Relative Dose Intensity—Improving Treatment and Outcomes in Early-Stage Breast Cancer: A Retrospective Study

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Breast cancer is the second most diagnosed cancer in women after skin cancer, with an estimated 226,870 new cases of invasive breast cancer diagnosed in 2012 in the United States (American Cancer Society [ACS], 2012). Death rates for breast cancer have steadily decreased in women since 1991, when 45,583 deaths occurred compared to the estimated 39,920 deaths in 2012, and with larger decreases noted in women younger than age 50 (a decrease of 3.1% per year) compared to those aged 50 years or older (2.1% per year) (ACS, 2012). The decrease in breast cancer deaths reflects progress in early detection and improved treatment. In addition, the five-year relative survival rate has improved from 63% in the 1960s to 90% in 2012 (ACS, 2012).

Researchers have determined that adjuvant systemic chemotherapy improves patient outcomes. Efficacy of adjuvant chemotherapy for breast cancer has been analyzed in 20-year (Bonadonna, Valagussa, Moliterni, Zambetti, & Brambilla, 1995) and 30-year (Bonadonna et al., 2005) follow-up studies comparing treatment outcomes with surgery alone. The 20-year follow-up of early-stage breast cancer (ESBC)—defined as stages I, II, or III—revealed that patients who were receiving adjuvant chemotherapy with cyclophosphamide, methotrexate, and fluorouracil (CMF) after mastectomy showed significant overall survival, supporting the use of early chemotherapy after mastectomy versus surgery alone for patients at high risk for micrometastasis (Bonadonna et al., 1995). These results confirm that chemotherapy plays a major role in primary management of breast cancer. Additional analysis in the 30-year follow-up (Bonadonna et al., 2005) measuring relapse-free and overall survival by univariate and multivariate...