# Cytogenetics predict transplant results in older patients with acute myeloid leukemia

## What were researchers trying to learn?

In this study, researchers wanted to better understand how older patients with acute myeloid leukemia (AML) do after having a blood or marrow transplant (BMT). Specifically, they wanted to know if testing genes in the AML cells can predict how well patients will do after BMT.

Genes are instructions that tell each cell in your body how to work. Sometimes genes mutate (change). Doctors have learned that certain gene changes in the AML cells make it harder to cure than other types of gene changes.

Studying gene changes is called **cytogenetic testing** (*cyto* means cell in Greek). To do this testing, doctors study patients' blood and bone marrow. When doctors learn that changes in the AML genes make it harder to treat, they say the patient has poor-risk cytogenetics.

In this study, researchers looked at the AML genes of nearly 200 patients who were 60 years of age or older. All patients in the study had BMT during their 2$^{nd}$ complete remission (the AML came back once and was treated). Researchers grouped them as having poor-risk, intermediate-risk, or favorable-risk cytogenetics.

## What did they find?

Researchers found that 42% (about 4 out of 10) of patients were alive 3 years after transplant. And 37% (also about 4 out of 10) of patients were alive and had no signs of AML 3 years after transplant.

They found that cytogenetic testing was very good at predicting survival after transplant. It was also very good at predicting whether AML would come back (relapse) after transplant.

Specifically, the patients who had poor-risk cytogenetics had the lowest rate of survival after transplant. Patients with intermediate-risk had better survival rates. And patients with favorable-risk had the best survival rates.

An important result of the study is that cytogenetic factors were the **only** factors affecting how well the transplants worked in these older patients. In other words, patient sex, general health, type of donor (related or unrelated), and type of transplant preparation (standard- or reduced-intensity) all had no influence on survival after transplant.

**Important Points:**

- **Cytogenetic testing can predict BMT outcomes in older patients with AML.**
- **Transplant works for about 1 of every 3 older patients with AML.**

## Why is this important?

The results of this study can be used to help doctors and older patients with AML decide whether BMT is a good treatment option for them. Older patients with AML should ask their doctor how their cytogenetic risk factors may affect how well the transplant works.

The study also confirms that there are many different types of AML. Some types are very hard to treat, and other types are more easily treated.

## What else should I keep in mind about this study?

The results of research studies are always limited in what they can and can't tell you. For example, cytogenetic risk factors may affect BMT results differently in younger patients with AML. Also, this study only included older patients who had BMT during their 2nd complete remission. BMT might work better during the 1st complete remission.

The researchers looked at BMT results in only 196 patients. If more patients had been studied, the researchers might have found that other factors (for example, donor type) could also affect BMT results in older patients with AML. Also, the researchers didn't have information about patients' quality of life, or how well they feel physically and emotionally, after BMT.

## Questions to ask your doctor

If you have AML and are considering a transplant, you may want to ask your doctor:

- What do my cytogenetic results mean for my treatment?
- Does my current health or age affect how well a transplant might work for me?
- Does this transplant center have a lot of experience transplanting older patients?

## Learn more about

- This research study
- Acute myeloid leukemia

**Source:**
Michelis FV, Gupta V, Zhang M-J, et al. Cytogenetic risk determines outcomes after allogeneic transplantation in older patients with acute myeloid leukemia in their second complete remission: A Center for International Blood and Marrow Transplant Research cohort analysis. Cancer. 2017 Jun 1; 123(11):2035-2042. Epub 2017 Jan 24. PMC5445018.

**About this research summary**
This information is provided on behalf of the Consumer Advocacy Committee of the CIBMTR® (Center for International Blood and Marrow Transplant Research®). The CIBMTR is a research collaboration between the National Marrow Donor Program®/Be The Match® and the Medical College of Wisconsin.



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