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Moskowitz. “While most women are aware that hereditary mutations can increase their risk for breast cancer, few are aware that radiation to the chest can also increase this risk, including the women who themselves were treated.”

Analyzing data from more than 1,200 female childhood cancer survivors participating in the Childhood Cancer Survivor Study (CCSS) and 4,570 female first-degree relatives of women participating in the Women’s Environmental Cancer and Radiation Epidemiology (WECARE) Study, Dr. Moskowitz and colleagues found that breast cancer incidence by age 50 among women treated with chest radiation for a childhood cancer was 24 percent compared to 31 percent for carriers of *BRCA1* mutations. Among survivors of Hodgkin [lymphoma](#) (who were treated with higher doses of radiation), the incidence was 30 percent.

“It’s not just survivors of Hodgkin lymphoma who are at risk of developing breast cancer but survivors of other childhood cancers typically treated with more-moderate doses of radiation,” Moskowitz added. “The issue is not just the dose of radiation. It’s also the volume of breast tissue that is exposed to radiation that’s a factor here.”

The Children’s Oncology Group recommends that women treated with radiation of 20 Gy or higher to the chest begin breast cancer surveillance with annual mammography and breast MRI starting at age 25 or eight years after radiation, whichever occurs last. However, this study found that women receiving lower doses of chest radiation were also at risk for breast cancer and thus may also benefit from a breast cancer screening.

Approximately 50,000 women in the United States have been treated with chest radiation of 20 Gy or higher and an estimated additional 7,000–9,000 have been treated with radiation of 10–19 Gy.

The work was supported by grants from the [National Cancer Institute](#) of the National Institutes of Health. These grants are also being used by Dr. Moskowitz to build a breast cancer risk prediction model for cancer survivors treated with radiation to the chest.

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