes and opportunities for drug development. *British Journal of Cancer*. 2014;111(10):1888-1898. doi:10.1038/bjc.2014.388.
- Nagayama A, Hayashida T, Jinno H, et al. Comparative effectiveness of Neoadjuvant therapy for HER2-Positive breast cancer: A network Meta-Analysis. *JNCI Journal of the National Cancer Institute*. 2014;106(9):dju203-dju203. doi:10.1093/jnci/dju203.

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