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Recurrent Carcinoid Valve Disease: Dual Transcatheter Valve Replacements in a Single Procedure

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Key Words: percutaneous valve therapy, pulmonary valve disease, tricuspid valve disease, percutaneous intervention, structural heart disease intervention

Abstract

We describe transcatheter treatment of a 67-year-old woman with severe right heart failure secondary to dysfunction of bioprosthetic tricuspid and pulmonary valves previously replaced for carcinoid-associated valve sclerosis. This case highlights considerations for serial, same procedure, percutaneous transcatheter valve-in-valve tricuspid and pulmonary valve replacements in a carcinoid heart disease patient with pacemaker-dependent atrioventricular block.

Introduction

Carcinoid tumors are neuroendocrine neoplasms that may secrete myriad vasoactive substances including serotonin, tachykinins, and prostaglandins. Some of these substances appear to cause endothelial injury of cardiac valves with subsequent plaque deposition and sclerosis of the downstream sides of affected valves and subvalvular supporting tissues. Because many of these substances are metabolized/inactivated in the liver and lungs, cardiac valvular involvement is seen primarily on the right side of the heart unless there is a pathway, such as a patent foramen ovale, for some degree of right-to-left shunting.[1] Cardiac involvement is associated with poor long-term prognosis with an estimated 3-year survival rate of approximately 31%.[2,3] Surgical replacement of valves with severe carcinoid valvular disease is generally required to alleviate severe symptoms.[4,5] Successful surgery can increase median survival times to 6-11 years.[2,6] However, bioprosthetic valves may be subject to accelerated (with poor tumor control) or natural deterioration, and surgical re–replacement is significantly more technically difficult and associated with increased morbidity and mortality.[4,7] Percutaneous, transcatheter, valve–in-valve replacement of the pulmonary valve, and, more recently, tricuspid valve, have been shown to be effective in the short to medium time frame with significantly lower morbidity and mortality than re-do surgical valve replacement for conventional causes of bioprosthetic valve dysfunction.[8,9] We report successful same–procedure, serial, transcatheter, pulmonary and tricuspid valve-in-valve replacements in a 67-year-old carcinoid patient with concomitant pacemaker-dependent atrioventricular block, and discuss some of the technical considerations.

Case Series

A 67-year-old female developed severe carcinoid heart disease related to a pulmonary neuroendocrine neoplasm. She underwent resection of several tumors, including a left lower lung segment for the original tumor. In 1999, she required surgical replacement of the mitral valve with a 29 Carpentier-Edwards Perimount valve (Edwards Lifesciences, Irvine, CA, USA), the tricuspid valve with a 31 Carpentier-Edwards Perimount valve, and the pulmonary valve with a 25 Carpentier-Edwards Perimount valve. She developed postoperative complete heart block and was pacemaker-dependent with a ventricular lead extending through the bioprosthetic tricuspid valve. Due to recurrent atrial fibrillation episodes, she underwent multiple ablations and placement of a Watchman (Boston Scientific, Marlborough, MA,

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USA) left atrial appendage occluder. She had hyperlipidemia with mild two-vessel coronary artery disease treated medically. She presented to our clinic with a one-year history of significantly worsening exercise tolerance with limitations to activities of daily living (NYHA Class 3-4). She did not have evidence of increased serotonin or other vasoactive carcinoid-related substances.

Transthoracic echocardiography **(Figures 1 & 2)** demonstrated severe tricuspid valve regurgitation with mild stenosis, severe pulmonary valve stenosis with moderate regurgitation, and an estimated right ventricular pressure of approximately 70mmHg (~2/3 systemic). Her bioprosthetic mitral valve and native aortic valve were functioning well with no stenosis or regurgitation. Cardiac magnetic resonance imaging confirmed pulmonary stenosis, severe tricuspid and pulmonary insufficiency with a right ventricular indexed volume of 165 mL/m2 and a right ventricular ejection fraction of 38%.

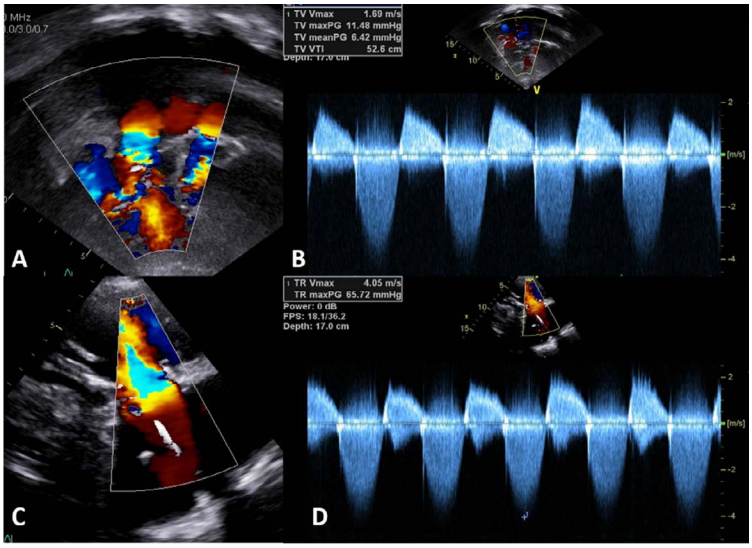

FIGURE 1 Pre-intervention Tricuspid Valve Disease
*Present was tricuspid valve stenosis with a mean gradient of 6mmHg **(A&B)** and severe tricuspid valve regurgitation with a regurgitation peak velocity of 4.05 meters/second **(C&D)**.*

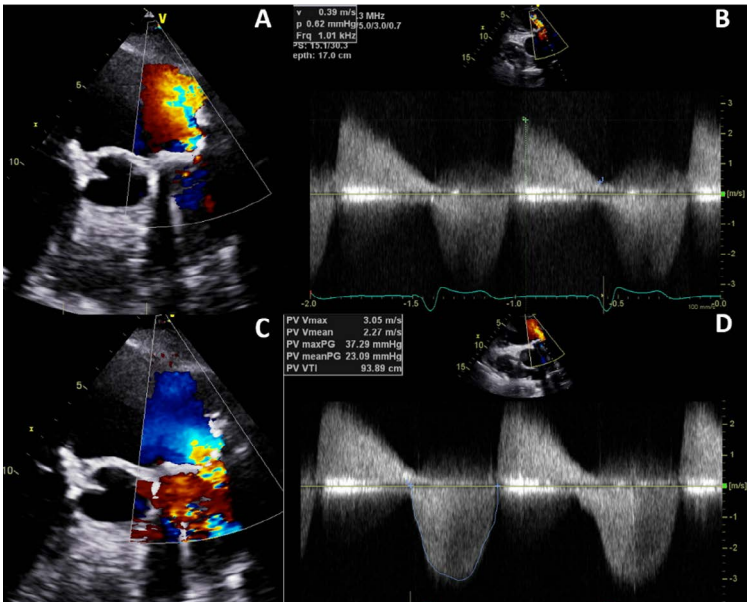

FIGURE 2 Pre-intervention Pulmonary Valve Disease
*Present was severe pulmonary valve regurgitation **(A&B)** and pulmonary valve stenosis with a peak gradient of 37mmHg **(C&D).***

The consensus recommendation of our Multidisciplinary Adult Congenital Heart Disease Conference was to proceed with transcatheter pulmonary and tricuspid valve replacements. Sequential pulmonary and tricuspid valve replacement during the same catheterization was planned. Due to the possibility of damage to the pacing lead within the tricuspid surgical valve frame by the transcatheter valve, preparations were made for urgent transvenous lead/pacemaker replacement if necessary.

Cardiac catheterization demonstrated moderately elevated diastolic pressures throughout. There was a 35mmHg systolic gradient across the pulmonary valve prosthesis with a cardiac index by the Fick method of 2.5 L/min/m2. An aortogram demonstrated that the coronary arteries were well away from both the pulmonary and tricuspid prosthetic valves. The pulmonary valve was a 25 Carpentier-Edwards Perimount valve, which has a native orifice diameter of 23mm. It was felt that a 22mm Melody valve (Medtronic, Minneapolis, MN, USA – outer diameter 24mm and lowest profile of available transcatheter valves) would provide an adequate orifice for this adult female patient. The valve was delivered using standard techniques with concomitant right ventricular pacing **(Figure 3)**. The tricuspid valve was a 31 Carpentier-Edwards Perimount valve with a native orifice diameter of 28.5mm. It was felt that a 29mm Sapien S3 transcatheter valve (Edwards Lifesciences, Irvine, CA, USA) was the best alternative for valve-in-valve tricuspid valve replacement. A non-trans-tricuspid lead for ventricular pacing was indicated for rapid pacing during deployment of the relatively short Sapien valve, and to ensure stable temporary pacing if the permanent transvenous pacemaker lead function was disrupted. We, therefore, utilized temporary coronary guidewire pacing.[10] A 0.014" coronary wire was advanced slightly into the lumen of the left main coronary artery through a 5 French left coronary guide catheter. Pacing was performed by attaching the generator to the guidewire and to a subcutaneous needle. The Sapien S3 valve delivery was performed over the same guidewire utilized for Melody placement **(Figure 4)**. A waist remained in the valve stent after inflation with nominal balloon volume using the Edwards Commander delivery system. Post-dilation was, therefore, performed with a 26mm ultra high-pressure balloon with elimination of the waist (with apparent fracture of the surgical valve ring) at 16 atm. The entrapped transvenous pacemaker lead continued to function normally. Both valves were in excellent position with excellent function by transesophageal echocardiography. There was only trivial central tricuspid insufficiency.

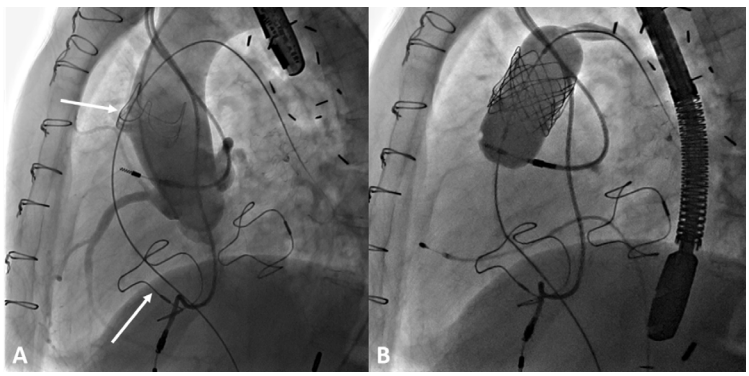

FIGURE 3 Transcatheter Pulmonary Valve Replacement
***A)** An aortogram demonstrates that the coronary arteries are indeed well away from the prosthetic pulmonary (cephalad white arrow) and tricuspid (caudal white arrow) valves. **B)** Valve-in-valve transcatheter pulmonary valve replacement from the transfemoral approach.*

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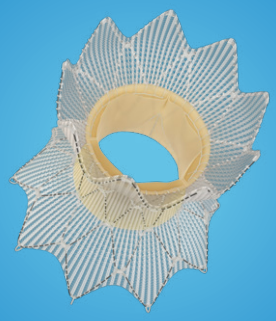

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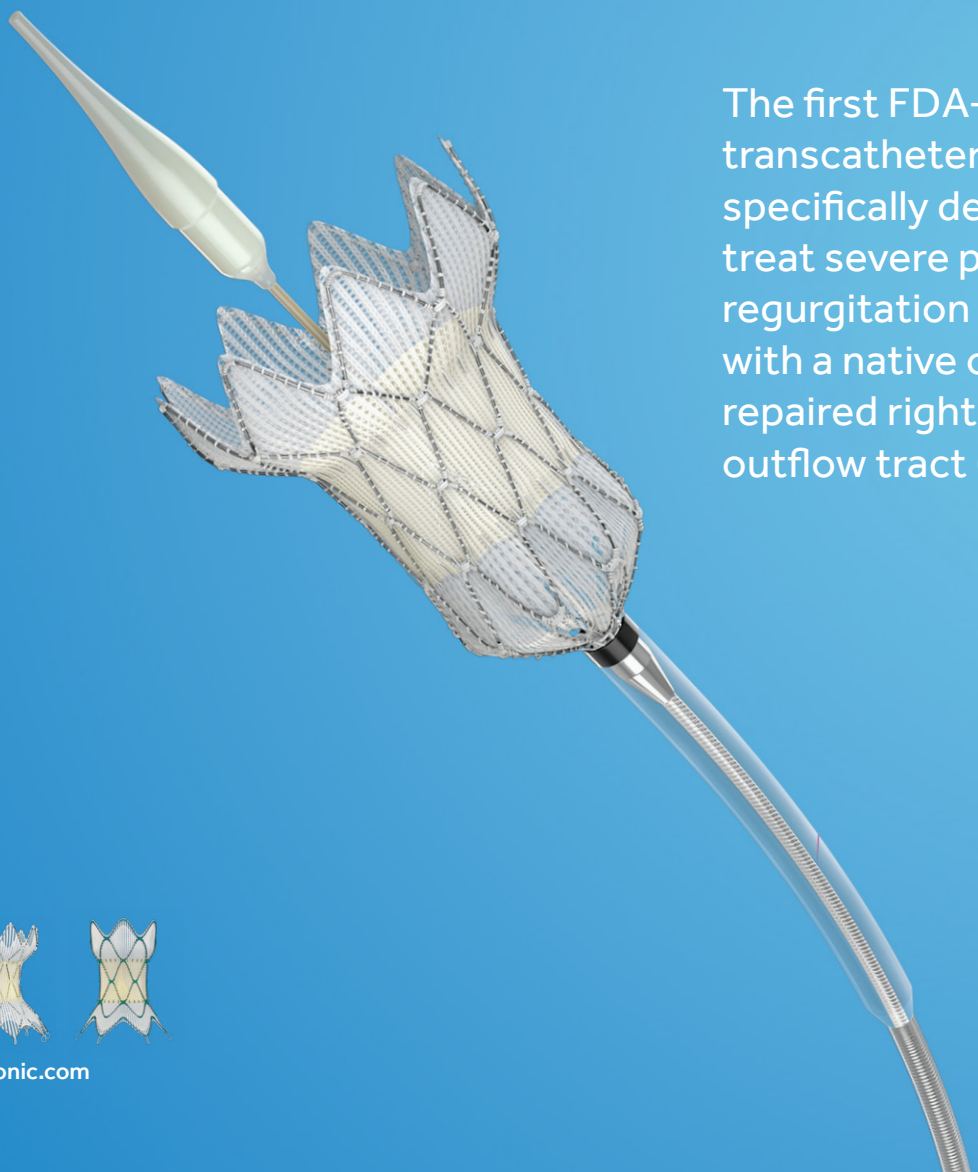

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Transcatheter pulmonary valve (TPV): This device was designed for single use only. Do not reuse, reprocess, or resterilize the TPV. Reuse, reprocessing, or resterilization may compromise the structural integrity of the device and/or create a risk of contamination of the device, which could result in patient injury, illness, or death. Do not resterilize the TPV by any method. Exposure of the device and container to irradiation, steam, ethylene oxide, or other chemical sterilants renders the device unfit for use. The device is packaged with a temperature sensor. Do not freeze the device. Do not expose the device to extreme temperatures. Do not use the device if the arrow on the sensor points to the symbol that indicates that the temperature limit has been exceeded. Do not use the device if any of the following have occurred: the tamper-evident seal is broken, the serial number tag does not match the container label, the arrow on the sensor points to the symbol that indicates that the temperature limit has been exceeded, or the device is not completely covered by the storage solution. Do not contact any of the Harmony TPV system components with cotton or cotton swabs. Do not expose any of the Harmony TPV system components to organic solvents, such as alcohol. Do not introduce air into the catheter. Do not expose the device to solutions other than the storage and rinse solutions. Do not add or apply antibiotics to the device, the storage solution, or the rinse solution. Do not allow the device to dry. Maintain tissue moisture with irrigation or immersion. Do not attempt to repair a damaged device. Do not handle the valve leaflet tissue or use forceps to manipulate the valve leaflet tissue. Do not attempt to recapture the device once deployment has begun. Do not attempt to retrieve the TPV if any one of the outflow TPV struts is protruding from the capsule. If any one of the outflow TPV struts has deployed from the capsule, the TPV must be released from the catheter before the catheter can be withdrawn. Do not attempt post-implant balloon dilatation (PID) of the TPV during the procedure, which may cause damage to or failure of the TPV leading to injury to the patient resulting in reintervention.

Delivery catheter system (DCS): This device was designed for single use only. Do not reuse, reprocess, or resterilize the DCS. Reuse, reprocessing, or resterilization may compromise the structural integrity of the device and/or create a risk of contamination of the device, which could result in patient injury, illness, or death. Do not reuse or resterilize the DCS. If resistance is met, do not advance the guidewire, DCS, or any other component without first determining the cause and taking remedial action. Do not remove the guidewire from the DCS at any time during the procedure.

Precautions
General: Clinical long-term durability has not been established for the Harmony TPV. Evaluate the TPV performance as needed during patient follow-up. The safety and effectiveness of Harmony TPV implantation in patients with pre-existing prosthetic heart valve or prosthetic ring in any position has not been demonstrated. The Harmony TPV system has not been studied in female patients of child-bearing potential with positive pregnancy.

Before use: Exposure to glutaraldehyde may cause irritation of the skin, eyes, nose, and throat. Avoid prolonged or repeated exposure to the chemical vapor. Use only with adequate ventilation. If skin contact occurs, immediately flush the affected area with water (for a minimum of 15 minutes) and seek medical attention immediately. The TPV and the glutaraldehyde storage solution are sterile. The outside of the TPV container is nonsterile and must not be placed in the sterile field. The TPV and DCS should be used only in a sterile catheterization laboratory (cath lab) environment. Ensure that sterile technique is used at all times. Strictly follow the TPV rinsing procedure. For TPV 25: Ensure that all green sutures have been removed from the attachment suture loops on the TPV before loading onto the DCS. Prevent contamination of the TPV, its storage solution, and the DCS with glove powder. Verify the orientation of the TPV before loading it onto the DCS. The inflow end of the TPV with attachment suture loops must be loaded first. Do not place excessive pressure on the TPV during loading. Inspect the sealed DCS packaging before opening. If the seal is broken or the packaging has been damaged, sterility cannot be assured. Proper functioning of the DCS depends on its integrity. Use caution when handling the DCS. Damage may result from kinking, stretching, or forceful wiping of the DCS. This DCS is not recommended to be used for pressure measurement or delivery of fluids. Carefully flush the DCS and maintain tight DCS connections to avoid the introduction of air bubbles.

During use: The TPV segment is rigid and may make navigation through vessels difficult. Do not advance any portion of the DCS under resistance. Identify the cause of resistance using fluoroscopy and take appropriate action to remedy the problem before continuing to advance the DCS. Careful management of the guidewire is recommended to avoid dislodgement of the TPV during DCS removal. Once deployment is initiated, retrieval of the TPV from the patient is not recommended. Retrieval of a partially deployed valve may cause mechanical failure of the delivery catheter system or may cause injury to the patient. Refer to the section below for a list of potential adverse events associated with Harmony TPV implantation. During deployment, the DCS can be advanced or withdrawn prior to the outflow struts protruding from the capsule. Once the TPV struts contact the anatomy during deployment, it is not recommended to reposition the device. Advancing the catheter forward once the TPV struts make contact with the anatomy may lead to an undesired deployment or may cause damage to or failure of the TPV and injury to the patient. Refer to the section below for a list of potential adverse events associated with the Harmony TPV implantation. Physicians should use judgment when considering repositioning of the TPV (for example, using a snare or forceps) once deployment is complete. Repositioning the bioprosthesis is not recommended, except in cases where imminent serious harm or death is possible (for example, occlusion of the main, left, or right pulmonary artery). Repositioning of a deployed valve may cause damage to or failure of the TPV and injury to the patient. Refer to the section below for a list of potential adverse events associated with the Harmony TPV implantation. Ensure the capsule is closed before DCS removal. If increased resistance is encountered when removing the DCS through the introducer sheath, do not force passage. Increased resistance may indicate a problem and forced passage may result in damage to the device and harm to the patient. If the cause of resistance cannot be determined or corrected, remove the DCS and introducer sheath as a single unit over the guidewire, and inspect the DCS and confirm that it is complete. If there is a risk of coronary artery compression, assess the risk and take the necessary precautions. Endocarditis is a potential adverse event associated with all bioprosthetic valves. Patients should make their healthcare providers aware that they have a bioprosthetic valve before any procedure. Post-procedure, administer appropriate antibiotic prophylaxis as needed for patients at risk for prosthetic valve infection and endocarditis. Prophylactic antibiotic therapy is recommended for patients receiving a TPV before undergoing dental procedures. Post-procedure, administer anticoagulation and/or antiplatelet therapy per physician/clinical judgment and/or institutional protocol. Excessive contrast media may cause renal failure. Preprocedure, measure the patient's creatinine level. During the procedure, monitor contrast media usage. Conduct the procedure under fluoroscopy. Fluoroscopic procedures are associated with the risk of radiation damage to the skin, which may be painful, disfiguring, and long term.

Potential Adverse Events
Potential risks associated with the implantation of the Harmony TPV may include, but are not limited to, the following: ▪ death ▪ valve dysfunction ▪ tissue deterioration ▪ hematoma ▪ heart failure ▪ cerebrovascular incident ▪ perforation ▪ rupture of the right ventricular outflow tract (RVOT) ▪ compression of the aortic root ▪ compression of the coronary arteries ▪ sepsis ▪ pseudoaneurysm ▪ erosion ▪ stent fracture ▪ arrhythmias ▪ device embolization or migration ▪ pulmonary embolism ▪ occlusion of a pulmonary artery ▪ laceration or rupture of blood vessels ▪ device misorientation or misplacement ▪ valve deterioration ▪ regurgitation through an incompetent valve ▪ physical or chemical implant deterioration ▪ paravalvular leak ▪ valve dysfunction leading to hemodynamic compromise ▪ residual or increasing transvalvular gradients ▪ progressive stenosis and obstruction of the implant ▪ hemorrhage ▪ endocarditis ▪ thromboembolism ▪ thrombosis ▪ thrombus ▪ intrinsic and extrinsic calcification ▪ bleeding ▪ bleeding diathesis due to anticoagulant use ▪ fever ▪ pain at the catheterization site ▪ allergic reaction to contrast agents ▪ infection ▪ progressive pulmonary hypertension ▪ progressive neointimal thickening and peeling ▪ leaflet thickening ▪ hemolysis. General surgical risks applicable to transcatheter pulmonary valve implantation: ▪ abnormal lab values (including electrolyte imbalance and elevated creatinine) ▪ allergic reaction to antiplatelet agents, contrast medium, or anesthesia ▪ exposure to radiation through fluoroscopy and angiography ▪ permanent disability.

Please reference the Harmony TPV system instructions for use for more information regarding indications, warnings, precautions, and potential adverse events.

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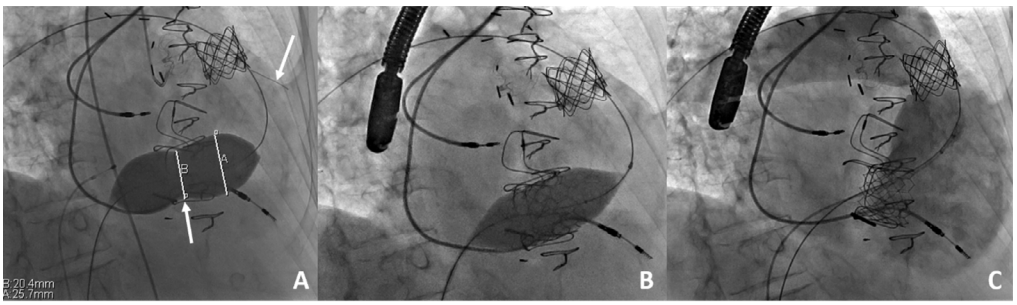

FIGURE 4 Transcatheter Tricuspid Valve Replacement
A) *Following pulmonary valve replacement, balloon sizing of the tricuspid bioprosthetic demonstrated a landing zone measuring 20.4mm at its narrowest portion (caudal white arrow). Pacing for intervention was performed via a coronary wire in the proximal left main coronary artery (cephalad white arrow).* ***B)*** *Valve-in-valve transcatheter tricuspid valve replacement from the transfemoral approach.* ***C)*** *Right ventriculogram in the anteroposterior view following dual-transcatheter valve replacement. Both valves were found to be well-positioned by angiography and functioning well by transesophageal echocardiogram.*

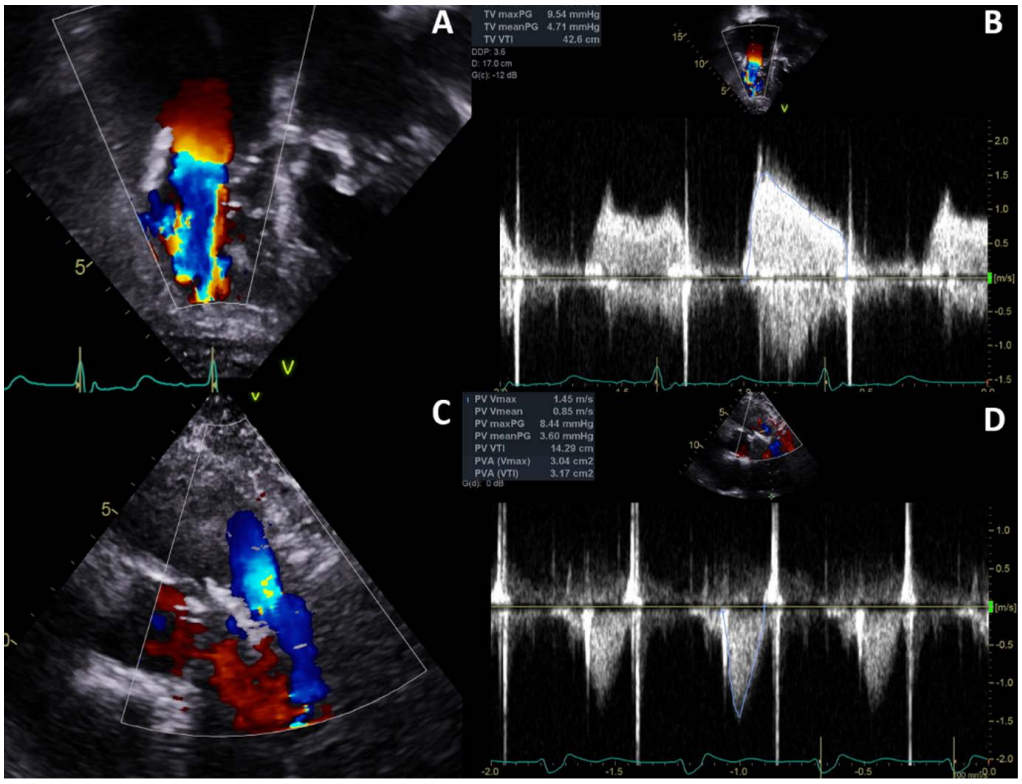

FIGURE 5 Post-intervention Outpatient Echocardiogram
A&B) *On outpatient follow up six months post-procedure, the patient reported no clinical symptomatology and transthoracic echocardiography demonstrated a mean gradient of 4.7mmHg across the tricuspid valve without any insufficiency.* ***C&D)*** *The pulmonary valve demonstrated no significant stenosis nor insufficiency.*

The patient had considerable improvement in clinical status with improved exercise tolerance and ability to perform all activities of daily living without marked fatigue (NYHA Class 1). Six months post-procedure, the outpatient echocardiogram demonstrated a mean gradient of 4.7mmHg across the tricuspid valve, with no evidence of insufficiency and no significant stenosis nor insufficiency of the pulmonary valve **(Figure 5).** Her dual chamber pacemaker continued to function well, without significant change in ventricular lead parameters.

Discussion

Carcinoid-associated cardiac valve disease can be particularly difficult to manage for multiple reasons. Circulating vasoactive substances may lead to abnormalities on multiple valves - primarily on the right side of the heart, but also on the left side if there is a pathway which bypasses the inactivating mechanisms of the liver and lung. Even after surgical replacement of affected valves, bioprostheses remain at risk for eventual deterioration, and the incidence of complete heart block is high.[11,12] Our demonstration of the feasibility of replacement of two valves in a single procedure using transcatheter techniques may offer new hope for better long-term function and survival in some patients. Especially because additional valve-in-valve replacements may be necessary in this population, it is essential to have a full understanding of the available transcatheter valve characteristics. The ideal valve has the lowest profile so that the valve orifice is reduced by the minimal possible amount with each added valve. The valve however, must be designed to expand to a large enough diameter to fit within the target surgical valve ring. "Cracking" of the surgical valve ring with ultra-high-pressure balloons has been accomplished in some patients to allow for placement of slightly larger than anticipated transcatheter valves.[13,14] The limits of expansion that can be achieved with different surgical valves, and differences in these limits for valves in different positions are still under investigation. Transvenous pacer leads are at risk for becoming nonfunctional when trapped between the surgical valve frame and a transcatheter valve stent during tricuspid valve-in-valve replacement. Alternative pacing techniques, such as coronary guidewire pacing, may enhance the safety of these procedures in pacemaker-dependent patients.

Our report uniquely represents an example of two transcatheter valve technologies working in concert to provide percutaneous transfemoral valve replacement of the pulmonary and tricuspid valves (within the same procedure) for carcinoid-dependent bioprosthetic failure. For the pulmonary position, the Medtronic Melody system was utilized for its superior lumen-to-prosthesis sizing ratio within the nominally 25mm prosthetic valve housing. For the Tricuspid position, the larger, nominally 31mm, prosthetic valve housing supported the Edwards Sapien system. Long-term outcomes comparing the currently available transcatheter valve systems remain unreported at this time. Mid-term results from transcatheter therapies in the tricuspid and pulmonary position(s) have been outlined in the literature.[8,9] However, direct comparison of different technologies to understand their truly long-term benefits and/or disadvantages remains an area of active investigation.

Conclusion

The technology and techniques for transcatheter valve replacement continue to progress at a rapid pace. The inherent advantages to percutaneous therapies are especially relevant to populations known to be at high risk for repeated valve replacements, such as those with carcinoid-related valve disease. As transcatheter technologies continue to advance, we must aim to alter our approach to provide the safest experience for our patients – not only considering the index procedure but possible future encounters as well. We demonstrate the feasibility of performing double right-sided transcatheter valve-in-valve replacement in the same procedure in a patient at high risk for requiring additional valve interventions over time. For these types of cases, careful, individualized pre-procedural planning should include analysis of the actual surgical and transcatheter valve dimensions, valve landing zone characteristics, and considerations of the methods to deal with possible procedure-induced malfunction of an essential transvenous pacemaker lead. A wider understanding of this transcatheter option may allow intervention in some high-risk patients sooner in their expected course of functional deterioration.

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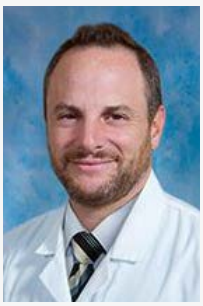

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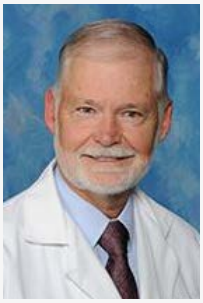

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Wolfson Children's Hospital is a member of the UPMC Children's Hospital of Pittsburgh's Heart Institute network. The collaboration with UPMC is designed to enhance and expand specialized pediatric cardiac care for children in the North Florida/South Georgia region, as well as the entire Southeastern United States.

Position Aspects – The Opportunity to Lead

This position offers the successful candidate an exceptional opportunity to lead a robust clinical practice with the region's top-ranked and most well-established group in one of the nation's most sought after destinations.

Interested applicants are invited to inquire or submit their CV to **PhysicianCareers@bmcjax.com**

BAPTIST HEALTH | Wolfson Children's Hospital

Changing Health Care for Good.®

Open-Heart Surgery, Without the Open-Heart Part

FDA Approves Harmony Transcatheter Pulmonary Valve

The U.S. Food and Drug Administration (FDA) today approved a first-of-its-kind heart valve that does something extraordinary. It takes the "open-heart" part out of certain open-heart surgeries. 20-year-old Jack Hurley couldn't be happier.

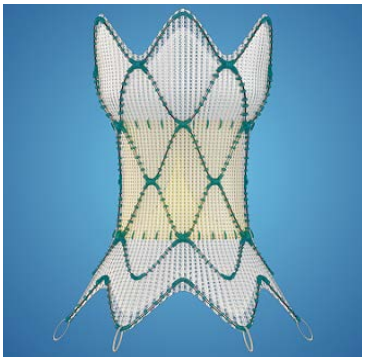
"One of the best things about the Harmony valve was not what it did for me, but for what I didn't have to do, like spend lots of time in the hospital with a long recovery time," he said.

"We are always looking for less invasive ways to treat our pediatric patients, and this new device will allow us to avoid open-heart surgery in many cases," said Matthew J. Gillespie, MD, attending interventional cardiologist, Director of the Cardiac Catheterization Laboratory, Co-Director of the Pediatric Valve Center at Children's Hospital of Philadelphia, and an investigator in the Harmony Pivotal Trial. Dr. Gillespie implanted Jack's Harmony valve. "For most patients, we are setting them up for a healthier life associated with their Congenital Heart Disease."

Jack's 20th birthday. With sisters Clare (left) and Nora (right).

The **Medtronic Harmony™ Transcatheter Pulmonary Valve (TPV)** is the first pulmonary heart valve in the world to be approved for patients with a specific type of congenital heart disease without requiring open-heart surgery. Rather than cut open a patient's chest to repair the heart, surgeons implant Harmony TPV through a much less invasive approach. They load the valve onto a catheter, make a small incision in the femoral vein or neck and deliver the valve directly inside the heart. Jack went home the next day and felt like he was back to normal within a week.

Jack was among an estimated 40,000 babies born every year in the US with congenital heart disease (CHD).[1] Jack's pulmonary heart valve, which allows blood to leave the heart and get oxygen from the lungs, didn't work properly. Surgeons repaired it when Jack was just three months old. But his family always knew the fix was temporary. The time would come, probably in Jack's late teens or 20's, that he would need open-heart surgery again.



Medtronic Harmony™ Transcatheter Pulmonary Valve (TPV)

"The idea that he needed another open-heart surgery at 18 years old was just devastating to me," said Jack's mom, Colleen. "It was such a relief for us to have a minimally-invasive option. And to see him back to living a normal life so quickly. It's just amazing."

Babies like Jack, born with chronic heart disease, face the possibility of multiple open-heart surgeries over the course of their lives. It can take patients weeks to recover from open-heart surgery, and each subsequent surgical procedure carries more risk than the previous one. An estimated 1.6 million adults currently live with CHD.[2] Thousands of them may now benefit from Harmony TPV.

"It's our Mission to bring life-improving therapies to as many people as possible," said Nina Goodheart, president of the Structural Heart & Aortic operating unit at Medtronic. "Harmony does exactly that. Procedures are shorter and far less traumatic for patients. They spend less time in the hospital and recover faster. It's very gratifying for us to be able to provide this option to CHD patients and their families."

"Being able to offer this therapy will increase the options available to patients and families and decrease the amount of time patients spend in the hospital and in recovery," added Dr. Gillespie.

Harmony is among several Medtronic devices that received the FDA's Breakthrough Device Designation, a unique federal effort intended to speed up the approval process of certain life-saving technologies. Harmony is the third Medtronic device to receive the designation and then receive FDA approval.

"The strong collaboration among physicians, Medtronic and the FDA, from the earliest study phase all the way to approval, helped bring Harmony TPV to patients much faster than it might have otherwise," Goodheart said.

Jack and his family are grateful. He's active in sports, working part-time as a landscaper, and studying engineering in school.

Jack as a baby, after open-heart surgery

"Life is the best it could be for me right now," he said. "Whatever I do, I want to help people. I've been on the receiving end. I know how that feels. It would be great to be on the giving end someday."

References

1. Hoffman JL, Kaplan S. The incidence of congenital heart disease. J Am Coll Cardiol. 2002;39(12):1890-1900.
2. Adult Congenital Heart Association (ACHA).

Echocardiography Faculty Opportunity

The Heart Institute at Cincinnati Children's invites Pediatric Cardiologist at the Assistant, Associate, or full Professor level with an interest in echocardiography and a strong track record in echocardiography research to advance the academic output and reputation of the echo lab at Cincinnati Children's.

The Heart Institute and the Advanced Imaging Service pride themselves on excellent clinical outcomes, while maintaining a strict academic focus, research productivity and exemplary professionalism. The acceptable candidate would be expected to maintain similar high standards of clinical service.

The Echo lab includes 12 imaging faculty and 22 cardiac sonographers and performs approximately 15,000 transthoracic and 500 transesophageal echocardiograms annually. The facility includes a state-of-the-art reading room as well as the necessary technology to perform all current advanced imaging techniques. Additionally, the Cardiovascular Imaging Core Research Lab provides dedicated personnel and resources for human and animal echo research.

The Heart Institute is an internationally recognized academic center of excellence for Pediatric (congenital and acquired) including Adult Congenital Cardiac Care, and clinical and basic science research. The Heart Institute incorporates the Divisions of Congenital Heart Disease, Cardiothoracic Surgery and Molecular Cardiovascular Biology to offer the full range of Pediatric Cardiac services within a free-standing not-for-profit tertiary care medical center. The Heart Institute also trains categorical Pediatric Cardiology and sub-specialty fellows in all areas of congenital heart disease practice (including 2 Advanced Imaging fellows).

Required
M.D., D.O., or equivalent degree
Current active medical license issued by the State of Ohio or eligible for license.
Appropriate medical credentialing through the Medical Staff Services offices
Completion of all required pre-employment activities
Current Assistant or Associate Professor appointment or eligibility required.

Preferred
Board certification Pediatric Cardiologist

Expectations
The applicant would be expected to participate in clinical service including (but not limited to):
Perform/interpret transthoracic and transesophageal echocardiograms.
Perform a single out-patient clinic on a weekly basis.
Provide limited periods of in-patient and/or consult service coverage.
Participate in all Heart Institute clinical and management conferences.
Perform teaching and instruction commensurate with the training mission of the Heart Institute at Cincinnati Children's
Develop and lead new research programs within the echo lab with significant dedicated time protected for research activities.

Interested candidates should address all inquiries to:

Andrew Redington, MD
Co-Director, The Heart Institute
Cincinnati Children's Hospital Medical

Email a letter of intent and CV c/o **Deborah.Mancini@CCHMC.org**

More Than 50,000 Children Screened for Congenital Heart Defects Using AI-Enabled Stethoscopes

Intelligent stethoscope with integrated ECG saved more than 36 lives and there are plans to expand screenings to 500,000 children worldwide

In recognition of World Congenital Heart Defects (CHD) Awareness Week, HD Medical Inc. announced it has screened over 50,000 children for CHDs using HD Steth, an ECG and artificial intelligence (AI)-enabled stethoscope, **https://hdmedicalgroup.com/shop/hd-steth/**. These screenings have been conducted at multiple locations in India, helping to save more than 36 lives to date. HD Medical, **https://hdmedicalgroup.com/**, said it plans to expand the screenings to over 500,000 children worldwide.

The children diagnosed with CHD were provided life-saving treatments and surgeries by the Sri Sathya Sai Sanjeevani Hospitals, **https://srisathyasaisanjeevani.org/**, in India.

CHDs are the most common types of birth defects. One out of 100 babies are born with CHD worldwide and nearly 40,000 infants in the U.S. are born each year with CHDs. In India, each year approximately 300,000 children are born with CHD and approximately 25% die before their first birthday. The absence of early screening and sophisticated pediatric care is causing over 250 deaths among children every day in India. Conventional stethoscopes used for screening have resulted in 28% false positives and 51% false negatives when used by non-specialists and health workers. While the ultrasound echocardiogram is a more accurate alternative, high equipment cost and low availability of trained medical professionals have limited its usage.

HD Medical's US FDA-cleared HD Steth addresses this problem, providing a cost-effective, easy-to-use solution for non-specialists and primary healthcare workers. HD Steth was tested and validated through a clinical study involving 1,200 children, with 91% sensitivity and 99% specificity for detecting heart murmurs caused by CHDs compared to ultrasound echocardiograms as a gold standard at the Sri Sathya Sai Sanjeevani Hospital at Raipur, Chhattisgarh State in Central India.

Based on this study, HD Steth was adopted in a large CHD screening program at their group hospitals and medical screening programs at multiple locations in India as follows:

- Sai Sanjeevani Hospital at Palwal, Haryana: 12,974
- Sai Sanjeevani Hospital at Kharghar, Maharashtra: 8,020
- Sai Sanjeevani Hospital at Raipur, Chhattisgarh: 2,000
- Sai Sanjeevani - Niraamaya Bastar initiative: 1,000
- Sai Sarla Memorial Hospital, Chickaballapur, Karnataka: 19,650
- Sai Arogya Vahini Trust Mobile Medical Clinics, Kolkata, West Bengal: 8,450
- Total number of Children Screened: 52,094
- Total number of Children Screened and Confirmed with CHDs: 90+
- Total number of Children Saved with Heart Surgeries: 36+

The Sri Sathya Sai Sanjeevani hospitals in Maharashtra, Chhattisgarh and Haryana are India's largest providers of totally free pediatric heart procedures, performing nearly 14,000 surgeries and catheter interventions

since 2012. "The centers stand committed to the investment in child health initiatives for a healthier nation in the future by offering quality healthcare provided totally free of cost," said C. Sreenivas, Chairman of Sai Sanjeevani hospitals, **https://srisathyasaisanjeevani.org/about-us/**. "The HD Steth device from HD Medical is very helpful for screening children with CHD at an early stage so that a timely surgical intervention can be possible to save their lives. We have recently signed an MOU between the Chhattisgarh State Government and HD Medical to screen 77,000 children in Bastar, a remote tribal region. HD Steth makes it possible for healthcare workers to screen children for CHD and refer them for follow-up care at our hospitals."

"HD Steth is very easy to use by non-specialists with minimal training requirements for cardiac auscultation and as a screening tool. We started a program to screen over 100,000 children in Chickaballapur District in Karnataka State during October 2020 and so far have screened close to 20,000 children despite COVID-19" said Satish Babu, MD, a leading endocrinologist trained at Cambridge University Hospital, King's College Hospital and Cardiff University Hospital in UK and currently practicing at Sri Sathya Sai Sarla Memorial Hospital, Muddenahalli near Bengaluru, Karnataka.

"We have also expanded the HD Steth screening program to countries such as Fiji, Sri Lanka, Nigeria, Malaysia, and the US," said Arvind Thiagarajan, founder and CEO of HD Medical. "These screenings will target 500,000 children within a year, demonstrating HD Medical's commitment to the cause of saving children through early CHD screening with better technology."

HD Medical Inc. is a Silicon Valley-based innovator of digital health solutions for AI-enabled detection and management of cardiovascular disease (CVD). HD Steth has been awarded FDA clearance (K201299).

For more information: **www.hdmedicalgroup.com**

JOIN OUR NATIONALLY RECOGNIZED CARDIOVASCULAR PROGRAM

We are looking for a fellowship-trained pediatric advanced cardiac imaging cardiologist.

To learn more, email Ryan at ryan.berreth@childrensMN.org.

Pediatric Fetal Cardiologist

One of the nation's leading children's hospitals, located among the nation's most sought after destinations, is actively seeking a **PEDIATRIC CARDIOLOGIST** with a primary interest in **FETAL CARDIOLOGY** to join Wolfson Children's Hospital in Jacksonville, FL.

Wolfson Children's Hospital of Jacksonville, Florida is the only full-service tertiary hospital for children in the region, serving North Florida, South Georgia and beyond. As an employee of Wolfson Children's Hospital the successful physician candidate will have an opportunity to practice in a robust pediatric cardiology practice.

Qualifications

- Board certified or board eligible in Pediatric Cardiology
- Successful completion of an accredited pediatric cardiology fellowship
- Able to obtain an active and unrestricted medical license in Florida

The ideal candidate will have expertise in transthoracic, transesophageal and fetal echocardiography with an emphasis on fetal echocardiography. The successful candidate will work closely with perinatology to refine prenatal evaluation and diagnosis of fetuses suspected to have congenital structural or acquired fetal heart disease, provide prenatal treatment as appropriate, counsel parents, coordinate the time and place of optimal delivery, and collaborate with other cardiologists and congenital heart surgeons on a plan of treatment after birth. Requires expertise in transthoracic and transesophageal echocardiography and specifically able to support the congenital heart surgeons in the operating room with transesophageal echocardiography.

In-patient care for congenital heart patients at Wolfson Children's Hospital is provided in a 12 bed dedicated Cardiac Intensive Care Unit. Two (2) state of the art cardiac catheterization laboratories host over 220 cardiac catheterization and electrophysiology studies per year.

Interested candidates are invited to apply here:
https://www.baptistjax.com/about-us/physician-opportunities/pediatric-fetal-cardiologist-wolfson-childrens-hospital

Pediatric Cardiologist - Noninvasive Imaging

One of the nation's leading children's hospitals, located among the nation's most sought after destinations, is actively seeking a **PEDIATRIC CARDIOLOGIST** with special interest and additional training in **NONINVASIVE IMAGING** to join a growing Pediatric Cardiology practice at Wolfson Children's Hospital in Jacksonville, FL.

Wolfson Children's Hospital of Jacksonville, Florida is the only full-service tertiary hospital for children in the region, serving North Florida, South Georgia and beyond. As an employee of Wolfson Children's Hospital the successful physician candidate will have an opportunity to practice in a robust pediatric cardiology practice.

Qualifications

- Board certified or board eligible
- Successful completion of an accredited pediatric cardiology fellowship
- Able to obtain an active and unrestricted FL license

This position will provide opportunity for multi-modality imaging physician. The ideal candidate will have extensive training in Cardiac CT and MRI; advanced training in nuclear cardiology and/or echocardiography is desirable. The successful candidate will be responsible for the supervision of standard MRI studies for evaluating cardiac morphology and function, as well as advanced techniques including pharmacologic stress imaging, adult congenital heart disease and evaluation for arrhythmia substrates.

In-patient care for congenital heart patients at Wolfson Children's Hospital is provided in a 12 bed dedicated Cardiac Intensive Care Unit. Two (2) state of the art cardiac catheterization laboratories host over 220 cardiac catheterization and electrophysiology studies per year.

Total Echoes done in Clinics = 5221
Total IP Echo = 2096 Total OP Echo = 530
Total TEE = 200 Total Fetal = 193

Interested candidates are invited to apply here:
https://www.baptistjax.com/about-us/physician-opportunities/pediatric-cardiologist-noninvasive-imaging-wolfson-childrens-hospital

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Top-Ranked Program

Recognized year after year as one of America's Best Children's Hospitals by U.S. News & World Report, Wolfson Children's Hospital of Jacksonville brings world-class pediatric care close to home for Florida, Georgia and Alabama families.

The Terry Heart Center Team at Wolfson Children's Hospital proudly provides the most advanced cardiac care for a wide-spectrum of conditions.

As the only full-service tertiary hospital for children in the region, Wolfson Children's provides care for the full spectrum of pediatric conditions – ranging from the most common to the rare and medically complex – in a family-centered environment designed around children's unique needs.

Wolfson Children's Hospital is a member of the UPMC Children's Hospital of Pittsburgh's Heart Institute network. The collaboration with UPMC is designed to enhance and expand specialized pediatric cardiac care for children in the North Florida/South Georgia region, as well as the entire Southeastern United States.

Baptist Health is an equal opportunity employer who recognized the value of a diverse faculty, we demonstrate daily our strong commitment to promoting and ensuring diversity and inclusion.

World-Famous Quality of Life and Regional Appeal

- The area serves as home to some of the Sunshine State's best cost of living and the nation's most sought after quality of life
- Immediately within reach are world famous destinations, attractions, theme parks, entertainment and recreation for individuals and families of all ages
- Recently ranked by Forbes Magazine as the second most desirable city for relocation in the United States, Jacksonville is a modern and vibrant destination surrounded by the very best

BAPTIST HEALTH | Wolfson Children's Hospital

Dr. Dipti Itchhaporia is New American College of Cardiology President

Itchhaporia looks to further digital transformation and health equity in cardiology during one-year term

Dipti Itchhaporia, MD, FACC, today begins her term as President of the American College of Cardiology. During her one-year presidency, she will lead the over 54,000-member global organization in its mission to transform cardiovascular care and improve heart health.

"From the moment I became a Fellow of the ACC, I've been excited about being a part of this community and contributing to advancing the field of cardiology and the patients we serve," Itchhaporia said. "I'm looking forward to connecting the cardiovascular community over the next year, as we emerge from a mostly virtual world, to make strides in our strategic priorities and improve the lives of heart disease patients. We must be prepared as a profession to embrace and move to center stage our solutions and vision of digital transformation and health equity."

Itchhaporia is an interventional cardiologist who is the Eric and Sheila Samson Endowed Chair in Cardiovascular Health, Director of Disease Management for Hoag's Jeffrey M. Carlton Heart and Vascular Institute in Newport Beach, California, and Associate Professor of Medicine at the University of California, Irvine. She has been a leader in the College for over 20 years, previously holding positions both nationally and in the ACC California Chapter.

Most recently, Itchhaporia held the position of ACC Vice President. She previously served as a member of the ACC's Board of Trustees and the Board of Governors, Secretary of the ACC as Chair of the Board of Governors, and President of the ACC California Chapter. She has also served on multiple ACC committees and helped to advance the College's education, science and innovation efforts, including as a member of the ACC Lifelong Learning Oversight Committee, Science and Quality Committee, Governance Committee, Practice Administrator Workgroup and as an advisor for the ACC's Innovation Program.

Itchhaporia's professional interests include quality measurement and improvement in cardiovascular disease, focusing on emerging risk factors and medical and lifestyle interventions to prevent coronary heart disease. She is also extensively involved in advancing technology and innovations that will advance the digital transformation of cardiovascular medicine to ultimately improve the lives of patients and clinicians, while helping to achieve health equity.

Itchhaporia's professional passions have led to leadership roles in advancing the ACC's strategic priorities, including serving as Chair of the ACC Board of Trustees Health Equity Task Force, which addresses issues of health disparities, the social determinants of health and improving access to care for underserved patients. Further work toward health equity will be at the forefront of her presidential year.

"Health equity has been a priority for the College for a long time and for the first time we are feeling like this could be actualized," Itchhaporia said. "In cardiology we need to have the mindset to prioritize health equity issues, and I'm excited that this is in our reach."

She received her medical degree from St. Louis University School of Medicine and completed her residency in internal medicine at Stanford University Medical Center. She then joined the general medicine faculty at the University of California, San Francisco (UCSF), ultimately pursuing a cardiology fellowship at Georgetown University and an interventional cardiology fellowship at Stanford University.

Other ACC officers for 2021-2022 are Vice President Edward T. A. Fry, MD, FACC; Board of Governors Chair Joseph Marine, MD, FACC; and Treasurer Christopher M. Kramer, MD, FACC.

ACC Launches NCDR EP Device Implant Registry

Formerly the ICD Registry, the new name reflects expanded offerings and aligns with other quality programs

Effective immediately, the American College of Cardiology is offering the EP Device Implant Registry, which will include data on ICD and CRT-D procedures previously captured in the NCDR ICD Registry as well as provide the flexibility to capture novel pacemaker procedures. The registry is aligned with the ACC's Electrophysiology Accreditation program, fully supporting the program's data requirements.

"The expanded scope of the EP Device Implant Registry will allow hospitals to track new and existing procedures, giving them the ability to optimize patient care and outcomes," said NCDR Management Board Chair Frederick A. Masoudi, MD, MSPH, FACC. "The registry is well-positioned to support continuous quality assessment and improvement in the growing EP procedure service line."

In addition, the EP Device Implant Registry now allows participants to capture data on shared decision-making, a compliance requirement for the CMS National Coverage Determination for ICD/CRT-D primary prevention device implants.

Since its inception in 2005, the ICD Registry has been the national standard for understanding patient selection, care and outcomes in patients receiving ICD therapy. The new EP Device Implant Registry will continue to empower the patient care team in their decision making by providing nationally benchmarked data on patient care and outcomes for broader range of devices. Over 800 U.S. based hospitals currently participate in the EP Device Implant Registry. For a complete list of participating facilities, visit Find Your Heart a Home, **https://www.cardiosmart.org/find-your-heart-a-home**.

NCDR is the ACC's suite of cardiovascular data registries helping hospitals and private practices measure and improve the quality of the care they provide. The EP Device Implant Registry is one of 10 NCDR hospital and outpatient registries.

For more information about the EP Device Implant Registry, visit **ACC.org/EPDeviceRegistry**.

Washington University in St. Louis
SCHOOL OF MEDICINE

Pediatric Cardiac Intensivist Faculty Positions

The Divisions of Pediatric Critical Care and Pediatric Cardiology in the Department of Pediatrics at Washington University School of Medicine seek applicants for faculty positions in the Cardiac Intensive Care Unit (CICU) at Saint Louis Children's Hospital (SLCH). The positions include an appointment at appropriate rank in the Washington University School of Medicine on the Clinician Educator faculty track. The ideal candidate should be board certified/eligible (BC/BE) in Pediatric Critical Care Medicine, Pediatric Cardiology, or Pediatric Anesthesia and have completed advanced training in pediatric cardiovascular intensive care (either via dual fellowships in pediatric cardiology and critical care medicine or via completion of an advanced cardiovascular intensive care training). The successful candidate will serve as an attending cardiac intensivist along with an extremely collaborative group of highly qualified dedicated Cardiac Critical Care faculty comprised of dually BC/BE Critical Care and Cardiology faculty, Critical Care faculty with advanced Cardiac Critical Care training, and senior Critical Care faculty with ample Cardiac Critical Care background. Participation in house-staff and fellow education, as well as clinical, translational or laboratory-based research will be expected. Extensive opportunities exist for scholarly collaborations with investigators at the School of Medicine and other departments throughout Washington University.

The Heart Center at SLCH is ranked among the nation's top Pediatric Cardiac programs and includes 2 Pediatric Cardiothoracic surgeons, 18 Pediatric Cardiologists, 8 Pediatric Cardiac Intensivists, and 5 Pediatric Cardiac Anesthesiologists who provide clinical care, teach, and perform clinical, translational and basic research. See the following links for more details on the divisions.

Pediatric Cardiac Critical Care:
http://pediatrics.wustl.edu/criticalcare/Home.aspx
Pediatric Cardiology:
http://pediatrics.wustl.edu/cardiology/Home.aspx
Section of Pediatric Cardiothoracic Surgery:
http://cardiothoracicsurgery.wustl.edu/Pediatric

Our CICU is an integral part of an acuity adjustable 38 beds Heart Center. Each patient room has been designed to accommodate either a critically ill or step-down patient. Hence, the number of critically ill patients is flexible and can increase up to 20 patients if necessary. The CICU is a state-of-the art dedicated unit that provides all forms of cutting-edge cardiovascular intensive care for children and adults with congenital and acquired cardiovascular diseases. The CICU is staffed by 2 Cardiac Critical Care faculty during the day, and a dedicated in-house Cardiac Critical Care faculty at night.

As an internationally renowned Pediatric Heart and Lung Transplantation Center, and one of the only pediatric centers worldwide performing combined heart-lung transplantations and reverse Potts shunt procedures, we admit the sickest and most complex heart and lung failure patients, as well as patients with severe pulmonary hypertension. Our care is innovative and frequently unique and provides a second chance to many children who would not receive this opportunity at other major centers. Among many others, we take pride in being one of the major Pediatric Mechanical Circulatory Support Centers in the nation. As such, we participate in the ACTION network and support children with single ventricle and biventricular physiology with a wide variety of ventricular assist devices. We are one of the first centers to join the Pediatric Cardiac Critical Care Consortium, and one of the first centers to implement the T3 Data Aggregation & Visualization system (Etiometry, Inc., Boston, MA) as a clinical tool in our Heart Center.

Interested candidates should send a letter of intent and curriculum vitae to:

Avihu Z. Gazit, M.D., *Medical Director, Cardiac Intensive Care*
Washington University in Saint Louis
1 Children's Place, Saint Louis, MO 63110
E. gazit_a@wustl.edu

Pediatric Electrophysiologist Faculty Position

The Department of Pediatrics of Washington University School of Medicine in St. Louis, is seeking a pediatric cardiologist to join our team of 19 clinicians and basic scientists, based at St. Louis Children's Hospital.

We seek to recruit a Pediatric Electrophysiologist to join two full time faculty members (Drs. Jennifer N. Avari Silva [Director, EP] and George F Van Hare) in our arrhythmia program. The program offers a full Electrophysiology Service, including interventional, inpatient and outpatient services. The interventional electrophysiology laboratory is a biplane cineangiography laboratory outfitted with an Ensite electroanatomic mapping system. The program has continued to grow and is currently on track to perform approximately 140 ablations, 40 pacemakers/ICDs, and 40 implantable loop recorders per year. We also offer a multidisciplinary inherited arrhythmia clinic, and Washington University offers a clinical genomic program, which we access for genotyping. Opportunities for basic, translational and clinical research are robust with close connections with researchers in the Department of Biomedical Engineering, the Department of Cell Biology and Physiology, and the Department of Developmental Biology at Washington University.

The ideal candidate must be eligible for licensure in Missouri, be board certified (or eligible) in pediatric cardiology, and have had advanced training in pediatric cardiac electrophysiology. Candidates will be considered at the Assistant or Associate Professor level.

Washington University School of Medicine is consistently ranked as one of the best medical schools in the country, and is a longstanding leader in funding for pediatric research. St. Louis Children's Hospital is a 400 bed free-standing children's hospital established in 1879. The St. Louis Children's and Washington University Heart Center includes an active surgical program, a 16-bed Cardiac Intensive Care Unit, and one of the nation's largest pediatric heart failure and heart transplantation programs.

Interested candidates should provide a curriculum vitae and contact:

Janet Scheel, MD, FACC, *Interim Co-Director, Pediatric Cardiology*
1 Children's Place, St. Louis, MO 63110
E. JScheel@wustl.edu, P. 314.454.4561

Washington University is an equal opportunity employer and is committed to increasing the diversity of its faculty. It welcomes nominations of and applications from women and members of minority groups, as well as others who would bring additional dimensions to the university's research, teaching and clinical missions.

‘Heart in a Box’ Expands Transplant Opportunities

The Smidt Heart Institute, Home of the Nation's No. 1 Adult Heart Transplant Program, Uses Transmedics Organ Care System (OCS) to Grow Geographic Area of Service, Enabling More Lifesaving Organ Transplants

Dominic Emerson, MD, and Pedro Catarino, MD, both transplant surgeons with the Smidt Heart Institute, know how to be spontaneous. At any given moment, they can get the call that a donor heart or lungs are available, requiring them to quickly board a private aircraft to procure the vital organs.

Until recently, those flights were quick jaunts lasting no more than four hours-the time a donor heart can survive on ice. Now that is all changing, thanks to a medical device called the OCS Heart, or "Heart in a Box," which enables transplant surgeons to travel to much farther destinations to procure lifesaving organs by acting as a miniature intensive care unit that keeps the heart alive.

"Cedars-Sinai has the biggest adult heart transplant program in the world and takes on some of the most complex surgical cases," said Emerson, Associate Surgical Director of Heart Transplant and Mechanical Circulatory Support and Surgical Co-Director of the Cardiac Surgery Intensive Care Unit at Cedars-Sinai. "The Heart in a Box technology is helping break down a major barrier of transplantation, ultimately offering many patients a second chance at life."

How it Works

The OCS Heart is the only such device currently under review with the Food and Drug Administration and is being used as part of a clinical trial at Cedars-Sinai. Fardad Esmailian, MD, surgical director of heart transplant and mechanical circulatory support at Cedars-Sinai, says the device has already gained approval in Europe and Australia and has been tested in the U.S. for more than five years.

"Cedars-Sinai was one of the largest enrolling clinical trial sites for the Organ Care System's Proceed II clinical trial and remains active in enrolling patients in its current EXPAND and DCD clinical trials," said Esmailian, who has served as principal investigator for all the trials. "We are eager to continue witnessing the improved access this system has brought to our patients."

Once a donor heart is removed from the body, instead of being placed on ice in a cooler, the heart is connected to a portable device that keeps it at a human-like, metabolically active state--allowing transplant surgeons to travel farther distances to retrieve donor hearts.

"Our hope is to increase the transplantation rate by about 20% or 30% using this kind of a device," said Joanna Chikwe, MD, the Irina and George Schaeffer Distinguished Chair in Cardiac Surgery in honor of Alfredo Trento, MD, Professor and Chair of the Department of Cardiac Surgery in the Smidt Heart Institute. "In doing so, our institute can heal the hearts of even more patients who otherwise have nowhere to turn."

A Heart and Lungs Travel from Hawaii

Recently, Emerson and Catarino flew to Hawaii-a state with limited heart transplant availability-to procure a heart and lungs from a donor. The heart spent more than seven hours outside of a human body being oxygenated and maintained in a beating state with the OCS Heart device.

"We spent the long flight home monitoring and caring for the heart," said Catarino, a recognized leader in the field of heart and lung transplantation and aortic surgery. "The whole travel team was eager to land, knowing two lives would be saved that very night."

Once the surgeons, heart and lungs arrived at Cedars-Sinai, Emerson headed straight into surgery to perform the heart transplant. His colleague, Dominick Megna, MD, Surgical Director of the Lung Transplant Program, performed the lung transplant.

Donald Stivers, 74, who had been battling ischemic cardiomyopathy, received the heart as part of an ongoing clinical trial evaluating the system as a way to use hearts that would otherwise not be available.

"There are so many mixed emotions, but I am so fortunate-the joy is truly overwhelming," said Stivers, who lives in Three Rivers, California, and who is eager to resume his once-active lifestyle of hiking in the mountains surrounding his home.

Stivers opted into the OCS Heart clinical trial because of his age and height of 6 feet, 4 inches-two qualifiers that could make it extremely difficult to find a donor match.

"I was told I had six to 12 months left to live if a heart didn't become available," recalled Stivers.

But when he and his wife got the call late one night in early March, his feelings of desperation turned to hope, knowing he could now be given more moments in the mountains and time spent with his children, grandchildren and great-grandchildren.

"There is hope out there," said Stivers. "And I found mine through this donor and the team at Cedars-Sinai."

For Emerson and his fellow transplant surgeons, Stivers' journey makes the long flights, middle-of-the-night surgeries and often-complex cases more than worthwhile.

"Our jobs are predictably unpredictable," said Emerson. "At the same time, it's extremely rewarding. At the end of the day, people like Don are so desperately sick, yet you can give them high-quality, memory-building time back to enjoy life."

UNIVERSITY OF MINNESOTA
Driven to Discover®

Pediatric Cardiologist - Electrophysiology

The University of Minnesota Department of Pediatrics seeks a Pediatric Cardiologist specializing in Electrophysiology for a full-time faculty position in the Division of Pediatrics Cardiology. The rank of this position is at the level of Assistant Professor, Associate Professor or Professor based on qualifications.

About the Department:

The mission of the Department of Pediatrics is to generate new knowledge through research, to apply this new knowledge to the highest quality health care for the prevention and treatment of illness in children, and to provide the best possible education of the next generation of medical students, physicians, and other health professionals in childhood disease prevention, treatment, research, and advocacy. Through this mission the Department seeks to improve the lives of children in our community, nation, and the world.

About the Appointment:

- The candidate will be responsible for performing invasive and non-invasive electrophysiology evaluations and procedures as well as providing medical treatment for arrhythmias.
- There will be oversight responsibility for Pediatric Electrocardiography including Holter monitors and event monitor records.
- Besides the University of Minnesota system, there is a busy outreach system for electrocardiograms, Holters and even monitor tracings from other Twin Cities institutions and from greater Minnesota.
- The potential opportunity exists to interface with a busy Adult Electrophysiology service with intense research and clinical activity.
- Opportunities also exist for outreach electrophysiology activities within the state and out of state.
- The candidate may also participate in inpatient attending activities and outpatient clinics.
- Additional responsibilities will include: participation in the teaching of medical students, residents, and fellows, clinical practice through UMPhysicians, and participation in service activities on behalf of the department, the medical school, and your profession.
- The successful candidate will participate in research projects and other academic/scholarly activities either as a collaborator or independent researcher, and participate in faculty development activities tailored to the candidate's career interests and goals.
- Pediatric Heart Center
- University of Minnesota Masonic Children's Hospital
- Academic time will be used to pursue scholarly work in the candidate's area of specialty/research experience with a goal of developing collaborative or independent, externally funded research.
- Faculty will be active in their national organizations and foster an academic environment for medical students, residents and faculty.

Qualifications:

- MD/DO must be a graduate of an accredited ACGME Pediatric residency and Pediatric Cardiology fellowship training programs
- Must have successfully completed advanced Pediatric Electrophysiology training.
- Board certified and/or board eligible in Pediatric Cardiology
- Must have demonstrated involvement in clinical or basic science research through publications anticipated or published in peer-reviewed journals
- Licensed or ability to obtain Minnesota Board of Medical Practice Licensure
- Ability to obtain/maintain DEA certification in the State of Minnesota
- Meet threshold criteria/qualifications for Credentialing and Privileges
- Ability to receive work authorization in the United States from the U.S. Citizenship and Immigration Services and maintain legal status according to the requirements of VISA category while in the United States.
- Excellent written and verbal communication skills
- Exceptional team player skills and priority of patient service
- Detail oriented and self-motivated
- Education focused and a creative problem-solver

To Apply: https://umphysicians.wd1.myworkdayjobs.com/umpcareers/job/Minneapolis-MN/Faculty-Physician---Pediatric-Cardiologist-Electrophysiologist_R0012925

For more information, please contact:
Connie Franklin
cfrankli10@umphysicians.umn.edu

JUNE

04-09

ATC 2021 American Transplant Congress
Virtual
https://www.atcmeeting.org/

JULY

16-17

CITI 2021
14th Annual Conference: A Case Based Workshop
Chicago, IL, USA
https://cictsymposium.com/

17-18

8th Congress of the Asia-Pacific Pediatric Cardiac Society
Taipei, Taiwan
http://www.appcs2020.org/

AUGUST

27-28

ESC Congress 2021 – The Digital Experience
Virtual
https://www.escardio.org/Congresses-&-Events/ESC-Congress

30-31

Frist Annual PICS Fellows & Early Career Course
Las Vegas, NV, USA
Kimberly_ray@chdinterventions.org

SAINT LOUIS UNIVERSITY
EST. 1818

Director, Division of Pediatric Cardiology

Saint Louis University
School of Medicine
SSM Health Cardinal Glennon Children's Hospital

Saint Louis University is seeking an experienced academic pediatric cardiologist as Director, Division of Pediatric Cardiology. The division currently consists of nine pediatric cardiologists, two clinical nurse practitioners, dedicated cardiology clinical nurses, dedicated procedural staff, as well as a pediatric cardiology fellowship training program.

The cardiology division is housed within the Dorothy and Larry Dallas Heart Center at SSM Health Cardinal Glennon Children's Hospital. A busy congenital heart surgery program exists, and the hospital houses state-of-the-art operating rooms, a 70 bed neonatal intensive care unit, pediatric intensive care unit, electrophysiology lab, and a hybrid cardiac catheterization lab/operating suite. SSM Health Cardinal Glennon Children's Hospital is a 190 bed free-standing children's hospital, connected to an extensive network or community and high risk nurseries, and is staffed by faculty members of Saint Louis University School of Medicine.

Collaborative research opportunities are available in conjunction with the School of Medicine, Doisy Research Center, and the Saint Louis University School of Public Health. Division members are actively involved in research, quality programs, and the teaching of medical students, pediatric residents, and pediatric cardiology fellows.

The successful candidate must be board certified in Pediatric Cardiology, and have the desire to foster the clinical, teaching, and research missions of the division.

Inquiries regarding this position can be e-mailed to:
Jeffrey Teckman, MD
Jeff.Teckman@health.slu.edu
Professor and Interim Chair, Department of Pediatrics
Saint Louis University School of Medicine
1465 S. Grand Blvd.
Saint Louis, MO 63104

All applications must be made online at:
https://www.slu.edu/working-at-slu.php.
Applications must include a cover letter and curriculum vita.

Saint Louis University, a Catholic Jesuit institution dedicated to clinical care, scholarship and learning, is an affirmative action, equal opportunity employer, and encourages nominations and applications from women and minorities.

Nicklaus Children's Hospital
Heart Institute

Immediate Opportunity for a Pediatric Cardiologist to Join a Thriving Practice in Palm Beach County, Florida

Nicklaus Children's Hospital, a 309-bed freestanding children's hospital and Level I trauma center, and **Nicklaus Children's Pediatric Specialists**, the physician multispecialty group practice of **Nicklaus Children's Health System**, have an exceptional opportunity for a **BC/BE fellow-trained pediatric cardiologist**.

Join a thriving and expanding group in Palm Beach County, Florida. The candidate will provide comprehensive outpatient and inpatient consultative services and should be highly skilled in noninvasive imaging, including fetal cardiology. This role presents a unique and exciting opportunity for a motivated candidate to flourish in a burgeoning market and reside in one of the most sought-after neighborhoods in Florida.

The **Nicklaus Children's Hospital Heart Institute** is a world leader in pediatric cardiology and cardiovascular surgery for the care of children with congenital heart disease and serves as a beacon to families confronting the reality of a child or newborn with a heart defect. The institute offers a full range of services, including the management of patients following congenital heart surgery, interventional catheterization and invasive electrophysiology. Our cardiac surgical program, led by Dr. Redmond Burke, is one of the most transparent in the world. It remains the **only cardiovascular surgical program to offer real-time outcomes reporting** (**https://rto.nicklauschildrens.org**).

With a historic legacy a century in the making, Palm Beach County, located just north of Miami and Fort Lauderdale, is home to 38 cities and towns and offers an array of cultural and outdoor events. Enjoy abundant sunshine and activities such as golfing, swimming, hiking and sport fishing, all year round.

Competitive compensation and benefits package.

Qualified candidates please contact:

David Drossner, MD
Director, Outpatient Cardiology
David.Drossner@nicklaushealth.org

Lourdes Prieto, MD
Interim Chief, Cardiology
Lourdes.Prieto@nicklaushealth.org

Joyce Berger
Physician Recruiter
Joyce.Berger@nicklaushealth.org
786.624.3510

NicklausChildrens.org/NCPS
DFW

JOHNS HOPKINS
SCHOOL of MEDICINE

Outpatient Director of Pediatric Cardiology

The Blalock Taussig Thomas Heart Center

The **Johns Hopkins University School of Medicine** is seeking an experienced pediatric cardiologist to be the **Outpatient Director of Pediatric Cardiology**. Applicants should be at least five years post-advanced fellowship and have extensive experience as an active cardiologist in the outpatient setting.

The rank of this position will be based on academic and clinical achievements. The **Bloomberg Children's Center of Johns Hopkins Hospital** has nine outpatient clinic sites located across the state of Maryland servicing the needs of patients of all ages with congenital and acquired heart conditions. The successful applicant will direct the structure of the outreach sites, mentor our existing faculty and teach the pediatric cardiology fellows.

Our pediatric and congenital cardiology program is medium-sized with excellent support in noninvasive imaging, electrophysiology, heart failure, adult congenital heart disease, fetal cardiology, pulmonary hypertension, and full range of pediatric and adult subspecialties. The ideal candidate would continue to develop our service to include new and developing therapeutic interventions.

Our goal is to recruit a talented individual with strong interpersonal and communication skills who is committed to excellence in patient care and education, and scholarly advancement. The ability to work effectively with faculty members from a variety of scientific and clinical disciplines is particularly important.

Interested candidates should forward their CV to: callen87@jhmi.edu

Shelby Kutty, MD, PhD, MHCM
Director, Pediatric and Congenital Cardiology

Johns Hopkins School of Medicine
Taussig Heart Center – M2315
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