

Frontiers

Features:
Books for Children
Becoming a Doctor-Part II
Surviving a Heart Attack



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2005/06

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MEDICAL CENTER**

EXPANDING THE FRONTIERS OF MEDICINE.®

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February 2006

Dear Friends:

The establishment of the Heart Lung Vascular Institute at the University of Tennessee Medical Center afforded us the opportunity to bring together in one place the talent and skills of physicians, nurses, and other health professionals treating diseases and illnesses of the heart, lungs and vascular systems. More importantly, it has provided our patients with access to care in one location by a team of health care professionals who understand the complexities of these related systems.

We are proud to feature in this issue of *Frontiers* those men and women who dedicate themselves to the care of our patients suffering from heart, lung, and vascular diseases while contributing to the field of knowledge through specifically focused research and clinical trials. The physician leadership at the University of Tennessee Medical Center long ago recognized the interrelationships and complexities of treating patients with heart, lung and vascular illnesses and were pioneers in establishing multidisciplinary approach to providing the highest levels of care for all of East Tennessee.

Our intention with this issue of *Frontiers* is to provide you with overviews of the University of Tennessee Medical Center Heart Lung Vascular Institute and highlight for you its important contributions to the health care of the patients and families we serve.

Sincerely,



Joseph R. Landsman, Jr.
President & CEO
University Health System, Inc.

Dear Alumni and Friends:

Welcome to the third edition of *Frontiers*, the publication that keeps you up-to-date with the UT Graduate School of Medicine within the University of Tennessee Medical Center.

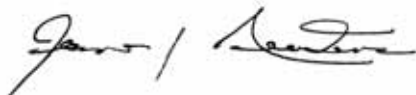
The last edition highlighted our cutting-edge imaging research on cancer, personal touch with patients through Preston Medical Library, and medical school as the first step in becoming a medical doctor.

Sequel articles in this edition illustrate the next step in becoming a doctor – the residency program. With approximately 180 residents, the UT Graduate School of Medicine embraces its principal mission of educating medical school graduates and providing physicians with clinical experiences. The vast majority of our graduating physicians remain in the State of Tennessee to practice medicine. As you will see, these well supervised training programs are very demanding with excellent patient care being one of our main educational goals. In keeping with patient care, our Health Literacy Program in Family Medicine is highlighted showing how we are making every effort to improve the health of Tennesseans by enhancing their ability to understand health information.

This issue also demonstrates how our alumni and friends help us achieve our mission through endowed lectures. Without their support these educational opportunities would not exist. These lectures go beyond resident education to meet the needs of physicians and other health care professionals in our surrounding communities.

I trust this edition will be informative and enlightening.

Sincerely,



James J. Neutens, Ph.D.
Interim Dean
UT Graduate School of Medicine

Advances in HEART SURGERY



THE HEART IS A WONDERFUL MACHINE

that must work continuously to pump nutrient- and oxygen-rich blood to all the organs of the body. An interruption in the supply of blood lasting more than a minute or two can lead to severe damage to many of those organs, especially the brain. Like other machines, the parts of the heart can be damaged or wear out with time, which reduces the heart's ability to pump adequate amounts of blood to the body.

For centuries it was felt that performing surgery to repair a damaged heart was impossible. But since the invention of the heart-lung machine in the 1950s, heart surgery has become routine. Early efforts were considered good if patients survived surgery; now patients expect a full recovery, even after the most complex procedures.

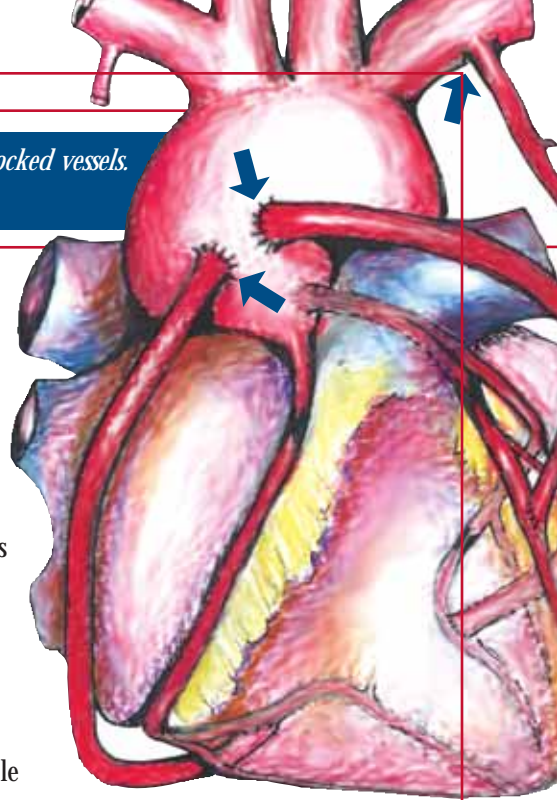
Today's advances in heart surgery include the introduction of new operations for conditions not previously treatable with surgery, the development of safer and less complicated operations, and improvements in patient care both in preparation for surgery and in rapid recovery following it.

The most common open-heart operation performed in the United States is coronary artery bypass graft surgery (CABG). Patients with atherosclerosis, or hardening of the arteries, develop blockages in the arteries that carry blood to the heart—a process that leads to chest pain, also known as angina, and to heart attacks. Coronary artery bypass surgery has been found to be very effective in improving the blood supply to the heart, thereby relieving chest pain, reducing heart attack, and allowing patients to live longer, more active lives.

Most CABG operations are done using the heart-lung machine. Veins from the legs are used to reroute blood around coronary artery blockages.

Arrows depict grafts bypassing blocked vessels.

Illustration by W. Brott, MD



By the 1980s, however, it was apparent that mammary arteries from the chest wall and forearm arteries last longer than vein grafts. Nearly all CABG operations now use a combination of arteries and veins. Many patients successfully undergo “redo” operations, and in selected patients CABG can now be done through small incisions and without the heart-lung machine. The number of CABG cases has declined because of better medical care and the use of stents and angioplasty which cardiologists perform in the catheterization lab without open-heart surgery. Unfortunately, stents can become blocked and in general do not last as long as bypasses. In the near future, many patients may receive a combination of bypass grafts and stents at the same time.

The human heart contains four valves whose function is to keep blood moving smoothly and in one direction through the different chambers. These heart valves may become narrowed so that the blood has trouble getting across them, or they may develop leakage so that blood goes in the wrong direction. When the damage to heart valves is severe enough, they need to be either repaired or replaced with artificial valves. All the artificial valves, however, have a tendency to wear out, or to develop blood clots on their surfaces so that the patient must take a powerful blood thinner. Major advances in heart-valve

surgery have been the development of more durable valves, as well as more effective techniques for repairing the patient’s own diseased valves and avoiding the use of artificial devices.

Heart failure occurs when the heart muscle is unable to pump an adequate amount of blood to the body. This may be caused by diseases or infections of the heart muscle itself, heart-valve problems, frequent heart attacks resulting in damage to the muscle, or other conditions such as high blood pressure. Heart failure can be improved with medications, but frequently this is not adequate. In patients with terminal heart failure, heart transplantation is the best option available. The problems with it are that the procedure is very expensive, requires lifelong medications to avoid rejection and infection, and is limited by the supply of available hearts to transplant. Mechanical artificial hearts have been developed to pump blood temporarily while the patient is awaiting a heart transplant. Much work is being done to develop a total mechanical heart that can be implanted inside the body, but there does not seem to be a practical device for long-term use on the horizon. Again, the need is for mechanical parts that do not destroy blood cells, develop clots, or wear out. A major problem with the mechanical heart is the lack of a reliable, high-output power supply that can be placed inside the body and can provide enough energy to enable the artificial heart to work continuously.

Heart-lung machine oxygenates blood during open heart surgery.



Birth defects involving the heart are uncommon, occurring in approximately eight out of 1,000 births, but they frequently require surgical correction. A large number of different birth defects can affect the heart; these are called congenital heart defects. They include holes between the heart chambers, incorrectly formed



ADVANCES IN HEART SURGERY *Timeline*

heart valves, underdevelopment of the heart chambers or aorta, and failed closure of fetal structures that are supposed to regress at birth.

Ever since the very first open-heart operations, steady advances have been made in the field of congenital heart surgery, and more defects are now fixable. Surgery can be done even in newborns. An important advance in congenital heart disease has been earlier and more accurate diagnosis using ultrasound machines. Routine fetal ultrasounds are now so detailed that experienced pediatric cardiologists can accurately diagnose congenital heart defects well before birth—a development that allows early planning for surgery shortly after delivery. One advancement that is somewhat futuristic but has been used in certain other birth defects is repair prior to birth by means of intrauterine surgery.

Heart surgery for most cardiac conditions can be performed today with a very low rate of complications, a very high rate of survival, and relief of heart symptoms leading to a more active and satisfying life. Future advances in surgery will center on less invasive procedures that give equal results with smaller incisions, shorter operations, quicker

Samples of artificial heart valves: The valve on the left is an aortic valve. The valve on the right is a mitral valve.



recovery, and briefer hospital stays. Advances will also include improved devices such as heart valves, graft materials, suture materials, and suture alternatives, as well as better instruments for minimally invasive procedures such as robotics. Research in genetics and stem cells may someday allow the growth of new heart muscle, valves, and blood vessels to replace diseased ones.

In the future, medications may take the place of most coronary artery bypasses and angioplasties for blocked coronary vessels. Current heart surgery is beyond the wildest dreams of the pioneers of the 1950s, and it is difficult to imagine what refinements in surgical techniques, operative materials, and artificial organs will have been made by 2050.

John W. Mack, Jr., MD

- 1940's
 - Repair heart defects
 - few successes
- 1950's
 - The first heart-lung machine
 - Repair of heart birth defects
 - Limited heart valve surgery
- 1960's
 - Coronary artery disease era
 - Coronary artery bypass for blocked arteries
- 1970's
 - Improvements in technique and safety of heart surgery
 - Better heart-lung machines
 - Protection of heart during surgery
 - Better heart valves
- 1980's
 - Heart transplantation
 - Use of mammary artery for coronary bypass
 - Heart valve repairs
- 1990's
 - Treatment of heart rhythm problems
 - New operations for very complex forms of heart disease
 - Safer surgery and more rapid recovery
 - Endoscopic vein harvesting
- 2000's
 - Less invasive forms of correcting cardiac abnormalities; “non-invasive” catheterization laboratory rather than open surgery
 - “Mini” incision heart surgery
 - Robotic surgery

Books for Children... Connections for Families



UT Family Physicians Embrace Reach Out and Read Program

THE LITERACY FACTS AREN'T VERY PRETTY.

In the U.S., 42% of Americans cannot extract basic information from a newspaper article or comprehend directions for taking medication. About one in four is unable to understand information on a physician's appointment slip.

In Tennessee, adults have lower literacy rates than across the U.S., and we see high school and college graduation rates below the national average. The rates often are even lower in our rural counties, including those surrounding Knox County.

It's simple: We must improve the literacy rates of citizens, and the University of Tennessee Graduate School of Medicine is working toward that goal every day.

TAKING ACTION IN OUR CORNER OF THE WORLD

Family Medicine physicians and residents at UT Graduate School of Medicine give more than checkups and immunizations. They also give the gift of imagination to children and promote stronger literacy skills in parents.



Fifteen-month-old Spencer Strunk is mesmerized by a book he reads with the help of his mother, Angela Strunk. Steven Roskos, MD participates in the Reach Out and Read program by giving a book to Spencer and other patients at the UT Graduate School of Medicine Department of Family Medicine at every well visit. "We love the program," said Angela. "Spencer really enjoys the books." And from the look on little Spencer's face, we believe it.

As part of the national non-profit program, Reach Out and Read, these everyday heroes give age-appropriate books to every child in their practice at every “well” visit from the time each child is six months old until he or she is five years old. That’s ten books by the time the child reaches kindergarten.

Along with books for children comes information for parents about the importance of reading aloud to their children as well as promotion of adult literacy.

“The program allows us to help the whole family in a lasting and meaningful way by encouraging parents to read to their children, which not only promotes the child’s reading skills but also strengthens the relationship between parent and child and encourages improved adult literacy,” says Steven Roskos, MD, family physician and medical director for the Reach Out and Read program at UT. “And importantly, reading is a wholesome activity that can simply bring families together.”

APPROACHING LITERACY IN CHILDREN AND ADULTS

Encouraging literacy in children translates to their success as adults, and it starts early. In the first three years of life, literacy is vital to successful brain development. Early literacy helps children develop memory and curiosity, experience enjoyment and realize mastery—even if it’s just learning to turn a page or identifying rhyme and repetition.



Children receive high-quality, classic children's books through the Reach Out and Read program at the UT Graduate School of Medicine Department of Family Medicine.

Children who are familiar with books are ready to learn once they enter school. And children who are engaged in learning are less likely to drop out of school and more likely to become successful adults.

“If we can get books into the hands of children and their parents and encourage their parents to read aloud to them, we are making small steps toward improving literacy for both and promoting closer parent-child relationships,” says Lorraine Wallace, PhD, UT Graduate School of Medicine’s Reach Out and Read program coordinator. “This is especially important here in East Tennessee, where literacy rates are low and high school dropout rates are high.”

The most recent information from United Health Foundation shows that in Tennessee, only 57% of children entering high school will graduate in four years. “Low graduation rates tell us that our literacy rates are just as low, or lower, and students likely to drop out of high school have the lowest literacy skills,” says Wallace.

And who better to make these strides toward literacy than physicians? Physicians are trusted advisors to families. Parents look to them for advice on health and

well-being, and information shared by physicians is viewed as reliable and important.

Our Numbers and Our Legacy

Since August 2005, when Reach Out and Read was implemented at UT Graduate School of Medicine's Department of Family Medicine, 36 physicians and residents have given 400 books to children—and an immeasurable amount of support to parents.

“Our program is one of the very few in Tennessee,” says Wallace, “and we hope to expand it through our residency program.” UT Family Medicine faculty physicians urge their residents to get involved in Reach Out and Read, with the hope that when the residents move into private practice, they will implement the program themselves.

“Our residents leave here with an excellent medical education, and as part of that education, we try to make sure they understand how someone's life situation affects their health,” says Roskos. “We want our residents to know how to counsel parents on healthy lives, and that includes encouraging parents to read to their children and improve their own literacy skills.”

What's Next?

The UT Graduate School of Medicine Family Medicine physicians and residents have big plans for their Reach Out and Read program, including providing books in Spanish, offering books to siblings and to children during sick visits. The group also will have volunteer readers in the waiting room to model reading aloud.

And because parents with low literacy skills often don't know of community resources that can help them improve their skills, our UT physicians soon will have such information available for their patients.

The literacy numbers might be discouraging, but at UT Graduate School of Medicine, we know that every book, every encouragement, and each interaction with parents are small steps that will make important differences.

Amanda F. Johnson, APR

The Need is NOW

Literacy Challenges Linked to Low Graduation Rate

The Reach Out and Read Program, which provides books to children during their "well" visits to their family physicians at UT, couldn't come at a better time. The most recent information from United Health Foundation shows that Tennessee has only a 57 percent high school graduation rate, and a low graduation rate tells us that literacy rates are low, too.



Perhaps an even more alarming fact is that 15 years ago, the high school graduation rate in Tennessee was 10 percent higher, at more than 67 percent. “We're moving in the wrong direction,” said Lorraine Wallace, PhD, Associate Professor, UT Graduate School of Medicine.

“History has shown that each generation is generally better prepared than the last, but that is not proving to be the case today. We must take action to positively affect the literacy of our children.”

You Can Help!

If you would like to volunteer your time as a waiting-room reader or make a donation of new books or of money to purchase books, please contact Dr. Lorraine Wallace at 865-544-9352.

Breath of Repair:

A Multidisciplinary Team Tackles a Deadly Syndrome



FOR YEARS, AN OFTEN DEADLY LUNG CONDITION BAFLED doctors. An initial problem—injury, bodywide infection, pneumonia, even a blood transfusion—was eclipsed by a bigger one: the patients couldn't breathe. Because the range of causes was so broad, physicians didn't realize that the syndrome was one entity. During the Vietnam War, however, trauma doctors caught on, referring to the syndrome as shock lung, wet lung, or even Da-nang lung.

Now called acute lung injury (ALI) in its less serious form and acute respiratory distress syndrome (ARDS) in its most dangerous one, the condition affects as many as 150,000 Americans each year—and 40% of those

patients die. "ALI/ARDS occurs when the initial insult to the lungs, such as pneumonia, results in an inflammatory state that causes more harm than the initial injury," explains Paul R. Branca, MD, director of the medical intensive care unit at the University of Tennessee Medical Center and section chief of Critical Care Medicine at UT's Graduate School of Medicine. "The patient has no reserve. And sometimes the oxygen level drops too low to sustain life."

Still, Branca and his colleagues have reason to be hopeful. The University of Tennessee Medical Center has developed a dramatically effective new ventilator

protocol, or plan, for managing ALI/ARDS patients. This protocol was based on a 2000 study of ALI/ARDS by the National Heart, Lung, and Blood Institute in Bethesda, Maryland also known as the ARDSNET study. This study suggested that a ventilator approach focused on protecting the lungs from further injury could save lives. The study also found that patients with ALI/ARDS were more likely to survive when they were supported by a ventilator pushing less air into their lungs at a lower pressure than traditionally used. In a patient with ARDS, parts of the lung are swollen and stiff while other parts remain normal. Branca says, “A high volume of air overexpands the relatively normal parts and injures them, making the lung injury last longer or worsen.”

A second prompt was the development in December 2001 of a new ventilator weaning protocol—implemented in all of the University of Tennessee Medical Center’s intensive care units. That plan shortened hospital stays and time on a ventilator by almost two days.

The protocol’s success, coupled with the results of the National Heart, Lung, and Blood Institute study, spurred the Medical Center to begin writing a more specialized ventilator protocol for ALI/ARDS in the spring of 2003. The center involved respiratory therapists, critical care nurses, pulmonologists, trauma and cardiothoracic surgeons, and anesthesiologists—including Blaine

Enderson MD, professor and chief of the Department of Surgery’s Division of Trauma and Critical Care; Paul D. Banick MD, PhD, MBA, chairman of the Pulmonary and Critical Care Division; J. Russell Langdon, MD, associate professor of anesthesiology and chief of critical care anesthesiology; and Magnus O. Meyer III, DO, critical care physician in the Division of Pulmonary Critical Care Medicine, program director of the transitional residency, and assistant professor of medicine.

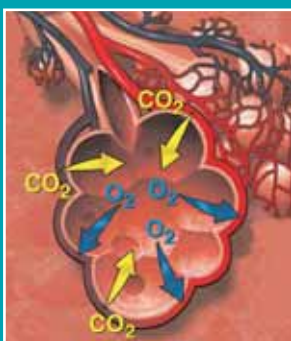
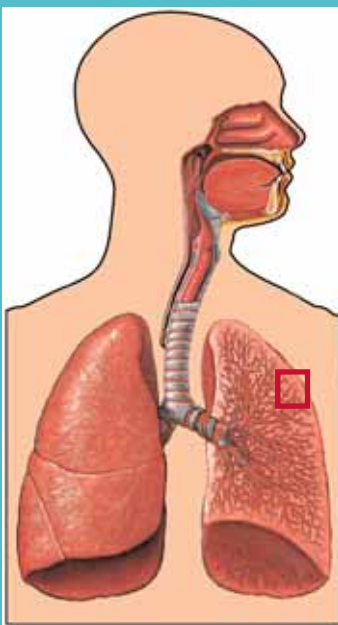
“With an interdisciplinary approach,” says Paul D. Banick, MD, PhD, MBA, FCCP, who also is medical director of respiratory care services and the University of Tennessee Medical Center’s Lung Center, “you adopt a culture of efficiency, decreased errors, and better patient-centered care.”

The ALI/ARDS protocol, implemented in May 2004, provides three options for doctors. One follows the approach described in the national ALI/ARDS study, minimizing the volume of air going into the lungs.

The second option which is a variation of the ALI/ARDS study (ARDSNET) concept is pressure control ventilation, which allows pressure-controlled breaths delivered at a set rate. “A physician may choose this if a patient is not responding to the volume control method of the ALI/ARDS study based protocol,” Banick says, “or when pressure control

Pneumonia and Acute Respiratory Distress Syndrome (ARDS)

(Red Box Indicates Area of Enlargement)



Normal Anatomy



Pneumonia



Pneumonia and ARDS

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Respiratory therapist monitors ventilator patient.

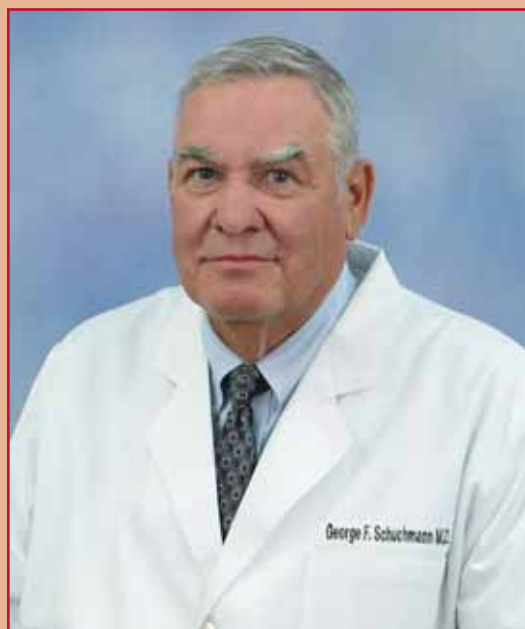
makes more sense—for instance, if the abdomen is enlarged due to fluid accumulation. The third option, airway pressure release, combines a release in airway pressure with the patient's spontaneous breathing. "Since the patient is breathing," says Banick, "he has less need for heavy sedation than with other ventilation methods." This option also oxygenates the blood efficiently and can be a good choice when the patient has a head injury, since it avoids increased pressure in the brain.

"The challenge was to develop a standard protocol that applied the principles of the national ALI/ARDS study but also allowed physicians options," says Bill Farnham, RRT, a clinical specialist in respiratory therapy at the Heart Lung Vascular Institute, who helped develop the protocol. The plan also allows respiratory therapists to make minute-by-minute adjustments within physician guidelines—a significant advantage in patient care, according to respiratory therapist Michael Powers, MS, RRT, director of the Lung Center at the University of Tennessee Medical Center.

Since the adoption of the protocol, mortality has dropped to 22% in a group of 107 ALI/ARDS patients—a 56% reduction from the year before and well below the national average of 40%. Although the process wasn't easy, the results are spectacular. "We asked our physicians, nurses, and respiratory therapists to do a 180-degree turn in approach," Branca says. "But it's been an effective way of implementing a proven strategy."

Dorothy Foltz-Gray

THE FUTURE of cardiovascular and pulmonary medicine is our challenge and commitment. The Heart Lung Vascular Institute at the University of Tennessee Medical Center is dedicated to providing the most advanced care for each of our patients through integrated clinical practice, education, and research.



George F. Schuchmann, MD
Heart Lung Vascular Gift Fund

It is only fitting for the general gift fund for the Heart Lung Vascular Institute at the University of Tennessee Medical Center to be named in Dr. Schuchmann's honor in recognition and appreciation for his many contributions to the successes at the Medical Center.

Gifts to the George F. Schuchmann Heart Lung Vascular Institute Gift Fund are used to support people and programs in furtherance of the Heart Lung Vascular Institute's objectives of excellence in patient care, education, and research. Gift to this fund have been made by friends, colleagues, and former patients of Dr. Schuchmann and also by other patients and their families who have benefited from the leadership and dedication exhibited by Dr. Schuchmann during his continuing service to his patients and the institution.



Residency | *Becoming a Doctor* – Part II



In the last issue of *FRONTIERS*, we introduced you to the first step in educating physicians – medical school and the passing of medical board exams. Upon successfully completing the three stages of exams, these medical students become licensed physicians and enter the next phase of the educational process for physicians. They are now residents. In this issue, we offer you a look at what it means to be a resident physician and the importance of residency programs to physicians and the quality of our nation's health care.

Cedric Palmer, MD, and Robin Huskey, MD, UT Graduate School of Medicine resident physicians

Perspectives...of a Faculty Physician

Alfred D. Beasley, MD

When I started to medical school, I was embarrassed to ask the difference between an “intern” and an “internist.” In time, I learned that there was a tremendous difference, and I have spent my professional career helping others understand the differences, too.

“The enterprise of teaching, research, and academic inquiry is the stimulus that brings out the best in those involved. It becomes the passion to be passed to the next generation.”

The educational process of turning undergraduate students into practicing physicians is actually quite simple. First, students must complete a collegiate pre-med program before qualifying to apply to medical school. The medical school curriculum is a four-year commitment and requires successful completion of medical board examinations. Students are then awarded a graduate degree—the Doctor of Medicine, or MD.

In the old days, earning the MD degree often entitled the new physician to practice medicine. Now, however, 3-8 years of post-graduate training, called a residency period, is required to qualify for licensure to practice any specialty and to qualify for membership on a hospital staff.

Residency education occurs in teaching hospitals and academic medical centers like the University of Tennessee that have been certified for that purpose. Together, the UT Graduate School of Medicine and UT Medical Center provide the critical clinical setting that prepares residents for their role in the delivery of high-quality patient care.

At the UT Graduate School of Medicine, all doctors are supervised by attending faculty physicians. During the early years of residency, each new physician is observed first hand to ensure that procedures are correctly and efficiently performed and to maintain patient safety and comfort. In later years of residency, physicians are allowed to acquire more responsibility as they function more independently. This progressive process requires a carefully crafted curriculum, constant supervision and critical feedback by UT faculty physicians and administrators.

The enterprise of teaching, research, and academic inquiry is the stimulus that brings out the best in those involved. It attracts the brightest minds. It becomes the passion to be passed to the next generation.

Alfred Beasley, MD



Dr. Alfred Beasley is Emeritus Professor of Medicine and Director of Graduate Education at the UT Graduate School of Medicine. He is also an avid photographer whose publication-quality images are on display in the resident quarters at UT Medical Center.

Perspectives...

of a Medical Resident

Robin Huskey, MD

It's hard to describe the typical day of a medical resident. Each physician has selected a specific educational program, has an individualized work schedule, and is assigned to certain patient cases. One can bet, though, that the day is busy and trying, starting somewhere around 6 a.m. at the hospital and ending long after dinnertime for most Americans.

Each day across this country, physicians are completing required residency periods that place them face-to-face with patients with whom they are unfamiliar. These residents are full-fledged physicians in jobs that put their medical school training to the test, drain their energy reserves, and strain their emotional well-being. Welcome to the on-the-job training world of the medical resident.

It's 9 a.m. on a Tuesday morning and Dr. Robin Huskey is preparing to go home. She started her family medicine residency shift at 6 p.m. Monday evening where she worked on team reports, maneuvered through three personnel shift changes, answered pages from clinic patients, advised medical personnel caring for her nursing home patients, responded to hospital floor and emergency room pages, made notations in patient charts

From the diary of Robin Huskey, MD

Tuesday
6 p.m. At the hospital & heading for rounds with the day team
8 p.m. Answering pages from patient floors, ER nursing home and clinics. Helping medical grad student assigned to be on call with me.
9:15 p.m. Very, very busy in the ER.
Wednesday
2 a.m. ER has been extremely busy since 7 p.m. Have admitted many patients including Patient with mild mental retardation and Schizophrenia being evaluated for possible dehydration and stroke.
• Toddler with pneumonia in need of IV antibiotics and fluids
• Middle-aged female with cryptogenic cirrhosis who requires withdrawal of fluid from her abdomen due to liver failure
• Middle-aged male with new onset of a rash who needs observation to rule out Rocky Mountain spotted fever
• Young adult with chronic diarrhea and severe abdominal pain

and hospital records, and participated in patient checkout rounds with the inpatient team. All in all, this has been a rather light-duty day made unusual because she did not need to admit any of the patients she cared for during this shift.

Robin had taken care of several personal chores before starting her shift on Monday. General household duties had to be done before taking her mother to a medical appointment. Now on Tuesday morning, she makes her way to the Tennessee Department of Motor Vehicles to obtain a new driver's license before heading to bed where a few hours of welcomed rest are waiting.



Dr. Robin Huskey is the co-chief resident for the UT Graduate School of Medicine Department of Family Medicine. She completed her undergraduate and medical school studies at UT and plans to stay in East Tennessee following her residency. Dr. Huskey enjoys the mountains, playing flute and piano, and sharing life with her family, friends and dog, a Havanese named Emma.

Robin's next few days as Dr. Huskey, resident physician, start in just nine hours. And they are going to be arduous.

Robin Huskey, MD with Lea Anne Law, APR

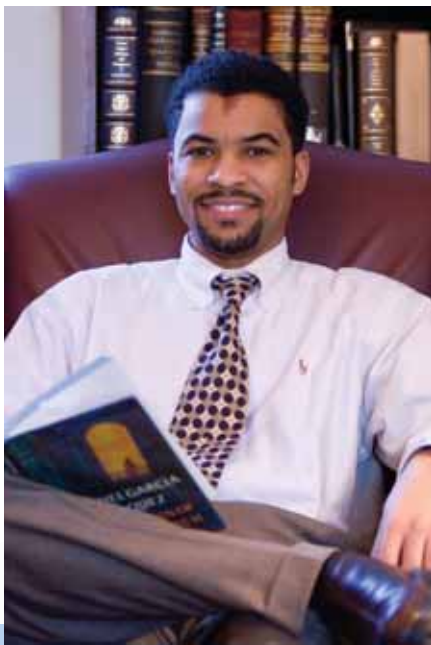
8 a.m. Check-out rounds with day inpatient team.
10 a.m. Leaving hospital for some time off. Heading to bed after a stop at the gym for a workout. Must get a haircut today plus do some shopping before dinner with friends. Then early to bed tonight.
Thursday
8 a.m. Examine patients as part of clinic duties at University Family Physicians (4.5 days a week).
9:30 a.m. Interview residency candidate as part of my co-chief resident duties.
10 a.m. Back to University Family Physicians clinic
12 p.m. Finished clinic. Today's patients included:
• Elderly patient with diabetes, high cholesterol and congestive failure
• Middle-aged patient with a history of stroke, muscular dystrophy, and respiratory issues who currently is experiencing chest pressure
• Young adult needing an an... smear and pelvic exam

Perspectives...

of a Medical Resident

Cedric Palmer, MD

So much of my journey to becoming a physician has been an exercise in faith and perseverance. I grew up in New Orleans, where I had the duties of an eldest child—raising a young brother and sister while my mother worked two and three jobs, and of parent-substitute, filling the void my father left when he abandoned the family.



I did not have time for the distractions of the sometimes mean streets of New Orleans. My free time was spent pursuing my fascination with literature and science, and at the age of 16, my aspiration became to serve families in the capacity of family physician.

A graduate of Xavier University and Meharry Medical College, Dr. Cedric Palmer is a UT Graduate School of Medicine Department of Family Medicine resident. As of this writing, twenty-one of his family members displaced from their New Orleans Ninth Ward homes are living in Knoxville and he shares his apartment with brother, Poree, whom he is helping complete a degree in fine arts. Dr. Palmer enjoys fishing, creative writing, and collecting limited first edition books.

I wanted to be a glimmer of hope to families affected by circumstances of health.

As an undergraduate student, I worked to gain entrance into medical school and to continue aiding my family

financially and spiritually. At Meharry Medical College, I plunged into the rigors of medical training.

Fueled by determination and God's grace, I have found myself in East Tennessee at UT Graduate School of Medicine. My residency here is filled with the things that define me as the eldest child and as the country doctor I hope to become. I have persevered through long-hour

“My residency here is filled with the things that define me as the eldest child and as the country doctor I hope to become. I have persevered through long-hour weeks balancing a host of responsibilities.”

weeks balancing a host of responsibilities. I have tended to the medical and psychiatric needs of my clinic patients. I have delivered the newborn and pronounced the dead, cared for the emergently ill patient, and been a collaborator with my attending physician. I have cared for the mothers and fathers of generations.

About my residency, I feel gratification, knowing that I have had a tangible role to play in some of the most important moments in the lives of my fellow human beings.

My goal—to practice family medicine in a rural or inner-city setting—is providing the enviable opportunity to move beyond being a “glimmer of hope” and become a real force for the betterment of the lives of families and communities. I want to make a difference.

I am ready.

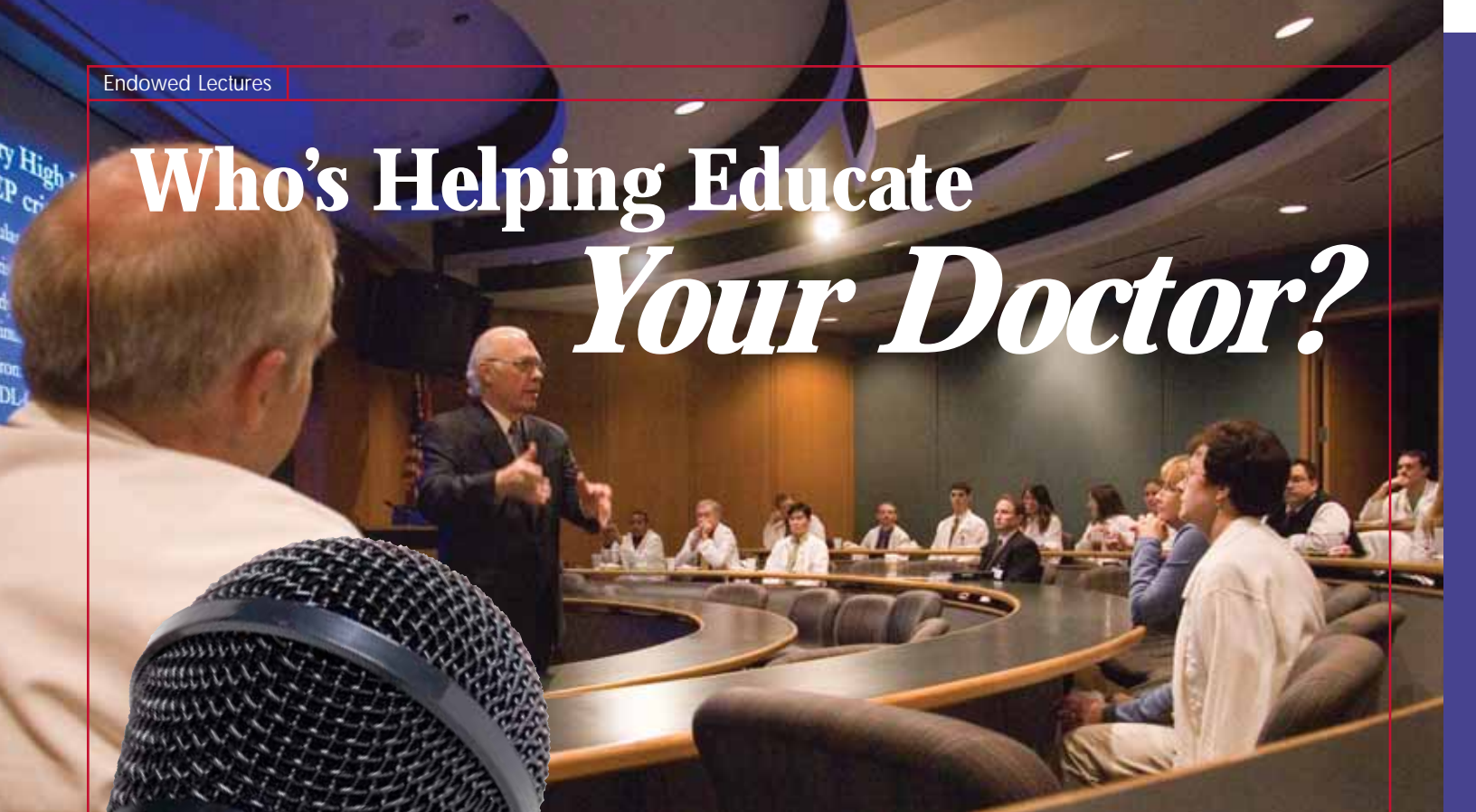
Cedric Palmer, MD

Additional Training Period Required After Completion of Medical School

Specialty	Years following MD degree	Specialty	Years following MD degree
Anesthesiology	4	Oral Surgery	4
Dentistry	1	Pathology	4
Family Medicine	3	Radiology	5
Medicine	3	Surgery	5
Nuclear Medicine	2	Transitional	1
OB/GYN	4	Urology	5

If you missed “Becoming a Doctor: Part I—Medical School” in the last issue of *Frontiers*, you can read the article at <http://gsm.utmck.edu/about/frontiers.cfm> or call the UT Graduate School of Medicine at 865-544-9190 for your copy of the November 2005 issue. In the next issue, Focus on Fellowships.

Who's Helping Educate *Your Doctor?*



It could be you!

Want to raise awareness for a disease a loved one is dealing with? Have an interest in broadening the knowledge of medical issues faced by our community? Looking for a way to make a difference? The Endowed Lecture Series at UT Graduate School of Medicine may be the answer.

A lecture funded by annual gifts or a permanent endowment can be designed to match the interests or wishes of those seeking to memorialize or honor an individual. Endowed lectures can increase awareness about a disease, broaden the region's knowledge about community issues, or provide a forum for discussion of the latest research on a particular topic.

Some endowments provide funding necessary to support educational events while others provide partial funding or partnership opportunities. No matter the size, gifts for lectures provide educators and healthcare professionals with new opportunities to learn about issues important to you.

Several East Tennessee families have banded together to increase the learning opportunities for our region's medical professionals, educators, and social services administrators.

Preserving a Legacy

One such family is the clan of Dr. R. Ben Alley. Ben Alley tragically lost his courageous battle with cancer in September 2003. His legacy lives on in the *Dr. R. Ben Alley Lecture Series* created through an endowment fund established by Dr. Alley's family, colleagues, patients and friends.

Taking It to the Streets

What's the impact of street drugs and how do you identify those impaired by them? A cutting-edge conference, funded in part by the *John E. Sullivan, DDS Memorial Endowed Lecture*, answered those questions for dentists, oral surgeons, dental office personnel, nurses, public health

officials, pharmacists and physicians. The endowment was established by friends and colleagues to recognize Dr. Sullivan's dedication to patient care and teaching.

Revealing Research

The most recent endowed lecture, the *Thomas J. Weaver AIDS Education Endowment*, allowed the Graduate School to bring to Knoxville the renowned scientist, educator and physician, James Earl King Hildreth, PhD, MD, director of the Meharry Medical College Center for Health Disparities Research in HIV. Dr. Hildreth's lecture allowed East Tennessee healthcare professionals to learn about recent research in AIDS prevention.

Serving the Community

Some endowments or gift funds are established for use in particular departments or designated to benefit the education of specified health care professionals.

- The *John W. Whittington Visiting Professorship Endowment* was established by Dr. John Whittington, an alumnus of the UT Graduate School of Medicine General Surgery Residency Program. The endowment provides resources to attract outstanding scholars and medical leaders to lecture and stimulate continued learning among resident surgeons, faculty and community physicians.



The inaugural Dr. R. Ben Alley Lecture Series conference included honored guests (L to R) inaugural lecturer Peter D. Quinn, DMD, MD, chair, Department of Oral & Maxillofacial Surgery & Pharmacology, University of Pennsylvania; John J. Sheridan, UHS; family members of the late Dr. Ben Alley including Sharon Alley, David Alley, Dr. Bob Alley and Mrs. Helen Alley; and UT Course Director for the lecture, Eric R. Carlson, DMD, MD, chair, Oral & Maxillofacial Surgery.

- The *Kevin Robert Swabe Family Values Lecture* was established within the Department of Pastoral Care to bring experts in human dynamics and personal interaction to the campus for the benefit of chaplains and health professionals.
- The *Robert F. Lash Memorial Endowment Fund* was established at the University of Tennessee Medical Center by friends and family of Robert F. Lash, MD to recognize Dr. Lash for his dedication to patient care, teaching and service. Income from this endowment funds an annual education program in emergency medicine and pre-hospital care.
- The *Edward J. Boling Health Policy Forum* was established by Edward J. Boling, former UT president, and his wife, Carolyn. The forum, open to all interested citizens, brings together government officials and healthcare providers to discuss national healthcare issues affecting the delivery of health care in the United States.

Raising Awareness

The next endowed conference, *The Patterson Lecture*, will be held on May 19, 2006, at UT Medical Center's Wood Auditorium. This continuing medical education event is funded through the *Patterson Domestic Violence and Child Abuse Education Fund* established by the Patterson family. The fund allows the UT Graduate School of Medicine to offer biennial conferences that help local health care professionals better understand the destructive forces that target the most vulnerable elements of society.


The previous Patterson Lecture raised awareness about the effects of drug abuse on families and the challenges faced by professionals trying to help them. This year's lecture will focus on "The Delayed Health Effects of Childhood Sexual Abuse."

Lea Anne Law, APR

For more information about upcoming lectures, contact UT Graduate School of Medicine at (865) 544-9190.

To establish or support a lecture, contact the Office of Development at (865) 544-6611.

The Inside Fix: UT Medical Center's Vascular Research Lab

A man in a white lab coat is working in a laboratory. He is holding a pipette and a small vial, and there are several bottles with colored liquids (orange, yellow) on a tray in front of him. The background is a blurred laboratory setting.

IN 1984, JUST AS THE UNIVERSITY OF TENNESSEE MEDICAL CENTER WAS SETTING up its division of vascular surgery, Julio Palmaz, MD, the Argentinian who had recently developed the endovascular stent, was trying to persuade companies to produce his invention. Since that time, physicians worldwide, including researchers at the University of Tennessee Vascular Research Lab have been working to improve the lifesaving stent, a tiny metal scaffolding designed to hold diseased arteries open.

By the early '90s, the Medical Center's vascular surgeons had read the medical literature about stents and knew they were a vast improvement over conventional methods of repairing arteries. But still no companies manufactured them. And the repairs involved working inside arteries only fractions of an inch across. Nonetheless, the vascular surgeons began hand-sewing stents and the fabric that lined their metal walls. As they perfected the devices, they started

Oscar H. Grandas, MD in the vascular research lab.

to use them on patients who couldn't survive traditional major surgery. Before stents, for example, the repair of an aortic aneurysm—a weakening or bulging on the wall of the aorta, the body's largest artery—involved opening the patient's abdomen, pushing aside his organs, clamping the aorta, opening it, and splicing in a tube of Dacron, a synthetic material, to do the repair.

"It was a grueling operation," says Scott Stevens, MD, director of endovascular surgery at UT Medical Center and associate professor of surgery at the UT Graduate School of Medicine. "The patient had to have several days in intensive care, five to 10 days in the hospital, and two to three months to recover. But now, using endovascular surgery, we travel up the femoral and iliac arteries through the groin with a balloon-tipped catheter—a procedure called an angioplasty where the artery is dilated—and a covered stent is put inside the diseased artery. The patient rarely goes to intensive care, and usually goes home in a day or two.



Illustration of an abdominal aortic stent

Endoprosthesis diagram courtesy of W. L. Gore & Associates, Inc.

"The use of stents is a perfect example of how we have taken a day-to-day clinical problem to the research lab and then returned with improvements to the operating room," Stevens adds. UT Medical Center's Division of Vascular Surgery was the first in East Tennessee to do a stent graft.

"Our work has led to some of the developments in covered stents," agrees Oscar H. Grandas, MD, assistant professor of surgery at the University of Tennessee School of Medicine and the scientific director of the Vascular Research Lab since his arrival at UT Medical Center a year ago. "Now covered stents are used everywhere."

The lab has worked with the Oak Ridge National Laboratory Center for Computational Sciences to predict aneurysms, using a CT (or computerized tomography) scan, a precise X-ray of specific sections of the body. "An aneurysm in a blood vessel is like a weakness in an inner tube," explains Mitchell H. Goldman, MD, professor and chairman of the Department of Surgery at the University of Tennessee Graduate School of Medicine. "It's dangerous because it can rupture, and people bleed internally."

"The use of stents is a perfect example of how we have taken a day-to-day clinical problem to the research lab and then returned with improvements to the operating room."

Scott Stevens, MD

Researchers in the lab were also the first to describe the effects of hormone replacement therapy (HRT) in women who have stents, Goldman says. Five years after surgery, their stented arteries are far less free from blockage than those of women who had the surgery but are not on HRT. Stevens says, "HRT likely affects the clotting quality of the blood."

Of course, training is no small part of what happens in the research lab. More than 10 vascular surgery fellows have trained at UT Medical Center and are now in private practice or academic centers across the country. "UT's vascular fellowship is one of the most sought-after," says Trent Prault, MD, one of two current vascular fellows. "We get extensive endovascular experience, and UT Medical Center is the center in this part of the state

for stenting the carotid artery”—the major artery of the head and neck—
“and for endografts that treat aortic aneurysms. You can’t get better training.”

The lab also works with undergraduates, medical students, and residents. Each week students, lab technicians, and the lab supervisor meet with Grandas to decide on experiments, assign research tasks, and present updates of ongoing research. Those in the lab also write grant proposals applying for federal funding of research projects.

***“Endovascular surgery has grown
with the advance in technology,
the way the Internet or cell phones have.”***

Scott Stevens, MD

“The lab is productive because it has strong support from the hospital, the Graduate School of Medicine and from all the physicians in the division,” Stevens says. For example, the hospital has provided generous lab space that includes two small labs, two medium-sized labs, two office areas, and a darkroom. And the Graduate School has funded research tools such as a scanner, specialized microscopes, and cell-culture equipment. The lab has also received funding from the National Institutes of Health, the American Heart Association, the



Scott Stevens, MD demonstrating an endograft.

Juvenile Diabetes Association, various industries, and private donors.

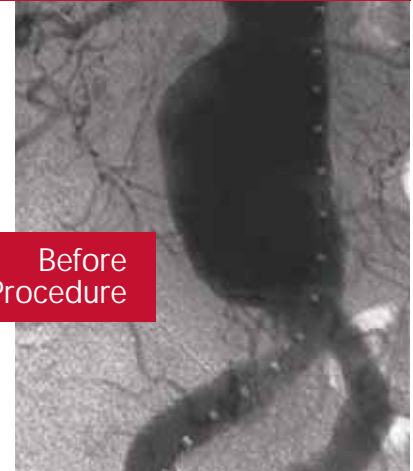
The vascular surgery division has five vascular surgeons, all involved with patient care, training, and research. Each has developed a specific area of expertise as well.

“We’re studying how to prolong and improve vascular constructions, looking at how grafts heal and how well they exclude the aneurysm from the pressure of the blood flow,” says Grandas. “That’s the value of the research: to advance knowledge.”

Stevens agrees: “Endovascular surgery has grown with the advance in technology, the way the Internet or cell phones have. It’s such an exciting time, because we have so much more to offer patients.”

Dorothy Foltz-Gray

Abdominal Aortic Aneurysm



Before
Procedure



After
Procedure

Angiograms courtesy of Barry T. Katzen, MD and Miami Cardiac and Vascular Institute, Miami, FL.

One Call Does It All:

Surviving a Heart Attack The Benefits of Integrated Cardiac Care at UT Medical Center

A middle-aged man is enjoying a round of golf in Loudon, a 45-minute drive from the University of Tennessee Medical Center, when he begins to suffer chest pain and shortness of breath. His condition deteriorates to cardiac arrest. The local emergency department calls LIFESTAR, UT Medical Center's emergency helicopter service. From the time the call is made to the moment the man's blocked artery is open again: 45 minutes. "He walked out of here a few days later," says George Schuchmann, MD, medical adviser to UT Medical Center's Heart Lung Vascular Institute and retired chief of the cardiothoracic surgery division. "But without a system like ours, where one phone call activates the whole system, that patient would have stood little chance of survival."

When there's a heart-attack victim to be saved, timing is critical. Cardiologists have about two hours from the beginning of the attack to open the blocked artery; otherwise, injury to the heart muscle will lead to irreversible damage or death. That's why the cardiology department's automatic-acceptance policy—which allows LIFESTAR to airlift patients in severe cardiac distress without waiting for physician consent—saves lives. "We're on a stopwatch system," Schuchmann says. "We time every minute from the outlying emergency

department to the cardiac catheterization lab, where the blocked artery is opened."

Until the policy changed four years ago, an emergency room had to speak to a cardiologist before LIFESTAR could send a helicopter. "Contacting a cardiologist could take 20 minutes," says Stuart Bresee, MD, chief of UT Medical Center's cardiology division and a clinical associate professor in the Department of Medicine. "And every 10 minutes you wait before opening the blocked artery amounts to a 1% higher death rate."

Now LIFESTAR, founded in 1984, can automatically send a helicopter to pick up any patient with one of the



following conditions:

- Acute myocardial infarction, or heart attack
- Unstable angina, or pain from lack of oxygen to the heart
- Life-threatening dysrhythmia, or abnormal heart rhythm
- Cardiac arrest
- Sudden congestive heart failure

About 230 cardiac patients a year arrive at UT Medical Center on one of LIFESTAR's three aircraft.

"We have a similar automatic-acceptance system in area counties that don't have a hospital, like Union County," says Christopher Brooks, MD, medical director of aeromedical services. In these cases, ambulance personnel assess a patient's condition, then make the call.

"For a patient suffering from a heart attack, time is heart muscle. The sooner we're able to get that patient into the cardiac cath lab and restore blood flow, the better the outcome will be," says director of aeromedical services Jeffery Gregory. "One phone call to LIFESTAR activates air medical transport, patient acceptance, consultation

"And every 10 minutes you wait before opening the blocked artery amounts to a 1% higher death rate."

–Stuart Bresee, MD

with a cardiologist, and notification of our cath lab. Our goal is to make it a seamless process without delays."

While the helicopter speeds to the patient, the outlying emergency department or ambulance personnel confer with a consulting physician at UT Medical Center. Once the patient is aboard the aircraft, he or she is attended by a nurse and a paramedic, who perform tests including a 12-lead electrocardiogram to assess or confirm the patient's condition. From the helicopter, the medical personnel communicate the test results to the in-house attending cardiologist.

"Waiting for the patient's arrival at the new cardiac catheterization laboratory is a cardiac team that includes a cardiologist, a registered nurse, and two cardiovascular



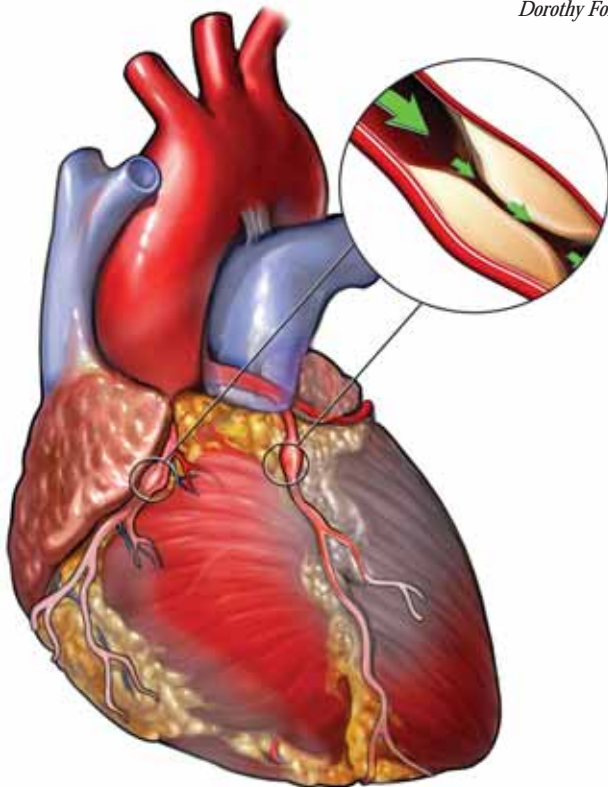
Dale Wortham, MD in heart catheterization lab.

technologists,” says Dale Wortham, MD, the lab’s medical director. UT Medical Center cardiologists treat about 500 heart attacks a year. A quarter of them require immediate angioplasty, a procedure in which a cardiologist snakes a balloon-tipped catheter through the femoral artery. The balloon expands, opening the blocked coronary artery.

“The best way to treat a heart attack is to do an immediate angioplasty with a stent,” Bresee says. A stent is a tiny metal sleeve that is inserted after angioplasty to keep the artery open. Angioplasties have lowered the mortality rate from heart attacks to 5%.

Only 18% of hospitals nationwide are equipped to perform the lifesaving angioplasties and to insert stents—a figure that may explain why a national movement has arisen to establish cardiac centers for the treatment of heart-attack victims. “Our protocol is part of that,” says Bresee. “The key is quick transfer. That’s what automatic acceptance is all about: you can get the same care if you’re flown from Sweetwater as you can if you walk into UT Medical Center. That’s a much better situation than we had 10 years ago.”

Dorothy Foltz-Gray



Heart Attack: Cholesterol plaque blocks blood flow to vital heart muscle (shown in grey).

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The University of Tennessee Medical Center Heart Lung Vascular Institute

Our physicians provide care for conditions that represents six of the top seven leading causes of death in the United States. Acute heart attack, heart failure, peripheral vascular disease including aneurysms and carotid artery blockage, respiratory problems such as chronic obstructive pulmonary disease (COPD), and pneumonia are among the conditions treated at the Institute.

The concept of the Heart Lung Vascular Institute developed in 1999 and culminated in the opening of a new building in May 2004. Because heart, lung, and vascular diseases are interrelated and have common issues, we have integrated cardiology, cardiothoracic surgery, pulmonary medicine, and vascular surgery under one roof. Our team provides coordinated diagnostic, surgical, therapeutic, rehabilitative, and preventative services for patients with heart disorders, breathing difficulties, or problems with arteries and veins.

Our purpose is to provide the best patient outcomes for the citizens of East Tennessee.



If you are a physician or allied healthcare professional, researcher, or faculty member seeking continuing education, you may be interested in this sampling of upcoming activities offered through the UT Graduate School of Medicine Office of Continuing Medical and Dental Education.

UT CME Course Calendar

Spring Semester 2006

<p>Incorporating Genomics into the Treatment of Breast Cancer</p>	<p>February 21, 2006 Riverside Tavern, Knoxville, TN February 22, 2006 UT Medical Center, Knoxville, TN</p>	<p><i>Participants will learn proven prognostic and predictive factors that are used to stratify newly diagnosed breast cancer patients for adjuvant treatment as well as valuable and timely information on biomarkers, gene expression profiles and more.</i></p>
<p>The "D" Team: Fighting Diabetes Together 2nd Annual Diabetes Update</p>	<p>March 11, 2006 University Club Knoxville, TN</p>	<p><i>This conference is focused on the latest techniques and medicines in the treatment of diabetes. It is a conference designed for the whole office as a team approach for battling this disease. From the front desk staff to the physician, everyone is included in this learning experience.</i></p>
<p>29th Annual Family Medicine Update: Prevention in Practice for the Family Physician</p>	<p>April 27–29, 2006 Park Vista Resort Gatlinburg, TN</p>	<p><i>The 29th Annual Family Medicine Update has a rich tradition of providing new methods and research on diseases and syndromes that the family physician will see. This year's update will cover immunization schedule changes, management of cirrhosis, depression in young adults, well-child screening and more.</i></p>
<p>The 2006 Patterson Endowed Lecture: Long-Term Health Effects of Childhood Sexual Abuse</p>	<p>May 19, 2006 UT Medical Center Wood Auditorium Knoxville, TN</p>	<p><i>Understanding that while the immediate and short-term effects of childhood sexual abuse are generally known, physicians seeing adult patients need information regarding the long-term effects of such a history.</i></p>
<p>Life...Inside & Out Perinatal and Neonatal Care Symposium</p>	<p>May 24–26, 2006 Grove Park Inn Asheville, NC</p>	<p><i>This perinatal conference will focus on the specialties of obstetrics, neonatology and pediatrics. Invited participants will include physicians, physician assistants, nurse practitioners and others. The faculty will be composed of the top specialists in the region.</i></p>

To register or for more information call 865-544-9190
or visit our website www.tennessee.edu/cme



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