The Heart Lung Vascular Institute was established in 2000 to help meet the increasing need for cardiovascular and lung disease care. Heart disease, stroke and pulmonary disease are among the leading causes of death in the United States. In addition, Tennessee is one of the five worst states for smoking, obesity, and high blood pressure—all of which contribute to the development of heart, lung and vascular disease.

The goals of the Heart Lung Vascular Institute are to attain excellence in patient care, preventive medicine, rehabilitation services, research and education. Excellence in patient care means offering the best diagnostic and treatment plans using the latest technology in a compassionate manner, keeping the patient and family informed and comfortable, both physically and emotionally. Preventive medicine involves education about disease processes and risk reduction through community seminars and screenings such as the HeartWise program. Rehabilitation services help patients recovering from heart attacks, heart failure, heart and lung surgery, and chronic lung disease. The University of Tennessee Medical Center is the area’s only academic medical center, and research into the cause and treatment of disease is part of our mission. The other role of academics involves physician education; the UT Graduate School of Medicine currently offers fellowships in cardiovascular medicine, vascular surgery and pulmonary medicine.

In the spring of 2010, the region’s only dedicated Heart Hospital will open. It has been shown that patients with cardiovascular disease have better outcomes when cared for by multidisciplinary healthcare teams in a dedicated heart hospital using evidence-based clinical pathways. The Heart Hospital will include information and support areas, a new state-of-the-art intensive care unit with large family-oriented rooms, high nurse-to-patient ratio step-down rooms, and a location adjacent to existing and future catheterization and operating suites.

As healthcare reform remains at the center of national attention, we are steadfast in our mission of healing, education and discovery. We hope you find the enclosed information and data helpful. If you would like additional information regarding our programs or services, please contact us at 865-305-9458 or www.utmedicalcenter.org.

Teresa Levey, MSN, RN
Vice President
Heart Lung Vascular Institute

John Mack, Jr., MD
Medical Advisor
Heart Lung Vascular Institute
The Heart Lung Vascular Institute is focused on the delivery of quality patient care.

Whether in the surgical suite or on the nursing unit, our team of physicians, nurses and allied health professionals is always seeking ways to improve patient safety, clinical outcomes and satisfaction.

Publicly reporting healthcare quality data leads to improved patient care, transparency, accountability and informed decision-making for the physician and the patient. In addition to the quality data submitted to The Joint Commission and The Centers for Medicare and Medicaid Services, we voluntarily submit outcomes data to the Leapfrog Group, American Heart Association, selected payers and a number of national database registries. In this report we share some of our quality outcomes, process measures and volumes from key service areas and specialty centers of care.

REGISTRY PARTICIPATION

Society of Thoracic Surgeons
Adult cardiac
Thoracic
Pediatric Cardiac Surgery
American College of Cardiology
Cath/PCI®
ICD™
CMS
Carotid Stent
STAR (Atrial Fibrillation)
American Heart Association
Get With the Guidelines® — Heart Failure
APACHE®
UNet™ — United Network for Organ Sharing
NDNQI® — National Database of Nursing Quality Indicators

HEART LUNG VASCULAR INSTITUTE

OUTPATIENT SERVICES

Aortic Center
Arrial Fibrillation Center
Cardiac Catheterization Laboratory
Cardiac Diagnostic Imaging
Cardiovascular & Pulmonary Rehabilitation
Center for Transplant Services
Chest Service
Echocardiography
Endovascular Service
Noninvasive Vascular Laboratory
Vascular Access Center

INPATIENT CARE SERVICES

Cardiovascular Intensive Care Unit 18
Cardiothoracic Surgery Intermediate Care 8
Comprehensive Cardiovascular Care 22
Medical & Interventional Cardiology 30
Pulmonary Medicine 30
Vascular Surgery & Transplant 30
Respiratory Care Services

Total Beds 138
The Performance Improvement Committee of the Heart Lung Vascular Institute is a collaborative committee that includes cardiologists, cardiothoracic surgeons, vascular surgeons, pulmonologists, emergency physicians, anesthesiologists and nurses, as well as departmental managers, administrators, and process improvement coordinators.

There were 575 AMI discharges in 2009.

Cardiologist Dr. Cox
Patients using chronic oxygen therapy are at risk for developing pressure ulcers on their ears. Because pressure ulcers are preventable, quality nursing care must include assessment and interventions to decrease the possibility of skin breakdown. With an increased incidence of pressure ulcers on patient’s ears, the Pulmonary Medicine Unit Council investigated ways to prevent and relieve pressure on the ears of patients with oxygen using a multidisciplinary approach. Comfort Straps were diligently placed on each patient requiring oxygen therapy. Audits were conducted to evaluate the effectiveness of the intervention. The incidence of pressure ulcers on pulmonary medicine patients has been monitored quarterly and has been below the National Database of Nursing Quality Indicators (NDNQI) mean since the third quarter of 2008. This intervention has therefore become a routine part of care; it is recommended for any patient at risk for skin breakdown due to continuous oxygen therapy.
Cardiothoracic Surgery

LESS INVASIVE SURGERIES:
ROBOTIC
Atrial Septal Defect Closure
Mitral Valve Repair
Tricuspid Valve Repair

MINIMALLY INVASIVE
Aortic Valve Replacement
CABG
Mini Maze
Mitral Valve Repair

VIDEO-ASSISTED THORACOSCOPIC SURGERIES
Bleb Resection and Pleuradesis
Chest and Mediastinal Mass Excision
Decortication
Lobectomy
Lung Biopsy

The Cardiothoracic Surgery Intermediate Care Unit assists patients in the transition from critical care to acute care. This focused team includes nurses, respiratory therapists, dieticians, exercise specialists, case managers, pharmacists and pastoral care chaplains.

As an infant, Caroline had her congenital heart defects repaired at UT Medical Center, the region’s only pediatric heart surgery center.

“She can do all these things because of your skilled hands. When I think that you actually held her heart in your hands I say a little prayer of thanks for you.”

- Amie and Scott Dyer
The Cardiovascular Intensive Care Unit reported no unit acquired pressure ulcers in 2009.
The Vascular Surgery and Transplant Unit specializes in the pre- and post-operative care of patients undergoing vascular surgery and transplant procedures.

The Endovascular program has won first place in national and international competitions for research describing new methods to improve outcomes using endovascular therapy.

Endovascular repair versus open repair of the aorta in elderly patients with AAAs has been associated with better operative outcomes. (Journal of Vascular Surgery, October 2009)
As healthcare faces demands to decrease length of stay and increase patient satisfaction, hospital staff seeks to streamline the discharge process. Evidence suggests an interdisciplinary discharge process results in increased nurse satisfaction, reduced incidence of medical errors and lower hospital acquired infections. The purpose of the Vascular Surgery and Transplant Unit (VSTU) Discharge by Eleven Project is to identify barriers to discharge and increase efficiency throughout the discharge process.

A patient database was developed to detect variables affecting early discharge. An improvement plan was implemented focusing on timeliness of writing discharge orders by surgical residents and early recognition of potential discharge by nursing, medical and case management staff. Subsequently, the “VSTU Resident Survival Guide” was created highlighting the expectations of nurses rounding daily with attending physicians and residents to identify discharges for the next day. Methods of communication included the team leaders, who served as discharge champions, and utilization of the assignment board as a visual cue. Nurses were instructed to communicate that discharge occurs before eleven to every admission. Discharge times and customer satisfaction scores were posted weekly.

The five-month study showed an increase in the satisfaction with speed of the discharge process (75 to 89.3) and overall satisfaction with the process (83.6 to 89.3) based on Press Ganey raw scores. The percent of discharges by eleven increased from 11% to 15% and late discharges decreased from 50% to 37%. These findings suggest that early discharges can be increased by targeting unit specific variables.

“It has long been documented that the native AV fistula is the best choice for hemodialysis access. Compared to catheters and AV grafts, the AV fistula has greater patency rates and fewer complications, thus fewer hospitalizations, decreased patient morbidity, and lower costs.” (Network 8, 2009)
The Center for Transplant Services has implemented strategic initiatives that focus on increasing living kidney donor transplantation.

Data from the Scientific Registry demonstrates that time to transplant performance is 28% lower than the national median of all kidney transplants performed over the last 5 years.
STEMIs are caused by the sudden occlusion of a major coronary artery. For 25 years, clinical research has focused on ways to quickly open these blocked arteries, which reduces the chance of dying from a STEMI.

This was accomplished first by clot dissolving “thrombolytic” drugs, which unfortunately are ineffective 33% of the time and can cause life-threatening bleeding. Re-occlusion causing a repeat heart attack often occurs following their use. Restoring blood supply to the effected heart muscle using immediate or “direct” coronary angioplasty and stenting has been demonstrated to be an option markedly superior to thrombolytic therapy for treatment of STEMIs.

In order to provide emergent STEMI care, a medical center must have 24/7 interventional cardiology facilities and personnel as well as cardiac surgery backup. For Tennesseans living within 30 minutes of one of the 43 medical centers capable of providing this care, angioplasty within 90 minutes should be achieved most of the time. Eighty-nine percent of patients presenting to The University of Tennessee Medical Center in 2009 achieved the 90-minute door-to-balloon benchmark, compared to a state average of 82% and a national average of 79%.

Controversy still surrounds the best treatment of STEMI patients who do not have easy access to medical centers capable of providing coronary angioplasty. Data suggests that every ten-minute delay in treatment can result in a one percent higher chance of dying from an acute myocardial infarction. Across the country, programs are underway to improve the access of these patients to interventional care by creating regional STEMI centers. In Tennessee, the Cardiac System of Care Task Force is identifying factors necessary to develop STEMI networks. The Heart Lung Vascular Institute has been functioning as a regional STEMI referral center for over a decade.
The medical center’s system of care for STEMI patients in rural East Tennessee began in 1999 with a “rapid transport protocol,” allowing patients with STEMI in rural emergency departments to be transferred directly to The University of Tennessee Medical Center. The UT LIFESTAR dispatch center became the communication hub for coordinating STEMI care by calling in the catheterization lab team at the moment a STEMI patient was identified, further reducing door-to-balloon time.

The UT LIFESTAR team went a step further beginning in 2005 with a program to train local EMS providers to recognize the EKG of STEMI patients in the field and to call for aeromedical transport directly from the patient’s location to an interventional center. This has been an enormous step forward in improving time to treatment.

The STEMI Management Committee conducts monthly case reviews for all patients entering the system with an ST-elevation myocardial infarction. Efforts by this committee have led to reduced door-to-EKG times and reduced door-to-balloon times.

### STEMI Management Committee

The STEMI Management Committee conducts monthly case reviews for all patients entering the system with an ST-elevation myocardial infarction. Efforts by this committee have led to reduced door-to-EKG times and reduced door-to-balloon times.

### Background

Optimal treatment of patients with STEMI in rural areas without immediate access to a PCI-capable facility is controversial. A strategy of immediate transfer from the field to a PCI-capable facility, instead of initial evaluation at a rural hospital GR, is an option to decrease treatment delays.

### Methods

We retrospectively evaluated 47 consecutive STEMI patients originating in rural counties without a PCI-capable facility. The patients were divided into two groups: Direct Transfer (Fright) and Inter-Hospital Transfer. We assessed the two groups for baseline differences in age, gender, and TIMI score. We then evaluated the treatment, which was defined as time from entry into the health care system to first balloon inflation. This was divided into transport arrival time, defined as entry time until helicopter arrival in the field or referring hospital; and PCI time, defined as receiving hospital arrival until documentation of patient intent artery or first balloon inflation.

### Discussion

Field transferred patients had a mean age of 64.5, while interhospital patients had a mean age of 67.8. Field-transferred patients had a mean TIMI score of 1.3. The transport arrival time from entry into the health care system to helicopter arrival was shorter in the field transfer group (mean 16.5 minutes) compared to the interhospital transfer group (mean 69.5 minutes), with a difference of 53 minutes. The PCI time from arrival at the PCI-capable facility to first balloon inflation was not statistically significant versus interhospital transfer (36.7 minutes), with a difference of 6 minutes. The PCI time from arrival at the PCI-capable facility to first balloon inflation or patient intent artery for field transfers (33.5 minutes) versus interhospital transfers (36.7 minutes) was not statistically significant. Total transfer time was defined as time from entry into the health care system to documentation of intent artery patency. The time for field patients (32.4 minutes) was significantly lower than for interhospital transfer patients (39.0 minutes), with a difference of 6.6 minutes and p < .02.

### Summary

This investigation demonstrates that direct transport of STEMI patients to a PCI-capable facility is associated with a significant reduction in time to vessel reperfusion.

<table>
<thead>
<tr>
<th>Results</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>143.5 ± 53.7</td>
</tr>
<tr>
<td>Gender (M/F)</td>
<td>31/6</td>
</tr>
<tr>
<td>TIMI Score</td>
<td>1.4 ± 0.4</td>
</tr>
<tr>
<td>Transporeal Time Transport</td>
<td>30.8 ± 20.3</td>
</tr>
<tr>
<td>Time Intention Transfer</td>
<td>36.2 ± 11.9</td>
</tr>
<tr>
<td>PCI Time Intention</td>
<td>30.5 ± 20.5</td>
</tr>
<tr>
<td>Total Door to Balloon</td>
<td>189.4 ± 28.2</td>
</tr>
</tbody>
</table>
Kyle Lowe
The Heart Lung Vascular Institute’s STEMI Team Launches into Action

Long hours spent at work in the barn were normal for Kyle, 54. Aside from his construction career, he also owns beef cattle. With these very physically active jobs, he was confident in his health despite having diabetes. However, he wasn’t factoring in the three-pack-a-day smoking habit he developed and how much of an impact that had on his health. He also had not given a second thought to the chest pains and uneasiness he had experienced.

On November 29, 2009, while working on his farm in Gibson Station, Va., he started feeling sick with indigestion. He continued working while his symptoms worsened and progressed into sweating, nervousness and vomiting. He also developed discomfort in his arm that caused him to take an aspirin and phone his wife for help.

Thankfully, Pam acted fast. “I had a feeling something might someday go wrong,” Pam explains. “I wanted to be prepared for an emergency, so I asked questions and knew ahead of time what I needed to do. I found him on his hands and knees in the barn and knew what was happening. I had to keep my head about me and do the right thing to get the best care for him.” It took just five minutes for the local EMS to pick Kyle up, identify that he was having a heart attack and start an IV. In a nearby field, EMS then met the aeromedical transport service UT LIFESTAR, which delivered Kyle to The University of Tennessee Medical Center. “It only took 38 minutes from the time I called EMS to the time he made it to the Emergency Department,” she recalls. “We had no trouble deciding where we needed to go. We have had to come to UT Medical Center before and received excellent care.”

The Emergency Department moved Kyle directly to the Heart Lung Vascular Institute Catheterization Lab where the STEMI team had already assembled and was waiting on his arrival. STEMI—also known as ST-elevation myocardial infarction—is caused by the sudden occlusion of a major coronary artery. Dr. Stuart J. Bresee, a cardiologist at the medical center’s Heart Lung Vascular Institute, determined that Kyle had suffered a heart attack, and he was prepped for a cardiac catheterization. Dr. Bresee and the rest of the STEMI team then placed a stent to open the blocked blood vessel in Kyle’s heart so that blood could again flow freely.

In addition to Dr. Bresee, Kyle also sees Dr. D. Russell Huntsinger for his regular checkups. “Considering the condition that Mr. Lowe presented just a few months ago, he is doing very well,” says Dr. Huntsinger. “If it wasn’t for the quick actions of Mrs. Lowe, the local EMS, UT LIFESTAR, Dr. Bresee and the rest of the STEMI team, Mr. Lowe might not be with us today.”
Aortic disease is common with multiple etiologies (*Table 1*). Atherosclerotic aortic aneurysms occur in approximately 5% of men over age 65. Elective aortic procedures have a high success rate; however, acute aortic ruptures have up to a 90% mortality without surgery. Survival is related to early recognition and experience of the medical team caring for the patient. The University of Tennessee Medical Center has a long history of treating large numbers of patients with both stable aortic disease and complex emergent disorders using the latest open and endovascular techniques (*Table 2*).

In 2009, the medical center’s Heart Lung Vascular Institute established the Aortic Center. The Aortic Center is a cooperative effort involving both cardiothoracic and vascular surgeons and a multidisciplinary team. Although patient care will always remain our number one goal, resident education, research, and publications also continue to be priorities.

The Heart Lung Vascular Institute vascular surgeons supervise the only Resident Review Committee approved fellowship in the region that trains physicians in endovascular surgery and thoracic endograft placement. The program has won first place in national and international competitions for research describing new methods to improve outcomes using endovascular therapy.

Every year, 15,000 Americans die from ruptured aortic aneurysms.
Recent publications by Dr. Raymond A. Dieter, III and Dr. Scott L. Stevens

**TABLE 1:**

**Aneurysms**
- Abdominal
- Thoracic
- Thoracoabdominal
- Iliac and visceral

**Pseudoaneurysms**

**Aortic Dissections**

**Marfan’s Annuloaortic Ectasia**

**Traumatic Aortic Injuries**

**Aortic Occlusive Disease**

**Congenital Aortic Anomalies**
- Coarctation
- Vascular rings
- PDA

**TABLE 2:**

**Surgical Procedures**

**Aortic Valve Replacement**
- Standard
- Minimally invasive

**Aortic Root Replacement**
- Standard
- Valve sparing

**Aortic Aneurysm Repair**
- Open
- Endovascular

**Repair Aortic Injuries**
- Open
- Endovascular

**Repair Aortic Dissection**

**Repair Congenital Aortic Anomalies**

---

**Mortality for Elective AAA Repair**

0.7%

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**Aortic Repairs Percent of Total Volume 2009**

- 43% Endovascular Repair
- 57% Surgical Repair

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**Regional Aortic Discharges 2009**

Source: Tennessee Hospital Association Database Estimated 2009 Volumes
Atrial fibrillation (AF) was the earliest identified cardiac rhythm disturbance and is now the most common.

Atrial fibrillation may be linked to valvular heart disease or other cardiac structural abnormalities but frequently occurs as an isolated disorder. Atrial fibrillation may be present continuously (persistent AF) or episodically (paroxysmal AF) and is a common cause of systemic thromboembolism and stroke.

For years, digitalis was the only drug available for the treatment of AF until quinidine was introduced in 1951. Other drugs such as procainamide, beta-blockers, calcium channel blockers, amiodarone and most recently dronedarone have been used to control atrial fibrillation but none have affected a cure. Electrical cardioversion has been used since the mid-1960s to convert atrial fibrillation to normal sinus rhythm.

Anticoagulation has been a part of the treatment regimen for AF since 1958. The choice between aspirin and Coumadin has been somewhat arbitrary until the recent development of evidence-based CHADS 2 scoring for risk of stroke in patients with AF. Low-risk patients are treated with aspirin while high-risk patients are treated with Coumadin.

In 1991, a new era in AF therapy dawned with the publication of work by JL Cox that culminated in the development of the Cox maze procedure. This operation originally involved surgical incisions in the left atrium to interrupt the AF circuit and was performed with the patient on cardiopulmonary bypass and the heart arrested. It was subsequently learned that radiofrequency or cryotherapy lesions—as well as lesions created by other energy sources that permanently disable the conductive heart muscle cells without destroying the structural integrity of the tissue—could replace the original Cox maze incisions.

In 1998, another important milestone in the treatment of AF was the demonstration by Haissaguerre that AF could be spontaneously initiated by ectopic beats originating in the pulmonary veins. This discovery has led to the development of catheter-based and minimally invasive, off-pump surgical approaches that eliminate recurrences of AF by
electrically isolating the pulmonary veins from the remainder of the left atrium.

The least invasive procedures for AF are catheter-based interventions performed in the electrophysiology lab. A catheter is introduced into the left atrium, which is electrically “mapped,” after which the pulmonary veins are identified and multiple adjacent radiofrequency lesions are created to cause electrical isolation of the veins from the remainder of the left atrium. Other lesions can be created as well.

The Mini Maze is a minimally invasive surgical procedure performed through small incisions on each side of the chest that allows pulmonary vein isolation and ablations on the outside of the atrium, avoiding the need for open-heart surgery. With this surgical procedure, the left atrial appendage can be removed or closed, which will significantly reduce the risk of stroke.

For patients requiring other on-pump cardiac surgical procedures or those with refractory AF electing for the most efficacious procedure, the traditional Cox maze procedure using the heart lung machine can be performed. These procedures can be performed through a standard sternotomy or sometimes through a right chest incision. The procedure can be accomplished as part of a “robot assisted” mitral valve repair also performed through a small right chest incision.

At the medical center, AF surgical procedures and catheter ablations have been performed since 2003 with minimally invasive, off-pump operations since 2006. The Heart Lung Vascular Institute participates in a large national database studying the outcomes of surgical procedures used to treat AF.

**MINI MAZE SIX-MONTH FOLLOW-UP:**
- 86% of patients AF free
- 90% off Coumadin
Interventional cardiology services at the medical center’s Heart Lung Vascular Institute provide a comprehensive program of diagnostic and interventional procedures.

The Cardiac Catheterization suite is comprised of five angiographic rooms and modern pre- and post-procedure care rooms. A sixth interventional room is planned for 2010. Adult interventional procedures are performed by five board-certified experienced cardiologists:

**Adult Interventional Cardiologists:**
- Raj Baljepally, MD
- Stuart J. Bresee, MD
- Tjuan L. Overly, MD
- J. Christopher Scott, MD
- Dale C. Wortham, MD

**Pediatric Interventionalists:**
- Jeffory G. Jennings, MD
- Sumeet K. Sharma, MD

In 2009, the most frequently performed procedures were coronary interventions for ischemic heart disease. The performed percutaneous coronary interventions included implantation of bare metal stents and drug-eluting stents, balloon angioplasty, and rotational atherectomy (with or without stenting) as well as thrombectomy. To better evaluate coronary anatomy and physiology, intravascular ultrasound and myocardial fractional flow reserve were invasively performed in selected cases. The angiographic success rate for the stented cases was 98.8%.
One of the fastest growing areas in Interventional Cardiology is the nonsurgical treatment of structural heart disease. The structural heart disease program, which began over 20 years ago, currently includes the treatment of valvular heart disease, acquired anatomic diseases of the heart, and congenital heart disease. Balloon valvuloplasty continues to be performed for stenotic lesions of the cardiac valves. Over 220 patients have benefitted from these valvuloplasty procedures that would have otherwise been performed surgically, often requiring an open heart operation.

In 2003, percutaneous closure of atrial septal defects was approved by the FDA and, using this new technology, a program was begun that same year at the medical center. Since the inception of the program, more than 200 patients have had their atrial septal defects closed nonsurgically. Alcohol septal ablation was performed for the first time at the medical center in 2009 and is now available for the treatment of selected cases of obstructive hypertrophic cardiac cardiomyopathy.

Interventional cardiology outcomes are tracked by participation in a number of institutional quality improvement programs, and the American College of Cardiology Cath-PCI Registry. These programs allow the catheterization lab physicians and staff to identify safety and quality issues.

The angiographic success rate for the stented cases was **98.8%**.

![Image of angiogram]
The IP service has had continued growth over the last five years, both in terms of volume of procedures and in type of procedures offered. An outpatient specialty clinic is dedicated to IP, allowing rapid access for symptomatic patients. Procedure time is “blocked” in our lab for IP cases to facilitate rapid scheduling.

A variety of procedures are offered for the management of malignant or benign central airway obstruction as well as symptomatic pleural effusion. Minimally invasive evaluation of mediastinal disease is accomplished using endobronchial ultrasound (EBUS) to guide needle biopsies. Our approach to endoscopic management of airway Carcinoma in situ (CIS) combines radial EBUS with thermal ablation techniques. Airway dilation and stenting is available for those patients with symptomatic airway narrowing. Complex airway problems, such as tracheobronchomalacia, are handled by a team combining interventional pulmonologists and thoracic surgeons.

Pulmonologist Dr. Branca

145% growth in bronchoscopy volumes since 2005
Procedures offered include:
Advanced Diagnostic Bronchoscopy
– Endobronchial ultrasound
– Rigid bronchoscopy

Pleural Disease Management
– Thoracentesis and pleural biopsy
– Chest tube with pleurodesis
– Tunneled pleural catheter
– Placement of bronchial valves for bronchopleural fistula closure

Artificial Airways
– Percutaneous tracheostomy
– Transtracheal oxygen catheter

Therapeutic Bronchoscopy
– Relief of central airway obstruction from tumor or foreign objects
– Tracheal or bronchial dilation and stenting
– Treatment of carcinoma in situ
– Treatment of tracheobronchomalacia or other benign airway stenosis
– Placement of catheters for brachytherapy
– Placement of fiducial markers for Cyberknife
– Whole lung lavage for pulmonary alveolar proteinosis

Endobronchial ultrasound (EBUS) experienced 129% growth over 2008.
This mission of education extends outside the walls of the medical center to the community itself by way of healthcare screenings and educational programs.

The Heart Lung Vascular Institute offered a total of 186 educational opportunities to the East Tennessee region, which ranged from community and corporate health screenings, cooking classes offered by the Healthy Living Kitchen, lunch and learn educational talks, health fairs, and fitness programs. One particular community outreach program that launched in 2009 was the very successful HeartWise wellness fair.

In recognition of American Heart Month, HeartWise is a comprehensive community wellness fair that takes place once a year during the month of February at the medical center’s Heart Lung Vascular Institute. In 2009, HeartWise provided physician-led community education on topics such as calcium scoring, minimally invasive treatments for atrial fibrillation, heart disease in women, and advances in the treatment of cardiac valve disease. Screening opportunities included a comprehensive cardiovascular risk assessment, COPD pulmonary testing, and cardiac calcium scoring utilizing the non-invasive 64-slice CT scanner. In its first year, HeartWise screened approximately 240 community members with many more attending the education talks and cooking classes offered that day.

Deborah Welch
Early Detection Potentially Saves Another Life

After her brother’s stroke in 2008, Deborah Welch, then 54, decided to check on her own health status and make certain that she was not at risk of the same. She attended the annual HeartWise screening at The University of Tennessee Medical Center’s Heart Lung Vascular Institute in February 2009, and was startled to hear what they discovered. Deborah’s carotid artery ultrasound assessment revealed that she had 80% blockage in the artery on one side of her neck and 40% blockage on the other.

“I just wanted to see where I stood since my brother’s stroke,” Deborah says. “I worried about my own health.” Other than family history, Deborah had additional risk factors for stroke and heart attack such as diabetes and smoking, but she did not have any symptoms.

Deborah’s first choice for treatment was The University of Tennessee Medical Center, where her brother had been treated when he had a stroke. Deborah met with Dr. Michael B. Freeman, a vascular surgeon with University Vascular Surgery.
Cardiovascular and Pulmonary Rehabilitation

The Heart Lung Vascular Institute’s Cardiovascular & Pulmonary Rehabilitation program is a nationally accredited program designed to help people with heart, lung and vascular problems recover faster and return to a full and productive life. The program includes three phases of rehabilitation. Phase I, the inpatient component, includes education for cardiovascular patients, as well as ambulation for the post-cardiothoracic surgery population. Phase II begins soon after discharge from the hospital. Participants are monitored and closely supervised during their exercise sessions. The multidisciplinary team provides ongoing education, counseling, behavior modification, and support for patients and their families. The Cardiovascular & Pulmonary Rehabilitation program is a safe and effective way to help participants feel better faster, reduce stress, reduce the risk of future health problems, and live longer.

They discussed her treatment, which would include surgery as well as lifestyle changes that could greatly impact her health. Dr. Freeman’s greatest concern was the plaque in her artery that had already started to break off, which can then close off an artery enough to cause a stroke. “With the blockage found of Ms. Welch’s carotid arteries she was definitely at risk for stroke,” says Dr. Freeman. “Thanks to screenings like the one offered at HeartWise, Ms. Welch was able to proactively discover the blockage before symptoms presented.”

In April 2009, Deborah underwent a carotid endarterectomy to remove the 80% blockage. Deborah was able to return home after a few days. She still requires blood pressure pills and monitors her heart rate. Dr. Freeman also regularly monitors the other 40% blockage.

Deborah highly encourages people to receive regular screenings. “None of us like dealing with health issues, but it is part of getting older,” she says. “When these screenings are made available, you need to actively participate. It could save your life as it did mine.”
Many individuals, families, small businesses and large corporations have embraced these opportunities as a way to demonstrate their commitment to making a difference in the caliber and depth of cardiovascular and pulmonary care available in Knoxville. Following are some of their stories:

**Regal Foundation Partners with The University of Tennessee Medical Center to Advance Pulmonary Care**

Never an organization to shy away from supporting and improving the communities they work in, the Regal Foundation has taken the lead in East Tennessee and elsewhere to address some of the key health issues directly impacting those living in the region. Specifically, the Regal Foundation and the Will Rogers Institute recently donated $1 million to the medical center and UT Graduate School of Medicine to establish the Mike Campbell Pulmonary Medicine Fellowship.

Regal's leadership and culture recognizes that giving has a multiplier effect. In addition to fostering an environment of enhanced training and research for physicians specializing in pulmonary disease, the Fellowship will attract the nation's leading pulmonary residents and ensure East Tennesseans—who experience a disproportionate share of chronic lung diseases and ailments—have access to the latest in pulmonary care and treatment. Bringing these doctors into the community means better care and a higher quality of life for the community and for Regal's employees and family members who live in the community.

In addition to the expertise, dedication, and compassion of the physicians, nurses, researchers and staff at the Heart Lung Vascular Institute, the generosity of mind and spirit displayed by our community of friends and family throughout the East Tennessee area has resulted in many of the triumphs and successes experienced in 2009.

“Regal Entertainment Group has established a culture of giving back to the communities in which we live and operate. This philanthropic attitude has always been a priority of our executive chairman, Mike Campbell,” stated Amy Miles, Regal Entertainment Group CEO and UT Alumnus. “It is very deserving and appropriate that our gift to the UT Medical Center be directed towards establishing a pulmonary fellowship in Mike’s name.”
An Evening in Orange Rings in a Happy New Year for Heart Hospital

With more than 400 UT Medical Center, Heart Hospital, and UT Graduate School of Medicine supporters in attendance, the 2009/2010 An Evening in Orange was destined to be an unqualified success—and it was. The sold-out gala and auction exceeded all expectations by raising more than $500,000 to benefit the medical center’s Heart Hospital.

Under the leadership of Teddy and Christy Phillips, the HeartSaver program was established and it, along with all of the other event committees, exceeded its sponsorship and donation goals. The HeartSaver program provides an opportunity for individuals and families to join together with other $1,000 donors to support the specialized care, treatment, education and research offered in Knoxville’s only dedicated heart hospital. HeartSaver patrons are recognized in perpetuity with a dedicated tile located on the Heart Hospital’s one-of-a-kind mural at the entrance to the patient care area. The Development Office at The University of Tennessee Medical Center can provide additional information about how you can participate in the HeartSaver program.

“The show of support, enthusiasm and generosity was quite profound,” noted Christy Phillips, who along with her husband, Teddy, co-chaired this year’s event. “We were honored to take part and give back in this rewarding way.”

The University of Tennessee Medical Center and the UT Graduate School of Medicine extends its sincere gratitude and appreciation to co-chairs Christy and Teddy Phillips and to the many sponsors who supported An Evening in Orange and the Heart Hospital. Their partnership has helped to create a state-of-the-art facility offering healing and medical advancements to individuals throughout the East Tennessee region who face the challenges of cardiac, pulmonary and vascular ailments.
Heart Lung Vascular Institute
Pioneer Honored by Family

At a time when the concept of “continuum of care” was far from standard practice, Dr. Joseph E. Acker, Jr. was far ahead of the game. From very early in his career, he placed a priority on educating cardiovascular patients and their families about the value of—and improved outcomes associated with—a post-treatment rehabilitation regimen.

It was for this commitment that his family chose to honor Dr. Acker with a generous contribution to The University of Tennessee Medical Center’s Cardiovascular and Pulmonary Rehabilitation program. The Joseph E. Acker, Jr., MD, Patient Education Room is a multi-functional room where cardiovascular and pulmonary patients and their family members work with the staff to determine personalized plans of care and goals for rehabilitation.

Along with Dr. Freeman Rawson and Dr. Frank London, Dr. Acker was one of the three founding partners of the Knoxville Cardiovascular Group, which is now known as University Cardiology. Dr. Acker was on the national cardiac rehabilitation board that convinced the medical world about the merits of cardiac rehabilitation and set the national standards and guidelines for cardiac rehabilitation in the 1960s. In addition, he served on state boards and committees as well as participated in national and international symposiums focused on cardiac rehabilitation.

Heart Lung Vascular Institute
Gift Funds

There are many giving opportunities available through the Heart Lung Vascular Institute. Gifts can be made to a specific fund or directly to the Heart Hospital or the Heart Lung Vascular Institute.

- Heart Lung Vascular Institute Campaign Fund
- George F. Schuchmann Heart Lung Vascular Institute Gift Fund
- Monroe and Sandra Trout Pediatric Cardiology Gift Fund

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“It’s just wonderful to have people recognize what we worked at getting accepted throughout all those years,” said Dr. Joe Acker, Jr. “We were happy to take even the reluctant acceptance that people had given us for cardiac rehabilitation because any acceptance meant lives could be saved and improved through rehab. Cardiac rehabilitation improves the length, quantity and quality of life in all phases.”
The University of Tennessee Medical Center has a rich history of utilizing evidence-based practices to ensure that we’re delivering the highest quality of care available, and the Heart Hospital represents a continuation of that commitment to our patients.

The building will be constructed to accommodate an eight-story tower as demand increases in the coming years.

The Heart Hospital, a $26 million, four-story building is on the medical center’s main Alcoa Highway campus in Knoxville and will provide expanded inpatient hospital services for the medical center’s Heart Lung Vascular Institute.

A report by a task force of the American College of Cardiology and the American Heart Association found that dedicated heart hospitals following the appropriate clinical guidelines saw improved outcomes in 20% of their heart surgery cases and improved clinical care processes in 90% of their cases. The opportunity to further improve patient care is the objective of the new Heart Hospital. The dedicated heart hospital concept is to bring the best possible care and patient outcomes by maximizing the efficiency and effectiveness of heart, lung and vascular services at the medical center.

The coordination of care at the Heart Hospital is enhanced by the close proximity and ease of access between the medical center’s cardiovascular intensive care unit, cardiac catheterization and endovascular suites, operating rooms, emergency department and UT LIFESTAR. Crucial to the success of this concept, according to medical center physicians, is having doctors, nurses and other medical staff dedicated to working exclusively with cardiovascular disease patients utilizing a multidisciplinary approach for care and treatment. This multidisciplinary approach to cardiac care began with the formation of the Heart Lung Vascular Institute in 2000.

The Heart Hospital will include information and support areas, a new state-of-the-art intensive care unit with large family oriented rooms, high nurse to patient ratio step down rooms and a location adjacent to the existing and future catheterization and operating suites.
Along with providing exceptional patient care, the Heart Hospital will further our mission by creating resources for educational opportunities and physician fellowships, as well as fostering medical research for treatment of heart, lung and vascular disease.

The 126,000 square foot building is being built to connect the front of the medical center and will serve as the new front entrance. Visitors will walk into a four-story open air lobby and atrium area including a 40-foot feature wall with custom lighting creating the effect of a moving waterfall as well as an elegant 25-foot custom-designed chandelier created specifically for the Heart Hospital. The entrance leads to the main information desk and access to medical offices as well as hospital departments and services. A dramatic 30-foot wall recognizing donors of the medical center will be prominent in the new lobby.

The second floor will house a vastly expanded, state-of-the-art cardiovascular intensive care unit (CVICU). The 24-bed private-room unit adds six beds to the medical center’s current capacity. Each room will be large, easily accommodating families, thus enabling loved ones to take an active role in the positive healing environment. Each room will offer to visitors and patients attractive design elements throughout the room and private restroom facilities, a flat panel television set and a sleeper sofa for a family member. The second floor lobby will feature the HeartSaver Wall, a three-dimensional artistic display featuring a wall with striking red-heart and glass tiled donor recognition plaques. The third and fourth floors will be built out in a custom fashion to accommodate the most prevalent heart, lung and vascular needs of the community.

The opening of the Heart Hospital marks the first new inpatient building constructed at The University of Tennessee Medical Center in more than a quarter of a century. The 12-story East Tower opened on the medical center’s campus in 1984. “The Heart Hospital will be a modernized facility equipped with the latest technological advances to help us deliver optimal care for our patients and the private rooms will be visually appealing and comfortable for our patients and their visitors,” said Joseph R. Landsman, president and CEO of University Health System, Inc. “The University of Tennessee Medical Center has a rich history of utilizing evidence based practices to ensure that we’re delivering the highest quality of care available, and the Heart Hospital represents a continuation of that commitment to our patients.”
Publications


27. Venero CV, Vemero JV, Wortham DC, Thompson PD. Lipid lowering efficacy of red yeast rice in a population intolerant to statins. *Amer. Jour. of Cardiology*. Accepted for publication 2009.


**Research Projects**


2. Primary investigator for ACOSOG Z4032- Randomized phase II study of sublobar resection vs sublobar resection plus brachytherapy in high risk patient with non-small cell lun cancers 3 cm or smaller.


4. Primary investigator for hormone replacement therapy: Modulation of vascular wall structure and remodeling post-injury.

5. Primary investigator for CALBG 14503- A phase III randomized trial of lobectomy vs. sublobar resection for small (<2cm) peripheral non-small cell lung cancer.
6. Primary investigator on the Effects of Estrogen and Progesterone on Inflammatory Markers, Matrix Metalloproteinase Levels, and Clinical Outcomes in Postmenopausal Females after Vascular Reconstruction: A Prospective Study.

7. Primary investigator for Creation of an anastomotic model of intimal hyperplasia to establish equivalence with an accepted balloon angioplasty model.

8. Primary investigator- Utility of fused PET/CT virtual bronchoscopy for airway inspection.

9. Primary investigator for Endobronchial lesion secondary to rhodococcus infection.

10. Primary investigator for a comparison and cost analysis of different techniques of fiducial placement for cyber knife radiosurgery of lung cancer.

11. Primary investigator for a randomized, double blind, placebo controlled phase IIB study to assess the safety and efficacy effects of ART-123 subjects with sepsis and disseminated intravascular coagulation.

12. Primary investigator for Lipitor and Crestor daily vs three time a week protocol.


15. Co-investigator SWOG-S0720- Phase II ERCC1 and RRM1 based adjuvant therapy trail in patients with stage I non-small cell lung cancer.


Meet the Physicians

John H. Acker, MD
- Board Certification: American Board of Internal Medicine, Cardiovascular Disease
- Medical School: University of Tennessee College of Medicine
- Internship: Baptist Memorial Hospital
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- Fellowship: Philadelphia Heart Institute

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- Internship: Boston City Hospital
- Residency: Boston City Hospital
- Fellowship: Boston University Medical Center

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- Medical School: University of Kentucky College of Medicine
- Internship: Vanderbilt University Medical Center
- Residency: Vanderbilt University Medical Center
- Fellowship: The Cleveland Clinic Foundation
Bret A. Rogers, MD

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Residency: Duke University Medical Center
Fellowship: The Cleveland Clinic Foundation

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Fellowship: Walter Reed Army Medical Center

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Internship: Baptist Memorial Hospital
Residency: Baptist Memorial Hospital
Fellowship: University of Tennessee

John W. Mack, Jr., MD

Board Certification: American Board of Surgery, Thoracic Surgery
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Internship: David Grant USAF Medical Center
Residency: David Grant USAF Medical Center, Letterman Army Medical Center
Fellowship: University of California Hospitals

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Board Certification: American Board of Internal Medicine, Cardiovascular Disease, Interventional Cardiology
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Internship: Letterman Army Medical Center
Residency: Letterman Army Medical Center
Fellowship: Letterman Army Medical Center

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Fellowship: University of Michigan Hospitals

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Fellowship: Vanderbilt University

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Fellowship: Virginia Commonwealth University Health Systems

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Fellowship: University of North Carolina Hospitals

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Internship: Los Angeles County General Hospital
Residency: Fitzsimons Army Medical Center
Fellowship: Fitzsimons Army Medical Center, University of Utah LDS Hospital

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The University of Tennessee Medical Center comprises the University Memorial Hospital and the Graduate School of Medicine. Together, these entities embody the Medical Center’s philosophy and mission to serve through healing, education and discovery.

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