

UPMC | HEART AND VASCULAR INSTITUTE



The team at the UPMC Heart and Vascular Institute and Department of Cardiothoracic Surgery are world-renowned leaders in cardiovascular and thoracic surgical care. Our team's commitment to surgical excellence, combined with our dedication to patient-centric care that extends beyond the operating room, consistently rank the UPMC Heart and Vascular Institute among the best programs in the nation for Cardiology, Heart and Vascular surgery by *U.S. News and World Report*. In 2023, we expanded our leadership team to include accomplished cardiothoracic surgeons, Ibrahim Sultan, MD, and Ryan Levy, MD. Our leadership's collaboration has allowed UPMC to deliver the highest quality of care for a full range of cardiothoracic diseases.

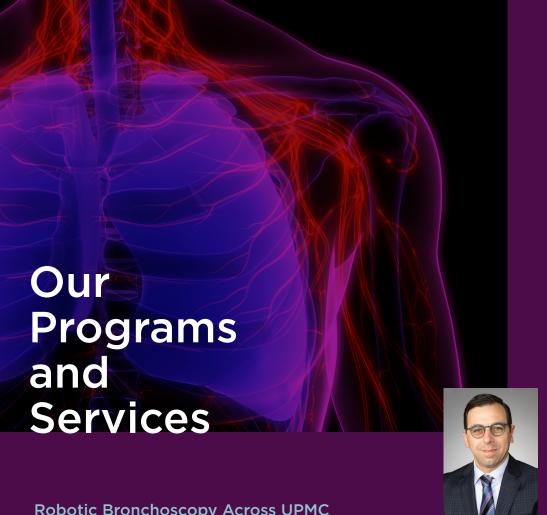
As the largest integrated adult and pediatric cardiology and cardiac surgery program in Pennsylvania, UPMC is a premier destination for adult cardiac surgery, thoracic surgery, interventional cardiology, pediatric cardiology and cardiac surgery, treatment and management of adult congenital heart disease, vascular surgery, and more. UPMC has a rich history in clinical excellence, patient care, and research and innovation.

We're proud of our accomplishments and continue to advance care through minimally invasive treatments and remote monitoring technology. Our mission is to ensure that every patient who comes through our doors receives world-class, comprehensive, and convenient care.



VICTOR O. MORELL, MD

Eugene S. Wiener Endowed Professor of Pediatric Cardiothoracic Surgery Chair, Department of Cardiothoracic Surgery Co-Director, Heart Institute at UPMC Children's Hospital of Pittsburgh VP and Chief Strategy Officer, UPMC Heart and Vascular Institute



Robotic Bronchoscopy Across UPMC

Over the last three years, thoracic surgeons at multiple hospitals across UPMC have adopted state-of-the-art technology to care for patients with lung nodules. These next-generation robotic bronchoscopy systems allow for direct visualization through an endoscopic camera to allow access to areas of the lung which were previously challenging to reach.

Thoracic surgeons are often tasked with making clinical treatment decisions on small lung nodules found either through computedtomography (CT) lung-cancer screening programs or incidentally on other imaging. Traditional transthoracic CT-guided biopsy techniques are associated with significant pneumothorax rates, and many deeper lung lesions cannot be accessed with this technique. With utilization of robotic bronchoscopy technology, diagnostic yield rates greater than 80% are often achieved with appropriately selected cases.

Robotic bronchoscopy may be an attractive alternative because it offers dramatic improvements over previously employed navigational bronchoscopy systems. There are currently two robotic bronchoscopy platforms in use across UPMC: the MONARCH Platform (Auris Health/Johnson & Johnson) and the Ion endoluminal system (Intuitive Surgical). Both platforms provide our surgeons with adept tools for biopsying lung nodules and dye-marking nodules that are difficult to palpate or visualize for surgical biopsy or resection.

A low incidence of procedure-related complications, particularly pneumothorax, has been evident during our adoption and continued use of robotic bronchoscopy. It is feasible to biopsy multiple nodules during a robotic bronchoscopy procedure because the risk of encountering procedure-related complications is low.

Robotic Bronchoscopy as Part of the Thoracic Surgeon's Armamentarium

At UPMC, our thoracic surgeons are highly adept at robotic bronchoscopy. However, this technology is only the start of a patient's lung cancer journey. In Pittsburgh, our surgeons in the Department of Cardiothoracic Surgery manage lung lesions from diagnosis to definitive treatment.



The key to success in improving outcomes in lung cancer care are early detection, early diagnosis, and definitive surgical treatment of early-stage lung cancer.

Our surgeons are highly experienced with minimally invasive thoracoscopic (VATS) and robotic (RATS) lung resection. We routinely perform these surgeries at many hospitals across the UPMC system. Robotic bronchoscopy guided endobronchial ablative treatment of lung cancer is on the horizon. Here at UPMC, our extensive experience with robotic bronchoscopy has us well-positioned to be at the forefront of treatment for lung cancer.



Heart Donation After Circulatory Death: New Findings from UPMC Experts Shows DCD Hearts Can Be Safely Used to Reduce Waitlist Times and Achieve Outcomes Similar to Hearts from Brain-Dead Donors



Experts from the UPMC Heart and Vascular Institute, UPMC Department of Cardiothoracic Surgery, and UPMC Department of Surgery recently published new research regarding donation after circulatory death (DCD) in *The Journal of Thoracic and Cardiovascular Surgery*.

The goal of this study was to assess the performance of DCD hearts for both waitlist and post-transplant outcomes in the United States. UPMC experts reviewed the United Network for Organ Sharing (UNOS) database to identify all adult waitlisted and transplanted candidates between October 18, 2018 and December 31, 2022.

In total, 14,803 candidates were waitlisted. The waitlisted candidates were grouped into cohorts depending on whether they had been approved for donation after brain death (DBD) offers only or also approved for DCD offers. 12,287 of the candidates were approved for DBD donors only and 2,516 approved for DCD donors.

12,238 recipients ended up receiving a transplant: 11,636 with DBD hearts and 602 with DCD hearts. Median waitlist times were significantly shorter for those receiving DCD hearts. Transplantation was then compared between both cohorts through a post-transplant analysis. One-year post-transplant survival was compared between unmatched and propensity-score-matched cohorts of DBD and DCD recipients.

Importantly, results showed that one-year post-transplant survival was similar between unmatched and propensity score-matched cohorts of DBD and DCD recipients. The use of DCD hearts allows for a higher probability of transplantation and a lower incidence of death or deterioration while on the waitlist. Therefore, this data is evidence that DCD hearts can be safely used to reduce waitlist times and achieve post-transplant survival outcomes that are equivalent to those using hearts from standard brain-dead donors.

The Da Silva Center for Ebstein's Anomaly: Refining the Cone Procedure While Providing Expert Specialty Care

The Division of Pediatric Cardiac Surgery within the UPMC Department of Cardiothoracic Surgery provides cardiothoracic surgical interventions for infants, children, and adults with congenital heart diseases, congenital abnormalities of the tracheobronchial tree, and abnormalities of the chest wall. The Da Silva Center for Ebstein's Anomaly is a specialty center within the division, founded by José Pedro da Silva, MD. Because Ebstein's anomaly is a rare congenital condition, concentrating expert care for patients with Ebstein's anomaly improves the quality of their treatment and encourages innovation.

In patients with Ebstein's anomaly (EA), the tricuspid valve (TV) is malformed and displaced such that it is inside of the right ventricle (RV). This displacement and malformation cause tricuspid regurgitation with blood leaking backwards into the right atrium. The muscle of the RV is also abnormal, leading to a thin ventricular wall and dilation of the RV that can worsen over time. An atrial septal defect (ASD) accompanies EA in more than 80% of patients. These congenital abnormalities, which account for 1%-2% of all congenital heart disease, typically cause limited exercise capacity, cyanosis, and arrhythmia.



In the early 1990s, Dr. da Silva created the cone procedure for repair of EA. Now, more than 30 years later, Dr. José da Silva and Dr. Luciana da Fonseca da Silva have performed more than 300 cone procedures and can complete the cone procedure in almost any patient with EA. With continued application and study of the cone technique, the long-term results are very good. The cone procedure creates a durable repair with a TV capable of appropriate growth. Optimal outcomes are obtained when the cone procedure is performed as an elective surgery in children under 12 years of age, and the ideal age to undergo the procedure is three to five years.



The Cone Repair After the Starnes Procedure: Our Recent Innovation

Recently, we expanded the patient population who could reap the benefits of biventricular repair of EA by performing the cone procedure after the Starnes procedure. We postulated that as the RV goes from being dilated to being hypoplastic over the course of several years, there must be a point at which the RV is an optimal size to restore biventricular circulation. In these patients, a Starnes procedure as a newborn, a Glenn procedure at four to five months of age, and then the cone procedure six months after the Glenn procedure should rescue the patient from neonatal circulatory insufficiencies and provide them with a long-lasting repair with the right ventricle pumping blood to the lungs. This sequence of operations should only be performed by highly experienced pediatric cardiac surgeons. Because these patients often present with associated pulmonary atresia and pulmonary insufficiency, the surgeon must possess the expertise to fix both the TV and the pulmonary valve.

With more than 50 years of experience, the Division of Pediatric Cardiac Surgery has a well-established mission to provide surgical care to patients with EA and other forms of congenital heart disease. The children we treat at the Da Silva Center for Ebstein's Anomaly benefit from a comprehensive heart center with expert surgeons, cardiologists, advanced practice providers, and support staff. Their perioperative care is enhanced by a dedicated cardiac anesthesiology team and a cardiac ICU where board-certified pediatric intensivists, cardiologists, specially trained nurses, respiratory therapists, and other professionals work in close collaboration with the pediatric cardiothoracic surgeons.

The adults we treat benefit from comprehensive medical care with a smooth transition in their care from childhood through adolescence and into adulthood.

The UPMC
Heart and Vascular Institute
and Department of
Cardiothoracic Surgery
by the

Landmark Clinical Experience:

More than 15,000 cardiac surgical procedures performed in the last five years.

Our experts have performed more than **2,500** minimally invasive esophagectomies.

Our team has performed more than **5,000** paraesophageal hernia repairs.



We have treated more than 2,000 acute aortic dissections.

Our program has earned a

3-Star Rating

from the Society of Thoracic Surgeons, the highest rating possible, for all congenital index cases, 1 of only 7

programs

to achieve this nationally.

Academic Impact:





Experts from the Department of Cardiothoracic Surgery have participated in more than

20

national podium presentations at major meetings by trainees in 2023.



2023 Accomplishments and Highlights:



has been ranked among the top ten in the nation for Pediatric Cardiology and Heart Surgery by U.S. News and World Report.

Our program performed the

DCD heart/kidney transplant in the United States.



We are the
#1 enroller
in the world for LeAAPS trial.

Our experts performed the first-in-human

NAVITOR™ TAVR using image-guiding technology.

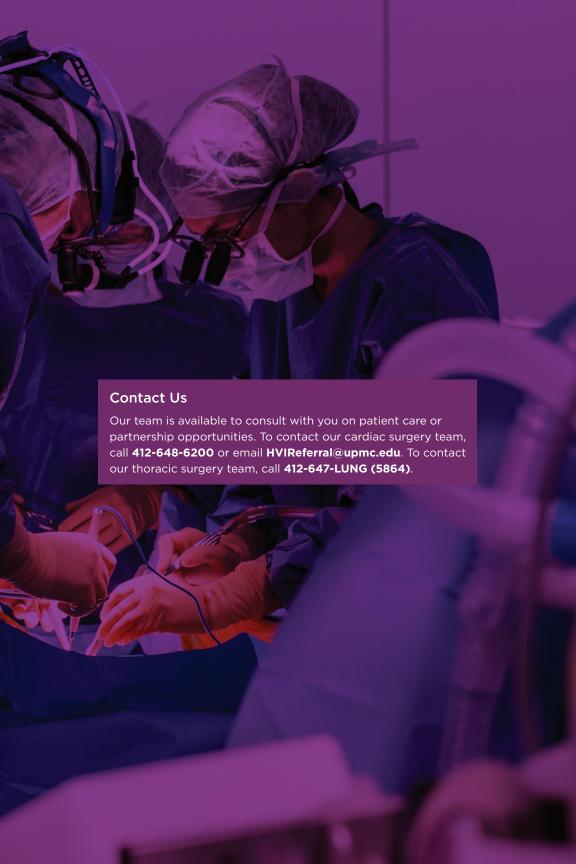
We are the #1 enrolling institution in the world for the International Registry of Aortic Dissections (IRAD).

In 2023, our experts performed the **1,000th** probotic bronchoscopy.



one of four

pilot programs in the
United states to demonstrate
intraoperative effectiveness
of immunofluorescent drug
Cytalux™ for use in
lung surgery.





UPMC policy prohibits discrimination or harassment on the basis of race, color, religion, ancestry, national origin, age, sex, genetics, sexual orientation, gender identity, marital status, familial status, disability, veteran status, or any other legally protected group status. Further, UPMC will continue to support and promote equal employment opportunity, human dignity, and racial, ethnic, and cultural diversity. This policy applies to admissions, employment, and access to and treatment in UPMC programs and activities. This commitment is made by UPMC in accordance with federal, state, and/ or local laws and regulations.