Pediatric Heart Transplant Society

PEDIATRIC HEART TRANSPLANTATION TODAY

PHTS NEWSLETTER

July 2022

Dr. Juan "Chuck" Alejos, Senior Editor
Dr. Neha Bansal, Junior Editor

PHTS GROWTH*

11207	patients enrolled
11635	total listings/ relistings entered
8560	transplants/ retransplants entered
507	listings for 2021
412	transplants for 2021
146	listings for 2022
140	transplant for 2022

*as of July 11, 2022

A MESSAGE FROM THE EDITORS

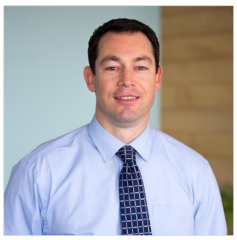
Hello PHTS community!

Any sufficiently advanced technology is equivalent to magic. - Arthur C. Clarke
We are bringing you an exciting edition of the PHTS newsletter with articles on the utility of donor derived cell free DNA (ddcfDNA) and the molecular microscope diagnostic system. It is amazing how new technology is quickly changing our lives! Technology has made our lives easier, faster, better, and more fun. We now have multi-functional devices like the smartwatches and smartphones. Our cars are electric and our computers are faster, more portable as well as more powerful than ever before. It is only logical that new technologies are revolutionizing the field of transplantation. It is important that the advances in these technologies help us improve care of our patients. The PHTS is committed to keeping up with the new data and is working on an optional data collection form for the ddcfDNA to study this in an organized fashion.

We also would like to take this opportunity to thank DeAnna Archer who tirelessly puts all these newsletters together for us every quarter. We are always looking for interesting ideas for the newsletter and would love to hear back from you on how to make these newsletters better serve the community.

Wishing you all a very happy summer for you and your families!

Chuck and Neha



PHTS President
Scott Auerbach, MD
Children's Hospital Colorado
Denver, Colorado



PHTS Vice President
Shriprasad Deshpande, MD
Children's National
Health System

PHTS Newsletter Editors



Juan Alejos, MD
jalejos@mednet.ucla.edu



Neha Bansal, MD
neha.bansal@mssm.edu



DeAnna Archer, BSW
darcher@uab.edu

Visit our website to learn more:
www.PHTSociety.org

Donor-derived Cell-free DNA (dd-cfDNA) – The Latest Tool in the World of Pediatric Heart Transplant

Michelle Staron-Ehlinger, MMS, PA-C, Gary S. Beasley, MD, and Rabia S. Khan, MD

University of Iowa Hospitals and Clinics

Despite continued advancements in the field of solid organ transplant, allograft rejection remains an important cause of morbidity and mortality. In adult and pediatric heart transplant recipients, endomyocardial biopsy (EMB) is currently the gold standard for diagnosing rejection. However, EMB is less than ideal due to patient discomfort, risk of complications, potential for sampling error, and inter-observer variation in result reporting. In the pediatric population, factors such as the need for anesthesia and smaller patient and organ size further increase the likelihood of complications.

Donor-derived cell-free DNA (dd-cfDNA) is a biomarker found in peripheral blood which consists of donor DNA fragments that are released into the recipient circulation when donor cells die (1). This technology allows differentiation of the donor organ DNA from the recipient DNA within the blood sample in order to provide a percentage of dd-cfDNA. At baseline, every organ has a normal rate of cell turnover, while during times of rejection, cell turnover and apoptosis are increased. Therefore, the proportion of circulating dd-cfDNA is expected to be elevated at times of rejection, making dd-cfDNA a potential direct marker for donor organ injury. It is not surprising that enthusiasm for this technology is growing as it provides a minimally invasive measure that may allow us to detect rejection and reduce the need for invasive biopsy surveillance in the near future.

Studies in adult heart transplant recipients have already demonstrated a clear association of increased percentage of dd-cfDNA with acute rejection as well as subsequent decrease following resolution of rejection with therapy (1, 2). Pediatric heart transplant data appears to demonstrate similar correlations to the adult studies, but many of these studies were not specific to pediatric patients and instead evaluated a combined cohort of both adults and children (3, 4). In adult heart transplant, research has led to the establishment of cutoff values for dd-cfDNA percentage which allow for reasonable interpretation of the test to identify rejection. Unfortunately, the volume of data is lacking in the pediatric population to establish a conclusive cutoff. Furthermore, normal cell turnover rate is potentially unpredictable in pediatric patients due to periods of rapid growth, hormonal changes, and natural immunologic changes. In spite of these challenges, dd-cfDNA has been utilized in small cohorts of pediatric heart transplant recipients to successfully detect rejection. Recently, a pediatric heart transplant center used dd-cfDNA results to decrease the frequency of EMB with no short-term adverse outcomes (5).
Not only has dd-cfDNA demonstrated potential to detect rejection in a minimally invasive manner, it has also shown potential to identify rejection earlier than our current tests. One adult study found that a rise in the percentage of dd-cfDNA can precede the development of biopsy-detectable rejection by several months (6). If it can be proven that dd-cfDNA can detect rejection earlier than current methods, the expectation would be that this would allow for early treatment of rejection which would have the long-term outcome of prolonging the life expectancy of the graft.

Not only has dd-cfDNA demonstrated potential to detect rejection in a minimally invasive manner, it has also shown potential to identify rejection earlier than our current tests. One adult study found that a rise in the percentage of dd-cfDNA can precede the development of biopsy-detectable rejection by several months (6). If it can be proven that dd-cfDNA can detect rejection earlier than current methods, the expectation would be that this would allow for early treatment of rejection which would have the long-term outcome of prolonging the life expectancy of the graft.

In June of 2021, our institution began obtaining dd-cfDNA for our pediatric heart transplant patients at the time of cardiac catheterization and EMB. Allosure, a dd-cfDNA test provided by CareDx®, is the specific biomarker test that was utilized at our institution. Per recommendations from CareDx®, patients who were < 14 days post-heart transplant did not undergo dd-cfDNA testing. Normal percentage of dd-cfDNA on Allosure testing was defined as any level less than 0.20%. Reviewing our data from June 2021 through January 2022, a total of 19 patients had one or more samples drawn for dd-cfDNA. Of the 19 patients for whom dd-cfDNA levels were obtained, nine had abnormal values defined by the test parameters. Of those, five had evidence of acute cellular rejection (ACR) on biopsy (four with ACR 1R, one with higher grade ACR 2R). The patient with ACR 2R was

Donor-derived Cell-free DNA (dd-cfDNA) – The Latest Tool in the World of Pediatric Heart Transplant

Michelle Staron-Ehlinger, MMS, PA-C, Gary S. Beasley, MD, and Rabia S. Khan, MD

University of Iowa Hospitals and Clinics

symptomatic and had a substantial elevation in dd-cfDNA level (7.1%) at the time that rejection was identified. Subsequently, the level improved on follow up testing one month after treatment of rejection. Of the four patients with abnormal dd-cfDNA in association with negative biopsies, two had elevated filling pressures and high-risk donor specific antibodies (DSAs) and a third had elevated filling pressures and developed an acute rise in NT-proBNP that occurred six months following the testing, which then resolved following an immunosuppression increase. During this time frame, there were a total of six patients with biopsies demonstrating ACR, of which only one patient did not have an abnormal dd-cfDNA level. In this case, the biopsy findings were described as minimal with only one of four samples affected and no associated myocyte damage.

Although our data is limited at this point, it does suggest that dd-cfDNA is a relatively sensitive marker for acute cellular rejection with the only patient not captured having minimal evidence of rejection on biopsy. Although four of nine patients with an elevated dd-cfDNA level did not demonstrate rejection based on biopsy alone, there is evidence that one patient may have developed rejection six months later, and two of the patients had high-risk DSAs which may indicate ongoing biopsy-negative rejection. Thus, it is possible that almost 90% (8 of 9) of pediatric patients with abnormal dd-cfDNA had real indications of active or prospective rejection.

Advancements in immunosuppression therapy have resulted in a decrease in rates of acute rejection after solid organ transplant, but rejection continues to be a significant contributor to allograft loss. There is an urgent need to develop methods for early detection of rejection with minimal risk of complications, as this will offer the best chance for long term graft survival. Could dd-cfDNA be the answer? Our preliminary results suggest that dd-cfDNA does hold promise. We predict that over the next year more pediatric centers will start using dd-cfDNA alongside EMB, and we may soon have more insight as to whether dd-cfDNA is a consistent marker for heart transplant rejection in pediatrics. Additional validation of this test would advance the field by fostering acceptance and integration of this biomarker into clinical care with consequent reduction in need for invasive testing, thereby improving life expectancy and quality of life for this vulnerable patient population.

Reference:

1. Agbor-Enoh S, Shah P, Tunc I, Hsu S, Russell S, Feller E, Shah K, Rodrigo ME, Najjar SS, Kong H, Pirooznia M, Fideli U, Bikineyeva A, Marishta A, Bhatti K, Yang Y, Mutebi C, Yu K, Kyoo Jang M, Marboe C, Berry GJ, Valantine HA; GRAfT Investigators. Cell-Free DNA to Detect Heart Allograft Acute Rejection. Circulation. 2021 Mar 23.

2. Khush KK, Patel J, Pinney S, Kao A, Alharethi R, DePasquale E, Ewald G, Berman P, Kanwar M, Hiller D, Yee JP, Woodward RN, Hall S, Kobashigawa J. Noninvasive detection of graft injury after heart transplant using donor-derived cell-free DNA: A prospective multicenter study. Am J Transplant. 2019 Oct.

3. Scott JP, Ragalie WS, Stamm KD, Mahnke DK, Liang HL, Simpson PM, Dasgupta M, Katz R, North PE, Tomita-Mitchell A, Zangwill SD, Kindel SJ, Mitchell ME. Total Cell-Free DNA Predicts Death and Infection Following Pediatric and Adult Heart Transplantation. Ann Thorac Surg. 2021 Oct.

4. 20. Richmond ME, Zangwill SD, Kindel SJ, Deshpande SR, Schroder JN, Bichell DP, Knecht KR, Mahle WT, Wigger MA, Gaglianello NA, Pahl E, Simpson PM, Dasgupta M, North PE, Hidestrand M, Tomita-Mitchell A, Mitchell ME. Donor fraction cell-free DNA and rejection in adult and pediatric heart transplantation. J Heart Lung Transplant. 2020 May

5. Feingold B, Rose-Felker K, West SC, Zinn MD, Berman P, Moninger A, Huston A, Stinner B, Xu Q, Zeevi A, Miller SA. Early findings after integration of donor-derived cell-free DNA into clinical care following pediatric heart transplantation. Pediatr Transplant. 2022 Feb.

6. De Vlaminck I, Valantine HA, Snyder TM, Strehl C, Cohen G, Luikart H, Neff NF, Okamoto J, Bernstein D, Weisshaar D, Quake SR, Khush KK. Circulating cell-free DNA enables noninvasive diagnosis of heart transplant rejection. Sci Transl Med. 2014 Jun 18.

The Molecular Microscope Diagnostic System: What Is It and How Are We Using It in Our Patients?

Christina Hartje-Dunn, MD, Senior Fellow in Advanced Cardiac Therapies, Kevin P. Daly, MD

Boston Children's Hospital

In the current era of solid organ transplant, the community is experiencing an exciting time of technological innovation. One area of particular importance is in the application of genomics to clinical care. Over the course of the lifespan of a cardiac allograft, we take great care to balance preventing immunological damage to the heart while maintaining sufficient immune function to prevent infection. How do we know when that balance is correct? How do we know when there is rejection? Traditionally the endomyocardial biopsy (EMB) has served as the gold standard method to evaluate for rejection. Pathologists stain EMB tissue and examine it for lymphocytes and evidence of myocyte damage under a microscope. However, there is much more information present in a biopsy specimen than is visible under the microscope using a hematoxylin and eosin (H&E) stain. What if we had a way to see subtle signals of damage before it was visible to the eye?

One tool which may help is the Molecular Microscope ® Diagnostic System for Heart (MMDx-Heart)1,2. MMDx-Heart is a gene expression profiling system that takes EMB samples and analyzes their messenger RNA (mRNA) gene expression for evidence of rejection and cardiac injury. The test uses GeneChip™ Custom Microarrays to determine which genes are being expressed in the biopsy tissue. The general concept behind this process is that cells up- or down-regulate genes to make proteins depending upon their function/activity. In the case of transplanted organs, we can use these changes in gene expression, measured by the types and amounts of mRNA present, to give us insight into what sorts of activity is occurring on the cellular and molecular level. MMDx-Heart processes biopsy samples, quantifies the mRNA expression, and then categorizes the gene sets into the different molecular phenotypes. As part of the test, MMDx-Heart categorizes mRNAs into 15 gene sets and 4 overall phenotypes: (1) No rejection or injury, (2) Cellular Injury, (3) Antibody Mediated Rejection or (4) T-cell mediated rejection. The individual gene set results are reported as discrete data and as a visually plotted composite for a particular biopsy sample.

Traditional pathology evaluation might not be able to identify subtle injury under the microscope, but molecular diagnostics can provide some insight3. By combining the information from the traditional biopsy with the MMDx-Heart gene profile, one can get a more complete picture of what is happening at the cellular level. The traditional biopsy allows one to see what type of cells are in the sample (cardiac myocytes, inflammatory/immune cells) and what condition the cells are in (e.g. are the myocytes damaged or swollen). The MMDx-Heart gene profile provides insight into what cell programs are active and inactive (lymphocytes inducing damage, blood vessel cells responding to antibody mediated damage, cardiomyocytes recovering from injury) by quantifying mRNA expression patterns.

One might consider a 5-year-old heart transplant patient with a history of a positive CDC cross-match undergoing a per-protocol biopsy 3 weeks after heart transplant. This is an immunologically high-risk patient and it may be difficult to determine if the patient has symptoms of heart failure because they are still recovering from transplant surgery. In addition, some ischemia-reperfusion injury is expected to be present in the first few weeks after a heart transplant. Understanding the specific molecular patterns present in the biopsy tissue would be useful in this scenario.

Logistically, using MMDx-Heart requires a few adjustments to the biopsy process. It starts by requesting a free specimen kit, which contains the specimen sample tube containing RNAlaterTM, tracking barcodes, and a form for basic demographic and clinical information. Unlike the other new technologies used to monitor for rejection on peripheral blood samples, MMDx-Heart is a tissue diagnostic performed on the biopsy itself. During a cardiac catheterization, the cardiologist obtains 1-2 additional pieces of endomyocardium. Having two samples improves the reliability, and allows for quality control. Once the biopsy is obtained, the samples for MMDx-Heart evaluation are placed in the supplied specimen tube with the RNAlaterTM solution which helps to preserve the RNA fragments in the sample for analysis. For U.S. hospitals, the biopsy specimen is then shipped to the Kashi Lab in Oregon via an overnight currier for analysis. At the lab, the mRNA levels are measured against the Reference Set database, and the report is generated in approximately 2-3 business days. At our institution, this process is independent of the

The Molecular Microscope Diagnostic System: What Is It and How Are We Using It in Our Patients?

Christina Hartje-Dunn, MD, Senior Fellow in Advanced Cardiac Therapies, Kevin P. Daly, MD

Boston Children's Hospital

pathology lab. Our results are uploaded into the electronic medical record and complement with the results of the traditional biopsy. This data enriches our understanding of the traditional pathology when used in the correct clinical context.

So, which patients get an MMDx-Heart at our center? The answer: not everyone. We have found MMDx-Heart to be useful in the following scenarios:

- *Elevated filling pressures in the acute post-transplant period: The MMDx-Heart can be helpful in distinguishing between ischemia-reperfusion injury and antibody mediated rejection which have similar appearance by traditional histology, but different molecular profiles.*
- *Evaluation of transplant patients with suspected rejection due to acute heart failure symptoms and/or changes in cardiac function on echo.*
- *Patients with suspected rejection who have already received high dose steroids prior to biopsy. In this situation, high-dose steroids can result in rapid decrease in the number of lymphocytes in the myocardium however the molecular signature of rejection persists for a longer time.*
- *Patients with de novo DSA in whom we are trying to understand the significance – is this just a circulating antibody or is there antibody induced damage?*
- *Patients who are highly sensitized pre-transplant or those with a history of antibody mediated rejection (AMR).*
- *Patients with a history of non-adherence as it may give us insight into whether there is subclinical allograft injury or rejection.*

One of the defined phenotypes of the MMDx-Heart test is the "Injury Related" phenotype. While this can be seen in the context of rejection, some patients demonstrate this phenotype without rejection. It is the most common molecular phenotype that we have seen in our institutional experience. It is sometimes seen it in patients with elevated filling pressures, and it is unclear if this a persistent finding after prior rejection episodes or if it represents the allograft response to other types of injury. A study in the adult heart transplant population evaluated "for cause" endomyocardial biopsies assessed with MMDx-Heart at a single center. They found that of the patients with normal histology but abnormal MMDx-Heart showing cellular injury, 7 of the 10 patients identified experienced adverse outcomes (biopsy negative rejection with reduced function, donor specific antibodies and/or death) within 3 months of the biopsy4. This suggests that molecular phenotyping may be important at identifying higher risk patients. One of our future goals is to compare patients with an "Injury Related" phenotype to those with the "No rejection or injury" phenotype to determine if there are differences in patient outcomes over time.

At Boston Children's Hospital, we have sent 101 unique MMDx-Heart tests on 41 different patients since May 2019. Thirty-nine percent of those samples have resulted as abnormal with the most common phenotype being the least concrete diagnosis: "Injury related." There is still significant room for learning about what the MMDx-Heart means for an individual patient but we believe that there is value in being able to identify, treat and trend molecular markers as we care for our patients. We look forward to developing best practices for the use of the MMDx-Heart test along with the rest of the PHTS community.

The Molecular Microscope Diagnostic System: What Is It and How Are We Using It in Our Patients?

Christina Hartje-Dunn, MD, Senior Fellow in Advanced Cardiac Therapies, Kevin P. Daly, MD

Boston Children's Hospital

Citations:

1. *MMDx For Molecular Biopsy Assessment. https://www.thermofisher.com/onelambda/us/en/post-transplant/molecular-biopsy-assessment.html. Accessed 17June2022.*
2. *Halloran P, Potena L, Duong Van Huyen JP, et al. Building a tissue-based molecular diagnostic system in heart transplant rejection: The heart Molecular Microscope Diagnostic (MMDx) System. The Journal of Heart and Lung Transplantation. 2017;36(11):1192-1200.*
3. *Halloran PF, Reeve J, Aliabadi AZ, et al. Exploring the cardiac response to injury in heart transplant biopsies. JCI Insight. 2018;3(20):e123674.*
4. *Shah K, Kobashigawa JA, Patel J, et al. Heart Transplant Patients with Histologic Normal and Molecular Microscope Abnormal Biopsies: An Exploratory Analysis. The Journal of Heart and Lung Transplantation. 2019;38(4):S284-S285.*

New PHTS Member Roles



Hope Salzer

New PHTS Foundation Board Member

"I am a Junior attending Purdue University in West Lafayette, Indiana. I am currently enrolled in the College of Health and Human Sciences, studying to become a Physician Associate. I am majoring in Biomedical Sciences, with two minors in Nutrition and Psychology.

I am the President of the Student Organ Donation Advocates. In this organization, we work with Donate Life Indiana in pursuit of organ donation and transplantation awareness; we work hard to destroy stigmas surrounding donation and transplantation, while spreading awareness of the importance of becoming an organ donor. This is by far my favorite organization to be a part of; I enjoy being able to spread awareness and education to Purdue students and staff, and to talk to my club members about my own personal experience receiving a heart transplant!

I am the Internal Development Chair of World Health Purdue. My role is to help plan events and educate Purdue students about different health issues affecting various populations around the globe. I am involved in the Pre-Physician Associate Club, the Purdue University Neuroscience Society, the Purdue Psychology Club, and the Purdue University Nutrition Society. I have very much enjoyed being a part of these different clubs and organizations; each club helps me better understand my various interests (both career and general fascination).

I had the pleasure of attending a national transplant conference in Washington, DC only 8 months after my heart transplant (16 years old). In this conference, I was able to share my story with the attendees, chat with other transplant recipients, and give my personal perspectives of different transplant issues: remembering to take medication, staying consistent with diet and physical activity, and even life post-transplant. The event was very eye-opening; I was able to help provide some recipients guidance in how to remember medication- taking it with you when you travel, setting permanent alarms, and allowing yourself the support of others."



Arene Butto, MD

New Junior Faculty Leader;
PHTS Mentorship and junior Faculty Committee

Children's Healthcare of Atlanta
Atlanta, Georgia

What's New in PHTS

Reporting tools in the PHTS System

PHTS lauched 2 new reporting tools in the PHTS system. A data visualization dashboard and a Kaplan-Meier tool.

Accepted Proposal



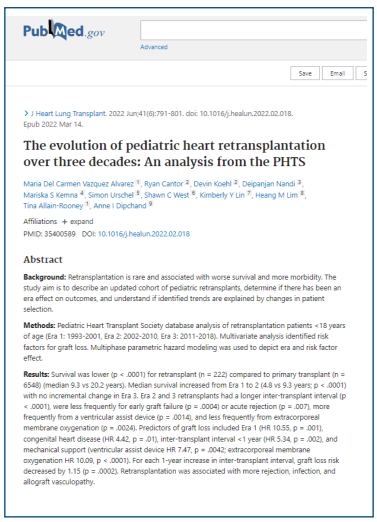
2022 Spring Enduring Hearts-PHTS Investigator Award

Statin Use in Pediatric Heart Transplantation Recipients in the Current Era

Madeleine Townsend, MD

Enduring Hearts
HEALTHY KIDS • STRONGER HEARTS • LONGER LIVES

Published Papers


PubMed.gov

Advanced

Save Email

J Heart Lung Transplant. 2022 Jun;41(6):791-801. doi: 10.1016/j.healun.2022.02.018. Epub 2022 Mar 14.

The evolution of pediatric heart retransplantation over three decades: An analysis from the PHTS

Maria Del Carmen Vazquez Alvarez [1], Ryan Cantor [2], Devin Koehl [2], Deipanjan Nandi [2], Mariska S Kemna [4], Simon Urschel [5], Shawn C West [6], Kimberly Y Lin [7], Heang M Lim [8], Tina Allain-Rooney [1], Anne I Dipchand [9]

Affiliations + expand

PMID: 35400589 DOI: 10.1016/j.healun.2022.02.018

Abstract

Background: Retransplantation is rare and associated with worse survival and more morbidity. The study aim is to describe an updated cohort of pediatric retransplants, determine if there has been an era effect on outcomes, and understand if identified trends are explained by changes in patient selection.

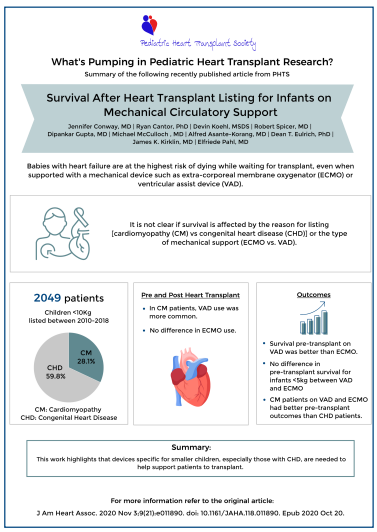
Methods: Pediatric Heart Transplant Society database analysis of retransplantation patients <18 years of age (Era 1: 1993-2001, Era 2: 2002-2010, Era 3: 2011-2018). Multivariate analysis identified risk factors for graft loss. Multiphase parametric hazard modeling was used to depict era and risk factor effect.

Results: Survival was lower (p < .0001) for retransplant (n = 222) compared to primary transplant (n = 6548) (median 9.3 vs 20.2 years). Median survival increased from Era 1 to 2 (4.8 vs 9.3 years; p < .0001) with no incremental change in Era 3. Era 2 and 3 retransplants had a longer inter-transplant interval (p < .0001), were less frequently for early graft failure (p = .0004) or acute rejection (p = .007), more frequently from a ventricular assist device (p = .0014), and less frequently from extracorporeal membrane oxygenation (p = .0024). Predictors of graft loss included Era 1 (HR 10.55, p = .001), congenital heart disease (HR 4.42, p = .01), inter-transplant interval <1 year (HR 5.34, p = .002), and mechanical support (ventricular assist device HR 7.47, p = .0042; extracorporeal membrane oxygenation HR 10.09, p < .0001). For each 1-year increase in inter-transplant interval, graft loss risk decreased by 1.15 (p = .0002). Retransplantation was associated with more rejection, infection, and allograft vasculopathy.

The evolution of pediatric heart retransplantation over three decades: An analysis from the PHTS

Maria del Carmen Vazquez Alvarez, Ryan Cantor, Devin Koehl, Deipanjan Nandi, Mariska S. Kemna, Simon Urschel, Shawn C. West, Kimberly Y. Lin, Heang M. Lim, Tina Allian-Rooney, Anne L. Dipchand

https://pubmed.ncbi.nlm.nih.gov/35400589


Pediatric Heart Transplant Society

What's Pumping in Pediatric Heart Transplant Research?

Summary of the following recently published article from PHTS

Survival After Heart Transplant Listing for Infants on Mechanical Circulatory Support

Jennifer Conway, MD | Ryan Cantor, PhD | Devin Koehl, MSDS | Robert Spicer, MD | Dipankar Gupta, MD | Michael McCulloch , MD | Alfred Asante-Korang, MD | Dean T. Eulrich, PhD | James K. Kirklin, MD | Elfriede Pahl, MD

Babies with heart failure are at the highest risk of dying while waiting for transplant, even when supported with a mechanical device such as extra-corporeal membrane oxygenator (ECMO) or ventricular assist device (VAD).

It is not clear if survival is affected by the reason for listing [cardiomyopathy (CM) vs congenital heart disease (CHD)] or the type of mechanical support (ECMO vs. VAD).

2049 patients

Children <10Kg listed between 2010-2018

CM: 28.1%

CHD: 59.8%

CM: Cardiomyopathy
CHD: Congenital Heart Disease

Pre and Post Heart Transplant

- In CM patients, VAD use was more common.
- No difference in ECMO use.

Outcomes

- Survival pre-transplant on VAD was better than ECMO.
- No difference in pre-transplant survival for infants <5kg between VAD and ECMO
- CM patients on VAD and ECMO had better pre-transplant outcomes than CHD patients.

Summary:

This work highlights that devices specific for smaller children, especially those with CHD, are needed to help support patients to transplant.

For more information refer to the original article:

J Am Heart Assoc. 2020 Nov 3;9(21):e011890. doi: 10.1161/JAHA.118.011890. Epub 2020 Oct 20.

Survival After Heart Transplant Listing for Infants on Mechanical Circulatory Support

Jennifer Conway, Ryan Cantor, Devin Koehl, Robert Spicer, Dipankar Gupta, Michael McCulloch , Alfred Asante-Korang, Dean T. Eulrich, James K. Kirklin, Elfriede Pahl

https://pubmed.ncbi.nlm.nih.gov/33076747/

PHTS New Member Onboarding Checklist

1. Visit the PHTS website and join the PHTS membership list.
   www.phtsociety.org

2. The DCC will create your PHTS Basecamp account and send you your Basecamp login.

3. If you will need access to the web based data entry system for data entry, report download, or to access any of the QI tools, contact the PHTS DCC to obtain your login information.

4. Check out Heart University and view the PHTS curriculum specific to pediatric transplant.

5. Follow PHTS on Social Media! (@PHTSociety across all platflorms)

- **Bi-annual Research Cycles**
  Submit a research proposal during the spring or fall research cycle. This is open to all members of PHTS. Proposals from Allied Health and Nursing Professionals are especially encouraged!

- **Join the PHTS Health Disparities Taskforce**
  This taskforce meets quarterly to discuss ways PHTS can continually work to improve the health disparities in this unique population

- **Committee involvement**
  Interested in joining a committee? Email the DCC your name and which committee you are interested in joining to have your name added to a running list!

- **Mentorship**
  Interested in being a mentor to a fellow PHTS member or mentee? PHTS now has a mentorship program to match mentees and mentors up with similar interest. If interested in learning more, contact DCC.

Who to Contact

Foundation Questions
Craig Collum
phtsfexecutivedirector@gmail.com

Registry and Research Questions
Claire Covington
clairefinley@uabmc.edu

PHTS Society Questions
DeAnna Archer
deannabeckham@uabmc.edu

Coming up in PHTS

PHTS Proposal Review Schedule

Investigators who are planning to submit a proposal are strongly encouraged to reach out to the DCC to obtain specific data frequencies to ensure the feasibility of their proposal. To make a data request, complete the Data Request Form on the PHTS website, https://pediatricheartransplantsociety.org/new-study-proposal/

- **October 1-31** Proposal Submission
- **November 1-30** Proposal Review by DCC and Scientific Committee
- **December 1-31** Notification to investigators
- **January 1-31** Enduring Hearts Award Proposal Review

PHTS Fall Membership Meeting



Information Corner

Job Postings

Pediatric Cardiologist with Tx and HF Experience

Alberta Children's Hospital (Calgary) is ooking for a pediatric cardiologist with a preference for an individual with transplant and heart function experience. While Calgary is not a transplant site, they work closely with our team in Edmonton and look after the patients both pre and post-transplant.

Visit PHTS Basecamp Board - Resources for Job Opportunities for more information

Pediatric Heart Failure and Transplant Cardiologist Position at the The Congenital Heart Center Levine Children's Hospital (LCH) in Charlotte NC

The Congenital Heart Center at Levine Children's Hospital (LCH) seeks to recruit a Pediatric Heart Failure and Transplant Cardiologist to join their existing faculty.

Contact: Phillip Christofferson - Peter.Christofferson@atriumhealth.org

4th year pediatric heart failure / transplant position at Vanderbilt

Monroe Carell Jr. Children's Hospital at Vanderbilt is currently accepting applications for a 4th year advanced fellowship position in pediatric heart failure, heart transplantation, and mechanical circulatory support for the academic year beginning in July 2023.

Contact: Justin Godown - Justin.Godown@vumc.org

Nurse Practitioner in Pediatric Heart Transplant at University of Alberta

Vacancy for a 0.7 FTE position for a Nurse Practitioner in Pediatric Heart Transplantation in beautiful Edmonton, Alberta.

Visit PHTS Basecamp Board - Resources for Job Opportunities for more information

4th Year Fellowship for Pediatric Heart Failure and Transplant at Dallas

University of Texas Southwestern Medical Center at Dallas and Children's Medical Center of Dallas are delighted to be able to offer a senior pediatric fellowship in Heart Failure, Mechanical Circulatory Support and Transplantation for the 2023-2024 academic year.

Contact: Priscilla Castro at priscilla.castro@utsouthwestern.edu

Texas Children's Hospital 4th Year Fellowship in Pediatric Heart Failure & Transplantation

Texas Children's Hospital / Baylor College of Medicine is now accepting applications for an advanced fellowship in pediatric heart failure, cardiomyopathy, mechanical circulatory support, and transplantation for the 2023-2024 academic year. Applicants must have completed their general pediatric cardiology fellowship prior to the start date of July 1, 2023 to be eligible.

Contact: William Dreyer - wjdreyer@texaschildrens.org and cc Jose Soto - jrsoto@texaschildrens.org

Academic Physician in Advanced Cardiac Therapies

The Advanced Cardiac Therapies Program of the Department of Cardiology at Boston Children's Hospital is actively recruiting a facutly physician with advanced traning and experience in anticoagulation, cardiomyopathy, mechanical support and heart transplant to join our well-established team.

Contact: Kelly Hill - kelly.hill@cardio.chboston.org

Information Corner

Job Postings

4th Year Fellowship in Pediatric HF/Transplant at CUMC/NYP

Columbia University Medical Center (CUMC)/Morgan Stanley Children's Hospital of New York is now accepting applications for advanced fellowship training in pediatric heart failure/transplantation/MCS for the 2023-2024 academic year. Applicants who will have completed their general pediatric cardiology fellowship training at an accredited ACGME institution prior to the start date of July 1, 2023 will be considered.

Contact: Marc Richmond - mr2306@cumc.columbia.edu or
Warren Zuckerman - wz2116@cumc.columbia.edu by September 2, 2022

Pediatric Transplant Nurse Practitioner/PA/APP Position
Johns Hopkins All Children's Hospital in St. Petersburg, Florida

The Heart Transplant Program at the Johns Hopkins All Children's Heart Institute in St Petersburg, Florida, is recruiting a trained pediatric APP to join our program.

Contact: Alfred Asante-Korang - Aasante5@jhmi.edu or Taylor Lanctot - mlancto1@jhmi.edu

---

Advanced Fellowship in Pediatric Heart Failure/MCS/Transplant at Children's Healthcare of Atlanta - Emory University

Children's Healthcare of Atlanta (CHOA) / Emory University is now accepting applications for advanced fellowship training in pediatric heart failure, mechanical circulatory support, and transplantation for the 2023-2024 academic year. Applicants must have completed a general pediatric cardiology fellowship at an accredited ACGME program prior to the July 1st, 2023, start date.

Contact: Chad Mao - maoc@kidsheart.com by August 12th, 2022.

Academic Physician in Advanced Cardiac Therapies

The Advanced Cardiac Therapies Program of the Department of Cardiology at Boston Children's Hospital is actively recruiting a facutly physician with advanced traning and experience in anticoagulation, cardiomyopathy, mechanical support and heart transplant to join our well-established team.

Contact: Kelly Hill - kelly.hill@cardio.chboston.org

Pediatric Heart Failure/Transplant Cardiologist Position at Hassenfeld Children's Hospital - NYU (New York, NY)

Seeking a pediatric heart failure/transplant cardiologist for a full-time academic faculty position in the Department of Pediatrics at NYU Grossman School of Medicine and Hassenfeld Children's Hospital at NYU Langone Health.

Contact: Rakesh Singh - rakesh.singh@nyulangone.org

Pediatric Heart Failure/Transplant Position – Arkansas Children's Hospital

The University of Arkansas for Medical Sciences and Arkansas Children's are seeking a junior or mid-level heart transplant/heart failure cardiologist to join our established and growing program. This is a full-time academic position with the full range of opportunities. Please see notice in Basecamp for full details of this opportunity.

Contact: Paul Seib, MD - SeibPaulM@uams.edu

More information about each job posting can be found on PHTS Basecamp under Resources for Job Opportunities