

What's Pumping in Pediatric Heart Transplant Research?

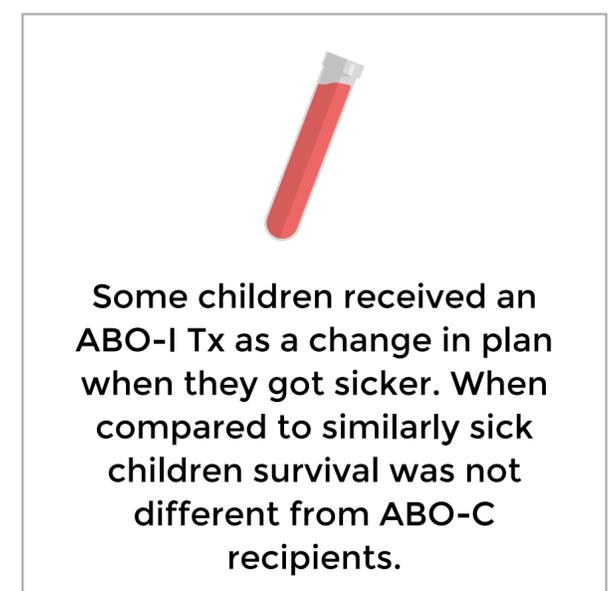
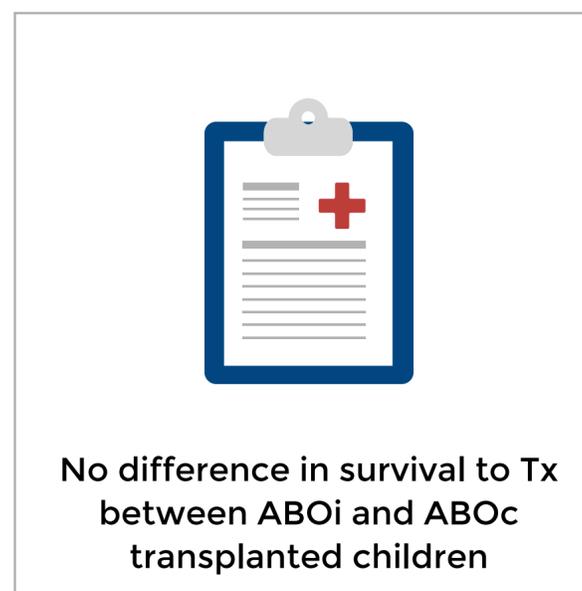
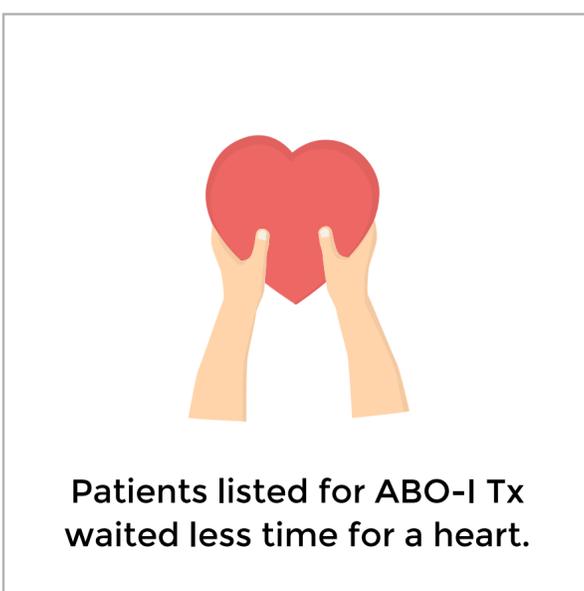
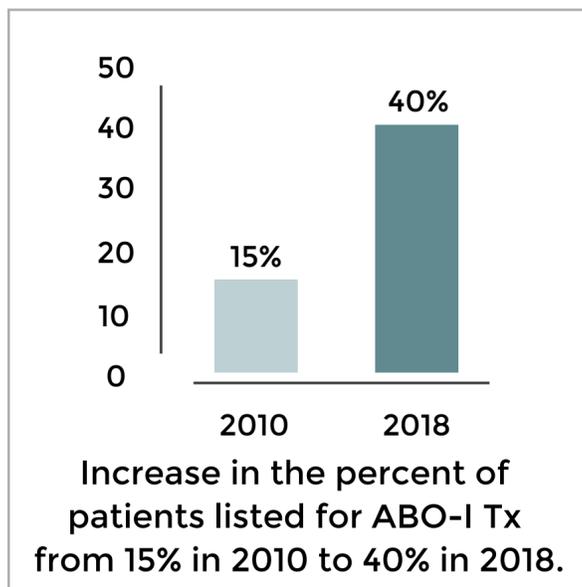
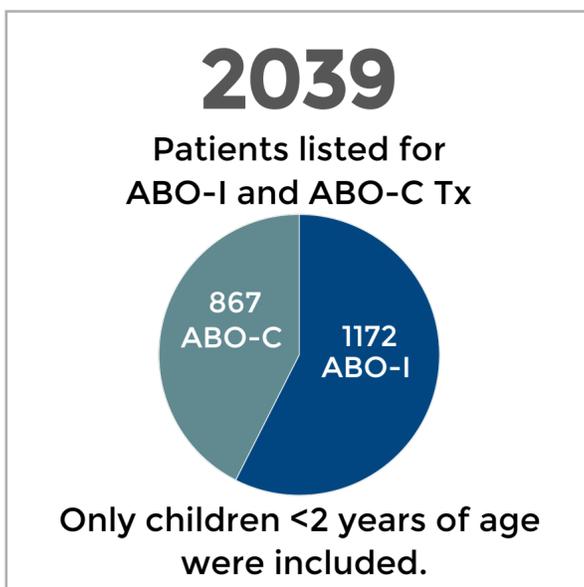
Summary of the following recently published article from PHTS

A current era analysis of ABO incompatible listing practice and impact on outcomes in young children requiring heart transplantation

Simon Urschel, MD | Marie McCoy, RN, NP | Ryan S. Cantor, PhD | Devin A. Koehl, BSc | Warren A. Zuckerman, MD | Anne I. Dipchand, MD | Zdenka Reinhardt, MD | Kirk R. Kanter, MD | Jean A. Ballweg, MD | Joshua Sparks, MD | James K. Kirklin, MD | Waldemar F. Carlo, MD

If a donor and recipient have mismatched blood groups this is called an ABO-Incompatible (ABO-I) transplant (Tx). This type of Tx has resulted in an immune system reaction that causes rejection, therefore, only ABO-Compatible (ABO-C) were performed.

Young children can receive a heart from a donor with a mismatched blood group because their immune system is different than older children and adults. If a child is able to be listed for an ABO-I Tx, it increases the number of potential donors.



Summary:

ABO-I listing should be considered for all children who are eligible, as this approach decreases waitlist time with no difference in survival after transplant.

For more information refer to the original article:

Urschel S, McCoy M, Cantor RS, et al. A current era analysis of ABO incompatible listing practice and impact on outcomes in young children requiring heart transplantation. *J Heart Lung Transplant*. 2020;39(7):627-635. doi:10.1016/j.healun.2020.02.008

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Background: In adults, hearts transplanted from a donor with a different ABO-blood group are immediately rejected and destroyed by the immune system. This experience had led to the dogma that ABO incompatible (ABOi) heart transplantation is not possible. Matching blood groups limits the pool of acceptable donors for any listed patient, especially for those with blood group O who only match to a blood group O heart. This limitation of the donor pool, has led to patients dying before a matching organ became available, especially in younger children. In the hope for a better chance to find an organ for these babies in time, transplantation with ABOi hearts was attempted first in the mid 1990s in a study. This study was done because young children don't have antibodies against other blood groups, and only develop these between 6 and 24 months of age. Initial results were good and accordingly more places started performing ABOi transplantation.

Study summary: We have studied children <2 years of age reported to the PHTS from 2010 to 2018. Among 2039 patients the proportion of children listed for ABOi transplant increased from 49% to 72% during the study period. However, patients listed for ABOi were sicker, suggesting that centers may still be concerned to use this approach in more stable patients. Altogether, 239 children received an ABOi heart, with the yearly proportion going from 15% in 2010 to 40% of transplanted children in the last year. Those listed for ABOi transplant received an organ sooner, especially patients with blood group O. The chance to survive until transplant was similar for both groups. After transplantation survival was not different between ABO compatible and incompatible transplants with exception of a small group (22 children) that were initially listed for ABO compatible transplant only, but later received an ABOi heart. These children most likely deteriorated while waiting and when we compared them with children who had a similar degree of illness, the survival of all groups was similar. **Conclusions:** ABOi transplantation has become a standard for children under 2 years of age in the past 10 years and this has reduced the waiting time, especially for blood group O children. Although there is still a tendency to reserve ABOi transplant for sicker patients, the survival after transplant is not different from ABO compatible transplant recipients.

Our study provides a strong argument to offer ABOi transplantation to all patients who are eligible.