Hypofractionated Whole Breast Radiotherapy
Adapting to the Evidence

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Increased consciousness about the costs of cancer care, which substantially impact both society and the finances of individual patients, motivates interest in opportunities to improve efficiency. In the field of radiation oncology, hypofractionation—reducing the number of daily radiation treatments by giving higher doses per fraction—is one of the most promising opportunities of this sort. Hypofractionation can improve convenience and lower costs, and growing evidence attests to its safety and efficacy in selected clinical settings. Therefore, it is unsurprising that hypofractionation is the subject of 2 of the first “top 5” opportunities in the Choosing Wisely campaign of the American Society of Radiation Oncology (ASTRO).

Given the sheer number of women who receive radiation therapy as part of breast-conserving therapy for breast cancer each year, hypofractionation has the potential for particularly dramatic impact in this setting. Numerous trials have demonstrated substantial improvements in locoregional control from the administration of radiotherapy after breast-conserving surgery, and meta-analyses have established a modest survival gain in patients with invasive disease.1 In light of the fractionation schedules administered in most of these trials, physicians have traditionally counseled patients to expect 5 or more weeks of daily radiation treatments after breast-conserving surgery if they wish to avoid mastectomy. Unfortunately, this could diminish access to breast conservation in populations that face geographic, financial, or other barriers to the receipt of protracted courses of radiotherapy.

Over the past decade, high-quality randomized trials2,3 have generated evidence supporting the efficacy and safety of hypofractionated whole-breast radiation therapy involving approximately 3 weeks of daily treatments in selected patients compared with traditional schedules spanning 5 weeks or longer. A large Canadian trial randomized women with invasive, node-negative breast cancer after lumpectomy to a hypofractionated course of 42.5 Gy in 16 fractions vs a standard course of 50 Gy in 25 fractions. Early results emerged over a decade ago, and a more recent report demonstrated continued equivalence in both efficacy and safety at 10 years.4 Similar results emerged from several British trials, including the UK Standardisation of Breast Radiotherapy (START) B trial,5 which randomized women to 40 Gy in 15 fractions vs 50 Gy in 25 fractions, finding that late adverse effects might actually be lower after hypofraction-
ated treatment. In light of this accumulating evidence, ASTRO issued consensus guidelines in 2011 supporting the use of hypofractionation for patients 50 years or older with T1-T2, NO breast cancer who do not receive chemotherapy and in whom dose homogeneity is within ±7% at central axis. Since these criteria identify about half of all women with invasive breast cancer who undergo breast-conserving surgery as ideal candidates for hypofractionation, the implications are manifest.

Nevertheless, many women who meet criteria for consideration of hypofractionation are not receiving this more convenient approach, even in studies of elderly women in whom the absolute benefit of radiotherapy overall is low and in whom omission of treatment altogether might be considered. Moreover, such studies document that most of the variation in use of hypofractionation occurs at the level of the practice and clinician rather than the patient, suggesting that this variation is not appropriate individualization of care (related to patient factors such as body habitus, chemotherapy receipt, age, histologic findings, or laterality—which some believe identify subgroups of patients in whom hypofractionation is less well established and potentially more risky), but rather evidence of undesirable inconsistency.

As a health services researcher who has documented some of these trends and as a breast radiation oncologist, I am often asked by my colleagues from other specialties how radiation oncologists can possibly justify treating patients with burdensome longer courses of radiation: for instance, "What is there to consider, really, if there are robust data to suggest equivalence, and one schedule is considerably more costly and burdensome?" At first glance, the practice seems the ignominious outcome of a reimbursement system that pays physicians more for delivering a greater number of treatments. Yet even in areas of the world where the reimbursement system does not serve as a clear financial incentive, change is not always forthcoming. Only by adapting to an evolving evidentiary landscape can we hope to advance our field and benefit our patients.

ARTICLE INFORMATION
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REFERENCES