

# Chest radiation to treat childhood cancer increases patients' risk of breast cancer

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A new study has found that patients who received chest radiation for Wilms tumor, a rare childhood cancer, face an increased risk of developing breast cancer later in life due to their radiation exposure. Published early online in *Cancer*, a peer-reviewed journal of the American Cancer Society, the findings suggest that cancer screening guidelines might be re-evaluated to facilitate the early diagnosis and prompt treatment of breast cancer among Wilms tumor survivors.

Wilms tumor is a rare childhood kidney cancer that can spread to the lungs. When this spread occurs, patients receive a relatively low dose of 12-14 Gray of radiation therapy to the entire chest. To see if such exposure to radiation affects patients' risk of developing [breast cancer](#), Norman Breslow, PhD, of the University of Washington and the Fred Hutchinson Cancer Research Center in Seattle, led a team that studied nearly 2500 young women who had been treated for Wilms tumor during childhood and who had survived until at least 15 years of age.

Of female Wilms tumor survivors who received radiation to the chest, over 20% developed breast cancer by age 40 years (3/4 invasive, 1/4 non-invasive), in contrast to only 0.3% in female Wilms tumor survivors who did not receive radiation. The researchers also found an intermediate risk (4%) of breast cancer among female Wilms tumor patients who had received abdominal but no chest radiation as part of their treatment for Wilms tumor. The rates for females receiving chest irradiation, abdominal radiation and no radiation are nearly 30, 6, and 2 times those expected among women of comparable age in the general population. This high incidence of breast cancer, including invasive cancer, was an unexpected finding.

"Current guidelines call for early screening for breast cancer among survivors of [childhood cancer](#) if they have received 20 or more Gray of [radiation therapy](#) to breast tissue. This would exclude a

large majority of patients who had received whole chest [radiation](#) for Wilms tumor," said Dr. Breslow. "Our results suggest that the risk of early breast cancer among Wilms tumor survivors is sufficiently high that early screening might be considered an option for them also."

In an accompanying editorial, Jennifer Dean, MD and Jeffrey Dome, MD, PhD of Children's National Health System in Washington, DC, noted that Wilms tumor survivors at high risk should undergo breast cancer surveillance with mammogram, breast MRI, or both starting at age 25 years. However, they pointed to research indicating that less than half of childhood cancer survivors considered to have a high risk for breast cancer follow through with surveillance guidelines. "Because compliance with breast cancer surveillance is low in adult survivors of childhood cancer, barriers such as education of both survivors and providers should be addressed and mitigated," they wrote.

**More information:** "Breast Cancer in Female Wilms Tumor Survivors: A Report from the National Wilms Tumor Late Effects Study." Jane M. Lange, Janice R. Takashima, Susan M. Peterson, John A. Kalapurakal, Daniel M. Green, and Norman E. Breslow. *Cancer*, Published Online: October 27, 2014 ([DOI: 10.1002/cncr.28908](https://doi.org/10.1002/cncr.28908))

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