Cost Implications of the SSO-ASTRO Consensus Guideline on Margins for Breast-Conserving Surgery with Whole Breast Irradiation in Stage I and II Invasive Breast Cancer

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Over \$125 billion is spent annually in the United States for cancer treatment.¹ Among women in this country, breast cancer remains the most common nondermatologic cancer diagnosis and the second leading cause of cancer-related death. In 2010, breast cancer treatment costs were estimated at \$16.5 billion, comprising 13 % of the burden of total cancer-related costs.^{2,3} Health care spending varies throughout the phases of breast cancer treatment, with ~23 % of total expenditures allocated during the initial episode of treatment (diagnosis and management during the first year), 41 % during continuing care, and 36 % during the last year of life.^{3,4} It has been estimated that surgical costs account for 25 % of breast cancer treatment expenditure among Medicare patients.⁵

An important contributor to health care costs includes deviations from the standard of care and variations in clinical practice that are not supported by evidence.⁶ Moreover, dramatic regional variations in health care spending are not associated with the quality of delivered care or with improved patient outcomes.^{7–9} In contrast, studies have consistently shown that adherence to clinical pathways and guidelines, and reductions in unintended practice variations are linked to improvement in clinical outcomes at lower costs.¹⁰

In the current treatment of early-stage breast cancer, management of surgical margins after lumpectomy is a prime example of wide variation in clinical practice. Consensus exists on the importance of removing all microscopically evident disease; however, there has historically been little agreement on what constitutes a pathologically acceptable distance from tumor cells to ink. Definitions of margin adequacy have ranged from “no tumor on ink” in the original NSABP B-06 trial, to the Milan trials requiring quadrantectomy with 2–3 cm of grossly normal tissue around the tumor including overlying skin and underlying fascia.^{11–14} Taghian et al.¹⁵ demonstrated this lack of consensus in defining close and negative margins in a survey of North American and European practicing radiation oncologists, with only 46 % of North American respondents considering “no tumor on ink” as adequately negative margins. A survey of surgeons treating breast cancer again demonstrated wide variation in defining margin adequacy, with only 3 % endorsing “no tumor on ink” as negative margins.¹⁶ The debate of what constitutes a negative margin has continued at a national level and has widespread implications for patients and cancer-related treatment costs.^{17,18}

The meta-analysis included in this issue by Moran et al.¹⁹ may finally put rest to this issue. In the United States, 60–75 % of women diagnosed with early-stage breast cancer are treated with breast-conservation therapy (lumpectomy and radiotherapy) based on long-term follow-up and contemporary data demonstrating equivalent survival to mastectomy.^{20–24} The “SSO-ASTRO consensus guidelines on margins for breast-conserving surgery with whole breast irradiation in stage I–II invasive breast cancer” included 33 studies with 28,162 patients reviewed by an expert panel.¹⁹ Evidence-based consensus guidelines on

management of pathologic margins among women treated with breast-conservation therapy concluded that reexcision for negative but close margins did not affect either the risk of ipsilateral in breast recurrence or overall survival.¹⁹

The most recent Surveillance, Epidemiology, and End Results registry data demonstrate that 37,170 lumpectomies were performed in 2010 among participating sites, capturing only 28 % of the U.S. population (<http://seer.cancer.gov>). When extrapolated to the entire country, we assume that ~132,750 lumpectomies are performed annually in the United States, and 26,550 women undergo reexcision for close but negative margins (~20 %).²⁴ Publicly available physician fee schedule data report that Medicare technical fee payments for partial mastectomy (CPT code 19301) range between \$550 and \$839, depending on geographic locality (<http://www.cms.gov>). The average Medicare professional fee reimbursement for reexcision is \$625.56 (<http://www.medassess.com>). If we then assume that Medicare reimbursements per partial mastectomy approximate \$1,200, elimination of reexcisions among women with close but negative margins translates into an estimated potential national cost savings of \$31 million per year. Hospital charges and reimbursements from a broad payer mix vary dramatically, and use of Medicare data likely underestimates actual health care spending. Applied on a national level, adherence to the Moran et al. guidelines has major implications for breast cancer treatment costs in the initial phase.^{25–28}

Many women who currently undergo reexcision do so for positive margins or out of concern for residual disease. However, data published by McCahill et al.²⁴ demonstrated that up to 20 % of women with initially negative margins returned for reexcision. National adoption of the included consensus guidelines and omission of unnecessary reexcisions, including associated perioperative costs and conversion to mastectomy (ranging 8–12 %), have the potential to further reduce health care spending for treatment of early-stage disease.^{24,29} Several other important opportunities have recently emerged to reduce health care spending in the setting of early-stage breast cancer without negative impact on clinical outcomes.³⁰ These include abbreviated radiation regimens or omission of radiotherapy in appropriate patients, reduction of completion lymphadenectomy in women eligible for treatment according to ACOSOG-Z0011, and omission of whole-body surveillance imaging for asymptomatic patients.^{31–33} These are important examples of the elusive “win-win” in efforts to control health care costs, where incorporation of guidelines will both reduce unnecessary morbidity and may significantly reduce breast cancer-related treatment costs without compromising quality care.

Surgeons have consistently led efforts to control costs associated with breast cancer treatment. Reductions in

inpatient admissions, length of stay, and readmission rates for breast cancer have already contributed to significant savings in initial phase treatment costs. Although the number of Medicare beneficiaries undergoing surgery for breast cancer remained steady between 1991 and 2002, mean costs of surgery and postoperative hospitalizations declined significantly.⁵ These efforts are worthwhile with episode-based payments (“bundled” or “global” payments) likely on the horizon; reduced health care spending in one phase of treatment may provide greater resources for treatment costs in other phases.

Clearly, health care spending must not be the primary driver of treatment recommendations or the dominating factor when making shared decisions with patients. Determining when reexcision after lumpectomy is warranted should be based on the clinical judgment of the treating team with clinical outcome as the priority. As leaders and gatekeepers in medicine, surgeons and physicians must embrace the responsibility to consider the impact of health care spending while continuing to practice high-quality, evidence-based medicine. Small changes in clinical practice have the potential to yield significant changes in cumulative spending across the wider health care system.^{34,35} Certainly, omitting unnecessary surgery without proven benefit is an important and impactful step.

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