

# Novel treatments to prevent infections in patients with leukemia

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Using either universal myeloid progenitor cells or expanded umbilical cord blood transplantation could help prevent infections in patients with leukemia, according to a pair of studies co-authored by Olga Frankfurt,

MD, associate professor of Medicine in the Division of Hematology and Oncology.

Patients receiving chemotherapy are severely immunocompromised and infections are among the greatest causes of toxicity and death in this population. These experimental treatments could reduce infections among [vulnerable patients](#), Frankfurt said.

"Infections are a serious risk for these patients, so any method to reduce [infection](#) will be valuable," said Frankfurt, who is also a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

## **Myeloid progenitor cells**

A trial studying more than 160 patients found that universal "off-the-shelf" myeloid progenitor cells helped reduce frequency of fever episodes and boost the production of infection-fighting cells in patients receiving chemotherapy for acute myeloid leukemia (AML). The study was published in the *Journal of Clinical Oncology*.

Chemotherapy decreases white [blood](#) cell counts, increasing risk of infections. Though patients receive prophylactic antibiotics, fevers and infections are serious causes for concern.

"Fever triggers an infectious workup, a change in antibiotics and it's stressful for the patient," Frankfurt said.

In the study, Frankfurt and her collaborators tested using white blood cell progenitors in patients after chemotherapy. The progenitor cells do not require matching to individual patients as some similar treatments require. A control group received standard supportive care.

Patients receiving progenitor cells had fewer fever episodes, less usage of antibacterial and antifungal medications, and spent fewer days in the hospital. These results suggest that myeloid progenitor cells may provide a new option to reduce infections in patients with AML undergoing intensive chemotherapy.

"It's quite impressive to me that the number of fever episodes were fewer," Frankfurt said. "Fewer days of hospitalization can also improve patient quality of life and reduce financial burden."

The investigators hope to follow up on this phase II trial with a larger phase III trial to definitively demonstrate the efficacy of the treatment.

This study was supported in part with federal funds from the Biomedical Advanced Research and Development Authority under Contract No. HHSO100201000051C.

## **Expanded cord blood**

A new method to "expand" a single unit of umbilical cord blood could reduce the risk of infection and shorten the length of hospital stays for patients with leukemia, according to a study published in *Blood*.

Umbilical cord blood is an important source of stem cells used in therapies for leukemia, and two units of cord blood are typically used for adult patients. However, sourcing cord blood for patients from racial and ethnic minority populations can be difficult, so this new technique could alleviate supplies of cord blood for transplant and speed engraftment, according to Frankfurt.

"It could provide lifesaving therapies for patients who do not have a donor—which is particularly pertinent to African American, Hispanic and multiracial patients," Frankfurt said.

The process coaxes stem cells to grow, effectively "expanding" the number of stem cells and hypothetically increasing the efficiency of the treatment, called omidubicel.

In the current phase III randomized study, investigators compared outcomes of patients with blood cancer who were treated with either the standard two units of cord blood or the expanded blood derived from a single unit.

Patients treated with omidubicel had their hospital stays nearly halved: an average of 12 days compared to 22 days in the group treated with cord blood. Patients treated with omidubicel also showed faster blood count recovery and had fewer infections—possibly a result of the quicker pace of immune cell regeneration according to Frankfurt.

"Because the infection-fighting [cells](#) are recovering faster, [patients](#) are better protected from infections," Frankfurt said.

Notably, the trial did not show a statistically significant improvement in survival, a finding that could have implications for eventual Food and Drug Administration approval. However, reduction in hospital stay could save costs overall compared to the standard cord blood transplant, according to Frankfurt.

This study was supported by Gamida Cell.

**More information:** Pinkal M. Desai et al, Open-Label Phase II Prospective, Randomized, Controlled Study of Romyelocel-L Myeloid Progenitor Cells to Reduce Infection During Induction Chemotherapy for Acute Myeloid Leukemia, *Journal of Clinical Oncology* (2021). [DOI: 10.1200/JCO.20.01739](https://doi.org/10.1200/JCO.20.01739)

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