



Less Chemotherapy, Better Outcomes: Immunotherapy Advances Treatment for High-Risk Childhood Leukemia

(Vienna, 17.09.2026) **Treating childhood leukemia often requires intensive chemotherapy, which can severely weaken the immune system and increase the risk of life-threatening infections. An international clinical study involving the Clinical Trials Unit led by Andishe Attarbaschi at St. Anna Children's Cancer Research Institute (St. Anna CCRI) and St. Anna Children's Hospital offers a less intensive treatment option for children and adolescents with high-risk B-cell acute lymphoblastic leukemia: replacing two cycles of high-dose chemotherapy with the immunotherapy blinatumomab improved treatment outcomes while substantially reducing serious infections.**

Treatment of childhood leukemia has improved significantly over the past few decades. However, curing high-risk leukemia still requires intensive chemotherapy, which can take a major toll on the body and severely weaken the immune system. As a result, patients are particularly vulnerable to serious and potentially life-threatening infections during treatment.

An international clinical study, led by Martin Schrappe at the University Medical Center Schleswig-Holstein in Kiel, and with the participation of the Clinical Trials Unit at St. Anna Children's Cancer Research Institute (St. Anna CCRI) and St. Anna Children's Hospital—which coordinated the study in Austria—now shows that two intensive chemotherapy cycles can be replaced by the bi-specific antibody blinatumomab. The approach improved clinical outcomes in children and adolescents with high-risk B-cell acute lymphoblastic leukemia and markedly reduced serious infections, showing that less chemotherapy does not necessarily mean a less effective treatment. The results were published in the New England Journal of Medicine.

Immunotherapy takes on a greater role

Blinatumomab is a therapeutic bi-specific antibody that has emerged in recent years as an important addition to chemotherapy for B-cell acute lymphoblastic leukemia (B-ALL). It acts as a bridge between leukemia cells and the body's immune system: by binding to the CD19 marker on the surface of leukemia cells, blinatumomab helps immune cells recognize and destroy the cancer cells. Adding blinatumomab to conventional chemotherapy has already improved outcomes for patients with high-risk leukemia. However, patients continued to receive highly intensive chemotherapy, and treatment-related complications such as severe infections remained a major concern.

In the new study, researchers investigated whether blinatumomab could replace parts of this intensive chemotherapy. A total of 705 patients with high-risk B-cell acute lymphoblastic leukemia were randomly assigned to two groups. One group received the standard of 2 cycles of high-dose chemotherapy as part of the consolidation therapy. In the second group, the two chemotherapy cycles were replaced by two cycles of blinatumomab.



Crucially, reducing chemotherapy improved clinical outcomes, halving the rate of relapses. At the same time, the frequency of clinically relevant infections fell sharply: from 69.4% in patients receiving chemotherapy alone to 22.8% in those receiving blinatumomab.

The findings show that replacing part of the intensive chemotherapy with immunotherapy can substantially reduce treatment-related toxicity and give the immune system more opportunity to recover and fight infections.

"Reducing the therapy we give to our patients can be daunting because it might compromise our ability to control the cancer," says Andishe Attarbaschi, head of the Clinical Trials Unit at St. Anna Children's Cancer Research Institute and co-designer of the study. "However, our results show that replacing chemotherapy with immunotherapy is safe and highly effective. This allows us to substantially reduce treatment toxicity and improve our control of the leukemia."

The study, coordinated by the AIEOP-BFM ALL 2017 consortium, included researchers and patients from Australia, Austria, the Czech Republic, Germany, Israel, Italy, Slovakia and Switzerland. Its findings could help shape future treatment strategies for children and adolescents with high-risk B-cell acute lymphoblastic leukemia.

Publication

Schrappé, M., Locatelli, F., Valsecchi, MG., Zugmaier, G., Vossen-Gajcy, M., Starý, J., Attarbaschi, A., Möricke, A., Bourquin, JP., Barbaric, D., Elitzur, S., Silvestri, D., Kolenova, A., Dalla Pozza, L., Bodmer, N., Stanulla, M., Alten, J., Zaman, F., Bergmann, A., Cazzaniga, G., Brüggemann, M., Buldini, B., Köhler, R., Fazio, G., Rössig, C., Sramkova, L., Parasole, R., Hunsdörfer, P., Putti, MC., Borkhardt, A., Fagioli, F., Bettini, LR., Poyer, F., von Stackelberg, A., Vinti, L., Conter, V., Zimmermann, M., Rizzari, C., Cario, G., Biondi, A. Blinatumomab Replacing Chemotherapy in Pediatric Acute Lymphoblastic Leukemia. *New England Journal of Medicine* (2026). DOI: <https://doi.org/10.1056/NEJMoa2604166>

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About St. Anna Children's Cancer Research Institute



St. Anna Kinderkrebsforschung
CHILDREN'S CANCER RESEARCH INSTITUTE



St. Anna Children's Cancer Research Institute (CCRI) is an international and interdisciplinary research institution dedicated to developing and improving diagnostic, prognostic, and therapeutic strategies for the treatment of children and adolescents with cancer through innovative research. Taking into account the specific characteristics of childhood tumors, dedicated research groups in tumor genomics and epigenomics, immunology, molecular biology, cell biology, bioinformatics, and clinical research work together to align the latest scientific and experimental findings with the clinical needs of physicians and sustainably improve the well-being of young patients. www.ccri.at www.kinderkrebsforschung.at

About St. Anna Children's Hospital

St. Anna Children's Hospital is one of Austria's leading centers of pediatrics and adolescent medicine, particularly in the treatment of childhood malignant and non-malignant blood disorders and malignant tumors, being the only ERN PaedCan center of the country. www.stanna.at

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