# Increasing radiation dose shortens treatment time for women who choose breast sparing treatment

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Radiation therapy after lumpectomy for early-stage breast cancer can be safely delivered in higher daily doses to greatly reduce treatment time. This conclusion of a new Fox Chase Cancer Center study is good news for women who might opt to have a mastectomy instead of a lumpectomy because of the time commitment needed for the usual six-week radiation course with the breast-sparing surgical option.

The curative outcome for early-stage breast cancer is the same whether a woman chooses to have a lumpectomy or mastectomy, the removal of the entire breast. Many factors influence a woman's decision when considering the two options. One of these factors is the time commitment for the recommended radiation course that follows a lumpectomy. Radiation significantly reduces the chance that cancer will recur in the affected breast, but the usual time commitment—five days a week for six or seven weeks—can be a barrier for choosing this treatment option.

In the first known study of its kind, published in the June 1, 2007, International Journal of Radiation Oncology Biology Physics (Vol. 68), physicians at Fox Chase demonstrated that treatment time can be shortened from six to four weeks using IMRT (intensity-modulated radiation therapy), a highly sophisticated system of delivering external-beam radiation that allows for more even dose distribution and accuracy as well as lower doses to organs such as lung and heart, thus reducing

side effects.

Using IMRT, this study examined the delivery of a higher daily dose of radiation over four weeks (versus a lower dose over six to seven weeks). During that same time period, the lumpectomy site where the tumor was removed was treated with a high-dose radiation "boost." The standard "boost" is typically administered after the four to five weeks of whole breast irradiation and adds another one to two weeks to the treatment time.

Fox Chase radiation oncologist Gary Freedman, M.D., and his colleagues demonstrated that in addition to safely increasing the dose to the whole breast during the four-week period, it is possible to deliver the "boost" concurrently, eliminating the extra two weeks.

"When delivering high doses of radiation, we have to consider the level of side effects and the cosmetic result," explained Freedman. "In this phase II study, women reported acceptable side effects, and the cosmetic result was similar to the longer six-week treatment course."

The study included 75 women treated with 2.25 Gy for 20 days (versus 2 Gy per day with conventional therapy) and a 2.8 Gy boost concurrently (versus sequentially delivering the boost after whole breast irradiation). The primary endpoint was acute skin toxicity.

"Acute toxicity on this clinical trial is not only acceptable but also compares favorably with the results seen for conventional standard fractionated radiation therapy," Freedman said.

At the end of treatment, none of the women had grade 3 or 4 skin toxicity or dermatitis (skin inflammation). Twelve percent had grade 0, 65 percent had grade 1, and 23 percent had grade 2 dermatitis. All toxicity had resolved within six weeks after treatment.

"Cosmetic results for this treatment were also acceptable," noted Freedman. "There was no difference between the cosmetic appearance before and six weeks after treatment."

Monica Morrow, M.D., chairman of surgery at Fox Chase and a co-author of the study. is an expert in patient-decision making. "Many women with breast cancer are working, have families, volunteer or have other commitments," she pointed out. "When they consider whether to have a lumpectomy or mastectomy, the time-commitment of treatment and recovery carries significant weight.

"Women may prefer a lumpectomy but often choose a mastectomy to avoid the time needed for the radiation. We believe this research is a big step in reducing the barriers for choosing breast conserving surgery." Freedman concluded by calling for longer follow-up to compare the outcomes five years after treatment.

Source: Fox Chase Cancer Center