

Childhood cancer survivors are at high risk for multiple tumors as they age

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The largest study yet of adult childhood cancer survivors found that the first cancer is just the beginning of a lifelong battle against different forms of the disease for about 10 percent of these survivors.

The research involved 14,358 individuals enrolled in the federally funded Childhood Cancer Survivor Study (CCSS). St. Jude Children's Research Hospital investigators leading the effort reported that 1,382, or 9.6 percent, of survivors developed new tumors unrelated to their original cancers. About 30 percent of those survivors, 386 individuals, developed third tumors. Four or more tumors were found in 153 survivors in this study. The results appear in the June 27 online edition of the [Journal of Clinical Oncology](#).

"These findings show that when you describe adult survivors of childhood cancer it is not sufficient to describe their risk of a first subsequent cancer, but to acknowledge that some of these patients are at risk for multiple cancers. This is the first study to more fully enumerate that risk," said Gregory Armstrong, M.D., the study's principal investigator and an assistant member of the St. Jude Department of [Epidemiology](#) and [Cancer Control](#).

The work underscores the importance of cancer screenings for this growing population. "Too often, survivors still are not getting these important [cancer screening](#) tests beginning as early or as often as recommended," Armstrong said. For example, [mammograms](#) beginning at age 25 rather than age 40 are recommended for female survivors

whose childhood treatment included chest radiation of 20 grays or more. A gray is a measure of absorbed radiation.

An estimated 366,000 Americans alive today are childhood cancer survivors. With overall long-term childhood cancer survival rates now at 80 percent, the ranks of survivors are expected to keep growing. The CCSS was launched in 1994 to identify the challenges facing [childhood cancer survivors](#) and to develop new methods to ease or prevent late effects. St. Jude is the study's central coordinating institution. St. Jude scientists are also focused on using genomics and other tools to develop the next generation of cancer therapies and better match patients with existing therapy to increase cures but decrease the risk of treatment-related toxicities, including second cancers.

In this study, half of the participants had survived at least 23 years since their childhood cancers were found. Their median age was 32 years old, meaning most had yet to reach the age when rates of prostate, breast and other cancers increase sharply in the general population.

Almost 70 percent of study participants received radiation as part of their successful childhood cancer treatment. This study reinforced earlier research that linked radiation therapy with an increased risk of developing additional tumors, malignant and benign, later in life. Female survivors whose [childhood cancer](#) treatment included radiation were among those at highest risk for later tumors, particularly breast tumors.

For 735 survivors, the second tumors were malignant and thus life-threatening.

Risks were also associated with benign tumors. Investigators showed survivors whose second tumor was a non-melanoma skin cancer had a 1 in 5 chance of being diagnosed with another, more aggressive cancer within 15 years. The group included 485 survivors with either basal or

squamous cell skin cancers. "These survivors are candidates for additional genetic evaluation to look for an underlying genetic propensity for [tumor](#) development or an inability to protect healthy cells against the harmful effects of radiation," Armstrong said.

Of the 176 survivors whose second tumors were found in the breast, 42 women developed multiple tumors. For many, researchers reported that the tumors apparently developed independently in both breasts almost simultaneously. "This finding reinforces previous reports of multiple breast cancers and defines them as a significant risk," Armstrong said.

This study included [survivors](#) whose cancers were found between 1970 and 1986 when they were age 20 or younger. Participants were treated at one of 26 institutions in the United States or Canada and survived at least five years after their cancer diagnosis.

Provided by St. Jude Children's Research Hospital

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