

# Progress in quest to reduce use of radiation in treatment of pediatric Hodgkin lymphoma

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A multicenter trial showed that nearly half of young patients with early-stage Hodgkin lymphoma can be cured without undergoing either irradiation or intensive chemotherapy that would leave them at risk for second cancers, infertility, heart and other problems later.

St. Jude Children's Research Hospital investigators led this multi-institution study, which focused on pediatric [Hodgkin lymphoma](#) patients without widespread disease or symptoms such as weight loss, fever and night sweats. The findings will likely spur efforts to identify patients with even more advanced disease whose cancer could be effectively treated with less irradiation.

"This study adds to evidence that it is possible to omit [radiation](#) even in patients treated with a less intense [chemotherapy](#) regimen and still achieve excellent long-term survival," said Monika Metzger, M.D., an associate member of the St. Jude Department of Oncology. She is the first and corresponding author of the research, which is published in the June 27 edition of the [Journal of the American Medical Association](#).

"These results will help push efforts to further adapt therapies based on a patient's disease risk factors and early response to treatment with the goal of eliminating radiation for as many patients as possible," she said. Metzger said the findings point to the possibility that elderly Hodgkin patients with similarly limited disease and who are less able to tolerate intensive chemotherapy may also be candidates for the minimal treatment approach used in this study.

For decades, radiation has been a staple of Hodgkin [lymphoma treatment](#) in children and adults. In children, radiation and chemotherapy have helped push long-term [survival rates](#) for patients with favorable-risk disease to better than 90 percent. But radiation leaves patients vulnerable to second cancers and other serious problems later. By the 1990s, work was underway in earnest to identify patients who could be cured without radiation.

Hodgkin is found in 850 to 900 children and adolescents each year and accounts for an estimated 6 percent of all childhood cancers. The disease strikes the lymph system, which includes the lymph nodes, tonsils and other immune system components.

This study involved 88 patients whose cancer had spread to less than three lymph node groups and surrounding tissue. None of the patients reported fever, weight loss or other symptoms also associated with a worse outcome. About one-third of young Hodgkin lymphoma patients fall into this favorable risk category. The patients were treated between March 2000, and December 2008, at St. Jude; Stanford University Medical Center; Dana-Farber Cancer Institute and Massachusetts General Hospital, both in Boston; and Maine Medical Center, in Portland. One patient withdrew early and was not included in the results.

The patients all received four rounds of chemotherapy with the drugs vinblastine, Adriamycin, methotrexate and prednisone, a combination known as VAMP. Unlike some other chemotherapy agents used to treat Hodgkin lymphoma, none of these drugs is linked to second cancers or infertility. One, Adriamycin, belongs to a family of drugs that can lead to heart damage, but at much higher cumulative doses.

Radiation was recommended for patients whose tumors had not shrunk at least 75 percent following two rounds of chemotherapy. Those patients received low-dose irradiation of 25.5 grays to the tumor and

surrounding tissue.

For patients with a favorable initial response to chemotherapy, omitting radiation had no impact on their survival either two years or five years after their diagnosis. Those patients fared no worse than patients who received radiation therapy after the opening rounds of chemotherapy resulted in only a partial response. All patients followed for at least five years were still alive regardless of their initial treatment.

More than 88 percent of the five-year survivors were cancer-free. Patients in both treatment groups were equally likely to enjoy that status.

Cancer returned in 11 patients, including five not initially treated with radiation. The recurrence was successfully treated with chemotherapy and low-dose irradiation. Four patients who received [irradiation](#) during their treatment received high-dose chemotherapy and bone marrow transplants when their cancer returned. One patient was successfully treated with a more [intensive chemotherapy](#) and radiation combination than the one that initially worked, but that patient did not undergo a bone marrow transplant. Another patient relapsed with a form of lymphoma known as non-Hodgkin lymphoma. Despite treatment, that patient later died of the disease.

Metzger said the findings suggest that for a subgroup of Hodgkin [lymphoma patients](#) this therapeutic regimen may not be appropriate. These are patients with nodular lymphocyte predominant Hodgkin. Of the five [patients](#) in the chemotherapy-only group who relapsed, four had this subtype.

**More information:** [Abstract](#)  
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Provided by St. Jude Children's Research Hospital

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