

Hold your breath to protect your heart

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Women who have breast cancer on their left side present a particular challenge to radiation oncologists. Studies have shown that the risk of heart disease is higher in this group of women after radiation treatment because it can be difficult to ensure that a sufficient dose of radiation is delivered to the left breast while adequately shielding the heart from exposure. New research shows a woman who holds her breath during radiation pulses can greatly reduce radiation exposure to the heart.

"Radiation therapy is commonly prescribed to patients with breast cancer following surgery as a component of first-line therapy," said first author Harriet Eldredge-Hindy, M.D., a Chief Resident and researcher in the Department of Radiation Oncology at Thomas Jefferson University "We wanted to determine how effective breath-hold could be in shielding the heart from extraneous [radiation](#) exposure during treatment of the left breast."

Recent studies have shown women with cancer in the left breast are at higher risk of heart disease, and that the risk increases proportionately with the dose of radiation the heart is exposed to during treatment. A number of techniques have been developed to reduce exposure to the heart including prone positioning (lying flat on the belly on a bed that only exposes the left breast), intensity-modulated [radiation therapy](#) (IMRT), and accelerated partial breast irradiation. The breath-hold technique allows doctors to monitor a patient's breath for the position that shifts the heart out of the range of the radiation beam.

In the largest prospective study to date, following women for 8 years

post treatment, 81 women were asked to hold their breath during radiation treatment for breast cancer- a process that was repeated until therapeutic dose was reached. The researchers found that patients capable of holding their breath over the course of treatment had a 90 percent disease-free survival, and a 96 percent overall survival, with a median reduction in radiation dose to the heart of 62 percent. The findings were published online this week in the journal *Practical Radiation Oncology*.

"Given that this technique helps to shield the heart during [radiation treatment](#) for breast cancer," said Rani Anne, M.D., Associate Professor of Radiation Oncology at Thomas Jefferson University and senior author on the study, "we routinely offer [breast cancer](#) treatment with the breath hold technique at Jefferson."

More information: H. Eldredge-Hindy, et al., "Active Breathing Coordinator reduces radiation dose to the heart and preserves local control in patients with left breast cancer: Report of a prospective trial," *Practical Radiation Oncology*, DOI: [dx.doi.org/10.1016/j.prro.2014.06.004](https://doi.org/10.1016/j.prro.2014.06.004), 2014.

Provided by Thomas Jefferson University

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