

# What's Pumping in Pediatric Heart Transplant Research?

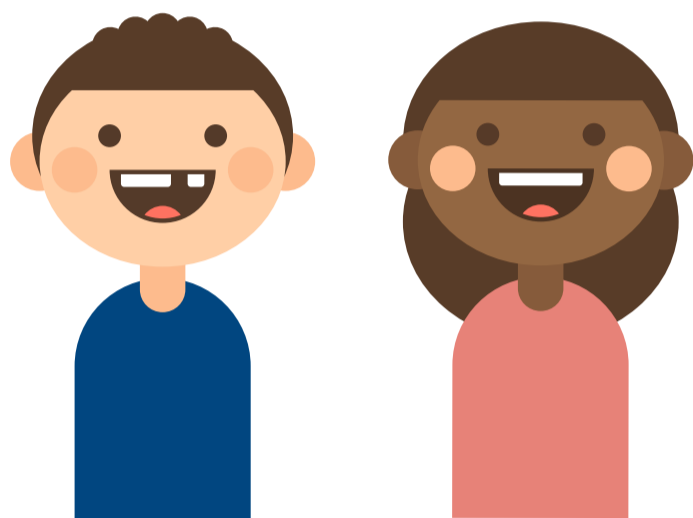
Summary of the following recently published article from PHTS

## Education Placement in Pediatric Heart Transplant Patients

Micah S. Brosbe, PhD | Lydia K. Wright, MD | Ryan Cantor, PhD | William J. Dreyer, MD | Sonya Kirmani, MD | Margaret Knight, MSN, CPNP | Stephanie J. Nakano, MD | Steven J. Kindel, MD | Thomas D. Ryan, MD, PhD | James K. Kirklin, MD | Shriprasad R. Deshpande, MD

Previous research has shown that children with heart disease may be at higher risk for delays in their development. PHTS was interested in studying this in children following heart transplant.

### Who did we look at?



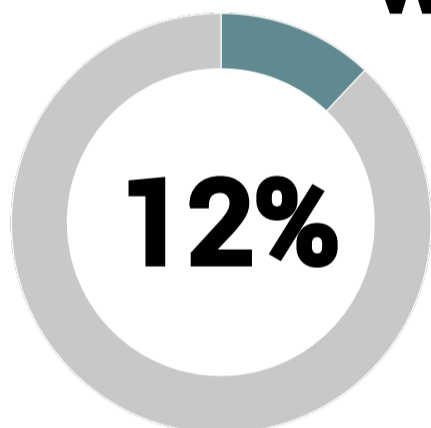
1495 US Heart Transplant Patients  
Ages 6 -18



### Grouped by Education Placement

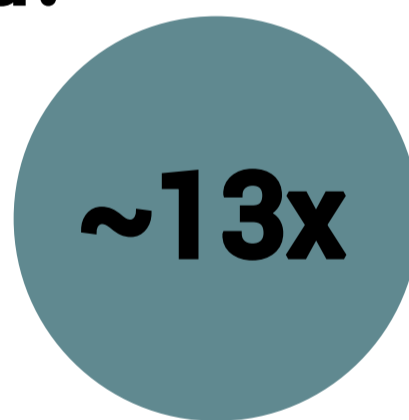
- Standard: At grade level without special education.
- Modified: Below grade level/receiving special education services.

### What was found?



12% of children (at listing and after transplant) were in Modified Education.

This is ↑ than the general population.



A child in Modified Education at listing was 12.9 times more likely to be in Modified Education 3yrs after transplant.

### Factors associated with needing Modified Education programs at time of listing

- Boys > Girls
- Congenital Heart Disease (CHD)
- Government insurance
- Longer hospital stay before transplant



### Who was more likely to need Modified Education after transplant?

- Congenital Heart Disease (CHD)
- Government insurance
- Infections after transplant

### What wasn't associated with Modified Education after transplant?

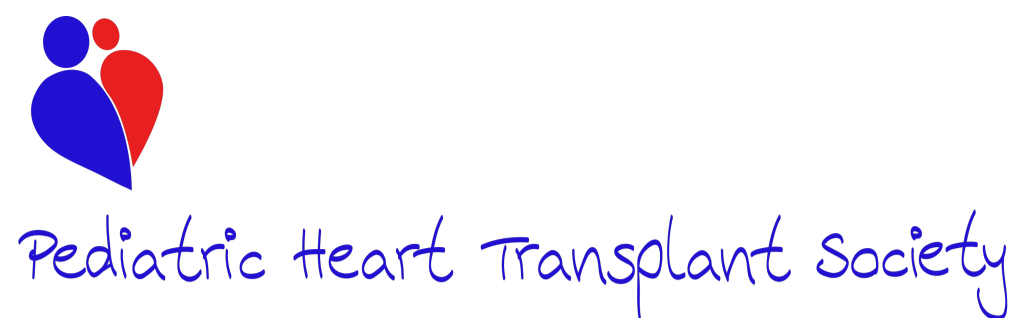
- Age
- Race
- Use of ECMO or VAD
- Waitlist Time
- Sickness at time of transplant

### Summary:

Some children, both before and after transplant, may have learning issues as suggested by the need for modified education. Understanding the factors associated with need for modified education, dedicating resources as well as creating targeted, early interventions will be essential to maximize their potential!

**For more information refer to the original article:**

Brosbe, MS, Wright, LK, Cantor, R, et al. Educational and learning morbidity in pediatric heart transplant recipients: A pediatric heart transplant society study. *Pediatr Transplant*. 2020; 24:e13711. <https://doi.org/10.1111/ptr.13711>



## **What's Pumping in Pediatric Heart Transplant Research?**

Summary of the following recently published article from PHTS:

### **Education Placement in Pediatric Heart Transplant Recipients**

Micah S. Brosbe, PhD, Lydia K. Wright, MD, Ryan Cantor, PhD, William J. Dreyer, MD, Sonya Kirmani, MD, Margaret Knight, MSN, CPNP, Stephanie J. Nakano, MD, Steven J. Kindel, MD, Thomas D. Ryan, MD, James K. Kirklin, MD, Shriprasad R. Deshpande, MD

Past research has shown that many children with heart disease have a higher risk for delays in development. Some of the areas that may be impacted include language, reasoning abilities, focus and concentration. Many of these children and teens also struggle with schoolwork and may fall behind their peers.

Most of this research in the past has focused on children and teens with congenital heart disease (CHD). We wanted to look more specifically at children who received a heart transplant. We wanted to know:

- a) How likely are children and teens at listing and after a heart transplant to be behind grade level or in special education?
- b) What predicts education placement?
- c) How does education placement change after transplant?

Using data from the Pediatric Heart Transplant Society (PHTS) study, we study records from 1495 US heart transplant patients from ages 6 to 18 years. We grouped children based on their education placement. Those who were at grade level without special education placement were in the "Standard Education" group. Patients behind grade level or in special education were in the "Modified Education" group. We looked at different aspects of their medical history and other features to try and figure out what factors were associated with education placement at transplant and over time.

We found that when listed for transplant, 12% of the children/teens in the study were in Modified Education, and this rate remained fairly stable, one and three years after transplant. This rate was higher than the special education placement rate for the general US population, which is roughly 4-5%. Boys (as opposed to girls), patients with congenital heart disease, government insurance coverage, and those with longer hospital stays were more likely to be in the Modified Education group when listed for transplant.

Those in the modified education at the time of transplant listing were 12.9 times more likely to still be in Modified Education three years after transplant. Those patients with government insurance, congenital heart disease, or post-transplant infections were also more likely to be in Modified Education three years after transplant.

Age, race, listing status, use of mechanical support, and waitlist time were not significantly associated with type of education placement.

These results of this study add to the developing research on learning and school-based issues in children with heart disease. There are a few key points:

- 1) Patients with a higher risk for Modified Education should be put forward for targeted assessment and testing to help develop an education plan.
- 2) Appropriate school-based interventions are very important to help maximize a child's potential post-transplant