CONGENITAL CARDIOLOGY TODAY
Timely News & Information for Congenital/Structural Cardiologists & Cardiothoracic Surgeons Worldwide

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Evolution of the Congenital Interventional Cardiologist

Sergio Bartakian, MD, FACC

Pick up almost any scholarly article on interventional cardiology for congenital heart disease published in the last 10 years and you will see reference to the dramatic change the specialty has undertaken in the modern era. Whereas in decades past the pediatric interventional cardiologist (PIC) performed a far greater percentage of catheterizations for purely diagnostic purposes, these are now comparatively rare. In fact, one could argue that the far greater majority are now for planned interventions. Today, even when a diagnostic catheterization is the plan, such as for evaluation of pulmonary vascular disease, pre-Glenn or pre-Fontan assessments, it often results in an intervention due to intra-procedural findings.

In 2015 when I began my work of rebuilding our specialty's nearly nonexistent Current Procedural Terminology (CPT) code set and guidelines, it became clear no one outside the specialty had a clear understanding of who we are and what we actually do. One of the initial priorities was to clearly separate us from our adult interventional cardiology counterparts. The CPT book's cardiac catheterization section had confusing language that often jumped back and forth between pediatric vs adult practices without making it clear on how to correctly apply the guidelines. Only the most astute of our colleagues were able to read between the lines and understand the intent. So, it should not be a surprise to anyone that even coding specialists were confused.

Clearly education was needed to help clean up this confusing approach. I chose to stress two key topics: the shift from diagnostic to interventional catheterizations and creating a clear distinction between our work and that of adult interventionalists. In nearly every conversation at CPT and RVS Update Committee (RUC) meetings, I took the opportunity to explain that we are taking care of as many adults as we are children in our procedures. The idea that children aren't just small adults was easily understood, but getting everyone to understand that age was not the issue was more complex. When I began writing the new introductory language preceding the cardiac catheterization CPT codes, it was immediately clear that it was no longer appropriate to consider and refer to ourselves as pediatric interventional cardiologists. Hence, the official use of "congenital interventional cardiologist" (CIC) was born. All of the language was changed from pediatric vs adult to now reflect congenital vs non-congenital. With that one stroke, suddenly everything seemed to start making sense to everyone.

While our interventional capabilities have rapidly expanded over the last 20 years, understanding of our economic contributions to the hospital lag behind. With respect to reimbursement for work performed, we remain at a significant disadvantage compared to our non-congenital counterparts. Hospital administrators continually cite a lack of revenue from congenital cardiac catheterization as the reason for curtailed division budgets and lower physician salaries. However, actual hospital reimbursement driven by CIC cases is often not disclosed, and as such we are left without key information to determine our value to the overall system. Institutional reimbursement is anywhere from 10-100x that of the physician professional fee reimbursement per case.

Let's look at a real-world example. The range of RVUs for cardiac catheterization interventions is between 6.0 for a simple venous angioplasty to 25.0 for a transcatheter pulmonary valve replacement. Add to those the requisite diagnostic catheterization and angiography RVUs and each case in the catheterization lab typically ranges between 14 – 50 RVUs. Similarly, for the congenital thoracic surgeon the RVU range is between 17.57 for surgical reconstruction of pectus excavatum to as much as 69 for a complex single ventricle, including Norwood arch reconstruction and systemic to pulmonary shunt. The RVU for repair of transposition of the great arteries with ventricular septal defect (TGA-VSD) is roughly in the middle at 39.07

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RVU. If we were to consider a hypothetical surgical program performing 200 bypass cases per year and ALL 200 cases were TGA-VSD repairs, that totals only 7814 RVU. Clearly this does not represent the surgeon's total CV surgery revenue.

The hospital revenue primarily comes from the diagnosis related group (DRG) payments the hospital receives for these procedures, which total in the tens of millions of dollars for a moderate-sized congenital cardiac surgical program. It is critical to understand cardiac catheterization hospital fees are paid by the same DRG system for inpatient cases and the similar Ambulatory Payment Classification (APC) scale for any outpatient procedures performed in the hospital. Although the individual hospital payments for a cardiac catheterization procedure are sometimes lower than those for surgery, the overall revenue from the cardiac catheterization procedures are typically similar to those of the surgical program because the cardiac catheterization volume is typically 2-3x that of the surgical volume.

Table 1 provides a direct comparison of 3 of the most common congenital heart interventions which have surgical as well as catheterization-based repairs, patent ductus arteriosus (PDA), atrial septal defect (ASD), and pulmonary valve replacement (SPVR vs TPVR). For purposes of illustration, I have simplified hospital payments in the table. The simple calculation involves taking the national payment rate (NPR) and multiplying by the relative weight (RW). The RW, displayed here in decreasing order, are for a procedure with either major co-morbidity, co-morbidity, or no co-morbidities. In addition to this calculation, the more complete method also accounts for other factors such as geographical region as well as the type of institution (non-profit, teaching, for profit, etc.). To keep it simple, those other factors are not displayed here, but this simple method provides a very good approximation of the payments. To be complete, I should also point out how a particular facility negotiates payments with individual payer contracts will also significantly affect the final amount received for any given procedure from each payer. A quick glance at these values should be enough for a basic understanding of how similar the payments are for the alternative procedures.

To point out one of particular interest, compare the max for surgical pulmonary valve replacement ($47,456 x 8.0 with major co-morbidity) to that of when a cardiac catheterization is performed during the same admission ($61,448 x 10.4); an additional payment increase of 68% ($379,648 vs $639,059). Finally, perhaps the most important factor in these calculations is that these are lump sum payments for the entire admission. Surgical patients remain in the hospital for anywhere from 3-14 days on average as compared to most cardiac catheterization patients going home in one day.

During the evolution of increasing interventional procedures and decreasing diagnostic studies, the CIC has supplanted the congenital thoracic surgeon as the primary means of repair / palliation for many defects. In the 1990's, new transcatheter ASD closure devices led to concern in the cardiac surgical community that cases would be lost to the catheterization lab. Since that time, most centers now understand the benefits of having the most minimally invasive form of repair. In the last two decades many more procedures are being performed with a minimally invasive approach. PDA device closure in premature infants has essentially eliminated surgical ligation in most centers in all but a few cases where a device will not fit safely. In major centers today, transcatheter pulmonary valve replacement (TPVR) has become the primary approach for most patients in need of pulmonary valve replacement. With the recent FDA approval of larger self-expanding transcatheter pulmonary valve models by Medtronic (Harmony™ transcatheter pulmonary valve) and Edwards Life Sciences (Alterra Adaptive present system), this volume could continue to shift further toward CIC over surgery. Device closure of sinus venosus ASD, ductal stenting in lieu of surgical shunt for ductal dependent pulmonary circulation,

TABLE 1 *DRG amounts displayed are for direct comparison. TPVR is an inpatient only procedure, therefore the DRG is appropriate for direct comparison to SPVR. PDA device closure is equally outpatient and inpatient depending on whether it is a child coming from home vs a premature infant in the newborn intensive care unit. ASD device closure is typically an outpatient procedure, however the APC National Medicare Rate for this is very similar to the DRG NPR (2025 APC $17,957 vs DRG 272 for $17,857 with no co-morbidity).*

Procedure	RVU	DRG Groups	NPR max	NPR min	RW
PDA device[1]	12.31	270 - 272	$36,632	$17,857	5.2, 3.6, 2.7
PDA ligation	16.69	270 - 272	$36,632	$17,857	5.2, 3.6, 2.7
ASD device[1]	18.27	270 - 272	$36,632	$17,857	5.2, 3.6, 2.7
ASD repair	29.58	228 - 229	$36,617	$23,495	6.2, 3.9
TPVR[2]	38.48	266 - 267	$41,812	$32,997	7.1, 5.6
SPVR	42.40	219 - 221	$47,456	$26,819	8.0, 5.4, 4.6
SPVR + CC[3]	Varies	216 - 218	$61,448	$30,300	10.4, 6.9, 5.1

[1]RVU displayed is bundle which includes all diagnostic work.

[2]RVU displayed includes the additional diagnostic cath and typical angiography performed.

[3]SPVR + CC – when CC is performed during same admission as the surgery for valve replacement (this applies to most major congenital cardiac surgeries if CC is also performed at the same admission)

ASD – Atrial Septal Defect, CC – Cardiac Catheterization, DRG – Diagnosis Related Group, NPR – National Payment Rate, PDA – Patent Ductus Arteriosus, RW – Relative Weight, SPVR – Surgical Pulmonary Valve Replacement, TPVR – Transcatheter Pulmonary Valve Replacement

and purely transcatheter stage I for hypoplastic left heart. These are just a few other examples of more and more procedures now being performed in the congenital catheterization lab by the CIC rather than the thoracic congenital surgeon. Leading edge teams are now able to have multidisciplinary catheterization conferences that leverage maximal outcomes from choosing the best cases for the interventional lab and the OR.

Despite the CIC doing more revenue-generating, high-margin procedures for the heart center, the practice of congenital interventional cardiology in some ways has not evolved to sustain growth and professional development. In some centers, the CIC sees general cardiology patients in clinic, as well as taking call for general cardiology in addition to the already huge call burden for the catheterization lab, or attending on the ward service. This is akin to congenital cardiac surgeons seeing patients with general pediatric surgical issues in clinic, covering general pediatric surgery wards, or being asked to perform inguinal hernia repairs. It is counterproductive to growing both the catheterization as well as surgical program and potentially limits availability of catheterization lab services.

Our specialty is at an inflection point. We have created immense value to patients and their families through the growth in the last 20 years of minimally invasive congenital cardiac interventions. This growth has created high margin catheterization lab interventions which are highly valuable to congenital heart programs and allow for overall program volume growth. Where we lack is in our professional development. Junior CICs should be in a place where meaningful mentorship can occur. Although every early career CIC needs to continue seeing some murmur and syncope patients and round on inpatients in order to develop their clinical skills, the senior medical director of the catheterization program should be focused on patient care and safety, and the growth and development of the catheterization lab services. The CIC medical director must have oversight of every detail of the operations of the catheterization lab. Just as the congenital thoracic surgeon is left alone on days between scheduled surgeries to properly prepare for each case, so must the CIC. Interventions are becoming more and more complex and appropriate planning is required. If a program wishes to ensure it is providing safe and proper care to these patients, the CIC must be treated with the same respect of their time as the surgeon.

This approach will lead undoubtedly to more stable programs as retention and satisfaction increase when clinicians are valued, appreciated, and have a clear path to a mutually acknowledged professional career. It's time for us to mature as a specialty, and for administrators and program leaders to understand the value of the CIC across the congenital heart disease spectrum.

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Dr. Shyam K. Sathanandam

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Join us in welcoming world-renowned cardiologist Dr. Shyam Sathanandam as Chief of Cardiovascular Medicine and Co-Director of the Nicklaus Children's Heart Institute.

> *My vision is to work alongside the trailblazers and innovators already here to make our Heart Institute the #1 destination for tailored specialized cardiovascular care for neonates and premature infants born with congenital heart defects.*
>
> - **Shyam K. Sathanandam, MD, FACC, FPICS, FSCAI**

Nicklaus Children's

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Where Your Child Matters Most™

How Advancing Fetal Cardiac MRI Capabilities is Improving Care

How are Doctors Pushing the Limits of Technology to More Accurately Diagnose Fetal Heart Conditions?

Imaging the heart of a fetus is innately tricky, requiring precision and expertise. MRI has the potential to provide critical diagnostic information in fetal heart conditions in addition to standard imaging options, but that is because the small size of the heart in utero, the fast heartbeat and the normal movement of the baby can make clear images difficult to capture. Clear fetal heart images are crucial to providing families with an accurate diagnosis and a detailed plan for postdelivery care. Over the past several years, the fetal cardiac MRI team at Children's Hospital Colorado has been exploring new technology to find a solution to these challenges and finally achieve a clear, crisp movie of the beating fetal heart, thanks to a special clinician-scientist partnership.

Bringing the images to life required a collaboration between Alex Barker, PhD, Erin Englund, PhD, and cardiac experts Lorna Browne, MD, and Richard Friesen, MD. Since 2019, the team has been working with industry partners on an MRI-compatible Doppler ultrasound device which uses ultrasound to detect fetal heartbeat and transmit this signal to the MRI scanner. Those images are then synchronized to the fetal heartbeat, creating depictions of the moving heart and allowing the team to see complex fetal cardiovascular conditions in exquisite detail. With U.S. Food and Drug Administration approval of this new Doppler-ultrasound gating device, the team is working on clinical translation of these methods for accurately diagnosing congenital heart disease and other cardiovascular abnormalities prenatally.

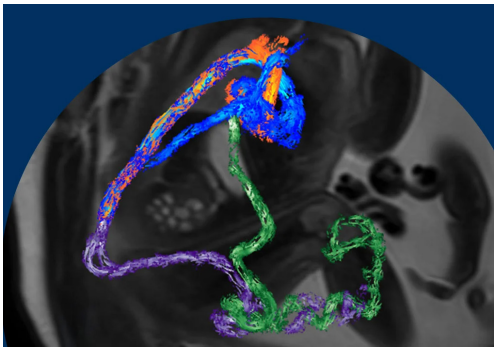
"We are pushing the boundaries of our technology on all fronts," Dr. Barker says.

Focusing on Function and Flow

As this technology is so novel, there was a need to establish normative data on fetal structures, including ventricle sizes and ventricular function, to reliably detect subtle abnormalities. In 2024, the team published the first normative data on fetal heart dimensions and fetal heart function using fetal cardiac MRI.[1] This work provides a baseline reference for implementing this new technology into practice.

But the team did not stop there. They wanted to see more than just the size of the fetal heart structures to be able to gather the most detailed information possible about congenital heart diseases. They also hoped to be able to visualize and quantify the distribution of blood flow throughout the fetal circulation. To do this, they needed to find a way to use a technique called 4D flow MRI in the fetus. This technique is a type of MRI that allows doctors to see 3D, time-resolved images of the heart and to measure 3D blood flow through the entire cardiovascular system. Dr. Barker was part of the first team to do 4D flow on adult hearts, and over the last eight years, he and his team developed faster sequences to apply this first to small children, and then most recently, to fetuses — where it is revolutionizing how doctors view fetal cardiovascular conditions.

Because it had never been done before in a fetus, the team again needed to establish normative values for fetal blood flow distribution. Dr. Englund, along with postdoctoral research fellow Takashi Fujiwara, PhD, spearheaded the team's most recent publication where researchers applied fetal 4D flow MRI to healthy pregnant patients to quantify the normative distribution of fetal blood flow by 4D flow MRI.[2]



"We'll continue to grow and push the envelope with others jumping on board with us. There's a lot of potential for the future of this."

– Erin Englund, PhD

"Reliable normative data is an essential step to widespread clinical application," Dr. Browne explains. "In particular, mapping the normal distribution of blood flow in the fetus with fetal 4D flow is a hugely important step because now we can look at the flow distribution in our patients and make better informed diagnoses."

Dr. Englund adds, "It's so rewarding to be a part of this team and to have all the infrastructure in place to be able to make such a huge difference. We'll continue to grow and push the envelope with others jumping on board with us. There is a lot of potential for the future of fetal cardiovascular conditions."

With a quick research pipeline from idea conception to implementation of new technology, the Colorado Fetal Care Center at Children's Colorado is now the only center in the U.S. routinely performing 4D flow for prenatal patients, and the fetal cardiac MRI team continues to push the boundaries of this technology. The team is now working on even more exciting developments using artificial intelligence and motion correction with international collaborators.

"I've worked on lots of projects over my career as a scientist. I've never been this close to translation so quickly," Dr. Barker says. "It's pretty exciting to be able to take something that we've been working on in the lab and see it actually making an impact. That's what motivates me every day here. It's not just a hypothetical."

Boosting Diagnostic Accuracy

The main area in which the team is seeing a major impact is diagnosing coarctation of the aorta (CoA), a congenital heart defect that occurs when a baby's aorta doesn't form properly during pregnancy. Current standard technology has limitations when it comes to diagnosing this complex condition, resulting in about a 50% false positive rate, despite best efforts. These false positives have significant implications for families, from impacting maternal mental health and finances, to increasing time spent in the hospital postpartum while teams work to confirm a diagnosis.

"Every modality has its limitations," Dr. Browne says. "When you have these difficult cases where echocardiograms can't be definitive, MRI provides an additional modality and an opportunity to be definitive. That really impacts the counseling of patients and delivery planning."

Providing families with an accurate diagnosis during pregnancy for conditions like CoA allows patients the chance to have clear expectations. Patients who faced the possibility of a CoA diagnosis and now can accurately find out their baby does not have the condition, get to deliver at their home hospital with their own care team and bond with baby immediately after delivery. Before this technology, they would have remained unsure if their baby would have this condition until medical interventions and testing after birth.

"This is supposed to be a very exciting time in pregnancy, and then families might get the news that their child has this heart condition, and the excitement turns to anxiety," Dr. Barker says. "Knowing that for one out of every two patients we might be reducing that anxiety motivates me."

And for families with an accurate confirmed CoA diagnosis during pregnancy, the team can make a detailed plan for care postdelivery.

"For some patients it's hard news, but at the same time they are so grateful that we are able to tell them this information, and they know exactly what is going to happen," Dr. Browne says.

Striving for More

The team is onboarding other hospitals across the country to the new Doppler ultrasound gating device and helping them launch similar programs. While they are training others to join in these efforts, they are also focusing on other conditions that could benefit from this type of technology.

"It has a really wide scope of potential applications," Dr. Browne says. "What we're focusing on currently are the conditions where fetal cardiac MRI can make a dramatic difference to patient care, such as informing interventions by improving delivery room and postnatal care planning and, hopefully, improving patient outcomes. It's exciting to be part of such a great team doing such important work."

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Children's Mercy KANSAS CITY

Pediatric Cardiologist

Springfield, Missouri

The Ward Family Heart Center at Children's Mercy Kansas City seeks a candidate to join our team as a pediatric cardiologist based at our CMKC owned practice in Springfield, MO. The successful candidate would join an existing group of 38 cardiologists (33 in Kansas City, 2 in Springfield, MO, 2 in Wichita, KS, 1 in Topeka, KS), 4 CV surgeons, and over 30 APNs. Experience and interest in outpatient cardiology and outreach is a must. Trainees in their final year are welcome to apply.

Candidates must be board-certified or board-eligible in Pediatric Cardiology. Strong communication skills are key. Salary and academic rank are commensurate with experience.

Springfield, Missouri is located in Southwest Missouri and has a rich and diverse history. It was founded in 1829 and is the third most populous city in the State of Missouri. The city has a plentiful and growing job market, great schools, world-class health care, and all the entertainment and cultural options of a big city—but with far less stress and an abundance of character and friendliness. The Springfield, MO based practice is the only pediatric cardiology practice in southwest Missouri, servicing 4 states. This practice sees over 4000 outpatient visits each year across 7 locations.

The Children's Mercy Heart Center serves a population of over 5 million in the heart of the U.S.A. We perform over 500 cardiac operations, 600 cardiac catheterizations including over 200 invasive EP procedures, 18,000 outpatient visits, and more than 20,000 echocardiograms annually. Our two state-of the art catheterization labs are both hybrid labs and equipped with the latest 3D imaging and EP technology.

Our Kansas City-based super-specialty resources include Electrophysiology (which includes Clinical EP, pacing and Genetic Arrhythmia), Cardiac Transplantation / Heart Failure, Interventional Cardiology and Advanced Cardiac Imaging (fetal echo, 3D echo, trans-esophageal echo, CT, MRI and 3D printing). We also provide specialized, team-based care in Fetal Cardiology (with on-site delivery services for high-risk neonates in Kansas City), Interstage Monitoring (CHAMP), Preventive Cardiology, Cardiac Genetics, Cardio-oncology, Single Ventricle Survivorship, Pulmonary Hypertension, a dedicated POTS clinic and Cardiac Neurodevelopmental services.

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Aliessa Barnes, MD
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Pope Francis Reflecting From the Hospital

Paddy Ferry

"The walls of hospitals have heard more honest prayers than churches…
They have witnessed far more sincere kisses than those in airports…
It is in hospitals that you see a homophobe being saved by a gay doctor.
A privileged doctor saving the life of a beggar…
In intensive care, you see a Jew taking care of a racist…
A police officer and a prisoner in the same room receiving the same care…
A wealthy patient waiting for a liver transplant, ready to receive the organ from a poor donor…

It is in these moments, when the hospital touches the wounds of people, that different worlds intersect according to a divine design. And in this communion of destinies, we realize that alone, we are nothing.

The absolute truth of people, most of the time, only reveals itself in moments of pain or in the real threat of an irreversible loss.

A hospital is a place where human beings remove their masks and show themselves as they truly are, in their purest essence.

This life will pass quickly, so do not waste it fighting with people.
Do not criticize your body too much.
Do not complain excessively.
Do not lose sleep over bills.
Make sure to hug your loved ones.
Do not worry too much about keeping the house spotless.
Material goods must be earned by each person—do not dedicate yourself to accumulating an inheritance…

— Pope Francis

CAREER OPPORTUNITIES

Nicklaus Children's Hospital

Where Your Child Matters Most

Join Our Team at Nicklaus Children's Hospital Heart Institute!

We are Currently Hiring for Multiple Positions

Director of Fetal Cardiology

As the Director of Fetal Cardiology, you will lead a dedicated team in providing exceptional care to expectant mothers and their unborn babies facing complex cardiac conditions. This role offers a unique opportunity to make a difference in the lives of families by providing advanced diagnostic and therapeutic interventions for fetal heart abnormalities.

Responsibilities Include:

- Develop outreach fetal screening opportunities with a growing neonatal/MFM network
- Provide inpatient care, opportunities for transthoracic and transesophageal echo
- Conduct outpatient clinic responsibilities at our main campus and satellite locations

Qualifications and Experience Include:

- MD degree or equivalent from an accredited school of medicine with 3+ years of fellowship training in pediatric cardiology + additional year of training in advanced congenital cardiac imaging and fetal echocardiography
- 5+ years of pediatric echocardiography experience with expertise in imaging and management of fetal cardiology patients and mothers
- Unrestricted medical license and American Board of Medical Specialties (ABMS) board certified in pediatric cardiology

Pediatric Cardiologist, Fetal Specialty

This BC/BE Pediatric and Fetal Cardiologist will have a strong desire to develop a community-based general pediatric cardiology practice with an emphasis on fetal cardiology. The candidate would collaborate with local hospitals and neonatology practices and provide personalized services to pediatricians, family practice providers, and maternal-fetal medicine specialists in these communities, with a focus on growing the practice within the region.

Responsibilities Include:

- Develop and maintain a community-based general pediatric cardiology practice with an emphasis on fetal cardiology.
- Collaborate with local hospitals and neonatology practices.
- Provide personalized cardiology services to pediatricians, family practice providers, and maternal-fetal medicine specialists.

Qualifications and Experience Include:

- Board-certified/board-eligible in Pediatric Cardiology.
- MD degree or equivalent from an accredited school of medicine with at least three years of fellowship training in pediatric cardiology.
- Strong commitment to community-based healthcare.

Pediatric Cardiac Intensivist

The Pediatric Cardiac Intensivist will report to the Medical Director of the CICU and work in close collaboration with cardiologists, cardiac surgeons, intensivists, and healthcare professionals to deliver state-of-the-art critical care to patients with complex cardiovascular conditions.

Responsibilities Include:

- Provide comprehensive, evidence-based critical care for pediatric patients with congenital and non-congenital cardiovascular conditions in the Cardiac ICU (CICU).
- Conduct thorough evaluations, diagnostic assessments, and treatment planning, including mechanical circulatory support and perioperative management.
- Engage in quality improvement and patient safety initiatives to enhance outcomes and efficiency within the CICU.

Qualifications and Experience Include:

- MD degree or equivalent from accredited school of medicine
- Fellowship training (three years) in Pediatric Cardiology or Pediatric Critical Care Medicine with
  - One year of Fellowship training in Pediatric Cardiac Critical Care OR
  - Dual Fellowship training in Pediatric Cardiology and Pediatric Critical Care Medicine
- Unrestricted medical license and board certification by the American Board of Medical Specialties (ABMS) in Pediatric Cardiology
- Eligibility for medical licensure in the state of Florida

Nicklaus Children's Hospital Heart Institute is a renowned center of excellence dedicated to providing world-class cardiac care to pediatric patients. With state-of-the-art facilities and a multidisciplinary team of experts, we deliver comprehensive, compassionate, and cutting-edge care to children with congenital and acquired heart conditions. The Heart Institute offers a wide range of services including the management of patients requiring complex congenital heart surgery, interventional catheterization, invasive electrophysiology, non-invasive imaging (fetal and cardiac MR/CT) and preventive cardiology. Our pediatric cardiology and cardiovascular surgery services are ranked among the nation's best for by U.S.News & World Report.

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UCSF Expands Arrhythmia Research with Vivalink's Biometrics Data Platform in Study to Examine Arrhythmias in High-Risk Pregnancies

BRITE-MOM Study Uses Vivalink's Wearable Devices and Data Platform to Examine Arrhythmias in High-Risk Pregnancies

Vivalink, a leading provider of digital healthcare solutions, is supporting a research initiative at the University of California, San Francisco (UCSF) to better understand how pregnancy impacts heart health.

As part of the university's BRITE-MOM study, researchers are using Vivalink's wearable ECG devices and data platform to continuously monitor heart rhythms in pregnant and postpartum women, including those with congenital heart disease (CHD) and pre-eclampsia. By enabling continuous, real-world cardiac monitoring throughout pregnancy and six months after delivery, the study aims to uncover arrhythmia patterns that may guide early detection, clinical intervention, and long-term cardiovascular care for high-risk individuals.

"Women with congenital heart disease and pre-eclampsia face a significantly elevated risk of arrhythmia during pregnancy, yet data on how and when these arrhythmias occur remain limited," said Nicky Herrick, MD, co-principal investigator of the study and a cardiology fellow at UCSF. "Our goal is to generate a detailed picture of the types, frequency, and symptoms of arrhythmias in pregnancy using wearable technology that allows us to monitor participants safely and remotely."

As cardiac complications during pregnancy rise, so does maternal mortality, which reached 32.9 deaths per 100,000 live births in 2021. The increase has raised questions about how cardiovascular health impacts maternal outcomes. Understanding what contributes to rising cardiac complications in pregnancy could help physicians better predict heart arrhythmias and preserve their patients' cardiovascular health.

"We are excited to bring longitudinal ECG data into maternal cardiovascular research," said Anushree Agarwal, MD, UCSF cardiologist and co-principal investigator. "By incorporating wearable devices for long-term use, we are able to better capture arrhythmia episodes and early signs of cardiac stress that could otherwise go undetected."

The study is enrolling pregnant participants, including those with a history of congenital heart disease and pre-eclampsia, which elevate the risk of arrhythmias and other cardiovascular complications. Using Vivalink's wearable ECG sensor and cloud data services, researchers will capture real-time continuous data from participants throughout pregnancy and six months postpartum. They will track heart rate variability, arrhythmia episodes, and early indicators of cardiac stress.

For more information about Vivalink's solutions, visit www.vivalink.com. If you are interested in enrolling in this study, please contact Dr. Nicky Herrick at BRITE-MOM@ucsf.edu.

About Vivalink

Vivalink is a provider of digital healthcare solutions for remote patient monitoring in healthcare and clinical trials. By combining medical wearables, advanced algorithms, and clinical applications, we provide a more effective and accessible approach to patient care worldwide.
www.vivalink.com/

UC Disclaimer

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Driscoll

Join Our Team: Medical Director of Pediatric Interventional Cardiology

We are seeking a dynamic and visionary **Medical Director** for our **Pediatric Interventional Cardiology** program. This leadership role offers the opportunity to shape the future of pediatric cardiovascular care, leading a dedicated team of specialists in a collaborative, innovative, and patient-focused environment.

As the **Medical Director of Pediatric Interventional Cardiology**, you will lead a state-of-the-art program providing cutting-edge care to infants, children, and adolescents with complex heart conditions. You will play a pivotal role in advancing clinical practices, guiding multidisciplinary teams, and ensuring the highest standard of care for our young patients.

Driscoll Heart Center has recently opened 35 dedicated CICU beds, 2 new CV ORs, and 2 new Cath labs. In 2024 we had 544 Cardiac admissions to the CICU, 231 index cardiac cases and 301 catheterization and hybrid cases. This volume has more than doubled in the past five years. We have a hospital approved strategic plan to double the volume again over the next five years.

Driscoll Heart Center provides pediatric congenital heart care to 7 practice sites across Texas. The center participates in STS, PC4, and C3PO.

Successful applicants will enjoy a highly competitive compensation package, medical, dental, vision, disability, and life insurance, excellent retirement plans, generous paid vacation days, paid holidays, paid CME, and malpractice insurance.

Requirements:

- MD/DO or equivalent degree with board certification in Pediatric Cardiology.
- Fellowship training in Pediatric Interventional Cardiology.
- 10 years post fellowship experience.
- Proven leadership experience in a clinical or academic setting.
- Demonstrated expertise in pediatric heart disease management, including catheter-based interventions.

About Driscoll Children's Hospital

Driscoll Children's Hospital is a 243-bed pediatric tertiary care center with more than 30 medical and surgical specialties offering care throughout South Texas, including Corpus Christi, the Rio Grande Valley, Victoria, Laredo and El Paso. Through the vision and generosity of its founder, Clara Driscoll, Driscoll Children's Hospital opened in 1953, becoming the sole free-standing children's hospital in South Texas.

About Corpus Christi, Texas

Corpus Christi is an excellent place to live, work, and play. Explore nine unique beaches and unleash your adventurous side by sailing fishing and kayaking out on the water. Craving inspiration in the outdoors? Try a paddleboard yoga class or horseback riding on the sand. Corpus Christi is also the center of iconic attractions like the Texas State Aquarium and the USS Lexington. Our mild climate allows for year-round outdoor family activities such as golf, cycling, and tennis. The cost of living is very low, and there is no state income tax!

Learn more about the Heart Center here: https://youtu.be/Kdq8_-15TWw?si=HShTrIg5waCywE2X

Apply Today!
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CAREER OPPORTUNITIES

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Adult Congenital Heart Disease (ACHD) Cardiologist

Phoenix Children's
Phoenix, Arizona

Pediatric Cardiologist Heart Transplant and Advanced Heart Failure
Phoenix Children's
Phoenix, Arizona

Pediatric Cardiologist
Loma Linda University Children's Hospital
Loma Linda, California

Pediatric Cardiologist
Stanford Children's Health
Packard Children's Health Alliance
Capitola & Monterey, California

Assist / Assoc Professor of ACHD
Yale University
Yale New Haven Children's Hospital
New Haven, Connecticut

Medical Director & ACHD Cardiologist

Nemours Children's Hospital
Wilmington, Delaware

Pediatric Cardiologist

Nemours Children's Hospital
Central Florida

Medical Director of Pediatric Cardiology

Nemours Children's Hospital
Lakeland, Florida

Medical Director, Pediatric Cardiologist

Nemours Children's Hospital
Lake Mary, Florida

Director Fetal Cardiologist
Fetal Specialist, Cardiologist
Pediatric Cardiac Intensivist
Nicklaus Children's Hospital
Miami, Florida

Medical Director of Pediatric Cardiology

Nemours Children's Hospital
Sebring, Florida

Advanced Cardiac Imaging Pediatric Cardiologst
BayCare Medical Group
St. Joseph's Children's Hospital
Tampa, Florida

ACHD Cardiologist
Louisiana State University Children's Hospital of New Orleans (CHNOLA)
New Orleans, Louisiana

CAREER OPPORTUNITIES

Click the position title to view the full job description – page 2 of 2

Pediatric Cardiologist
Tulane University
Children's Hospital of New Orleans (CHNOLA)
New Orleans, Louisiana

Advanced Imaging Cardiologist
Ochsner Children's Hospital
New Orleans, Louisiana

Director of Pediatric Heart Failure / Heart Transplant Cardiology
Ochsner Children's Hospital
New Orleans, Louisiana

Pediatric CVICU Medical Director
Ochsner Children's Hospital
New Orleans, Louisiana

Regional Pediatric Cardiologists
Ochsner Children's Hospital
Baton Rouge, Lafayette, Monroe, Louisiana
Monroe, Mississippi

Pediatric Cardiologist Advanced Imaging with Cross-Sectional Focus
MaineHealth Maine Medical Center
Portland, Maine

Pediatric Heart Failure / Transplant Cardiologist
Children's Minnesota
Minneapolis/St. Paul, Minnesota

Pediatric Cardiologist
Children's Mercy
Springfield, Missouri

Pediatric Cardiologist
Billings Clinic
Billings, Montana

Assoc/Full Prof Pediatrics Director Non-Invasive Imaging
Columbia University
New York-Presbyterian Hospital
New York, New York

ACHD & General Adult Cardiology
Auckland City Hospital
Auckland, New Zealand

Pediatric Cardiologist
Akron Children's Hospital
Akron, Ohio

Acute Care & Electrophysiology
UPMC Children's Hospital of Pittsburgh
Pittsburgh, Pennsylvania

Medical Director of Pediatric Interventional Cardiology
Driscoll Children's Hospital
Corpus Christi, Texas

Merit Medical Launches the Ventrax™ Delivery System

Novel All-In-One Retrograde Aortic Access Delivery System Supports Streamlined Treatment of Ventricular Tachycardia

Merit Medical Systems, Inc. (NASDAQ: MMSI), a global leader in healthcare technology, today announced the US commercial release of its Ventrax Delivery System.

The new delivery system is Merit's latest addition to its growing electrophysiology (EP) and cardiac rhythm management (CRM) portfolio. The portfolio provides a unique selection of solutions to improve cardiac interventions, including the HeartSpan®, Worley™, Prelude SNAP™, and SafeGuard Focus® product lines.

Ventrax is intended to facilitate placement of devices used in ablation procedures commonly performed to treat an abnormally fast heartbeat known as ventricular tachycardia (VT). Ventricular arrhythmias, which include VT, are believed to cause approximately three out of four sudden cardiac deaths, which result in an estimated 184,000–450,000 lives lost in the United States each year.[1]

The all-in-one device provides a streamlined pathway for ablation catheters to enter the left ventricle through the aorta, an approach known as retrograde aortic access.

"For the electrophysiologist, using retrograde aortic access was always a risk-benefit decision, and the community has needed a tool that would make that decision easier," said Albert Sun, MD, electrophysiologist at Duke Health in Durham, NC, and whose advice was instrumental in Merit's development of the Ventrax system.

Retrograde aortic access can be useful to reach certain areas of the ventricle compared to traditional methods, such as transseptal puncture. Using this approach, these areas of the left ventricle are more accessible,[2] supporting targeted treatment.

"The new retrograde delivery system provides access to the left ventricle, allowing for the exchange of catheters to diagnose, map, or treat VT," said Jason Koontz, MD, PhD, electrophysiologist at Duke Health and product development consultant to Merit. "This adds to our tools as we work to deliver the best possible outcomes for our patients."

Learn more about the Ventrax Delivery System: **https://www.merit.com/product/ventrax-delivery-system/**

Key features of the Ventrax Delivery System include a 95-cm sheath designed to access desired target locations. An ultralow-profile transition between its sheath and pigtail-dilator offers smooth insertion, and an angled tip enhances the reach of an ablation catheter.

VT ablation is one of the fastest growing areas in electrophysiology. Many physicians are using retrograde aortic access for VT procedures, and researchers are increasingly investigating the technique.

"Effective access is essential to supporting the growth of VT ablation," said Fred P. Lampropoulos, Merit's Chairman and Chief Executive Officer. "We are proud to take another significant step toward providing electrophysiologists with a valuable tool that helps fill this need in patient care."

About Merit Medical

Founded in 1987, Merit Medical Systems, Inc. is engaged in the development, manufacture, and distribution of proprietary disposable medical devices used in interventional, diagnostic, and therapeutic procedures, particularly in cardiology, radiology, oncology, critical care, and endoscopy. Merit serves client hospitals worldwide with a domestic and international sales force and clinical support team totaling more than 700 individuals. Merit employs approximately 7,000 people worldwide.

Trademarks

JUNE

09TH

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Dellwood, MN, USA
https://campodayin.org/event/whole-heart-golf-tournament/?utm_source=Odayin+E-Newsletter&utm_campaign=510a02f914-2025-whole-heart-invitation&utm_medium=email&utm_term=0_-0c21a930c9-330472589&mc_cid=510a02f914

AUGUST

25TH-28TH

PICS 2025
Chicago, IL, USA
https://www.picsymposium.com/home.html

SEPTEMBER

25TH-28TH

ASE 2025 36th Annual Scientific Sessions
Nashville, TN, USA
https://www.asescientificsessions.org/registration/

OCTOBER

27TH-28TH

4th CME HeartCare and Cardiovascular Medicine Conference
Rome, Italy
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