

FRONTIERS

FEATURES:

TRAUMA

THERE ARE NO ACCIDENTS

FELLOWSHIPS

LIFESTAR



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The University of Tennessee Medical Center and The University of Tennessee Graduate School of Medicine Frontiers

2nd Quarter 2006

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Frontiers is a quarterly magazine produced by The University of Tennessee Medical Center and The University of Tennessee Graduate School of Medicine. This publication was designed to showcase the unique benefits of having an academic medical center in East Tennessee.

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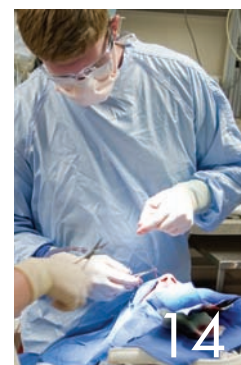
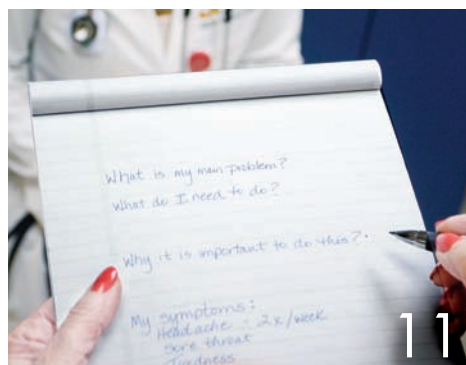
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MEDICAL CENTER**

EXPANDING THE FRONTIERS OF MEDICINE™



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June 2006

Dear Friends:

Trauma Centers developed in the United States when the emergency medical service system built by our military in Vietnam was brought to America. They now anchor a system that has lowered the U.S. death rate from assaults and motor vehicle crashes. The University of Tennessee Medical Center has, from our earliest days, been focused on assuring access to excellent care throughout the region for the seriously injured. As the region's only designated Level I Trauma Center, the Medical Center guarantees immediate availability of specialized surgeons, anesthesiologists, physician specialists, nurses, and resuscitation life-support equipment.

Of equal importance is the care for emergent patients with less severe injuries and medical illness. Our state-of-the-art emergency department provides access to medical services 24 hours per day and coordinates prehospital care. Together with the Trauma Center, the Emergency Department provides rapid and organized patient treatment in times of individual and community crisis of all types.

We are extremely proud of the physicians, nurses, and other health professionals who staff our Emergency Department and Trauma Center teams. In this issue of *Frontiers*, we're pleased to acquaint you with the work of these truly outstanding people and to share with you a story from a fellow East Tennessean who received the help from these valuable individuals.

Thank you for your continued support of *Frontiers* and the University of Tennessee Medical Center.

Sincerely,



Joseph R. Landsman, Jr.
President and Chief Executive Officer
University Health System, Inc.

Dear Alumni and Friends:

This issue of *Frontiers* marks a full year of helping you understand how the UT Graduate School of Medicine improves the health of Tennesseans through education, research and patient care. I hope you are enjoying the day-to-day look into the academic research hospital setting.

We are proud of the footprint we are leaving in this region, and we are excited about our future, a future we see every day in the faces of nearly 200 resident physicians. These resident physicians, as you've read in *Frontiers* over the past year, embrace the stringent and rewarding education that awaits them here as they progress in their medical training. In this final installment of the "Becoming a Doctor" series, we explain continuing medical education for medical specialists: the fellowship.

One of the main goals of graduate medical education is excellence in patient care. In this issue, you'll learn ways you, as a patient, can more successfully communicate with your physician, resulting in what we all want: your improved health. I encourage you to share this article with your friends.

As always, we welcome your comments about the information we are sharing with you, our alumni and friends.

Sincerely,



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

Humor, Humility, Heart

THE RECIPE FOR A SUCCESSFUL EMERGENCY DEPARTMENT

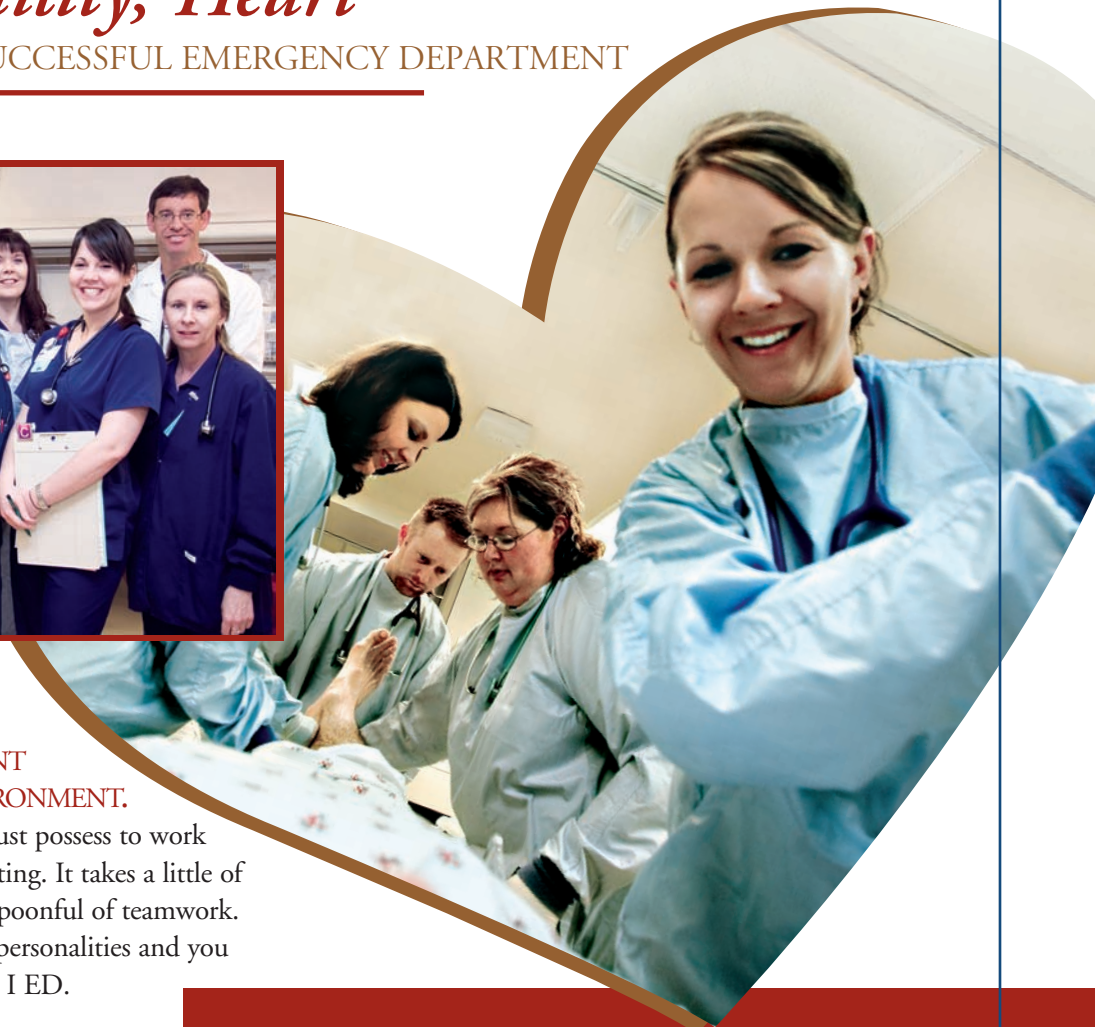


THE EMERGENCY DEPARTMENT (ED) IS A UNIQUE WORK ENVIRONMENT.

There's no single quality that one must possess to work in such a demanding, fast-paced, setting. It takes a little of everything: A dash of judgment. A spoonful of teamwork. Cups of compassion. Mix in strong personalities and you have the recipe for a successful Level I ED.

Professional credentials are paramount. The ED uses physicians who are residency-trained and board-certified. Nurses have years of experience in emergency or intensive care nursing and multiple accreditations in advanced cardiac, pediatric, and trauma care. Knowledge is the foundation, but pulling it all together with critical thinking is the key. So many issues must be considered, prioritized, and dealt with in order of necessity.

There are many roles in the ED, and each one, from the secretary's to the physician's, relies on the others. "We have to function as a team," says Medical Director Kip Wenger, DO. "A physician unable to take feedback from a nurse is not someone we want." Calmness during calamity is a required characteristic for everyone. "Staying cool and collected and providing direction helps," says Shelia Duncan, RN, the ED's nurse manager. "The staff feels secure, and then you can get the job done."



"We're ready for anything, prepared for everything, and surprised by nothing."

-Sheila Duncan, RN

Compassion is at the heart of it all. Each patient and family needs something different to cope with a unique situation. Laughter can be the best medicine. Other times, all that can be offered is a cup of coffee or box of tissues and some quiet listening. "You want a person who can calm anxiety, be comforting and empathetic," Wenger says.

There is no typical day. The hours are long. The shifts are busy. At the end of the day, there is a surreal sense of accomplishment. Duncan sums it up best: "We're ready for anything, prepared for everything, and surprised by nothing."

Jessica Fischer, RN

EMERGENCY MEDICAL SERVICES AND THE MEDICAL CENTER

A Partnership in Trauma and Emergency Care

THE UNIVERSITY OF TENNESSEE MEDICAL

Center has a long tradition of working closely with emergency medical services (EMS) to provide care for emergent patients in the region.

Medical Center physicians and specially trained nurses partnered with various agencies to take advanced care to the scenes of emergencies years before the introduction of emergency medical technicians and paramedics. In the early '70s, despite concerns in the medical community about liability and malpractice issues, the Medical Center provided support to volunteers in the form of equipment, facilities, and educational opportunities—all of them crucial to successful patient care at accident and emergency scenes. The relationship developed years ago is still going strong as the University of Tennessee Medical Center and EMS team up to save lives each day.

Trauma centers are built around the “golden hour” concept, that mortality can be greatly reduced by the swift transport (within one hour) of trauma patients to advanced care facilities with immediately available surgical intervention. Included in this is the importance of the prehospital response. “EMS continues to partner with the Medical Center to transport patients in that golden hour,” says Roger Brooksbank, MD, medical director of Rural Metro. “Crews are challenged to minimize the amount of time spent at an emergency scene so that the patient can receive the benefit of a trauma center.”

Trauma admissions at the University of Tennessee Medical Center average 300 a month, and more than 58% of those patients are transported by ambulance. The number of times EMS crews interact with Medical Center staff in a day, however, is approximately five times that amount. These crews bring many patients every day to the Medical Center for non-trauma-related reasons. The ability to



determine which patients need transport to a Level I trauma center and which can receive care at other outlying facilities is gained through experience and training.

Training programs offered by the Medical Center, such as Basic Life Support and Prehospital Trauma Life Support, help EMS providers hone the skills they need to quickly assess which patients need the resources of a Level I trauma center. EMS crews learn to triage patients into trauma subgroups to help the Medical Center prepare the appropriate care regimens before patients arrive. They also learn how to provide accurate, thorough EMS patient reports, including vital signs, level of consciousness, and the Glasgow Coma Score—all while keeping time on the



EMS crews responding to scenes.

emergency scene to an absolute minimum. Other training opportunities include an annual symposium, conducted by the Medical Center and LIFESTAR, that updates EMS personnel on the latest in emergency and trauma medicine.

Additional training is offered by the Region II Emergency Medical Services Directors' Association. The most active directors' association in the state, it provides education in some of the most advanced patient care techniques, such as rapid sequence induction, which aids airway maintenance, and 12-lead EKG monitoring, which helps diagnose myocardial infarctions (heart attacks). The association also has disaster response equipment and offers incident-command training suited to mass casualty incidents.

The cooperation between the Medical Center and EMS crews extends beyond training and patient arrival at the Medical Center. EMS crews involved in a patient's care are provided with feedback on trauma admissions by the Medical Center, and EMS providers supply reports that are an important source of data for the national trauma database. The Medical Center and EMS also team up to offer educational opportunities to the public, raising awareness about trauma injuries and trauma prevention.

The ideal is a life without emergencies. But thanks to the partnership between EMS and the University of Tennessee Medical Center, less-than-ideal situations can be handled with lifesaving efficiency and skill.

Rick Harrington, EMT-P



Saving Matthew Derrick

SECOND BY SECOND, OUR TRAUMA CENTER RESTORES A YOUNG MAN'S LIFE

MATTHEW DERRICK'S GOALS DON'T SOUND too out of the ordinary for a 21-year-old. He would like to finish his degree in computer electronics at ITT Technical Institute and return to his job in aviation electronics. However, for those who know Matthew, this would be quite an accomplishment considering the events of the past two years.

At 3 a.m. on February 21, 2004, Matthew was driving home from his girlfriend's house, a happy guy, he says: "I had a great job, a great girl, great grades. I felt I was invincible." And then he rounded a curve in his small pickup and smashed head-on into a Dodge truck. It took firemen an hour to cut him out of the crushed metal.

When he arrived by LIFESTAR helicopter at the University of Tennessee Medical Center, the Trauma Center team knew it faced an almost impossible challenge. Stabilizing him required the insertion of a breathing tube, another tube for receiving transfusions, and yet another the size of a garden hose to reinflate his right lung. "He was so severely injured," says Brian J. Daley, MD, an attending general and trauma surgeon at the Medical Center and an associate professor of surgery at the University of Tennessee Graduate School of Medicine. "Just one of his injuries to the vena cava—the main vein running through the abdomen and liver—is usually fatal."

Within the first 24 hours, Matthew required 19.2 liters (over 5 gallons) of blood and fluids. Radiology took CT scans, or cross-sectional pictures, of his head, his chest, his abdomen, left arm, and hip; they took images of the large blood vessels in his chest, of his heart, and of his esophagus. In the radiological suite, the trauma team used an imaging procedure to help stop the bleeding in his liver.

Once he was stabilized, surgeons operated to make sure a possible bowel injury wasn't spilling waste into his body, also potentially fatal. During the operation, they removed his injured spleen. Odd as it sounds, they closed him up with towels and tape, leaving the wound open to help relieve the massive swelling caused by injuries and the huge doses of fluids he was receiving.

***"I had a great job, a great girl,
great grades. I felt I was
invincible."***

And that's just the start of a long list: fractured right ribs, a broken arm, a dislocated left hip with the top of the bone shaved off, a fractured left thighbone. Blood was collecting in Matthew's brain and around his carotid artery, a main artery in the neck. For the next 18 days, Matthew was in and out of an operating room almost daily. And even as he lay unconscious, physical therapy began, the therapists moving his muscles. "The physical therapists performed

muscle exercises to keep Matthew's arms and legs from getting stiff," says Loren Rourke, MD, administrative chief surgery resident with the University of Tennessee Graduate School of Medicine Department of Surgery. "In situations like this it is also important to move a patient from side to side in an effort to prevent bed sores. For bedridden patients, these forms of therapy are vital to their overall recovery."

Matthew, of course, knew none of this. He lay in a coma in the Trauma Center's 16-bed intensive care unit. When he finally opened his eyes, he looked down and saw that his left forearm was gone. "At first I thought, 'Dang, what am I going to do now?' But then I thought, 'Well, at least I'm still here.'"

That day occupational therapists began to work with Matthew, and physical therapists continued their work as well, teaching him how to start over. Still his physical dangers didn't subside. On March 23 he developed a plug in his airway, an event that returned him to intensive care and a breathing tube. It was, he says, a "low point" in his hospital stay. "With injuries like this, recovery is like a roller coaster," says Rourke. "It gets better, it gets worse. We try to give the family perspective about the length of the road ahead."

What can also be difficult to understand is that the effort to save trauma patients like Matthew can create new problems. The fluids that saved Matt's life also contributed to swelling, resulting in abdominal surgery and ultimately

Matthew's senior portrait
before the accident

Matthew and his Aunt Susan after the accident



Matthew's severe injuries*

1. *Brain hemorrhage*
2. *Carotid artery bruise*
3. *Right lung bruises*
4. *Right rib fractures*
5. *Spleen laceration*
6. *Liver laceration*
7. *Left radius/ulna (arm) fracture*
8. *Bowel injury*
9. *Broken and dislocated left hip*
10. *Left femur (leg) fracture*

*All of the above injuries resulted in approximately 24 surgical procedures or interventions.



Matthew's doctors, Brian Daley, MD and Loren Rourke, MD

the loss of his left arm. He developed a severe pressure ulcer from lying in bed, a urinary infection, pneumonia, difficulties in swallowing, and paralysis of his left vocal cord, which left him unable to speak above a croaky whisper. "Matthew's recovery was based on overcoming all the things that happened during his resuscitation," Daley says.

That recovery involved every department in the hospital, from surgeons to speech therapists, from nurses to the wound team, from the CEO to anesthesiologists, from the pastoral staff to food service workers. "That's what makes a trauma center unique," says Daley. "It involves everyone, and it takes an extensive commitment for the hospital to maintain services for such critically injured people and to support them for every single second of every day."

On April 30, more than two months after the crash, Matthew left the hospital for Patricia Neal Rehabilitation Center in Knoxville, Tennessee. For over two months more he lived at the center, doing physical, occupational, and speech therapy at least four hours a day.

Matthew left Patricia Neal on July 10, 2004 and in March 2006 he finished physical therapy, and is now beginning vocational therapy. He knows that without the University of Tennessee Medical Center, this would not have been possible. "The people there did everything they had to do to keep me alive and kicking," Matthew says. "In my opinion, it's the best hospital in the world." Now 21, he lives on his own and has a new car. "I couldn't wait to get behind the wheel again," he says.

Dorothy Foltz-Gray

Matthew's truck



Good Communication equals Good Health

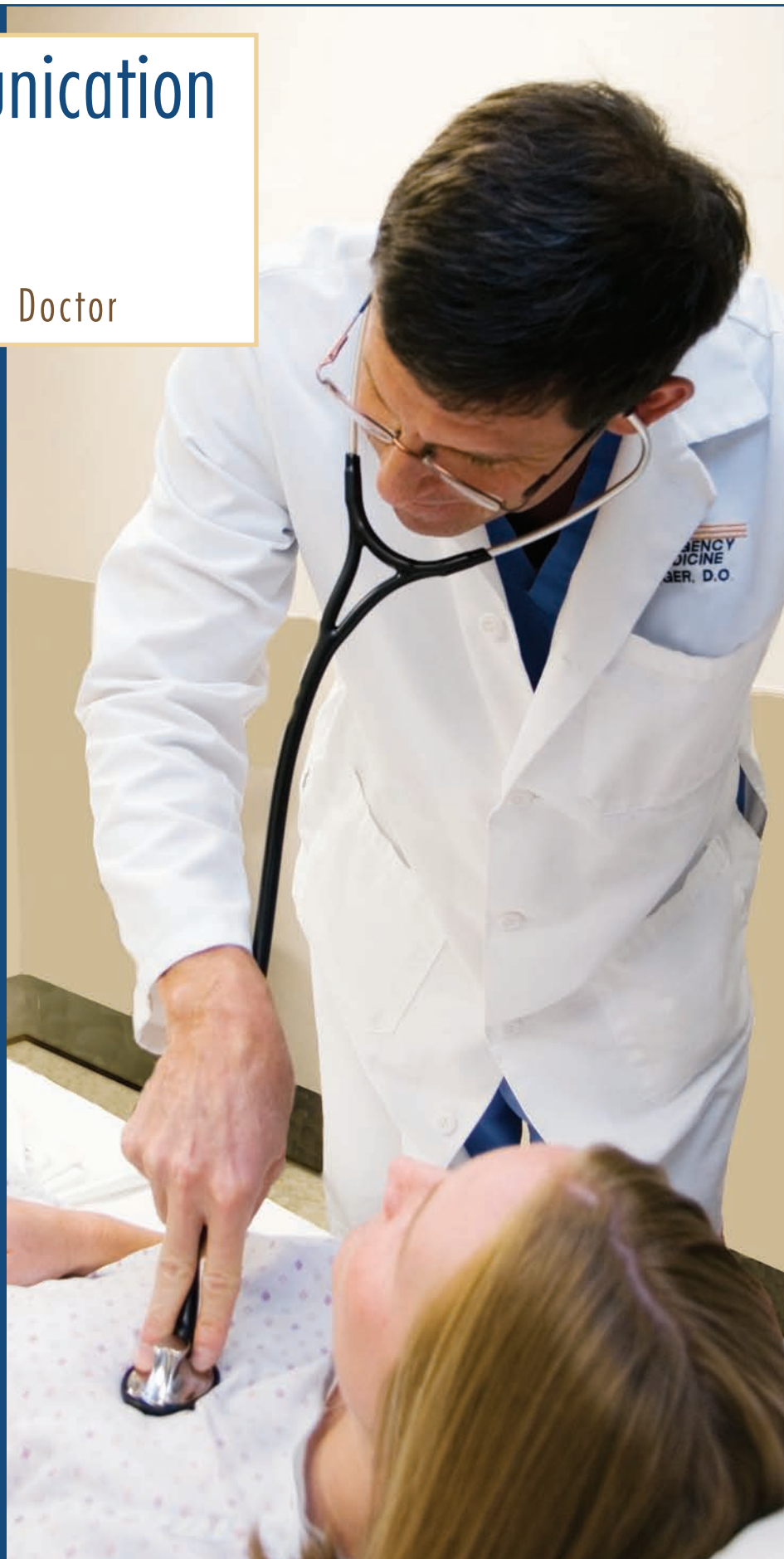
How to Talk with Your Doctor

ARE YOU A ROCKET SCIENTIST?

PERHAPS YOU ARE. Probably, though, you are not. This occupation seems to be one we use to indicate that someone is particularly “brainy,” that he has a level of intelligence that we can only admire and wish to emulate.

Rocket scientists seem to conquer the most difficult tasks, leaving the rest of us feeling inadequate—unless the task at hand is conversing with physicians. Or reading instructions for taking medication. Or trying to navigate the health insurance maze. In any of these situations, they probably perform no better than you do.

The fact is, when it comes to communication in the healthcare world, we all are in the same boat. According to the Partnership for Clear Health Communication, factors like income level, education, age, employment status, and racial or ethnic group don’t significantly affect how well we communicate with our healthcare providers. It all comes down to understanding one another, speaking the same language. And your health depends on doing that successfully.



So what can you do to communicate well with your physician, nurse, or pharmacist?

BE PREPARED

Arrive at your doctor's office with questions written down. Have a list of medications you're currently taking. Jot down symptoms and when they started.

BE FORTHCOMING

Your physician wants to help you, but she can do that only if you are open about your symptoms, medications, and medical history.

BE DETERMINED

Make sure you understand the information you get from your healthcare provider before you leave. Don't be embarrassed about asking him to repeat an explanation.

Avoidable hospital and emergency room visits, and mistakes patients make in taking medications, cost Americans as much as \$73 billion per year. Aside from this, your personal health suffers if you don't understand the information you're given. It's worth it—personally and financially—to work toward clear communication with healthcare providers.

You really don't have to be a rocket scientist to understand your doctor, nurse, or pharmacist. Help is available. Organizations such as the Partnership for Clear Health Communication and the Agency for Healthcare Research and Quality have developed tips to help you communicate effectively. Read them. Write down the questions, and take them with you to every consultation with your healthcare provider. Good communication equals good health.

ASK ME 3 PROGRAM

Ask your physician, nurse, or pharmacist these three questions:

1. What is my main problem?
2. What do I need to do?
3. Why is it important for me to do this?

Take notes, especially about medications and procedures. Bring a family member or friend to help you communicate.

Partnership for Clear Health Communication, www.AskMe3.org

ARE YOU SPEAKING LATIN?

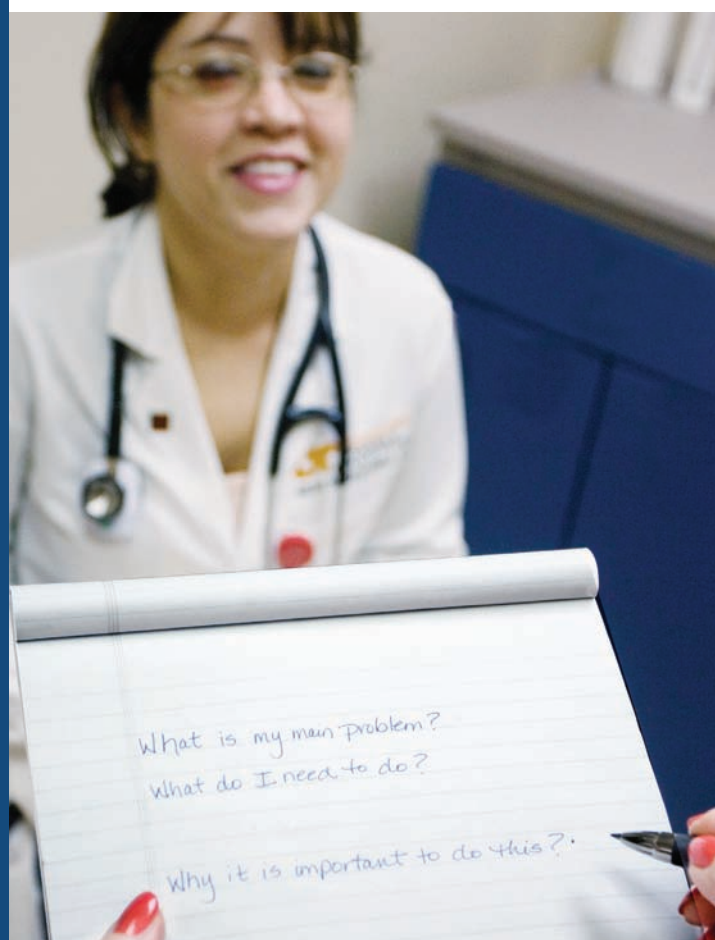
Even highly literate people have problems understanding words used in healthcare. As a patient who knows that your good health often depends on sound communication with your physician, nurse, or pharmacist, you should listen for words healthcare providers sometimes use that might not be clear enough to you. If they use these words, ask them to explain again, using common words, examples, or visuals.

TROUBLESOME WORDS

Listen for words such as these, and ask for clarification:

Adequate	Factor	Option
Adjust	Gauge	Oral
Adverse	Generic	Procedure
Ailment	Gradually	Progressive
Avoid	Inhibitor	Prosthesis
Benign	Intake	Referral
Cognitive	Intermittent	Routinely
Collaborate	Landmark	Significantly
Condition	Lesion	Temporary
Dysfunction	Moderately	Vertigo
Excessive	Noncancerous	Wellness

Partnership for Clear Health Communication





FAST FACTS

In America, health literacy—the ability to read, understand, and act upon health information—is low at all age, race, and income levels. Most Americans read at the 8th or 9th grade level. Healthcare information is usually written at the 10th grade level.

DO YOUR HOMEWORK

As a proactive patient, you should try to learn all you can about your condition, treatment, surgery, or medication. This knowledge will help you ask more information-rich questions of your doctor, nurse, or pharmacist. A reliable source of medical information is Preston Medical Library & Learning Resource Center at the University of Tennessee Graduate School of Medicine. Preston Library offers the **Consumer and Patient Health Information Service**, a free information resource.

RESEARCH YOUR TOPIC

UT Graduate School of Medicine Preston Medical Library

To research your topic, call the information service at 865-544-9525, or e-mail your questions to library@utnck.edu. A medical librarian will search for information and mail it to you free of charge.

You also can visit the library's website, www.tennessee.edu/healthinfo, to find links to sources of health information.

U.S. Government Resources

The U.S. government offers information and publications on topics such as second opinions, specialists, insurance costs, and more.

Medicare:

1-800-633-4227

www.medicare.gov/Publications/home.asp

Healthfinder:

www.healthfinder.gov

Agency for Healthcare Research & Quality:

1-800-358-9295, www.ahrq.gov

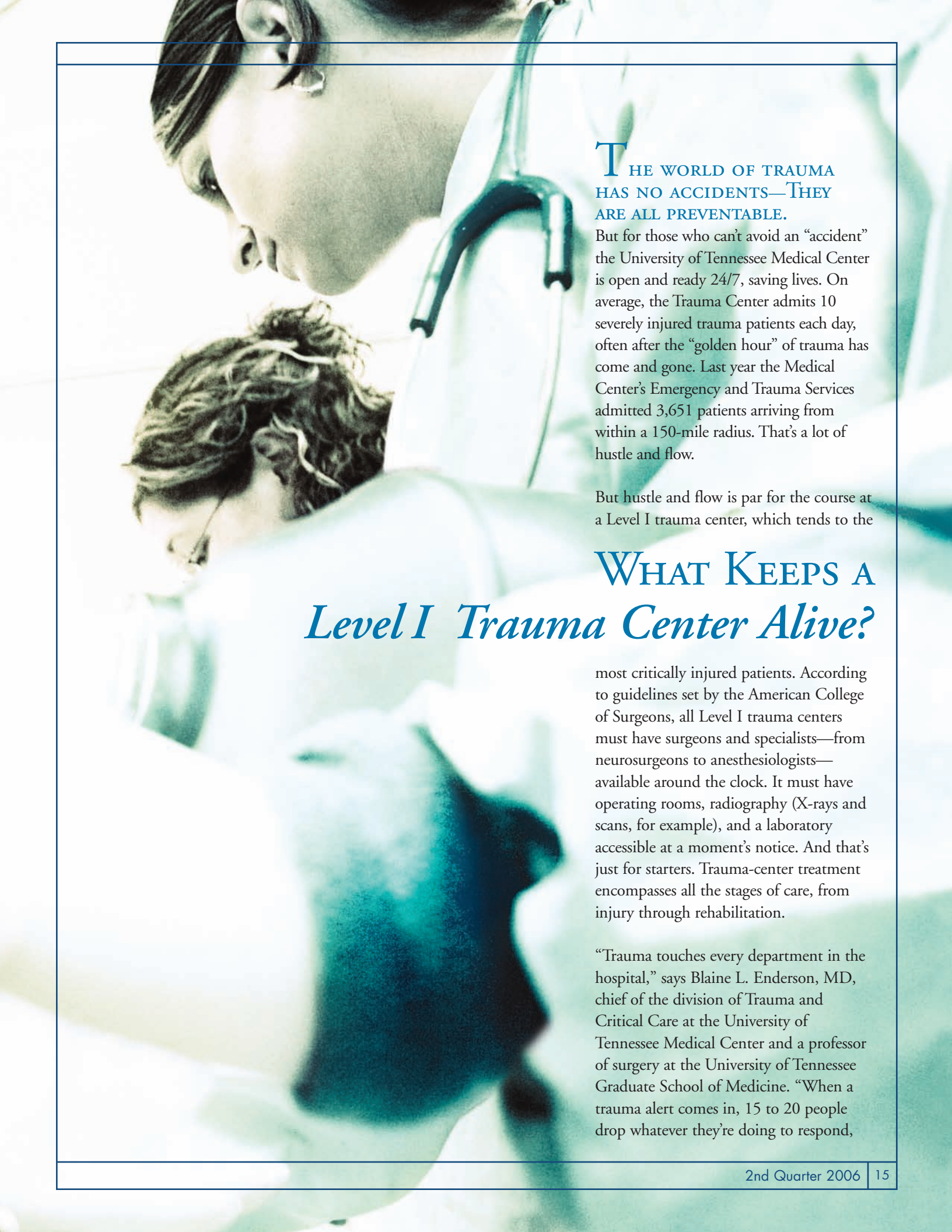
QUESTIONS TO ASK YOUR SURGEON BEFORE SURGERY

1. Why do I need an operation?
2. What operation are you recommending?
3. Are there alternatives to surgery?
4. How much will the operation cost?
5. What are the benefits of having the operation?
6. What are the risks and side effects of having the operation?
7. What if I don't have the operation?
8. Where can I get a second opinion?
9. What kind of anesthesia will I need?
10. Will I have to stay overnight in the hospital?
11. How long will it take me to recover?
12. How much experience do you have in performing this operation?
13. Can you mark the site on my body where you'll operate?

Amanda F. Johnson, APR

TRAUMA

There are no accidents.



THE WORLD OF TRAUMA HAS NO ACCIDENTS—THEY ARE ALL PREVENTABLE.

But for those who can't avoid an "accident" the University of Tennessee Medical Center is open and ready 24/7, saving lives. On average, the Trauma Center admits 10 severely injured trauma patients each day, often after the "golden hour" of trauma has come and gone. Last year the Medical Center's Emergency and Trauma Services admitted 3,651 patients arriving from within a 150-mile radius. That's a lot of hustle and flow.

But hustle and flow is par for the course at a Level I trauma center, which tends to the

WHAT KEEPS A *Level I Trauma Center Alive?*

most critically injured patients. According to guidelines set by the American College of Surgeons, all Level I trauma centers must have surgeons and specialists—from neurosurgeons to anesthesiologists—available around the clock. It must have operating rooms, radiography (X-rays and scans, for example), and a laboratory accessible at a moment's notice. And that's just for starters. Trauma-center treatment encompasses all the stages of care, from injury through rehabilitation.

"Trauma touches every department in the hospital," says Blaine L. Enderson, MD, chief of the division of Trauma and Critical Care at the University of Tennessee Medical Center and a professor of surgery at the University of Tennessee Graduate School of Medicine. "When a trauma alert comes in, 15 to 20 people drop whatever they're doing to respond,

and several other departments—the operating room, intensive care, radiology, respiratory care, the blood bank—are put on alert. By the time the patient arrives, blood has been delivered to the center and the surgeons are there.”

For a trauma patient, almost always arriving by ambulance or helicopter, the journey to recovery begins in one of four trauma resuscitation beds within the Emergency Department, where the patient’s condition is evaluated by



attending surgeons. “We’re usually dealing with patients who have injuries to many systems,” Enderson says. “And they frequently can’t tell us what’s going on because they’re unconscious. So we rely on radiology and other tests. Evaluation can take two hours or more.”

Departments are constantly reviewing and updating both protocol and technology to shave minutes off the response

time. In 2003, for example, Dynacare-Tennessee Laboratory, which provides all clinical and pathology laboratory services at the Medical Center, began working with Emergency and Trauma Services on a massive transfusion protocol, or plan, that was implemented in November 2004. A multidisciplinary team decides what blood and blood products will be needed for massive blood loss, whatever its cause.

“The trauma physician initiates the protocol,” says Norman Crowe, general manager and vice president of Dynacare-Tennessee, a joint venture of LabCorp and University Health System. “The nurse notifies the blood

bank, and the laboratory stays ahead of what the trauma physicians need.” It’s not unusual for a patient to take 20 units of blood in 24 hours, almost double the quantity of blood in a healthy adult.

Like the laboratory, the radiology department—available 24 hours a day to perform X-rays, CT Scans, Ultrasounds, MRIs (magnetic resonance imaging), and other imaging—has several timesaving systems. For instance, its trauma protocol defines what images are needed for any trauma patient, based on injury or condition. “Before the protocol, different physicians were ordering the same individual tests,” says Vanessa Bramble, RT(R)(M), CRA, the administrative director of radiology. “Now we know what we need for every trauma patient that comes in the door.”

“When a trauma alert comes in, 15 to 20 people drop whatever they’re doing to respond, and several other departments—the operating room, intensive care, radiology, respiratory care, the blood bank—are put on alert. By the time the patient arrives, blood has been delivered to the center and the surgeons are there.”

— Blaine L. Enderson, MD

Five years ago the radiology department added PACS (picture archival communication system), an electronic imaging system that can transmit images like CT scans to every physician in the hospital. “As soon as something is scanned, the image is sent,” Bramble says. Last February the department also began using voice-recognition software, which types a report as the radiologist dictates it. A final report is ready in minutes instead of hours.

BECOMING A TRAUMA CENTER

1985

1987



1984

LIFESTAR’s first flight.



The Medical Center commits to provide trauma services.



A trauma registry was established.

Addressing trauma involves the spirit too, not only of patients, families, and friends but also of staff, says the Reverend George Doebler, director of Pastoral Care: “Most of our work is with the families, initially. But we work as much or more with staff as we do patients and families.” A chaplain is on-site 24 hours a day.

Security is another important aspect of dealing with distraught family or friends. Security staff help these visitors and the media get where they need to go, and take custody of blood samples (in the case of driving under the influence or other crimes), weapons, drugs, and drug paraphernalia. “Having a family member come to the Emergency Department can be a stressful situation, which means emotions can really run high,” says Brian Hitch, an investigator and training officer with Medical Center Security. “Our role is to make everyone feel comfortable and safe in our facility.”

Trauma Services and an associate professor of surgery at the University of Tennessee Graduate School of Medicine. “But people don’t get better in hours or days. Our trauma center follows someone from injury through rehabilitation.”

To ensure quality of care, the trauma staff maintains strict standards. Trauma surgeons, for example, must have 16 hours of continuing medical education each year and be board-certified. The Trauma Center itself must be recertified every two and a half years by the Division of Health Care Facilities of the Tennessee Department of Health. The center is also required to do research and community outreach—both part of the effort to curb what the trauma team views as a preventable disease.



Pastoral Care consults with family.

Falls and vehicle crashes are the most common causes of trauma, and many result from risk-taking behavior like drinking or speeding. “Trauma is the most expensive medical problem in the United States,” says division chief Blaine Enderson. “Yet most occurrences of it can be prevented and treated if people think ahead.”

Certainly the Trauma Center is doing its part. In 1999, the University Health System Consortium named it one of three leading trauma centers in the nation. Of course, this success depends on the kind of people who staff the center—and the hospital. “You have to be a person who enjoys the unexpected, who can work fast and make decisions based on limited information,” Enderson says. “You don’t know what’s coming when you get that call.”

Dorothy Foltz-Gray



Rehabilitation also plays a huge part in trauma care. The process begins in intensive care. “People watch TV and see someone suffer a terrible event, and he’s better by the next commercial,” says Brian J. Daley, MD, an attending general surgeon and trauma surgeon at Emergency and

1988

The Medical Center was designated a Level I trauma center for adult patients in the State of Tennessee.



2000

LIFESTAR added a 3rd aircraft to its fleet.

LIFESTAR began operating two aircrafts simultaneously.

1993



A new dedicated facility for trauma care was established at the Medical Center.

2004

Fellowships | BECOMING A DOCTOR, PART III

IN PAST ISSUES OF *FRONTIERS*, we introduced you to medical school and medical board exams. We've given you an inside look at the life of physicians as they enter residencies to meet the requirements to practice medicine in medical groups, private practice and hospitals. Now, continue the journey of a physician becoming a medical specialist—the fellowship.

Honing the Art and Science of Surgery:

The Surgical Critical Care Fellowship

Interview with Dr. Dana Taylor

The first impression of Dana Taylor? A petite frame and youthful appearance. The next impression of Dana Taylor? A look in her eyes that reveals intensity and focus, traits Doctor Dana Taylor uses to be the exceptional critical care surgeon she has studied and continues to study to be.

“AS A YOUNG GIRL GROWING UP IN the small rural community of Breezewood, Pennsylvania, I always knew I wanted to be a doctor,” explains Dr. Dana Taylor, a physician faculty member at the University of Tennessee Graduate School of Medicine at the Medical Center. “Specifically, I wanted to be a surgeon, although at that time I didn’t know the word for the type of doctor I wanted to be.”

Now, after 12 years of schooling and 13 years of college and post-graduate education, Dr. Taylor finds herself doing something she has always wanted to do—advancing her skills as a critical care surgeon.



Before landing in Knoxville, Dr. Taylor completed an undergraduate degree in biology at the State University of New York in Albany, then graduated with a medical degree from Ross University in New Jersey. She chose The University of Tennessee Medical Center for her required five-year residency in surgery, and before she had completed the residency period, she applied for UT’s surgical critical care fellowship.

"I have always been happy working as a physician at UT, particularly since East Tennessee and its people are so friendly. It seemed natural that I would continue learning more about specialized surgery through the fellowship here."

As a surgical critical care fellow, Dr. Taylor concentrated on the management of the critically-ill surgical patient. The yearlong fellowship training expanded upon the experience she gained during the surgical residency period by incorporating training in teaching, research and administrative duties.

"I try to provide residents the opportunity to learn about varied responsibilities of being a surgeon, some of which have nothing to do with actual surgeries."

-Dr. Dana Taylor

Fellows studying different specialties are treated as visiting scholars, with opportunities to sharpen teaching skills and contribute to the stimulating environment of an academic teaching hospital. As a fellow, Dr. Taylor was an important

member of the clinical care medical team, which averaged 10 to 20 patients at a time. She was responsible for patient treatment while being supervised by an assigned attending faculty physician.

Now an attending physician herself, Dr. Taylor is responsible for training and mentoring surgical residents. "I try to provide residents the opportunity to learn about varied responsibilities of being a surgeon, some of which have nothing to do with actual surgeries."

"What are some of those additional responsibilities?" she repeats the question posed to her. "I am responsible for helping patients and their families understand what is happening. The art of communicating to patients under stress, many with multiple traumas, is a hard skill to learn, but it's important. Sometimes I have to explain things over and over. It takes patience and gentleness, and I want the residents to learn that."

Dr. Taylor pauses to contemplate her last comment, then adds, "I don't want that to sound like a prideful thing. It's actually a very humbling thing."

She then flashes an easy smile before leaning back in her chair. "I love what I'm doing. I help trauma patients in distress."

Her smile fading, she leans forward on her desk and quietly adds, "Some of them are going to die if we don't help them. Ultimately, the payoff is when we are able to communicate good news to families."

The smile bursts across her face. "Oh, to see the joy! Now, that's what keeps me going."



Dr. Dana Taylor lives in West Knoxville with her boxer, Anastasia. She has recently taken up fox hunting and will soon introduce the sport to her prized thoroughbred/Appaloosa, Opie.

Lea Anne Law, APR

What is a Fellowship?

Residency training, which requires at least three to four years to complete, is the necessary pathway to certification in any specialty from family medicine to surgery. Some subspecialties, such as neurosurgery or interventional cardiology, require an additional three or four years of training. These additional years of training are usually referred to as “fellowships.”

For example, to become surgical critical care physicians, students must complete medical school and pass medical board tests. The students now become physicians. Next, they must complete required residencies in the areas of medicine in which they have chosen to practice medicine. In this case, the physicians do a residency in general surgery, rotating in general surgery and other subspecialties like vascular, critical care, and cardiothoracic surgery. They then graduate as general surgeons after passing the general surgery boards. The surgeons may choose to further specialize in surgical critical care by completing fellowships and taking the subspecialty board, to become surgical critical care physicians.

Fellowships are designed to provide licensed physicians with concentrated experience in a subspecialty, or specialized area of medicine. Subspecialties require fellowship training in addition to the 9-14 years of medical education required to complete medical school and the subsequent residency period. These fellowship subspecialties include

2-3 Year Subspecialties

Rheumatology
Hematology-Oncology

3 Year Subspecialties

Allergic Diseases
Cardiology
Critical Care/Pulmonary
Endocrinology
Gastroenterology
Infectious Diseases
Nephrology

Fellows learn the latest technological advances. They also function as the leader of a critical care team, supervise residents rotating into the program, assist with the education of medical students, and communicate with the primary and consulting physicians of a vascular, neurological, transplant, cardiac or pediatric patient.

Completion of a fellowship program qualifies the physician to sit for a certification examination in the specialty in which the physician has trained and to become a member in the respective specialty society. This specialized certification is an essential requirement to obtain the privileges to join the staff of most hospitals and to perform special procedures that patients need.

Alfred Beasley, MD



Dr. Gui Christiano and his wife, Katherine, a physical therapist, enjoy biking, snow skiing, and other outdoor activities.

Honing the Art and Science of Surgery:

The Role of Physician Fellowships

"THE IMPORTANCE OF FELLOWSHIP PROGRAMS cannot be over emphasized," explains Dr. Gui Christiano. "The fellowship period trains physicians to be more highly skilled in their areas of expertise. It also prepares the Fellow to step into the role of attending physician, a critical role in the academic medical center setting."

"The Fellow provides consistency, appraises the medical team of the patient's progress, and becomes the intermediary between the residents and the attending physician."

-Dr. Gui Christiano

2004-2005 UT Surgical Critical Care Fellow

Residents at UT Graduate School of Medicine are trained by teaching teams. Physician faculty are responsible for teaching and overseeing residents, senior residents provide guidance and assign tasks in their service areas, and fellows monitor the day-to-day flow of patients and resident physicians.

"While residents are rotating monthly between areas and attending physicians are changing due to rotating weekly schedules, the fellow working in the intensive care unit is assigned to that area for at least one year," explains Dr. Christiano. "The fellow provides consistency, appraises the medical team of the patient's progress, and becomes the intermediary between the residents and the attending physician."

The son of an international civil engineer, Dr. Christiano grew up living in various countries around the world. Eventually his family returned to his birthplace, Brazil, where he completed

Interview with Dr. Gui Christiano



Dr. Gui Christiano examines patient in our Emergency Department.

medical school and a two-year general surgery residency. He completed his education and a year of military service as a flight surgeon for an army helicopter combat unit.

He also completed a fellowship in the intensive care unit (ICU) at Santa Casa of Sao Paulo before continuing medical training at the University of Connecticut and UT Graduate School of Medicine. "The ICU can be an overwhelming experience for young residents, but once they are taught the basic principles of the subspecialty, being in the ICU can be exciting," he explains. "There is something new every day."

Dr. Christiano points out that most critical care surgeons share several attributes. "They are picky, very detail-oriented, systematic in their approach, and terrific multitaskers. A great combination that is crucial as decisions are made about the treatment of our critical care patients."

Lea Anne Law, APR

If you missed Parts I and II of our series on "Becoming a Doctor" in the past issues of Frontiers, see the magazine online at <http://gsm.utmck.edu/about/frontiers.cfm> or call the UT Graduate School of Medicine at 865-544-9190 for your copy of back issues.

LIFESTAR

EXPANDING OUR HORIZONS INTO THE REGION



A 39-YEAR-OLD EAST TENNESSEE WOMAN, Christmas-shopping with her husband in December, began to feel faint and collapsed. Her husband took her to a local hospital, where she was diagnosed as suffering a heart attack and in need of immediate intervention.

Because no cardiac catheterization laboratory services were available locally, the emergency department physician called LIFESTAR at the University of Tennessee Medical Center in Knoxville. The patient met the criteria for automatic acceptance, and a helicopter was immediately dispatched to pick her up while the Medical Center prepared for her arrival. With one phone call, the automatic acceptance protocol had put a helicopter in flight and a Medical Center physician and specialty team waiting for the patient's arrival.

When the patient arrived at the hospital, she was immediately evaluated by a cardiologist and taken to the cardiac catheterization laboratory for diagnosis and

intervention. The results showed a blockage in a coronary artery and indicated that she needed surgery without delay.

The operation was successful; the patient recovered well and was able to return home and celebrate the holidays with her family. Her experience became another of the many examples of how LIFESTAR and its automatic acceptance protocols at The University of Tennessee Medical Center save lives.

The Medical Center's Division of Aeromedical Services provides critical support to Emergency and Trauma Services. Critically ill or injured patients throughout the region are transported to lifesaving care by LIFESTAR helicopters.

"The flight program provides direct access to the Medical Center and absolute continuity of care. In order to improve our accessibility, LIFESTAR has chosen to out-base each of its aircraft," says senior vice president and chief administrative officer Norman Majors. "LIFESTAR has

strategically located each aircraft, with bases at Morristown, Sweetwater, and a base that flexes between the Medical Center in Knoxville and Sevierville."

The LIFESTAR program has served the region for almost 22 years; it transported its first patient on October 1, 1984. Robert Lash, MD, then a family practice physician and a medical examiner for Knox County and the Federal Aviation Administration, was the program's founder. With the support of the Medical Center, he proved to the region that airborne transport is of the utmost importance in maintaining the "golden hour" during which critically injured trauma patients can have a greater chance of survival.

Lash was the medical director and program manager of LIFESTAR until his death in 1992. He was succeeded by Christopher Brooks, MD, who remains LIFESTAR's medical director and also serves as an Emergency Department physician and medical director for the Great Smoky Mountains National Park. "Since 1984, LIFESTAR has been committed to providing rapid transport to trauma patients or patients requiring a level of care not available in the outlying region," says Brooks. The program provides services to 16 counties in the Region II EMS Council of East Tennessee and in western North Carolina and southeastern Kentucky.

LIFESTAR employs 24 full- and part-time medical crew members. Each medical crew includes a registered nurse that is also a certified Emergency Medical Technician and a nationally registered paramedic. In addition, LIFESTAR has six dedicated air medical communications specialists who are also nationally registered flight paramedics. Twelve pilots and four aviation maintenance technicians round out the well-balanced team.

LIFESTAR's communications center is expanding this summer to become the regional medical communications center (RMCC) for the 16-county area surrounding Knox County. The RMCC is a state-designated communications entity with a regional mission to coordinate hospitals, ambulance services, and other medical resources in real time. Its focus is on optimizing emergency patient care in situations in which local governments and healthcare providers request assistance. The RMCC participates in public health, injury, and disease surveillance programs in association with the department of health. It will operate

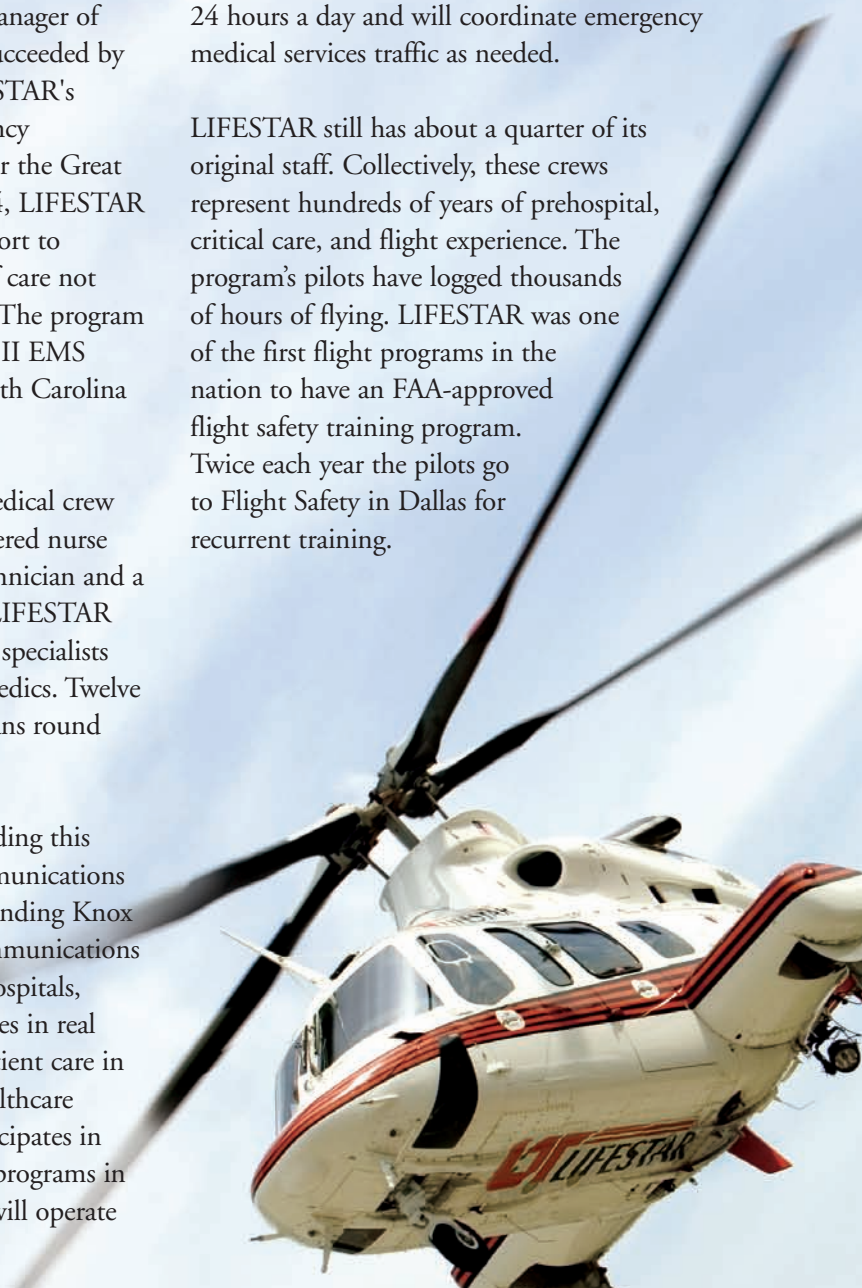
"Since 1984, LIFESTAR has been committed to providing rapid transport to trauma patients or patients requiring a level of care not available in the outlying region."

-Dr. Brooks



24 hours a day and will coordinate emergency medical services traffic as needed.

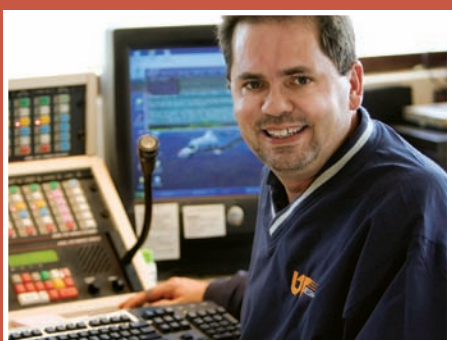
LIFESTAR still has about a quarter of its original staff. Collectively, these crews represent hundreds of years of prehospital, critical care, and flight experience. The program's pilots have logged thousands of hours of flying. LIFESTAR was one of the first flight programs in the nation to have an FAA-approved flight safety training program. Twice each year the pilots go to Flight Safety in Dallas for recurrent training.



In addition to its other contributions, LIFESTAR offers educational services to the region. "We made 2,000 contacts and sponsored or held 70 events in 2005," says the program's outreach education coordinator, J. R. Gore. Part of this effort consists of providing medical training to emergency service personnel in the 16-county area.

Each of LIFESTAR's three helicopters is capable of carrying two medical crew members and a pilot. The two Bell 430s can transport two patients and the Bell 206 L-4

This summer LIFESTAR will implement a night vision goggle program to enhance the safety and capabilities of all three aircraft. Each helicopter has been modified to accommodate the use of night vision goggles, with changes in the lighting of the aircraft's cabin and cockpit and the addition of filters to the digital displays. Night vision goggles can enhance mission capability and sharpen awareness on the part of pilots and crews, allowing them to make flights that might otherwise have been impossible because of darkness. An FAA study reports, "When properly



LIFESTAR command center

transports one patient. Each Bell 430 is a single-pilot instrument flight rated (IFR) aircraft that cruises at 140 knots. Its cockpit contains systems for integrated instrument display, electronic flight instrumentation, traffic collision avoidance, and color radar. The single-pilot IFR provides additional capabilities for LIFESTAR to fly in adverse weather conditions. This feature has also given LIFESTAR the opportunity to acquire six global positioning system approaches into heliports in three states.

used, night vision goggles can increase safety, enhance situational awareness, and reduce pilot workload and stress that are typically associated with night operations."

Since 1984, LIFESTAR has established a reputation of providing exceptional medical care and safe transport. "LIFESTAR looks forward to serving the region for many more years to come," says Jeff Gregory, director of aeromedical services.

Susan Toberman, RN, CCRN, CFRN, EMT

Trauma Prevention Tips

General Prevention Tips

Warm weather means fun in the sun! After months of cold days, thoughts turn to outdoor activities like swimming, bicycling, boating, and hiking. This time of year, though, can also be filled with danger. While it's impossible to predict when an accident

might occur, we can take precautions to protect our families, our friends, and ourselves.

- Always remember to wear your safety belt when riding in a vehicle.
- Obey the rules of the road, especially the speed limit.
- Always wear proper safety gear when engaging in any sport.
- Always check the depth of water before diving in. Remember, **FEET FIRST, FIRST TIME.**
- Never dive into any pool unless it's at least nine feet deep.
- Never dive into an aboveground pool.

How to Prevent a Spinal Cord Injury

- Follow correct safety procedures and use protective equipment in the workplace.
- Regular exercise, good posture, and lifting heavy objects properly (letting your leg muscles do most of the work) all help prevent spinal injuries.
- Warm up thoroughly and use the appropriate techniques and equipment when you play sports.
- Never drink alcohol or take drugs and drive, and don't travel in a vehicle driven by a person who's under the influence of drugs or alcohol.
- Don't take unnecessary risks when you're riding a horse, water-skiing, rock-climbing, hang-gliding, or trampolining.

There is no cure for spinal cord injury, but there is prevention.

Rhonda McAnally, RN

Rhonda McAnally

Rhonda McAnally, RN, is the Medical Center's trauma nurse coordinator. Her many clinical, educational, and outreach responsibilities include developing and implementing trauma protocols, coordinating courses and educational opportunities like Advanced Trauma Life Support, and increasing public awareness of the trauma center and trauma prevention. She also helps to develop strategic program goals and prepare grant applications, and serves as a communications liaison for emergency, trauma, and critical care.

McAnally has worked at the Medical Center for more than 15 years and has served as the trauma nurse coordinator since 2003.



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

Late Spring • Early Summer Semester 2006

The 2006 Patterson Lecture Long-Term Health Effects of Childhood Sexual Abuse	Friday, May 19, 2006 8:30 – 11:15 a.m. Wood Auditorium, The University of Tennessee Medical Center, Knoxville, TN	<i>The Patterson Domestic Violence and Child Abuse Education Gift Fund was established to offer educational conferences to help local healthcare professionals better understand the destructive forces that target the most vulnerable elements of society. This year's conference will highlight the short-term effects of childhood sexual abuse and more closely examine the long-term effects of such a history in adult patients.</i>
Life...Inside & Out Perinatal & Neonatal Care Symposium	Wednesday, May 24–26, 2006 Grove Park Inn Asheville, NC	<i>Expert faculty in the fields of perinatology, neonatology, obstetrics and pediatrics will discuss issues such as recognizing the signs and causes of premature birth, understanding the moral and ethical issues surrounding the resuscitation of extremely low birthweight infants, creating better NICU environments through design, and understanding the importance of neonatal nutrition.</i>
22nd Annual Alzheimer's Disease Research Symposium	Monday, June 5–6, 2006 Park Vista Resort Hotel Gatlinburg, TN	<i>Co-sponsored with the Alzheimer's Association of East Tennessee, this symposium will explain current approaches to the differential diagnosis and management of Alzheimer's disease (AD) and vascular dementias. Topics include the early diagnosis and prevention of AD, novel research approaches in imaging and understanding neurodegenerative diseases, beneficial modalities for dementia patients; and the future impact of the Alzheimer's disease epidemic.</i>
Dean's Multi-Disciplinary Grand Rounds "Surgical & Endoscopic Treatments of GERD & Atypical Manifestations of GERD"	Tuesday, June 13, 2006, 8:00-9:00 a.m. Wood Auditorium, The University of Tennessee Medical Center, Knoxville, TN	<i>Severe gastroesophageal reflux disease (GERD) is a lifelong problem that can be complicated by peptic esophageal structure and adenocarcinoma of the esophagus. Typical and atypical manifestations of GERD as well as treatment options for both will be discussed. Featuring visiting lecturer Kenneth R. DeVault, M.D., F.A.C.G., Professor of Medicine, Mayo Clinic College of Medicine.</i>
CME is Important	Physicians' knowledge and skills can become outdated unless they continue to seek new information through journals, research, and quality continuing medical education (CME). The University of Tennessee provides scores of comprehensive, state-of-the-art educational courses that allow physicians to learn new strategies for disease prevention and detection, discuss issues that are important to health maintenance, and observe techniques to enhance medical skills throughout the year.	
UT's Statewide Impact on CME	UT is making a difference in the quality of healthcare provided by physicians. Last year, 25,000 healthcare professionals enrolled in more than 100 CME courses totaling almost 1,300 hours of certified medical education instruction.	

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



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