

Department of Cardiac Surgery Program Description

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Clinical Excellence

The Department of Cardiac Surgery, which includes the Division of Pediatric Cardiac Surgery, provides comprehensive surgical services for patients with cardiovascular disease. We focus on providing the most innovative surgical procedures that are safe, state-of-the-art and of the highest quality. Our adult surgical outcomes are ranked third best in the country according to recent University HealthSystem

Consortium (UHC) data. Our Pediatric program is one of only 15 centers nationwide to be certified as a Pediatric Heart Transplant Center of Excellence by OptumHealth Clinical Sciences Institute. We are recognized nationally as a pioneer in “hybrid” coronary artery revascularization; and our program is also renowned as a leader in congenital and acquired valvular heart disease, minimally invasive cardiac surgical techniques and cardiac transplantation.

By partnering with the Vanderbilt Heart and Vascular Institute, the Monroe Carell Jr. Children’s Hospital at Vanderbilt and the Vanderbilt Transplant Center, our patients benefit from experienced surgeons who collaborate with specialists in all areas of cardiovascular disease to determine the most appropriate care for each individual.

Informatics

By fully incorporating Informatics into the Department, we have developed the Cardiovascular Outcomes Research Enterprise and Workflow Efficiency Tools.

The Cardiovascular Outcomes Research Enterprise is a collaborative effort of clinicians, nurses, statisticians, epidemiologists, researchers and scientists from Informatics to enable academic queries of clinical databases, comparative effectiveness evaluations, quality improvements and dashboards.

Workflow Efficiency Tools include real-time dashboards that facilitate OR scheduling, real-time reminders and notifications and enhanced tools for electronic documentation.

Case Volumes

	FY2008	FY2009	FY2010	FY2011	FY2012
Adult	1130	1216	1172	1034	1245
Pediatric	439	462	481	517	480

Academics and Research

In addition to studying new ways to surgically treat congenital and adult heart disease, we maintain a national presence in several national clinical trials.

- The Department of Cardiac Surgery was chosen as only one of 15 major academic centers involved in the first NIH observational trial for hybrid coronary revascularization – the combination of coronary stenting and bypass surgery.
- Vanderbilt was chosen to be part of the first U.S. trial of the CoreValve® transcatheter aortic-valve system (Medtronic, Minneapolis, MN).
- Vanderbilt was the largest enrolling site for the St. Jude Medical Trifecta™ Valve. Vanderbilt is also participating in the Post-Approval Study.

Groundbreaking Achievements

- Vanderbilt Cardiac surgery celebrates busiest year in history
- New stent helps diabetic heart patients
- Vanderbilt offers new aortic valve technique
- Vanderbilt performs 100th transcatheter aortic valve-replacement (TAVR)
- Trial tests novel treatment for heart failure patients
- Cardiac surgeons study genetics of heart condition to uncover new treatments
- Pediatric cardiac tissue bank aims to solve heart disease mysteries

Areas of Specialty

Acquired (Adult) Heart Disease

Coronary Revascularization Program

Our surgeons perform advanced techniques in coronary revascularization, including off-pump coronary bypass, minimally invasive coronary bypass, coronary endarterectomy and transmyocardial laser revascularization, and multiple artery bypass grafting.

Cardiac Valve Program

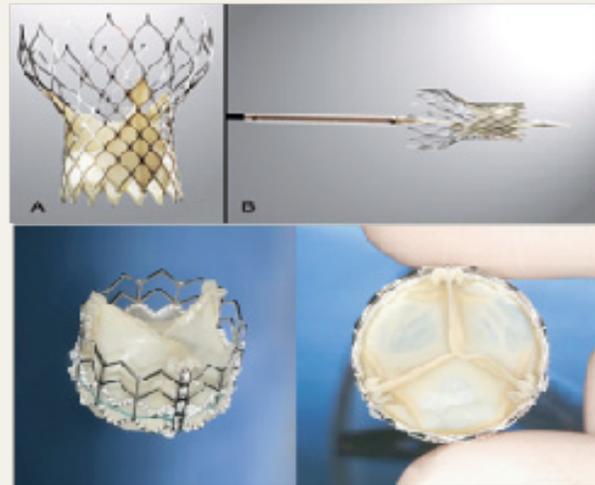
The Vanderbilt Cardiac Valve Program unites a multidisciplinary team of cardiologists, radiologists, anesthesiologists and surgeons trained in diagnosing and treating all disorders of cardiac valves. Guided by diagnostic techniques, including cardiac MRI and trans-esophageal echocardiography, our surgeons perform all types of aortic, mitral, pulmonary and tricuspid valve operations including: mitral valve repair, mitral valve replacement with biological or mechanical valve prostheses, aortic valve replacement using stented or stentless tissue valves or mechanical valve prostheses, tricuspid valve repair or replacement, aortic root replacement with tissue or mechanical valves, valve-sparing aortic root reconstructions and pulmonary autograft switch operation in younger patients. In addition, Vanderbilt Heart's hybrid OR allows minimally invasive valve surgery to be performed in patients with concomitant coronary artery disease. This allows percutaneous approaches to coronary disease to be combined with minimally invasive techniques for valve replacement surgery.

Heart Failure and VAD/Transplant Program

Vanderbilt Heart has extensive experience treating patients with heart failure and advanced cardiomyopathies. Our team includes cardiac and transplant surgeons, specially trained and certified cardiologists, nurse practitioners, social workers, dietitians, psychologists, pharmacists and infectious disease doctors. Many studies have shown that this multidisciplinary approach makes for better outcomes and improved quality of life for our patients. This team gives heart failure patients options including: optimal medical management, investigational drugs, bi-ventricular pacing, conventional (non-transplant, non-assist device) surgical procedures (ventricular restoration procedures), mechanical assist devices as a bridge to transplantation and heart transplantation. Recently, Vanderbilt Heart received Advanced Certification in Ventricular Assist Devices from The Joint Commission, allowing us to provide Destination Therapy for patients for whom transplantation is not an option.

Aortic Surgery Program

The Vanderbilt Aortic Surgery Program offers diagnosis and state-of-the-art treatment of aortic root, ascending, arch and descending thoracic aortic pathology, including aortic aneurysms and dissections. By using a multidisciplinary approach involving cardiac surgeons, cardiologists, radiologists and vascular surgeons, we are able to treat all conditions of the



TAVR Program

Vanderbilt began using trans-catheter aortic valves (TAVR) in adult patients in July 2011 when it embarked on a clinical trial of Medtronic's CoreValve. Vanderbilt is one of a few medical centers in the country to offer both the CoreValve and the SAPIEN valve, and we are the most experienced hospital in Tennessee at replacing heart valves using TAVR.

thoracic aorta, including acute aortic dissections, aortic aneurysms, and Marfan's syndrome. Also, as one of the leading trauma centers in the Southeast, we perform surgical repair of traumatic aortic rupture.

Atrial Fibrillation/Arrhythmia Repair Program

Vanderbilt Heart's hybrid OR allows us to combine catheter-based procedures with minimally invasive surgical approaches to achieve optimal results. Our multidisciplinary team of cardiologists and surgeons provides comprehensive treatment of atrial fibrillation, including optimal medical management, catheter-based ablation procedures, and minimally invasive surgical ablation.

Congenital (Pediatric) Heart Disease

Adult Congenital Cardiac Surgery

As patients who have previously had congenital cardiac surgery reach adulthood, a significant number will require surgical or percutaneous repair of associated congenital lesions. As one of the leading pediatric cardiac surgery programs in the nation, Vanderbilt Heart provides state-of-the-art surgical repair of these lesions, frequently with newer non-operative, percutaneous approaches. Our surgical and interventional teams work together to recommend the more appropriate treatment. In our "Hybrid OR," we can combine traditional surgical and percutaneous approaches when appropriate.

- Closure of atrial or ventricular septal defects
- Norwood procedure
- Fontan procedure
- Hybrid surgical strategies
- Robotic, minimally invasive procedures

Teaching and Residency

We are committed to training the next generation of cardiac surgeons through an ACGME-approved cardiothoracic (CT) training program.

In the future, we envision an **Integrated Six-Year CT Residency Program**, a paradigm which has been successful at a number of academic centers through the U.S. This six-year CT program ideally would incorporate General Surgery, Cardiology, Vascular Surgery, Thoracic Surgery, and Cardiac Surgery.

Very shortly, the Department of Thoracic Surgery and the Department of Cardiac Surgery will apply for ACGME approval of this six-year integrated program format. We believe this format will attract an elite group of medical students who could complete the program in six years instead of the traditional seven or eight.

Outreach

Outreach is an integral component of Cardiac Surgery's growth. Our dedicated physician liaison works with our physicians to strategically ensure continued market development by:

- Establishing and maintaining a network of strong relationships with physicians throughout Tennessee and adjacent states,
- Orchestrating and implementing educational programs for physicians in the community, and
- Collaborating with new physicians to assist in developing and executing a marketing plan to build their brand equity and referral network.

Cardiac Surgery/Cardiology Programmatic Alliances

Cardiac Surgery

Established

- Veterans Affairs Tennessee Valley HealthCare System
- Maury Regional Medical Center

Pending

- NorthCrest Medical Center
- West Tennessee Healthcare/Jackson-Madison County General Hospital

Cardiology

Established Clinics

- **Tennessee:** Byrdstown, Columbia, Crossville, Franklin, Hohenwald, Johnson City, Knoxville, Lawrenceburg, Lebanon, Lewisburg, Livingston, Murfreesboro, Pulaski, Shelbyville, Spring Hill, Waynesboro, Winchester
- **Kentucky:** Franklin, Powderly



Infrastructure

Providers and Partners

- Cardiologists
- Cardiac Anesthesiologists (all perform Intra-op TEE)
- Perfusionists
- Intensivists
- Access

Operating Rooms

- 3 Traditional Cardiac ORs + 1 Cardiac Hybrid Suite
- OR staff combination of Surgical Technologists and Registered Nurses
- First assistant staff of PAs and RNFAs
- Dedicated cardiac call team providing 24/7 coverage

Cath Lab

- Currently 4 Cath Labs, 2 EP Labs, expanding to 5 Cath Labs, 4 EP Labs in January 2014
- Cath volume ~6,000 cases/year
- EP volume ~2,000 cases/year

CVICU

- Cardiac Anesthesia as Intensivists that work in an integrated fashion with Midlevels, Critical Care Fellows, Cardiac Surgery Fellows and Cardiac Surgery Attendings

Step-down

- Cardiac Surgery Step-down is adjacent to the CVICU, on the same floor.