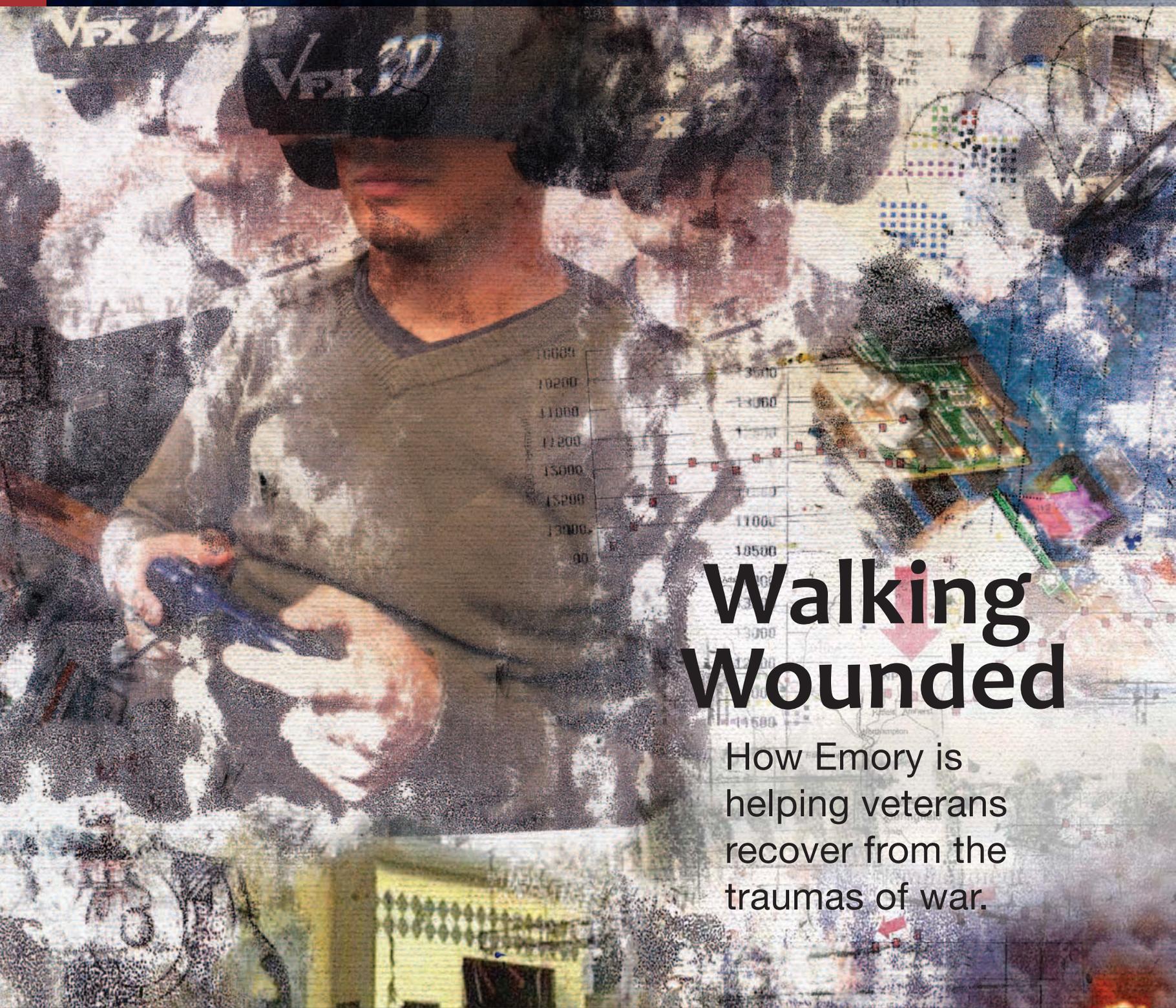


EMORY | health

PATIENT CARE, RESEARCH, AND EDUCATION FROM THE **WOODRUFF HEALTH SCIENCES CENTER**



Walking Wounded

How Emory is helping veterans recover from the traumas of war.

FROM THE EXECUTIVE VP



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Emory Health

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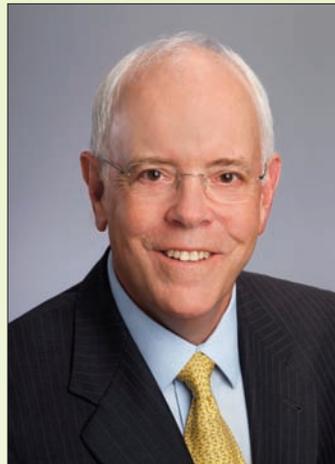


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Three of Emory's hospitals have made impressive strides in national quality measures.

By the numbers

THE FALL SEMESTER HAS ONLY JUST BEGUN, AND ALREADY THE WOODRUFF HEALTH SCIENCES CENTER (WHSC) HAS RECEIVED EXCITING NEWS—objective measures of success that recognize the excellence of our patient care and research programs.

In September we learned that three of Emory's hospitals—Emory University Hospital (EUH), Emory University Hospital Midtown (EUHM), and Emory University Orthopaedics and Spine Hospital (EUOSH)—have made impressive strides in national quality measures. Out of 101 hospitals nationwide ranked by the University HealthSystem Consortium, EUH and EUOSH (ranked jointly) rose to the 10th position (up from 45th last year) while EUHM rose to 11 (up from 42 last year). These rankings compare how academic medical centers across the country are doing in multiple dimensions of quality and safety.

The extraordinary strides our Emory Healthcare facilities have made in the past year are truly a testament to the knowledge, expertise, and teamwork of our physicians, nurses, and allied health and support staff. Our teams have earned this honor by providing the most compassionate, cutting-edge care available in the nation.

Our research team has equal reason to be proud. In spite of a challenging economic climate and increased competition for limited federal research funding, Emory University received \$539.7 million in funding in fiscal year 2011, and the WHSC brought in \$511.5 million—or 94%—of that total. This increase represents an impressive gain from the previous year. In fact, Emory's research funding has increased by more than 52% in the past five years. This news is great not only for Emory but also all of Georgia, since Emory's research funding results in a significant statewide economic impact.

These are numbers we can all celebrate. They represent objective scorecards by which we can continually measure and improve our performance. They show that we are making an important difference to the health and well-being of our community and to our understanding of the treatment and prevention of disease.

This issue of *Emory Health* also is packed full of the ways we are impacting our community's health, from helping veterans recover from the traumas of war to bringing health care to seniors where they live. Enjoy reading many examples of our efforts in research, education, and patient care—all with the goal of improving health. Then let me know how you think we are doing. Share your feedback at evphafeedback@emory.edu.

S. Wright Caughman

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What's so special about teaching hospitals? Emory Dean Tom Lawley and the Association of American Medical Colleges want you to know.

Letter to the editor. *Over the years of my daughter's frequent visits to Winship (where she receives excellent care for polycythemia vera), I have come to look forward and appreciate the articles in Emory Health. They are always well written and easy to understand. They allow me to share a bit of the excitement researchers and medical staff must feel as they work to uncover mysteries and solve human problems. Kudos to you and the writing staff for producing such an excellent vehicle for promoting the wonderful staff and works at Emory's medical center.* —FAYE ANDRESEN, ATLANTA, GA

What do you think? Emory Health welcomes your comments—pro or con—about topics and issues covered in this magazine. Please send comments, letters to the editor, address changes, and other correspondence to *Emory Health*, 1440 Clifton Road, 150M, Atlanta, GA 30322; email rhonda.mullen@emory.edu; or call 404-727-8166.



How Emory is helping veterans recover from the traumas of war.

providing some level of hope as
to civilian life providing some level of hope as
PTSD can be combated civilian life
hope PTSD can be combated

Walking Wounded

As members of the U.S. military, they've driven Humvees through desert roads laced with buried explosive devices. They've spent years away from family and home, living in cramped tents, barracks, or submarines. They've followed orders to search out those who would like nothing better than to see them dead.

If they are lucky enough to survive, they get called heroes. But sometimes acting heroically can take a psychological toll. That's where Emory's Barbara Rothbaum and Ursula Kelly come into play. They are leading research that explores what it takes to help new generations of veterans adapt emotionally once they've physically returned home.



On the home front:
Barbara Rothbaum (*top left*) and Ursula Kelly (*bottom*) help vets recovering from trauma to stabilize and feel safe.

When something traumatic happens, “it’s so painful to think about that all those with PTSD want to do is push it away. But it’s unfinished business, and they haven’t really processed it. Emotionally, it haunts them.” —BARBARA ROTHBAUM

Battling stigma

Post-traumatic stress disorder (PTSD) became an official diagnosis in 1980 in response to patterns of behavior among Vietnam veterans who were experiencing difficulty in adapting to civilian life. These vets could be shopping in a suburban grocery store, hear a loud bang, and suddenly feel transported back to the jungles of Vietnam—ducking behind produce bins, vigilant for an attack coming from the frozen dinner aisle. At night, while most of their neighbors might leave doors unlocked and windows open, they would sleep with a gun under their pillows, alert to the slightest noise. Their actions made complete sense in a war zone but were hard to stop once they were home.

Around this same time, Emory psychologist Barbara Rothbaum was starting a career that focused on researching and treating anxiety disorders. On a job interview, she told her prospective boss, “I don’t know anything about PTSD.” The boss, a preeminent anxiety researcher replied, “That’s all right, we don’t know anything either.”

But it was time for Rothbaum and the mental health community to learn. For many veterans, flashbacks and hyper-vigilance made it hard to keep a job and maintain a relationship. The stigma against seeking help was strong, and many tried to self-medicate their anxiety and depression with alcohol and drugs. For these reasons, a fifth of homeless people today are veterans, and half of all homeless veterans served during the Vietnam era, according to estimates from the Veterans Administration and National Coalition for Homeless Veterans. (Since the 1970s, psychologists have determined that PTSD also can result



from rape, abuse, traumatizing accidents, and other life events.)

To combat PTSD, Rothbaum started focusing on exposure therapy. “One of the things that maintains PTSD is avoidance,” she says. When something traumatic happens, “it’s so painful to think about that all those with PTSD want to do is push it away. But it’s unfinished business, and they haven’t really processed it. Emotionally, it haunts them.”

Rather than avoid their trauma, Rothbaum hypothesized that veterans needed to face it head-on in controlled, safe environments. “Going over and over and over it helps decrease their distress,

and they can look at it,” she says. “So we do the exposure therapy repeatedly and in a therapeutic way to help them see that they can handle it.”

Fighting the virtual war

Research evidence showed that exposure therapy worked well. But exposing veterans to wartime conditions wasn’t as easy as walking a client with a height phobia up a flight of stairs. So when gains in virtual reality technology came in the 1990s, Rothbaum teamed with a Georgia Tech computer scientist to create a virtual Vietnam. And when the war in Afghanistan and then Iraq began, she began working on a new virtual reality system. The resulting program has since been incorporated in Emory’s Trauma and Anxiety Recovery Program, which Rothbaum directs.

Computer programmers developed sounds and scenes intended to replicate a Middle Eastern war zone. The 360-degree, 3D environ-

ment includes the noises of gunfire, prayer calls, dogs barking, military radio chatter, and Humvee engines as well as the sights of aircraft overhead and desert roads. The therapist is able to manipulate the virtual perspective to match the memory of a particular vet, whether he or she was a Humvee driver, passenger, or gunner. In addition, the patient's chair can vibrate during the session to further simulate the feeling of explosions or sitting in a Humvee with the engines on.

Once a veteran straps on a helmet and earphones, therapists can replicate the specific set of circumstances in which his or her particular trauma occurred. "They're describing their most traumatic events from Iraq or Afghanistan, and the therapist is matching what they're describing in the virtual reality," says Rothbaum. During five one-and-a-half hour sessions, the vet undergoes the virtual reality experience and, equally important, has time to talk about it.

For a number of years, Rothbaum has paired virtual reality therapy with the use of a fear-extinguishing drug, d-cycloserine (DCS). The hypothesis is that sessions and debriefings are made more effective by DCS, which has been used since the 1960s to fight tuberculosis. In recent years, Emory researchers have come to see that DCS also enhances the treatment of anxiety and phobias. In their studies with rats, Emory researchers Michael Davis and Kerry Ressler conditioned the rodents to be scared of a specific light or sound. Ridding the rats of that anxiety required exposing them to the same light or tone a full 60 times without any negative consequences. But when the rats were given DCS, the researchers found that only 30 exposures were needed to reduce the fear. In other words, DCS allowed therapeutic exposures to be cut in half. That finding has since been replicated in studies with people who have height phobias.

Unlike most drugs used to fight anxiety disorders, DCS works in single doses. Says Rothbaum, "Most of the drugs we use in psychiatry have to be taken every day. And you have to take some every day for a month before they build up in the system. For this one, you have to take it only the day of the session and only right before the session."

Accordingly, in Rothbaum's study, each veteran takes a DCS pill (or comparison medications) before each of five virtual reality sessions. "We're underdosing the virtual reality," says Rothbaum because the expectation is that DCS will make each session twice as effective as it would be without it. While fewer sessions are appealing to therapy-weary veterans, the shorter time frame makes economic sense for health care providers as well.

Since the virtual reality therapy research at Emory is ongoing, no formal results have been announced as yet. But Rothbaum is hopeful that results in the next year will show that virtual reality therapy in conjunction with DCS is as effective as other kinds of treatment for PTSD in veterans, if not more so. Many younger veterans have grown up playing video games, and Rothbaum sees



Intervening after trauma

Even as **Barbara Rothbaum** has discovered better ways of treating patients with PTSD, she's had a nagging thought in the back of her head: What if PTSD could be avoided in the first place?

No one can stop traumatic events from happening. Natural disasters, car accidents, and war injuries are often unavoidable. And for a long time, clinicians also assumed that PTSD was unavoidable.

But Rothbaum started to wonder if early intervention could stop PTSD in its tracks. "In so many people, what happens immediately after the event can make things worse or better," she says. So for the past three years, Rothbaum and a team of clinician researchers have camped out in the Grady Memorial Hospital emergency room, seeing what can be done to make things better for trauma survivors.

Here's how it works: when a patient comes into the ER and is waiting for medical treatment, trained psychotherapists assess those who have just survived a trauma such as rape, a car or industrial accident, a shooting, or a knife attack. Half are then randomly chosen to receive an intervention.

Using a version of exposure therapy, therapists tape record the patients talking about the trauma and then assign homework to them—listening to the tape every day. "We also help them look at unhelpful thoughts of guilt or responsibility," says Rothbaum. "We

Continued on page 7

If incidents of ongoing threatening harassment are included, upwards of 40% of female soldiers report military sexual assault trauma. Meanwhile, up to 15% of male soldiers also report surviving sexual trauma perpetrated by fellow soldiers.

signs that they are more comfortable with virtual reality therapy than traditional talk therapy.

“It’s a younger gaming generation,” Rothbaum says. “So something with virtual reality feels less stigmatizing.” And so far it looks like a game the veterans are winning.

Recovering from sexual assault

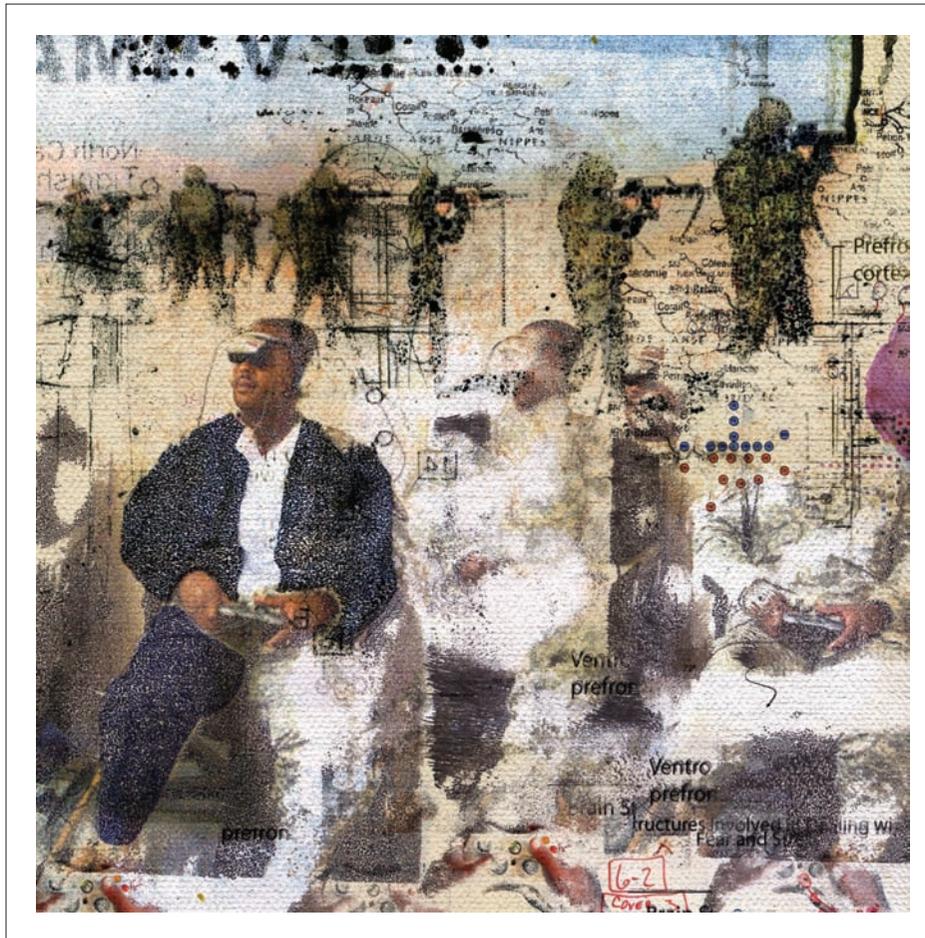
But not all military traumas result from enemy attack, a fact that Emory nurse scientist Ursula Kelly knows all too well. Through her joint appointment in Emory’s Nell Hodgson Woodruff School of Nursing and the Atlanta VA Medical Center, Kelly works with female veterans who were

sexually assaulted or threatened and harassed by fellow service members during their service. And while sexual assault can lead to PTSD, sexual assault by a comrade in the military (known as military sexual assault trauma, or MST) can lead to its own specific aftereffects.

Particularly if one is assaulted by a fellow service member. “Soldiers are supposed to have each others’ backs. That involves an incredible betrayal of trust,” says Kelly. “Military is family, so it’s really going to impact your relationships in a different way than combat trauma would.”

Unfortunately, that betrayal is all too common. Studies show that about one in every four female soldiers has experienced MST. If incidents of ongoing threatening harassment are included, upwards of 40% of female soldiers report MST. Meanwhile, up to 15% of male soldiers also report surviving sexual trauma perpetrated by fellow soldiers.

Like PTSD, MST has been linked with physical and emotional prob-



lems including depression, chronic pain, and cardiovascular disease. It’s unclear whether PTSD is causing these issues—or is simply correlated—but the link is obvious nevertheless. “Both MST and PTSD are associated with a variety of mental health disorders, substance abuse, negative health behaviors, a plethora of physical symptoms, and acute and chronic medical problems,” says Kelly.

Veterans can experience social problems as well, and they may distance themselves from their spouses, children, and friends. “Depending on the severity of the symptoms, MST and PTSD affect both men and women’s ability to func-

tion socially, to have meaningful relationships, and to be able to work and be productive,” says Kelly.

Nationally, the VA is mandated to provide treatment to veterans who are dealing with health problems associated with MST. The Atlanta VAMC goes one step further, with a dedicated MST/PTSD treatment team that has 300 active patients, with about five new referrals each week. Kelly says this singularly focused team of clinicians and researchers is crucial for helping female veterans regain their footing. “It’s important to help women access care in the male-dominated environment of the VA,” she says, “and to develop treatment plans that address women’s specific concerns.”

Those treatment plans are based on the three-stage trauma recovery model developed by psychiatrist Judith Hermon in the 1990s. During the first stage, clinicians work with female veterans on issues around stabilization and safety—everything from making sure they have a safe place to live to helping them re-regulate sleeping and eat-

ing. “Usually people come in because they are in crisis,” Kelly says. “Nobody comes to therapy for fun.”

In a PTSD 101 group, the female vets learn that they are not “crazy” and things are happening in their brain, which are not willful. In addition, they participate in a weekly skills group for three to four months to learn how to manage their emotions and foster their relationships. “The class is about getting stabilized and safe, learning to work with emotions so the women are not in a constant state of having their fears triggered,” says Kelly.

In stage two, veterans begin the work of processing the trauma through trauma-focused therapy—for example, prolonged exposure. But discussing assault and other traumas can be a challenge to many patients. “There are some who start and just don’t continue because it’s so distressing,” Kelly says. “It’s scary.”

Those who do successfully stay with the program then advance to a third phase that is focused on moving forward and thriving with peer support, check-ins with therapists, and, in some cases, continued medication management.

And while many women successfully recover, Kelly knows her job isn’t over. “Among our patients, more than 95% experienced at least one other lifetime trauma in childhood or adulthood—either emotional, physical, or sexual abuse,” she says. Kelly and the MST team are working to figure out how to address those past traumas in treatment. Part of their research is focused on whether specific kinds of traumas make developing PTSD and related health issues more likely.

As a part of her work, Kelly is exploring which factors help some female veterans bounce back and which make recovery more complicated “because, of course, there are people who experience multiple forms of abuse and trauma who do not develop PTSD,” she says. “We need to know what makes women resilient and how we can foster that. It’s important for us to understand that more fully to develop effective treatment programs.”

Resilience and healing

For both Kelly and Rothbaum, fostering this resilience and healing isn’t always easy, especially when it involves hearing patients’ horror stories. Listening to a patient’s tale of terror can take a toll on those hearing the story too. “When you’re working with PTSD, you have to be prepared to hear about life’s worst moments,” says Rothbaum. “You hear about evil. It’s not the kind of stuff you can talk about over the dinner table.”

But both researchers maintain hope. They are encouraged that the stigma surrounding PTSD has dropped dramatically over the past two decades, and they know that the field of trauma research with veterans is growing quickly. As scientists who are practicing clinicians, they have both the direct experience with patients and research expertise to help pave the way forward.

And most important, they know it’s possible to heal not just from physical injuries but from psychological wounds as well. Recovery is possible. ■

Intervening after trauma (continued)

teach them a brief breathing or relaxation technique, and we talk about self care.” The clinicians explain that it’s beneficial to not avoid the place or thing associated with the trauma (such as driving, for car accident survivors).

The entire intervention takes less than an hour, so it doesn’t get in the way of medical treatment or affect discharge times. Patients then return to be assessed for trauma symptoms at four and 12 weeks. Rothbaum’s hypothesis is that those who receive the intervention will present significantly fewer symptoms of PTSD than those who have not received the intervention.

While results won’t be available until later this fall, anecdotal evidence seems to prove Rothbaum is on the right track. “For the most part, people are pretty compliant. For the most part, it makes sense to people,” she says. Patients like having tangible tasks to do in the wake of a traumatic event, and while many people might not listen to the tape of their trauma every day, most report listening to it at least a couple times—enough to have a healing effect.”

If the intervention does work to prevent the development of PTSD, the implications are immense. “If we know what to do, and it’s something we can train emergency workers to do in large scale, it can help on the battlefield, in natural disasters, and after criminal assault,” Rothbaum says. “It really can be implemented in emergency rooms throughout the country.”

In other words, patients wouldn’t wait to seek help only after symptoms become unmanageable. They would receive help before symptoms even start. “That’s the world we envision,” says Rothbaum.

WEB CONNECTION *To lessen the stigma of mental illness, Emory is partnering with the Atlanta Braves to publicize the signs of PTSD and to reach out to returning vets. A **BraveHeart** initiative offers education, resources, screenings, and support to veterans throughout the Southeast. Learn more at braveheartveterans.org. In addition, Emory is raising funds to support Rothbaum’s ongoing research in PTSD. If you are interested in how you can contribute to these clinical and research efforts, please contact Matt Boyle at 404-727-8253 matthew.boyle@emory.edu. Read further about MST at mentalhealth.va.gov/msthome.asp.*

FEATURE WHEN HEALTH CARE IS IN THE BAG



During her home visits with Stewart Moran, geriatrician Louise Horney can put his health in the context of his current environment and his long life.

the new house call

By RHONDA MULLEN • Photography by JACK KEARSE

Stewart Moran, 91, has a sweet temperament, a head full of white hair, and a smile that can light up the room. He likes watching British sitcoms and is amiable with the staff at Sunrise Assisted Living in Decatur, Ga., where he lives.

But the one thing that could put Moran in a black mood was a visit to the doctor. “As he declined, it became overwhelmingly impossible to get him to the clinic,” says his daughter, Nancy Yang. “By the time we got him there, he was so physically and emotionally drained that he’d be undone.”

That’s when Nancy and her husband, Emory primary care physician Bill Yang, decided to ask a favor of Emory geriatrician Louise Horney. She had been the doctor of Bill’s father, who also had lived at Sunrise. Could she come to the patient? Horney agreed, and during her visit, she uncovered a key to improving Moran’s health. His orders were written for medications to be administered at bedtime, which at Sunrise occurred routinely at 9 pm. But Moran went to bed around 8 pm each evening. When he was awakened an hour later, he’d just roll over and go back to sleep. The chart was marked as “meds refused.” Horney changed the order to 5 pm, and the problem was solved. Once Moran was back on his medications, he allowed his blood to be drawn.

“It wasn’t rocket science, but it’s a good example of what we knew already,” she says. “It makes sense for us to go to them.”

That visit in 2008 became the inspiration for a new domiciliary care program that Horney helped launch in 2010 on completion of a Fulbright in Turkey. The program brings Emory health care professionals to patients rather than the other way around. For more than a year now, Horney and her colleagues—geriatrician Candace Cato and geriatric nurse practitioner Karolina Graber—have been making the rounds at 11 assisted-living facilities throughout metro Atlanta. Among the three of them, they see about 200 patients each year in this outreach program of the Emory Clinic.

Their visits differ from the traditional house call where the family calls the doctor and she comes. Rather, the practitioners make regular rounds at assisted-living facilities, seeing several patients during a visit.

They go armed with a laptop computer, stethoscope, pulse oximeter, reflex hammer, otoscope, ophthalmoscope, sphygmomanometer, and geriatric medicine book. With these simple tools, they often are able to address small things that help keep patients healthy and out of the hospital.

“You have to do more detective work yourself,” says Cato, “but you are not as pressed for time as you frequently are in the clinical setting.” Horney finds it rewarding when she’s able to solve her patient’s health issues “without simply prescribing another pill.”

Medicare reimburses for these domiciliary visits, recognizing the health care cost savings that will result from reducing emergency room visits and hospitalizations.

The Emory providers say that the system has the advantage of allowing them to see patients in the context of where they live. “You get a better picture of who they were in the past,” Cato says. “You get

to know their families. You see the pictures of them as a child. It makes the patient and doctor interaction more personal.”

The visit

The Stewart Moran that Horney has come to know is a native of Sault Ste. Marie, the third oldest settlement in the country, just south of the Canadian border in Michigan. His father started a lumber business there and raised three boys, Moran being the baby. Moran himself lived most of his life in the town, marrying, raising children, and working as a public relations executive for the local electric company. In fact, he even served as postmaster for a year when there was no one else to deliver the mail. For retirement, he moved with his wife to Brevard, N.C., where they enjoyed milder winters, hiking in the Pisgah National Forest, and volunteering at the Brevard Music Center.

Horney also knows Moran’s health inside and out, from his history of congestive heart

failure and dementia down to a small infection on his toe. Today she’s back to follow up on some problems



Emory’s domiciliary care program reinvents the house call to bring health care to seniors where they live.

Overheard

Karolina Graber arrived at Coventry Place Assisted Living in Decatur to see three patients. First on her list is William "Jack" Lamb, a retired United Methodist minister. Signs on his door read, Knock loudly, then come in.

Rev. Lamb, I'm Karolina Graber from Emory. How are you doing today?

I feel pretty good. I don't have as much sense as I need. But I'm pretty good.

I'm here to check on you. I have a note here from your daughter that she wants me to check your foot. How does your foot feel?

It feels pretty good.

Can I take your blood pressure?

I guess I'll let you do that. You think I might make it another year or two?

I think so. So how old are you now?

Old enough to know better. I'm 94. Have I seen you before?

Yes, I saw you last month.

What's your name?

Karolina.

[Singing]: **Carolina girl,** won't you come out tonight and dance by the light of the moon?... Where'd you go to school?

I got my nursing degree at the University of Pennsylvania in Philadelphia.

I was just wondering if you knew what you were doing.

How about you?

Well, I started out at Young Harris, then West Georgia. Let's see, the Atlanta division of the University of Georgia, Emory for preaching. I'm a preacher. I can haul off and preach anytime. I started preaching at 17. I used to preach to my brothers out in the country.

Does it hurt when I touch your foot?

No. I think both of my feet have five toes...

Graber goes to look for scissors and gauze to dress an oozing sore on the patient's foot. She doesn't routinely carry these supplies with her but finds what she needs in Lamb's room. He pays her no mind and goes on talking.

On vacation, my wife and I didn't just go to the lake and go swimming. We traveled the world. I've been to every country in South America, every country in Europe. I've been to all 50 states.

When Graber returns, he asks, **Have I seen you before?**

Healthy Aging

The domiciliary care program is one of the programs offered by the Emory Center for Health in Aging, which enables seniors to age safely and successfully in their homes and communities. These outreach efforts address a range of issues that affect seniors' daily lives, from transportation and safe driving to research on how to prevent falls and other topics.



he's having with his ears and pain associated with arthritis. His daughter is there for the visit and fills the doctor in on recent developments while they wait for her dad to return from lunch. Apparently, he's been going more often to the dining hall for his meals, something Horney is delighted to hear.

As Moran is wheeled in from lunch and transferred to the lift chair that his family calls the "rocket chair," he has a smidge of barbecue sauce on his chin. "There's the doctor," he says on seeing Horney.

"You're looking good," she says. As she chats with him, she has a computer at the ready, reviewing his electronic chart. Then she takes out an otoscope, sliding between a lamp and side table to lean over and check his ears, which are full of wax. "I'm surprised you can hear at all," she says.

Horney steps into a small kitchen area and draws the water to a comfortable temperature, mixing it with peroxide and mineral oil. She enlists Yang to help her hold a tray to catch the solution and explains to Moran that she's about to flush his ear. As soon as she starts, he calls out, "That hurts."

"This is just the first inning," Horney says, continuing with her task.

"Dad, did you watch the Braves and the Pirates game last night? They went 19 innings," says Yang, trying for distraction.

Moran's response is another moan and a few select swear words. Horney stops the procedure briefly and asks, "Don't you want to hear?"

"No," Moran says.

"We're going for the second inning," Horney says. "Let's try for a home run this time." A minute later, Moran gets a reprieve as a staff nurse arrives to give him

Louise Horney



his medication, and Horney pauses in the treatment. But it has to be done, so she starts in, gently but firmly, on the other ear.

"That hurts," Moran protests.

"It's okay," Yang says, holding her dad's head.

"You can yell if you want," says Horney. "Take some deep breaths." And then in a gush, chunks of wax wash out of the ear.

"One more flush, and this is over. We're at the bottom of the ninth." Moran squinches his eyes and pulls up his knees. "Hang in there. Okay, bud, we're done."

Within a minute, Moran has recovered his sweet self. He holds out his finger for the portable pulse oximeter that measures oxygen saturation of the blood. He sticks out his tongue and says a feeble "ah" for Horney to check his throat. "After all that carrying on, is that the best you can do?" she asks.

He smiles.

The rest of the exam goes smoothly. Horney makes a note of a skin lesion behind the ear, which might be a basal cell cancer. She notices from the electronic chart that her patient has lost 15 pounds since January. She says she may swing by during the week to give him a shot of B12.

A geriatrician on the road

The visit with Moran is typical of ones that Horney, Cato, and Graber make in the course of the week. But many days are atypical. Sometimes they encounter the unexpected, arriving to find a patient much sicker than anticipated.

And some things are beyond the skills of these practitioners whether in the emergency department, clinic, or at home. "By the time a person gets to assisted living, something has failed physically," Horney says. "There's a lot we can't fix. So we need to think about how do we make the end of life as easy as possible. What we try to do is find a balance with the patient and family about how aggressive they want to be in treatments and ER visits."

She believes the Yangs are the ideal family. They don't sweat the small stuff, but they are prepared to handle the big stuff. Horney

believes Moran wouldn't be able to function in assisted living without his family.

In turn, the Yangs say that Emory's domiciliary care service lessens their burden. "In my opinion, this is the most wonderful program in the world," says Nancy Yang. "We've haven't had to go to the ER in more than a year."

Horney is pleased with the progress the program has made in that year. She'd like to see it grow but not so quickly that the team can't maintain high quality. She wants to preserve what makes it work, getting to know the patients, hearing their stories, talking with their families—all the things that help her navigate the complicated way of a geriatrician on the road. ■■



Candace Cato

Karolina Graber

Full potential.

Emory's Down Syndrome Center is showing what a child with an extra chromosome can do.



By RHONDA MULLEN • Photography by JACK KEARSE

Meet the Mulligans. The father, Paul, is an executive at The Coca-Cola Company, and the mom, Adrienne, a community activist and tall Irish beauty. Their two boys, Hugo and Kyle—ages 7 and 6—are boisterous but well-mannered,



shaking an adult's hand and saying "Nice to meet you" before they thunder outside to play. The baby, Sara Kate, is a loveable and cuddly 3-year-old, who has her mother's good looks.

But Sara Kate has one additional attribute—an extra copy of chromosome number 21. This condition is called trisomy 21 but is more commonly known as Down syndrome (DS). Around 250,000 families nationwide have a child with DS, which occurs in 1 of 691 births.

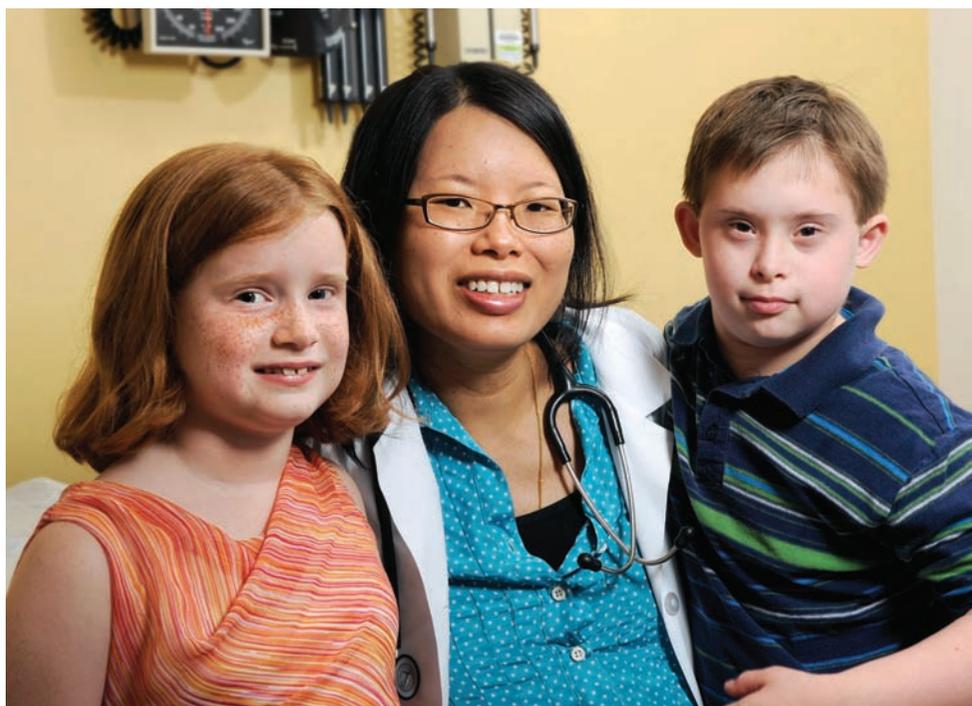
The additional genetic material causes what Adrienne Mulligan calls "a perfect storm of circumstances." These children have developmental delays, and they often experience hypotonia (low muscle tone), congenital heart defects, respiratory challenges, and gastrointestinal abnormalities.

However, with early interventions, many children with DS now are overcoming these obstacles to live rich and full lives up to age 50 and beyond. The Down Syndrome Center at Emory helps more than 200 children with DS each year, providing clinical care,

access to research, and connections to community resources to allow these children to reach their fullest potential.

This is one of the reasons that the Mulligans say they are grateful to be in Atlanta.





Pediatrician Jeannie Visootsak, shown above with Emma and Daniel Harman, works with children with Down syndrome (DS) and their families to boost development and potential. She also collaborates on research with Emory geneticist Stephanie Sherman (right), who has amassed the largest DS database in the country. Current Emory studies are examining the variations that can result from having an extra chromosome 21 and identifying factors that may lead to a congenital heart defect in people with DS.

From clinic to community

Jeannie Visootsak—or Dr. Jeannie, as patients call her—is a developmental behavioral pediatrician, who directs the Down Syndrome Clinic that opened at Emory in 2003. The clinic works with 15 hospitals in the Atlanta metropolitan area and is often the first specialty care for DS that local families encounter.

“Our goal is to form a long-term relationship with the children and parents, help them look beyond the diagnosis, and be an advocate for them,” Visootsak says. At the beginning, parents “may be overwhelmed and unsure of which direction to take. We start talking about development right away and what parents can do to help their children reach their full potential.”

The first visit with a family begins with a review of the chromosome studies and sharing general information on DS. Children receive a full physical and developmental screening as well as a review of DS health care guidelines, specifically medical issues, from vision and hearing to thyroid and cardiovascular function. They are given refer-

als to the state’s early-intervention program for physical therapy and to medical specialists for particular concerns.

“Each child is an individual with different strengths and challenges,” says Visootsak. “But one thing is a given for all. They have a wide range of developmental delay. So early intervention is key.”

Some 20% of the clinic’s population is Hispanic, and the clinic provides a full-time Spanish translator for those patients and families.

Just as important as the clinic’s referrals to physical and developmental specialists is putting families in touch with community resources like the Down Syndrome Association of Atlanta (DSAA), says Visootsak, who describes the DSAA as “the area’s premier DS organization.” A partner of Emory’s DS clinic, the DSAA enhances the lives of people with DS through support, education, advocacy, and programs. It provides programs for new and expectant parents and links them to support groups and early-intervention programs like the one at Emory. In fact, says Visootsak, the DSAA was

instrumental in helping get the clinic started, and its enthusiastic support has helped Emory’s clinical and research efforts in DS continue to grow.

The largest database of the smallest chromosome

That research takes place in the Emory medical school’s Department of Human Genetics, where geneticist Stephanie Sherman has spent more than two decades studying the causes and consequences of DS.

Over the years, she has amassed the largest DS database in the country, thanks to children and families who have participated in studies at Emory. In one such study, the Atlanta Down Syndrome Project, done in collaboration with the CDC from 1989 to 1999, researchers interviewed and collected medical information and biologic samples both from families with an infant with DS and controls without DS in the five-country metro Atlanta area. The goal was to understand why the chromosomal error occurred and to look at the consequences of having an extra chromosome 21.



From 2000 to 2004, the study expanded to additional sites around the country to become the National Down Syndrome Project—with Emory leading the largest multi-site, population-based study of DS to date. Again the goal was to identify the molecular and epidemiologic factors that lead to the genetic error and packaging of an extra chromosome as well as to identify risk factors for DS-associated birth defects. The participants included 1,215 families who had a child with trisomy 21 and 1,327 families who had a child without DS. All of the children had been born in the same geographic region.

“We wondered when during the formation of an egg or sperm does the chromosomal error occur and why is the age of the mother such a strong factor that influences this error,” says Sherman.

The researchers began using genetic variants along chromosome 21 in the parents and the child with DS to collect information on the timing of the error—where it occurred during meiosis (a special type of cell division that happens during formation of the egg or sperm). They also looked at patterns of

recombination, the exchange of chromosome material among pairs of chromosomes. From model systems (yeast, fruit flies, and mice, to name a few), they knew that recombination was an important process to help stabilize the chromosome pairs during meiosis.

Meiosis occurs in two stages, and the researchers found that the chromosome error in eggs could occur at either stage and that more of the oldest moms had errors at stage 2. “More than anything, the study emphasized the complex association between advanced maternal age and chromosome 21 errors during meiosis,” Sherman says.

What now?

While continuing the work on the causes of the error leading to trisomy 21, current investigations are focusing on understanding the variability that results from having an extra chromosome 21. Why, for example, do only some children with DS have congenital heart or gastrointestinal defects? And what accounts for the large range of cognitive abilities among children with DS? The epide-

miologic databank of interviews and clinical information along with a large biorepository of cell lines and DNA continues to be a major source for researchers trying to answer these questions.

Sherman hopes that targeted drug therapy and behavioral and educational interventions will soon become available to improve cognitive learning abilities for those with DS. “Researchers have seen that drugs are working in animal models of DS to restore balance in the activities of the neurons in the brain and how they interact with each other,” she says. “The question is, will they improve behavior and cognition in humans?”

Currently, the largest DS study at Emory (in collaboration with the Sibley Heart Center of Children’s Healthcare of Atlanta and other national sites) is seeking to identify genetic and environmental factors that influence the susceptibility for congenital heart defects in people with DS. The ethnically diverse study conducted by Emory has shown that the risk for atrioventricular septal heart defect (AVSD) is twice as high in



The baby of the family, Sara Kate always has enjoyed being the center of attention. Her mom, Adrienne, wants to spread the love and resources that her daughter enjoys to Atlanta families with DS through the opening of a GiGi's Playhouse here this fall.



African American participants and half as high in Hispanic participants as compared with Caucasians. Researchers are now trying to understand these differences to learn more about AVSD.

Complementing that effort, Visootsak is leading an NIH study to examine the neurodevelopmental outcomes of children with DS who have congenital heart defects, in particular AVSD. As these children increasingly survive cardiac surgery and live longer, the researchers want to better understand their early developmental trajectories (cognitive, motor, language, and social) to design better early interventions to maximize potential.

Skating to acceptance

Adrienne Mulligan follows results of studies like these like a hawk. She regularly attends educational conferences and research sessions about trisomy 21. Right after Sara Kate's birth, she decided to get as much education as she could to support her daughter.

She watched a determined Sara Kate struggle with her first baby steps and early walk-

ing, which took more energy than Hugo or Kyle had needed because of low muscle tone. She insisted that Sara Kate be tested for sleep apnea, which she turned out to have—as often is the case for children with DS, according to Mulligan. Each week, the littlest Mulligan goes to see physical, occupational, and speech therapists, and the results are paying off. She is excelling in her school program for 3-year-olds.

Adrienne Mulligan is just as tireless in her efforts to spread what she has learned to help all children with DS. She and her husband founded the SKate Foundation—named for Sara Kate—which has a three-fold mission: to publish and distribute a summary of the basic issues that almost all babies with DS face, conduct clinical trials which identify early interventions that work, and reach more families by supporting the opening of GiGi's Playhouses throughout this country and beyond. In fact, funds raised at the foundation's inaugural gala are making possible the opening of a GiGi's Playhouse in Midtown Atlanta this fall. The Atlanta playhouse will work to raise awareness about DS and empower families through free programs for

occupational, physical, and speech therapy as well as free tutoring in literacy and math. The Emory Down Syndrome Center received the Playhouse's first leadership award that honors Visootsak.

“Our vision is to see a world where individuals with DS are accepted and embraced in their families, schools, and communities,” says Mulligan. Of her daughter, Mulligan hopes that Sara Kate has options. “I want her to have the same opportunities as my sons or anyone else on the block.”

Emory's clinic staff share that same passion to have children with DS reach their fullest potential. “We're here to help them get the most out of life,” says Visootsak. ☐

WEB CONNECTION For more information on the Emory Down Syndrome Center, see genetics.emory.edu/DSC. For community resources, visit the Down Syndrome Association of Atlanta at atlantadsaa.org, the SKate Foundation at theskatefoundation.com, and the new GiGi's Playhouse in Atlanta at gigisplayhouse.org/Atlanta.

The discriminatory cancer

MORE CELL LINES IN THE FREEZER COULD MEAN MORE OPTIONS, EVENTUALLY, FOR WOMEN WITH A HARD-TO-TREAT FORM OF BREAST CANCER.

That's the idea behind LaTonia Taliaferro-Smith's plans to generate more basic materials for scientists working on triple-negative breast cancer.



These aggressive tumors strike women an average of two decades earlier than other forms of breast cancer and can return quickly after chemotherapy. The triple-negative label refers to the tumor's lack of three biologic markers that make other breast cancers vulnerable to standard drugs such as tamoxifen or

Herceptin. Triple-negative breast cancers disproportionately affect African American women and contribute to their higher rate of breast cancer mortality, according to Emory studies.

Taliaferro-Smith, a researcher at Emory's Winship Cancer Institute, ran into a problem when she began pursuing new targets for drugs that fight triple-negative breast cancers. "The idea is to have a representative set of cell lines, but there are very few cell lines from African American donors," she says. She wants to remedy that problem by making Winship "a go-to resource nationwide for researchers working on triple-negative."

To generate more cell lines, Taliaferro-Smith proposes to tap tissue banks at Winship and Grady Memorial Hospital. The Winship tissue bank began collecting biopsy samples from clinical study participants in 2010.



Cell lines are what researchers in the lab grow in large amounts from patient tissue samples to study how the cells have been altered or how they respond to drugs. Patients who have already donated tissue and given their consent need not undergo an additional biopsy for cell lines to be created.

Additional cell lines will enable Taliaferro-Smith to test combinations of existing therapies across a wider spectrum of tumors. She also will examine whether drugs that target a molecule, insulin-like growth factor 1 receptor (IGF1R), would be viable. Recent research has shown that IGF1R is hyperactivated in triple-negative breast cancer. But so far, most of what scientists know about IGF1R pertains to its activation in hypertension and diabetes, not triple-negative, she says.

Medical research historically has not encompassed diverse cross-sections of the population, and the scarcity of cancer cell lines from African Americans reflects this. As a recent report on demographics and cancer research by the National Cancer Institute warned, "The risk factors, screening guidelines, and treatment regimens identified through research are often not appropriate for individuals of non-European descent."

Over the past few decades, African American women have not participated in clinical studies in cancer at rates equivalent to those of white women. To combat this reluctance, "I like to talk with prospective donors and explain who I am and what is involved in the study," Taliaferro-Smith says.

The researcher has a personal connection to triple-negative cancer—six members of her husband's family have been diagnosed with breast cancer before the age of 50. "This is more than just a job for me," she says. —Quinn Eastman

How to save \$15 billion in health care costs?

A study published in *Health Affairs* (September 8) says the U.S. government could do it by investing in weight loss programs to help prevent diabetes and heart disease over the lifetime of a group of baby boomers aged 60 to 64. Emory health policy experts Kenneth Thorpe and Zhou Zang at Emory's Rollins School of Public Health led the research that proposes expanding a successful program developed by the CDC, YMCAs across the country, and most recently, the private insurance company UnitedHealth Group. According to their estimates, such a program has shown that participants in this age bracket can lose weight and reduce the risk of developing diabetes by up to 71%.

Whipping up immunity

Emory scientists are looking in an unusual place for a way to bulk up the body's defenses—the tails of bacteria. What they are finding is that flagellin—a building block of the miniature whips that bacteria use to move—may act as a protective agent to strengthen the body's innate defenses.

"Flagellin activates the body's own internal defense pathways," says Emory pathologist Andrew Gewirtz. "It also helps cells survive situations where they'd usually die."

The immune system evolved to recognize flagellin because so many types of bacteria have it. When cells in the lungs and intestines sense flagellin's presence, an ensuing flurry of signals strengthens barriers and stimulates immune cells that can go after invaders.



Previously, Gewirtz's team demonstrated the versatility of flagellin. They found that it has the ability to protect mice against a lethal dose of radiation, a severe intestinal irritant, Salmonella, and rotavirus.

The radio-protective aspects of flagellin suggest that it could be used for civil defense, for example, in miti-

gating the effects of radiation exposure after a nuclear power plant meltdown or for cancer patients receiving radiation therapy. This property of flagellin has interested both biotech companies and the U.S. military in bacteria's tiny whips.

At Emory, Gewirtz's laboratory is concentrating on viral infections. The researchers have found that a flagellin treatment can help prevent and also clear chronic rotavirus infection. The next step is to figure out whether its properties could apply to viruses such as HIV or hepatitis C.

Flagellin also stimulates cells that make up the soft tissues assaulted by the influenza virus, leading Emory microbiologists Ioanna Skountzou and Richard Compans to investigate whether flagellin would make a good component for a flu vaccine. In animal models, Emory hematologist Edmund Waller is testing flagellin's ability to promote healthy immune reconstitution and prevent graft-versus-host disease after a bone marrow transplant. —Quinn Eastman



Helping Haitians claim health: Several times a year, a group of Emory faculty and students travel to Haiti as a part of Emory Medishare—a branch of the nonprofit Project Medishare, which advances community health and development in one of the poorest countries on earth. This spring Emory Medishare's efforts focused on developing an electronic medical record and a referral system to help patients receive the treatment they need. The system fills a void in Haiti, where previously no reliable method existed to track needed follow-up care, says **Sameer Kapadia** (above), a third-year Emory medical student who helped organize the trip.

With an iPad and a mobile printer, the Emory Medishare team was able to print forms that patients could take to subsequent visits for medical follow-up or surgical consultations. Local health care providers were able to tweak and adjust the forms to suit the needs of both patients and doctors alike—all done onsite, with no power supply.

"Schools like Emory are definitely playing a part in providing primary and surgical care when those services aren't readily available, especially in rural areas," Kapadia says. To create a permanent health care infrastructure for Haiti, however, he emphasized the need for sustainable solutions, including new clinic buildings to provide venues for care as well as incentives to retain medical professionals in Haiti. Emory Medishare will continue its volunteer efforts to reach those goals, he says. —Angela Ju

Life-changing discoveries on the medical frontier

FDA approval for new transplant drug. For the past 20 years, kidney transplant recipients have faced a cruel paradox. To stave off immune rejection of their new kidneys, they must take drugs that gradually destroy kidney function.

Emory transplant specialists **Chris Larsen** (right front) and **Tom Pearson** have been leading the development of an alternative drug that can control the immune system while having less toxic side effects. In June 2011, belatacept—the

result of the researchers' long collaboration with Bristol-Myers Squibb—received FDA approval. Belatacept has the potential to simplify the medication regimens of kidney transplant recipients because it can be given every few weeks in contrast to standard drugs, which must be taken twice a day.



“Our goal is to achieve a normal life span for kidney transplant patients and have them survive dialysis-free,” Larsen says. “We believe belatacept can help us move toward that goal.” Belatacept also is being tested at Emory in clinical trials for liver and pancreatic islet transplant.

Progesterone as pediatric cancer treatment.

New research findings from Emory suggest that progesterone may be effective against neuroblastoma, a form of cancer affecting small children.



Already progesterone is being tested in emergency departments across the country in a phase 3 clinical trial for traumatic brain injury—thanks to pioneering research by Emory neuroscientist Don Stein. In investigating how to possibly enhance progesterone’s effectiveness, Fahim Atif, a colleague in Stein’s laboratory, observed that it could protect healthy neurons from stress but

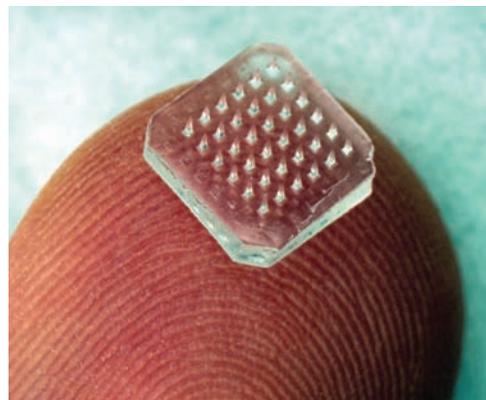
kill tumor cells. The findings, that high doses of progesterone can kill neuroblastoma cells while leaving healthy cells unscathed, appeared in *Molecular Medicine* (summer 2011).

Progesterone’s effects on cancer are known to be complex. Large-scale studies have shown that hormone replacement therapy with combined estrogen and synthetic progestins can increase the risk of heart disease and breast cancer. However, there may be differences between progesterone, the natural hormone, and synthetic progestins.

More research is necessary to determine the optimal dose, how long treatment should last, and if progesterone should be used alone or in combination with radiation or chemotherapy. Emory scientists are also exploring whether it can stop the growth of other brain cancer types such as glioblastoma and astrocytoma.

Microneedle apps. The right stuff delivered to the right place is the goal that Emory and Georgia Tech researchers have in mind in exploring the applications of microneedles. Not only can tiny needles supply medication directly into the eye, they allow vaccines to meet up with cells in the skin that drive good immune responses in H1N1 flu and other strains.

Although intramuscular injection is a standard mode of vaccine delivery, it may



not be the most efficient. The muscles have a low concentration of cells needed to activate immune signals, called antigen-presenting cells, says Emory immunologist Ioanna Skountzou. In contrast, the skin contains a rich network of antigen-presenting cells.

Vaccination by a microneedle patch appears to ensure that immune protection lasts a long time. In contrast, mice that received an intramuscular injection of flu

Helping elders unable to help themselves

SOMETIMES THE MOST COMPLEX IDEAS HAVE HUMBLE BEGINNINGS—A LATE-NIGHT EPIPHANY OR AN INSPIRED NOTE WRITTEN ON THE BACK OF A HAND. SOMETIMES THEY EVEN OCCUR IN A PIZZA JOINT.

“Like a lot of ideas, it starts on a napkin,” says Tom Price, chief of medicine at Emory’s Wesley Woods Hospital, remembering the drafting of a plan to help prevent elder abuse and neglect in DeKalb County, Ga.

After mapping out logistics with colleagues, Price went on to negotiate a working relationship between Emory Healthcare, Wesley Woods, and DeKalb County to implement the idea. The joint effort resulted in Vulnerable Adults Living At Risk Invisibly (VALARI), a multidisciplinary team that prosecutes cases of neglect and provides support to victims who need medical attention or, in some cases, shelter.

TAME, or the Taskforce Against the Mistreatment of Elders, is a program within the Emory Center for Health in Aging that grew up alongside VALARI. TAME’s goal is to help educate professionals—specifically social workers, law enforcement, and health care providers—about what to do when they find instances of abuse.

The idea had outgrown the napkin.

Elder abuse is a difficult crime to combat, requiring cooperation among different professions. It exists in many forms, ranging from physical and sexual to mental and financial. Those professionals



are dealing not just with cases of mistreatment but also self-neglect.

For victims of elder abuse, “we explain the system and go to court with them,” says Betsy Ramsey, who works in DeKalb County’s special victims unit and VALARI.

However, cases often are able to be resolved without prosecution. The bigger burden for health care professionals, says Price, is to report suspicion, with nurses and doctors evaluating each patient’s medical history to establish whether ailments

stem from abuse or another cause.

Once victims are identified, VALARI’s safety action plan kicks in. Based on needs and desires, the abused person will receive help

moving to an apartment at Wesley Woods Center or the home of a trustworthy friend or relative and be given any needed medical attention.

Price recalls one case where an elderly woman, being cared for by her son,

was found in an unkempt home with waste matter on and around her. On investigation, the VALARI team found that the caretaker was neglecting his own medical condition, which had led to the unacceptable living conditions for both mother and son. As a result, both were given assistance.

These cases of abuse are not merely about catching a criminal. They are about helping those unable to help themselves, says Ramsey. —Stone Irvin

Those professionals are dealing not just with cases of mistreatment but also self-neglect.

vaccine had extensive lung inflammation and 60% less antibody production against the virus. Mice that were vaccinated with microneedles maintained high levels of antibody production, with no signs of lung inflammation when challenged with homologous influenza virus six months after vaccination.

Microneedles offer other logistical advantages, such as low cost, small size, and simplicity that might enable people

to vaccinate themselves, says Georgia Tech’s Mark Prausnitz, who developed the technology.

For ophthalmology researchers, a long-standing goal has been to deliver medication to the back of the eye in a selective and minimally invasive way. In April, Henry Edelhauser, former director of research at the Emory Eye Center, and Prausnitz were awarded a patent for this application of microneedle technology.

Many patients with age-related macular degeneration have injections on a regular basis. Because the microneedle apparatus is so much smaller than the needles used to inject medicine into the eye, the patient may experience less discomfort. The same technology could be used to inject medication directly into the eye for other ocular conditions, such as glaucoma, eliminating the need for daily drops.

—Quinn Eastman

Modulation

One year in the cancer journey of a symphony family



Halloween has always been big at the Joneses. They drape cobwebs on their porch, strategically place a mat that plays scary music when visitors come to the front door, and litter their lawn with creepy tombstones. The parents, Ralph and Gloria Jones, even don costumes every year when they perform with the Atlanta Symphony Orchestra for the annual Halloween concert.

This year their decorations include a life-size mask that eerily resembles Ralph's face and neck. That's because the 3-D mask was created for Jones at Emory to help radiologists mark the exact location of an aggressive, stage IV cancer that had taken hold at the base of the tongue.

Jones received his cancer diagnosis on May 7, 2010, a day that he and his family will never forget and which they say has changed their lives forever. He had had few warning signs—a little blood in his saliva, a small lump that suddenly appeared on his neck, and in hindsight, a persistent cough.

Since that time, the Atlanta Symphony's principal bassist has undergone surgery, chemotherapy, and two rounds of radiation at Emory's Winship Cancer Institute.

Under the care of a team of specialists that rivals the number of players in the symphony's bass section, Jones has had to relearn how to swallow. For a while, he lost the characteristic beard for which his bass students had dubbed him "Sir Ralph." His voice has even changed in timber and pitch. But he can still make music that moans, weeps, skips, and soars.

After many months of treatment, Jones returned to the orchestra part-time for rehearsals, and Gloria Jones recorded events in a journal that she has kept from the beginning of their cancer journey. "Today he made it through the entire rehearsal time of the Dvorak *7th Symphony*," she wrote in March. "This piece is tiring for a healthy person, much less a compromised one, so I am also bursting with pride for him."

Emory radiation oncologist Jonathan

Beitler had seen Ralph Jones once a week or more during 35 rounds of radiation treatment. He now got to see his patient in another setting—Atlanta's Symphony Hall, complete with a backstage tour to meet the musicians. (Beitler has since become a season symphony subscriber.)

Too soon, however, neither Beitler nor the Joneses would have any reason to celebrate. Despite victory in the tongue and neck, a small blueberry-sized spot had turned up on Ralph's sternum, and it was malignant.

Déjà vu

The team at Winship discussed whether to remove the spot or leave it alone. Based on the experience of a previous patient, they ultimately decided on surgery—and additional sessions of radiation.

"There are no solid answers here, and that is very scary," wrote Gloria Jones.

After a performance with the Atlanta Symphony in Savannah—where Ralph got



a hug from guest conductor Roberto Abbado during the applause—the Joneses were back at Winship in a place that was all too familiar. “Walking back down into the radiation oncology tunnel gave both of us a weird feeling of déjà vu,” Gloria wrote. “Ralph said just now, ‘I would

rather not be here.’ That says it all.”

To prepare for the second round of radiation, Beitler took a CT scan of the area around Jones’s sternum, measuring the thickness of the bone and adjusting the radiation beam to make sure the heart would be protected during treatment. Jones got a black circle the size of an orange drawn on his chest, precisely mapping the location for radiation delivery. It was easier the second time around, he says, with each treatment taking only two minutes.

“We carefully check measurements to compare what we are planning to do against what we are delivering,” Beitler says.

Radiation has always been a rapidly expanding field, and now more than ever, technology is allowing radiologists to target smaller and smaller tumors while minimizing damage to surrounding tissue. “As chemotherapy gets better, radiation is going to be even more important,” Beitler says. “Chemo is systemic, and radiation is local. One barrier to cancer survival now is local control.”

Currently the most precise local control uses proton therapy, and Emory is making plans to open the first proton therapy center in Georgia. Only nine other centers in the United States currently offer proton therapy, and the closest to Georgia is at the University of Florida in Jacksonville.

Proton therapy allows for the greatest possible control of the radiation energy deposited in the body because of a Bragg Peak, which determines the rate at which a particle delivers energy as it travels through space. Protons exhibit a sharper Bragg Peak than conventional radiation therapy, meaning they deposit more energy over a short amount of time. This characteristic enables the radiation oncologist to target cancer cells with radiation so that energy is deposited to the tumor, not the healthy surrounding tissue.

Proton therapy will complement rather than replace traditional radiation therapy. Its precision makes it ideal for treating areas of high sensitivity such as the prostate, brain, and eye.

The very tunnel where the Joneses found themselves in April currently is undergoing renovation to bring in new radiation equipment, adding to Winship’s arsenal. Site selection also is under way for the proton facility, which will require a massive cyclotron being built in Europe.

Gloria Jones noted the changes in her journal, after watching an online interview with Beitler. “His hope is that when he retires, everything he learned as a student is obsolete,” she wrote. “The way they are improving treatment, I wouldn’t be surprised if his dream comes true.”

Easter promises

For now, the Joneses are focused on their own dreams—a healthy, cancer-free father, attendance at symphony rehearsals, trips to the beach, and going to school programs for their children, Christopher—a teenager—and Shelley in elementary school.

Although Ralph continues to have trouble with swallowing and is fighting fatigue, he has returned fulltime to the symphony. He would like to eat a juicy cheeseburger one day. For now, it is enough to be cancer-free.

In the midst of returning to something more closely resembling normal, Ralph and Gloria took time to talk up free screenings for throat and oral cancers at Winship this summer. After Gloria came out with a clean check-up, the couple went around the Emory Clinic drumming up business for the screenings. Of the 111 people screened that day, some had issues that needed further study, Gloria says, even fellow symphony member and violinist Frank Walton. His screening revealed a cancerous growth on his vocal chords.

“His wife says we saved his life,” says Gloria. “If we saved just one person from what we’ve been through, it was worth our time.” —Rhonda Mullen



WEB CONNECTION To see a video about the Joneses and hear them play a double bass duet, visit bit.ly/jonesbasscancer. To learn about radiology imaging services, contact 1-888-WINSHIP or visit cancer.emory.edu. In May 2012, Emory will offer free throat and mouth cancer screenings at Relay for Life in Gwinnett County and at the Atlanta Motor Speedway on Labor Day.



A banner year for hearts: Last year, Emory's heart failure and transplant teams performed 29 heart transplants and implanted 24 ventricular-assist devices. What distinguishes Emory's program is that the ventricular-assist device and heart transplant teams work together, says Jennie Perryman, the transplant center's director of policy outcomes and management.

A hybrid treatment for cancer

Patients who are diagnosed with esophageal cancer face a daunting prognosis: pain, fatigue, weakness, and difficulty eating. In some advanced cases, all or part of the esophagus and stomach may have to be removed.

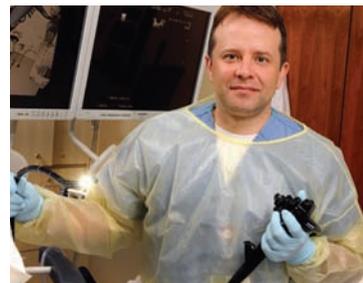
But early detection and a new approach to treat esophageal lesions promises to ease the burden and may offer a more hopeful prognosis for esophageal cancer. Emory gastroenterologist Field Willingham and his colleagues are using several minimally invasive therapies to treat lesions and have developed a new hybrid approach to treat tumors in the upper GI tract.

The flow of stomach acid into the esophagus can lead to gastroesophageal reflux disease (GERD), which in turn can lead to a condition known as Barrett's esophagus. Barrett's esophagus occurs when the cells in the lower esophagus begin to look more like cells from the intestine. Over years, Barrett's esophagus can become low-grade dysplasia, then high-grade dysplasia, and even maybe esophageal cancer.

"We are trying to intervene when the disease is at a premalignant stage, before the Barrett's has progressed to cancer," Willingham says. "If we can catch the Barrett's in the premalignant stage, we can use an endoscopic

approach to treat just the lining layer of the esophagus."

In many cases, the team can get rid of the bad cells in a short endoscopic procedure. Endoscopy involves passing a slender, tube-like instrument into the esophagus to treat just the lining layer. Often the approach



Field Willingham is working to halt the progress of esophageal conditions before they become malignant, using therapies that are minimally invasive.

can keep patients from progressing to a more severe stage and spares them a radical esophagectomy.

Among the endoscopic techniques in the surgeons' toolbox is an endoscopic mucosal resection (EMR), during which they apply a band around the area that contains the troublesome cells. The band raises the tissue into a polyp of sorts, allowing them to remove the polyp and take the bad cells while leaving the deeper esophagus intact. The lining grows back normally, allowing some patients

to avoid the debilitating side effects of major surgery.

After EMR, Willingham and his team use other techniques to get rid of the premalignant cells (radiofrequency ablation, which uses a balloon or small pad to apply energy to the lining layer of the esophagus, and cryotherapy, which freezes just the bad cells in the lining layer with liquid nitrogen). Almost all patients go home the same day, and only a few have any discomfort.

For more advanced tumors, teams from surgery and gastroenterology use thin laparoscopic instruments and flexible endoscopes to remove larger tumors that previously would have required major surgery. Working together, they have been able to spare five of seven recent patients a major life-altering surgical resection.

Detecting and removing esophageal tumors early is essential for a favorable outcome. Once tumors progress, the prognosis can be grim and morbidity high. The hope is to offer all patients an excellent outcome with the least invasive approach. —Robin Tricoles

WEB CONNECTION To learn more about treatments for esophageal cancer, call 404-778-7777 or visit emoryhealthcare.org/connecting/healthconnection.html.

Jumping quality hurdles: Five years ago, Emory Healthcare put a stake in the ground to be ranked in the top 10% of all academic medical centers in quality. This fall, that goal was achieved. The University HealthSystem Consortium placed Emory University Hospital (EUH) and Emory University Orthopaedics & Spine Hospital at 10 out of 101 centers in national quality rankings (up from 45 in 2010). EUH Midtown also made a dramatic jump from 42 in the rankings last year to 11 this year. How did it happen? Teamwork and collaboration, says William Bornstein, chief quality and medical officer for Emory Healthcare. "These improvements are not just numerical rankings. They represent the progress we have made in caring for our patients."



Like going to the dentist, but for the voice

Daryl Collins never knew what sounds would emerge when he began to speak. His hoarseness made him so self-conscious that he went looking for a cure.

The cause, he discovered, was recurring growths on his vocal cords, most likely tied to papillomavirus.

So Collins underwent direct laryngoscopy, a surgical procedure requiring general anesthesia. When the growths again grew large enough to affect his cords, he underwent the procedure again and again and again—in fact, three times a year for seven years.

Then Collins learned about a procedure at the Emory Voice Center that allows doctors to remove the growths without putting patients to sleep. "This was something I had been looking for for years," he says. "I don't relish having to be put to sleep every two to three months."

The Emory Voice Center is one of a few in the nation and the first one in the Southeast that offers awake laser therapy. Introduced at Emory in 2007, the approach uses a potassium titanyl phosphate (KTP) laser to avoid damaging the delicate tissues of the vocal folds during surgery. Its predecessor, the pulsed dye laser, was developed to treat port-wine stains caused by broken blood vessels.

KTP has since received FDA approval as a treatment for vocal disorders and is regularly covered by most insurance plans. Most recently, its use has been expanded as a trial treatment for laryngeal cancer in combination with anti-cancer therapies such as

radiation and chemotherapy.

"The laser basically starves a lesion by heating and shutting down the blood vessels that feed it," says Emory laryngologist Adam Klein.

According to Klein, awake laser therapy is ideal for patients with recurring conditions—such as papilloma and dysplasia—because it does less damage than conventional surgery to surrounding tissue and can be performed as an outpatient procedure.

"We can keep patients healthy without putting them to sleep over and over again," Klein says.

The treatment requires only local anesthesia, poses minimal risk of damage to vocal cord tissue, and takes only a couple of minutes to do. It involves numbing the throat and running an endoscope down through the nose to view the larynx and vocal cords. Doctors then snake a flexible laser through the endoscope to treat the problem, while the patient remains awake.

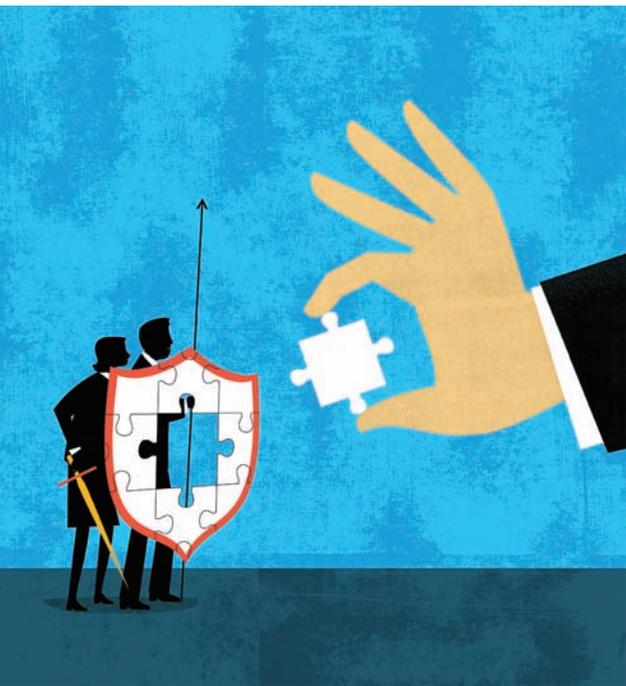
"I was a little nervous the first time that Dr. Klein treated me with the pulsed KTP laser," Collins says. "But once the numbing agent kicked in, it really wasn't that bad. In fact, after the numbness goes away, there's no residual pain. Except for the fact that a couple of days later my voice returns and sounds a lot better, I don't even notice that he's been there."
—Quinn Eastman



WEB CONNECTION To see a video on the awake laser therapy for the voice, visit bit.ly/voicetherapylaser.

Advocating for health

By THOMAS LAWLEY



What's so special about teaching hospitals? Emory Dean Tom Lawley and the Association of American Medical Colleges want you to know.

Not surprisingly, the biggest issues facing the Association of American Medical Colleges (AAMC) today are economic ones, above all, proposed cuts to federal support for research and teaching hospitals. As AAMC president Darrell Kirch recently wrote in a letter to President Obama, cuts to funds for teaching hospitals would have serious adverse and lasting effects on patient care, jobs, medical research, and hopes of ever mitigating our country's growing physician shortage.

Teaching hospitals account for only 6% of U.S. hospitals, so how can they have such an impact? And why is the federal government supporting them in the first place?

The importance of government funding—specifically Medicare—to teaching hospitals is not well understood. Serving as a source of information for elected officials and citizens alike is one of the AAMC's ongoing responsibilities, so here goes.

The nation's 400 teaching hospitals—including Emory's own five hospitals and its affiliates (Grady, Children's Healthcare

of Atlanta, and the Atlanta VA Medical Center)—are by definition hospitals associated with a medical school. Teaching hospitals serve as educational sites for more than 100,000 residents nationwide. These young physicians are medical school graduates who are receiving postgraduate specialty training to become family medicine doctors, surgeons, gynecologists, internists, or practitioners in another of the 130 clinical specialties recognized by the Accreditation Council for Graduate Medical Education (GME). Such training can take three to

11 years, depending on the specialty.

The cost for hospitals to train a resident averages \$100,000 each year, including a stipend and a percentage of supervision costs and hospital overhead. While that figure may sound high, in actuality graduate medical education is a bargain for hospitals, communities, and the nation, considering that each resident provides up to 80 hours of complex patient care each week while being taught and supervised by medical faculty. The highest paid resident, a physician in the 10th year of training after medical school, receives roughly \$60,000 a year (and often has more than \$100,000 in student loans to repay at the completion of the residency).

On average, Medicare, through its GME payment system, reimburses teaching hospitals about \$40,000 per resident over and above their salary. The payments are partial compensation for the fact that teaching hospitals end up treating a sicker, more medically complicated patient population than other hospitals, that they provide essential but costly services unavailable elsewhere in the community, and that they treat a disproportionate share of poor patients.

For example, teaching hospitals provide the country with 75% of burn units, 62% of pediatric ICUs, 61% of level I regional trauma centers, 50% of surgical transplant services, and the list goes on. Furthermore, teaching hospitals provide more than 40% of all hospital charity care and 25% of all Medicaid hospitalizations. (Like Medicare for seniors, Medicaid for individuals and families with low income pays less than the costs incurred in providing patient care.)

No one can argue with the need for fiscal responsibility, but our country can't afford to target teaching hospitals to achieve it. The phrase throwing out the baby with the bathwater never rang truer. The AAMC has expressed concern that funding cuts would almost immediately cause serious damage, threatening services that all of us want to be in place if we need them. For the poor or those with devastating medical bills, an already tenuous safety net would be torn to shreds.

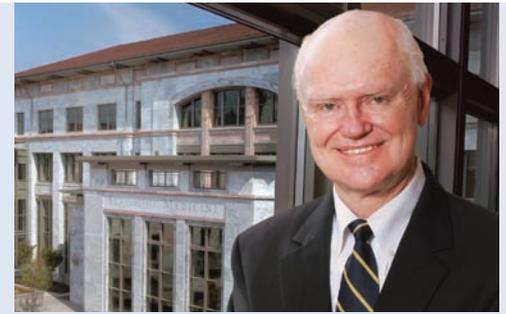
Then there is the future.

Further declines in Medicare support to teaching hospitals (support has effectively been frozen since 1997) would not only threaten access to services for all of us but also worsen the current physician shortage. By 2020, the proportion of the population over 65 will have increased by 35% at a time when one-third of current physicians are expected to retire. The AAMC projects a shortage of 45,000 primary care physicians and 46,000 surgeons and medical specialists. The passage of health care reform would add 32 million Americans to the rolls of insured people, further intensifying the demand for physician care. While a critical shortfall will affect everyone, those most affected will be vulnerable and underserved populations.

Little wonder that support for medical schools and teaching hospitals is such an important issue to the AAMC, but there are plenty of other irons in the fire too. One is advocating for support of the National Institutes of Health, our nation's health research engine, which supports thousands of jobs. Another is creating the best possible physicians. For example, the MCAT exam, which is part of the selection process for medical schools, is being revised to balance its current focus on natural sciences with more emphasis on critical analysis, reasoning skills, and behavioral and social sciences. Another AAMC effort involves tailoring medical school curricula to prepare future physicians, nurses, allied health, and other health care professionals to work together in teams rather than as lone rangers.

Despite the challenges we face today, the excellence of American academic medicine, research, and patient care has never been greater. And the AAMC wants to make certain that they keep getting better. That's not just advocating for academic medicine. It's advocating for the American people. ■

WEB CONNECTION To learn more about the AAMC's advocacy for teaching hospitals, visit bit.ly/gradmedfunding.



The man for the job

Last year, Emory medical dean Tom Lawley took office as chair of the board of the AAMC, the highest office of the most powerful organization that supports medical education. The AAMC represents America's 134 medical schools (and 17 Canadian ones); approximately 400 major teaching hospitals and health systems, including 62 Veterans Affairs medical centers; and nearly 90 academic and scientific societies that are concerned with biomedical and behavioral research, medical education, and patient care.

Lawley knows this turf well. One of the longest-serving medical deans in America, he led Emory into the nation's top medical schools, with research awards expanding five times over since he took the deanship in 1996. Before joining Emory as chair of dermatology, he was a senior investigator at the National Cancer Institute. He has never stopped seeing patients as his administrative duties have increased. Now, as head of the 17-member AAMC board that he helped create and on which he has always served, Lawley is front and center in dealing with the critical issues that face medical education—and the country—in an era of economic pressure, health care reform, and spiraling achievements of modern medicine.



A new look at an old mummy

Where does one start putting back together a 4,000-year-old mummy whose head has fallen off and whose bones aren't where they are supposed to be? It turns out at Emory University Hospital.

When conservators at Emory's Carlos Museum began restoration on the oldest mummy in North America, now on display at the Carlos, they had many unanswered questions, according to lead conservator Renee Stein. Where were the bones located? What did they reveal about the condition of the person's health? Was the mummy male or female? What was the cause of death?

The Carlos enlisted Emory radiologist William Torres to help answer those questions about the mummy, which had lain in storage in the museum's collection since 1921. Torres used CT imaging to view the bones and their locations and prepared a 3D reconstruction that allowed the mummy to be rotated and viewed in a variety of positions. These techniques allowed the conservation team to see what was underneath the wrappings without having to disturb the fragile linens from antiquity.

Torres, who serves on the board of the Carlos and is an art collector, previously had examined a cache of mummies for an earlier Carlos exhibit that included Pharaoh

Ramesses I. (Emory returned the pharaoh's mummy to Egypt in 2002 as a gesture of good will.) Unlike those mummies, which dated from the Middle Kingdom, the Old Kingdom example was in "rather bad condition," Torres says. "For one thing, the vertebral bones were in the wrong place, and the ribs were where the pelvis was supposed to be."

The CT in combination with x-rays showed that all the bones were well-mineralized. The person had experienced no head trauma, and most likely, was male, with a large and wide skull and a brow ridge (usually lacking in women).

From the physical evidence, Emory anthropologist George Armelagos surmised that this man had enjoyed good health with access to a good diet and social advantages. The mummy's brain remains intact, with a walnut texture these 4,000 years later, and he still retains some teeth that are in amazingly good shape.

Because the mummy was buried at a holy site in Abydos, Egypt, he was likely a member of the elite class and a person of means, says Peter Lacovara, the Carlos' curator of ancient Egyptian, Nubian, and Near Eastern art. As further evidence, the base of the coffin that he rests on is made of a single piece of wood—"the cedars of Lebanon," says

Conservators at Emory's Carlos Museum had many unanswered questions.

Where were the bones located?

What did they reveal about the condition of the person's health?

Was the mummy male or female?

What was the cause of death?

Lacovara—and would have been covered by a limestone sarcophagus, expenses that no ordinary Egyptian could afford.

Now through December, the mummy is the centerpiece of an exhibition at the Carlos, "Life and Death in the Pyramid Age: the Emory Old Kingdom Mummy." With a new jaw and new digits to replace missing bones from the hands and feet, he lies on his right side, as if asleep. With a reattached head supported by a headrest, he faces east to the rising sun in his afterlife. —Rhonda Mullen



WEB CONNECTION For more information, see carlos.emory.edu/Old-Kingdom-Mummy. To hear a podcast of Egyptologists discussing the Old Kingdom mummy, visit carlos.emory.edu/podcasts.

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ask Stacey

Need an appointment for an Emory doctor quick? Interested in registering for a prenatal class? Want to learn how to protect yourself and your family from flu? Stacey Hammett can help you with that and more.

Hammett is one of the 14 registered nurses who answer 16 phone lines at Emory Healthcare's HealthConnection. A one-stop shop for patients and referring physicians, HealthConnection is available 7 a.m. to 7 p.m. each weekday. **What would you like to know?**

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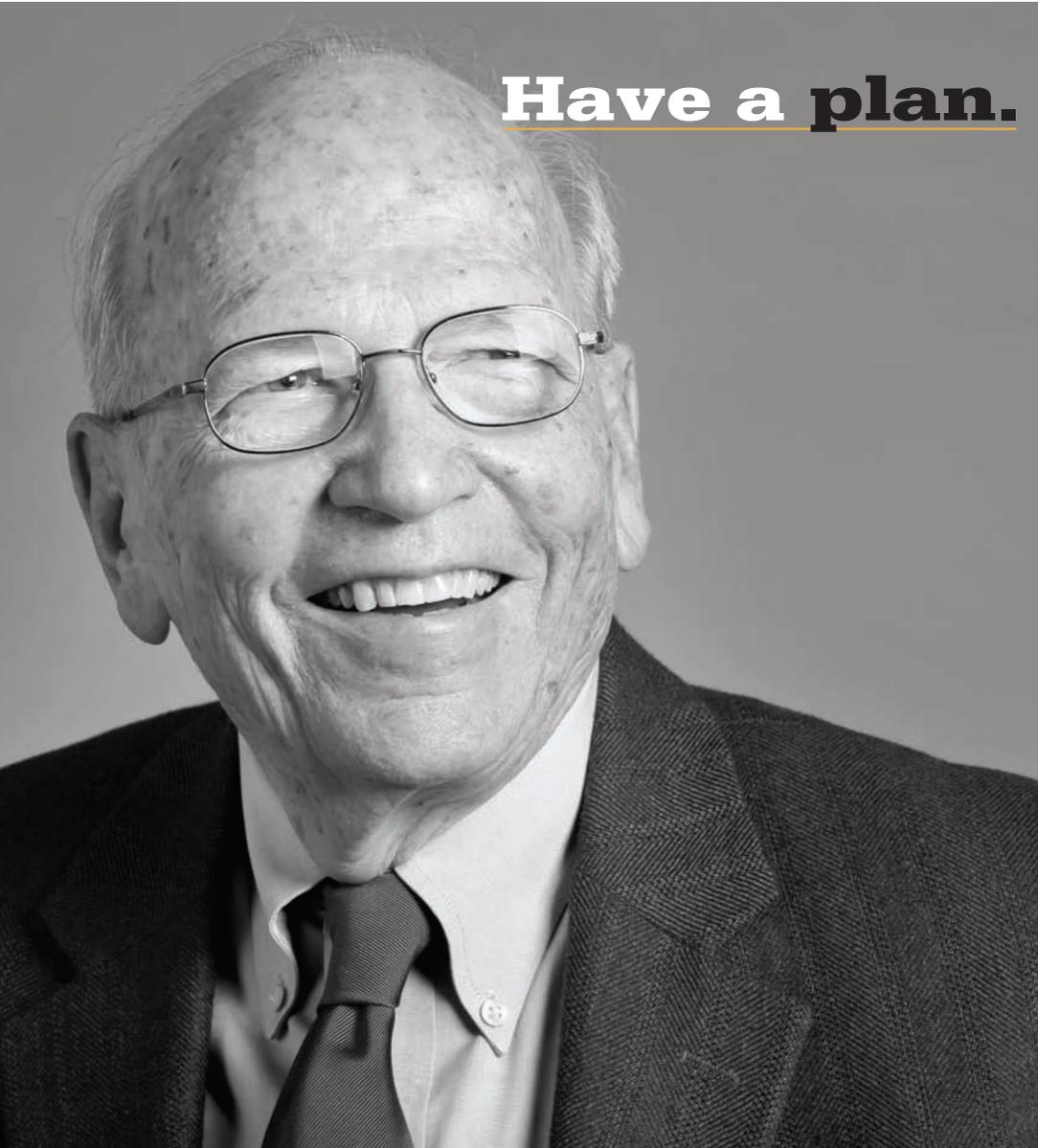
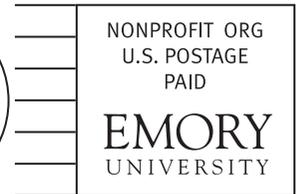
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Have a plan.

DAN DUNAWAY was one of 62 applicants admitted to the Emory School of Medicine class of 1961. Nearly 1,200 others were not. “It’s a sobering thought that you were selected to be of service to the community when so many others weren’t,” says Dunaway 61M 62MR, a successful Memphis dermatologist who still practices at age 81.

Determined to assist future generations of medical students, he has funded charitable gift annuities and made a bequest to support the Class of 1961 Medical Scholarship Fund he helped establish. “What are we going to do? Say thank you and move on, or watch out for the next generation of students coming along?”

Learn how you can include Emory in your estate plans. Please call the Office of Gift Planning at 404.727.8875, email giftplanning@emory.edu, or visit www.emory.edu/giftplanning.

Plan to be of service.



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