

## Transplant can help some children with hypodiploid acute lymphoblastic leukemia

### What were researchers trying to learn?

Researchers wanted to learn how well transplants work in children with a type of acute lymphoblastic leukemia (ALL) called hypodiploid ALL. ALL is a type of blood cancer where the bone marrow makes too many lymphocytes (a type of white blood cell). In hypodiploid ALL, the diseased lymphocytes have fewer than 46 chromosomes, which is the number of chromosomes (strands of genetic information) in normal cells.

The researchers specifically looked at whether the number of chromosomes in the diseased cells affected how well the transplants worked. The researchers also wanted to learn whether the timing of transplant affected how well the transplants worked. And finally, the researchers wanted to learn whether the results of transplant for hypodiploid ALL have improved over time.

To answer all these questions, the researchers studied the outcomes (results) of 78 transplants for children with hypodiploid ALL. The children had their transplants between 1990 and 2010. Half of the children (50%) had ALL with 43 or fewer chromosomes, 12 (15%) had 44 chromosomes, and 27 (35%) had 45 chromosomes.

### What did they find?

Researchers learned that more than half (56%) of the children who had transplant for hypodiploid ALL were alive 5 years after transplant. Also, 51% of the children were alive with no signs of diseased cells in their bodies.

The number of chromosomes in the diseased cells affected transplant outcomes. Children with 43 or fewer chromosomes in their diseased cells had a higher risk of their leukemia coming back within 5 years of transplant than children with 44 or 45 chromosomes in the diseased cells. Similarly, children with 43 or fewer chromosomes had a higher risk of death within 5 years of transplant compared to those who had 44 or 45 chromosomes in their diseased cells.

Researchers also found that children who had transplant earlier, in their 1<sup>st</sup> complete remission, were more likely to be alive 5 years after transplant. The 1<sup>st</sup> complete remission means there are no signs of ALL after the 1<sup>st</sup> type of chemotherapy treatment. Children who had transplant later, in their 2<sup>nd</sup> complete remission, had a higher risk of dying. The 2<sup>nd</sup> complete remission means that chemotherapy controlled the ALL a 2<sup>nd</sup> time (after coming back once).

And finally, researchers learned that children who had transplant between 2000 and 2010 lived longer than those who had transplant between 1990 and 1999. The researchers think this improvement is because of better ways to find matched donors and better supportive care during transplant.

### Important Points:

- **Children with hypodiploid ALL did worse when they had a transplant later (in their 2<sup>nd</sup> complete remission).**
- **Children with 43 or fewer chromosomes in their diseased cells had a higher risk of the leukemia coming back and dying after transplant compared to children with 44 or 45 chromosomes.**
- **While more children may live longer because doctors can find better matched donors, disease factors still affect transplant outcomes.**

### Why is this important?

This study showed that transplant can be a good option for many children with hypodiploid ALL. Transplant results, however, may not be as good for children who have transplant in their 2<sup>nd</sup> complete remission compared to those in their 1<sup>st</sup> complete remission. Children who have diseased cells with 43 or fewer chromosomes may also have worse transplant outcomes (results).

### 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. Many children with hypodiploid ALL get chemotherapy only and do not get transplants. This study did not compare these 2 treatment options, so it does not have information for parents deciding between these 2 treatments.

### Questions to ask your child's doctor

If you have a child with hypodiploid ALL, you may want to ask:

- Is my child eligible for a transplant? Why or why not?
- How will the number of chromosomes affect a transplant for my child?
- If chemotherapy doesn't get my child's disease in remission, what is the best treatment option?
- What can you tell me about my child's quality of life after a transplant? After chemotherapy-only treatment?

### Learn more about

- [This research study](#)
- [Transplantation in patients with ALL](#)

### Source:

Mehta PA, Zhang M-J, Eapen M, et al. Transplant outcomes for children with hypodiploid acute lymphoblastic leukemia. *Biology of Blood and Marrow Transplantation*. 2015 Jul 1; 21(7): 1273-1277. doi:10.1016/j.bbmt.2015.04.008. Epub Apr 10. PMC4465998.