

# Finding the optimal combination of anticancer drug administration for the conditioning of cord blood transplantation

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Allogeneic hematopoietic stem-cell transplantation (allo-HSCT) can cure hematopoietic diseases, such as acute myeloid leukemia. Cord blood

transplantation (CBT), which accounts for more than one-third of allo-HSCTs in Japan, uses hematopoietic stem cells contained in the blood in the umbilical cord and placenta. Moreover, it is a valuable option for patients lacking suitable HLA-matched donors.

Allo-HSCTs are expected to have antileukemia effects because of conditioning that contains a combination of anticancer drugs and total-body radiation performed before allo-HSCT and the allogeneic immune reaction of the transplanted cells.

Various reduced-toxicity conditioning regimens exploring fludarabine, an anticancer drug, have been recently developed, and allo-HSCT is now conducted more safely. Thus, alkylating agents (e.g., melphalan and busulfan) and low-dose total-body irradiation are combined, but the optimal combination for CBT remains unclear.

A [study](#), published in *American Journal of Hematology*, compared five different fludarabine-containing conditioning regimens commonly used in CBT for myeloid malignancies, such as myeloid leukemia and [myelodysplastic syndrome](#), employing data from 1395 cases extracted from the Transplant Registry Unified Management Program.

The results revealed that the combination of fludarabine, melphalan (140 mg/m<sup>2</sup>), and low-dose total-body irradiation offered the best survival rate (the three-year survival rate was 67%) with the lowest relapse rate and nonrelapse mortality after CBT compared with that of other fludarabine-containing conditioning regimens. Researchers also found fewer deaths from infection using the combination.

Moreover, an appropriate combination of fludarabine and alkylating agents is expected to improve the outcome of future CBTs.

**More information:** Naoki Kurita et al, Comparison of

fludarabine-based conditioning regimens in adult cord blood transplantation for myeloid malignancy: A retrospective, registry-based study, *American Journal of Hematology* (2024). DOI: [10.1002/ajh.27172](https://doi.org/10.1002/ajh.27172)

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