

TMC | PULSE

THE OFFICIAL NEWS OF THE TEXAS MEDICAL CENTER — VOL. 3 / NO. 4 — MAY 2016

Conceiving After Cancer

.....

*Integrating fertility preservation
and cancer care*

INSIDE: THERAPEUTIC HORSEMANSHIP, P. 6 » NCAA ALL-STARS, P. 22 » THE PAINKILLER PARADOX, P. 24

VISTAS DE SEVILLA

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Conceiving After Cancer

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NCAA ALL-STARS // p. 22

PATIENTS AT SHRINERS HOSPITALS FOR CHILDREN – HOUSTON HAD A BALL WHEN MEMBERS OF THE NCAA ALL-STARS PAID THEM A VISIT. THE COLLEGE BASKETBALL PLAYERS SHOT HOOPS AND PLAYED ONE-ON-ONE WITH THE CHILDREN BEFORE THE 2016 REESE'S ALL-STAR GAME.

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PRESIDENT'S PERSPECTIVE



ROBERT C. ROBBINS, M.D.
*President and
Chief Executive Officer,
Texas Medical Center*

When I was a cardiothoracic surgeon at Stanford, I would often see patients suffering from cardiomyopathy as a direct result of a drug called Adriamycin. The drug was a common chemotherapeutic agent and it was effective: it cured the cancer. Unfortunately, it left in its wake patients with heart failure who frequently needed heart transplantation.

The toxicities of cancer-killing modalities are well known. Radiation, chemotherapy, even specialized surgical routes are notorious for leaving collateral damage. The price tag could be as straightforward as the loss of healthy cells or as unanticipated as the inability to have children.

In this issue of Pulse, you'll read about fertility specialists here in the Texas Medical Center and how they're working to provide childbearing options to couples affected by cancer. It's a collaborative effort and part of the ongoing development of less toxic cancer treatments taking place on our campus every day. Be it proton beam therapy, applied genomics research, or the promise of immunotherapy, these innovative treatments will likely transform the field of oncology.

As the largest medical complex in the world, we are committed to finding novel ways to improve the landscape of health care. In addition to our cover story, this month's issue features stories about our involvement with the American Heart Association, the power of equine therapy, concerns about our country's opioid epidemic and more. Because if there is anyone who will engage the whole of Houston in a commitment to heart health, or make meaningful strides in a Parkinson's patient's recovery, or reduce the weight of a cancer diagnosis, it's the 56 institutions that make up the Texas Medical Center.

Robert C. Robbins

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Beware of the Bite

May has been designated as Lyme Disease Awareness Month to increase education and help prevent the tick-borne illness

BY BRITNI N. RILEY

According to the Centers for Disease Control and Prevention (CDC), over 300,000 Americans are diagnosed with Lyme disease each year. The infection is a tick-borne illness that has only been recognized as a reportable disease by the CDC since 1982.

While there are a considerable number of patients diagnosed with Lyme disease each year, the disease is still somewhat new to patients, as well as physicians and scientists. In an effort to raise awareness of the disease, May has been designated as Lyme Disease Awareness Month.

The perplexing disease was first described in the 1970s by Allen C. Steere, M.D., and a group of researchers in Old Lyme, Connecticut, when an alarming number of children and adults began complaining of puzzling and debilitating symptoms, including skin rashes, arthritic conditions, headaches and fatigue. By 1975, researchers concluded that all of the people suffering from these symptoms had been bitten by ticks but still did not know what caused these ticks to be more harmful than others.

In 1982, scientist Willy Burgdorfer, Ph.D., discovered that a spiral shaped bacterium, later called *Borrelia burgdorferi*, was the bacterium carried by ticks that causes Lyme disease.

Around the same time, Steven Norris, Ph.D., professor of pathology and laboratory medicine at McGovern Medical School at The University of Texas Health Science Center at Houston (UTHealth) had just begun his career researching syphilis, which also carries a corkscrew shaped genome. Upon learning of Burgdorfer's work with *Borrelia burgdorferi*, Norris changed his focus to research Lyme disease.

"*Borrelia* is similar to the organism that causes syphilis because of its spiral shape, but one of the real mysteries of Lyme disease is that it can cause disease for weeks to months, and that is unusual for a bacterium to do,"

said Norris, who is the Robert Greer Professor of Biomedical Sciences at UTHealth. "I was drawn to researching Lyme because I wanted to figure out how this organism is able to cause a persistent infection."

Through his research, Norris, along with collaborator Alan Barbour, Ph.D., and others, was able to develop a diagnostic test to positively identify patients who are suffering from Lyme disease. The test, which was developed in 1997, can confirm whether patients have VlsE, a protein found only in Lyme disease bacteria.

"A lot of people have aches and pains and flu-like symptoms, which are very similar to the common symptoms of Lyme disease," Norris said. "By identifying VlsE, which is the protein that helps the *Borrelia* organism evade the immune response, we can test the patient's blood for the presence of anti-VlsE antibody to see if they have contracted Lyme disease in a more conclusive way."

According to the CDC, the common symptoms of Lyme disease include fever, chills, headache, fatigue, muscle and joint aches and swollen lymph nodes. The initial tick bite will leave a bull's-eye shaped rash on infected persons.

"After the tick bite, the organisms have to move from the gut of the tick into its salivary glands, and at that point the microorganisms migrate into the human," Norris said. "This process typically takes 24 hours at which point the organism multiplies and spreads to form the bull's-eye rash, goes to the bloodstream and infects other tissues."

The highest concentration of Lyme disease cases is in the northeastern and north-central United States. The southern United States and Texas have a relatively low occurrence of Lyme cases, mostly treating patients who were bitten by a tick while on vacation outside of the area.

"In Houston, we are evaluating patients who think they have contracted



“...one of the real mysteries of Lyme disease is that it can cause disease for weeks to months, and that is unusual for a bacterium to do.”

— STEVEN NORRIS, PH.D.

Professor of Pathology and Laboratory Medicine at the McGovern Medical School at the University of Texas Health Science Center at Houston

Lyme disease about every other week,” said Charles Ericsson, M.D., head of clinical infectious diseases at Memorial Hermann – Texas Medical Center and the Dr. and Mrs. Carl V. Vartian Professor in Infectious Diseases at McGovern Medical School. “The vast majority of these people do not have Lyme disease, and the ones who do have been exposed in areas outside of Texas with Lyme transmission.”

Antibiotic treatments have proven to be successful for patients suffering from Lyme disease. Patients treated with appropriate antibiotics in the early stages of Lyme disease usually recover rapidly and completely. The most common antibiotics used to treat Lyme disease are doxycycline, amoxicillin or cefuroxime axetil. Patients with certain neurological or cardiac forms of illness may require intravenous treatment with drugs such as ceftriaxone or penicillin.

“Ninety percent of patients treated with appropriate antibiotics recover

fully from Lyme disease without experiencing long-term symptoms,” Norris said. “Many of these factors depend on the patient's immune response to the infection and antibiotic treatment.”

To prevent Lyme disease, the CDC recommends avoiding wooded areas with high grass, wearing protective clothing while in the outdoors and using repellents that contain 20 to 30 percent DEET (N, N-diethyl-m-toluamide) on exposed skin and clothing.

“Everyone should be aware that ticks can transmit disease, not only Lyme disease but other diseases,” Norris said. “These ticks are often the size of the head of a pin and are difficult to spot. Anyone who spends time outdoors should take the time to inspect themselves for ticks, particularly in the spring and summer months.” ■

More Than a Ride

One horse farm is giving disabled patients a chance to look at life from a different angle

BY CHRISTINE HALL



Maria Martinez wheels her daughter, Emelly, through SIRE Therapeutic Horsemanship's stable in preparation for her horseback ride.

“...when you spend your life looking up at people, being able to look down from a horse is powerful.”

— ANTHONY BUSACCA
Chief Operating Officer at
SIRE Therapeutic Horsemanship

Emelly has been riding horses since she was three years old, but she is not the typical rider. Emelly, who is now 16 years old, was born with a chromosome disorder and depends on a wheelchair for mobility.

Once a week, she visits Self-Improvement Thru Riding Education (SIRE) Therapeutic Horsemanship's location in Hockley, northwest of Houston, to ride Broadway, one of the horses residing at SIRE.

Just before her lesson, Emelly and her mother, Maria Martinez, arrived via ambulance. Decked out all in pink, Emelly prepared to ride Broadway by having her mother stretch out her arms and legs. She explained that they came from their home near Hobby Airport.

“It was a one-hour drive, but it is worth it,” Martinez said.

Susan Hart, Emelly's occupational therapist, emerged from the supply room with a helmet to match her outfit.

“Are you ready to ride Broadway, Emelly?” she asked.

As Hart and Emelly's mother wheeled Emelly up the wheelchair ramp, Broadway, a brown horse, patiently waited while she was moved into place.

Since it was established in Houston in 1983, SIRE has helped many people with disabilities ride. The riders range from three-year-olds all the way to a man in his mid-80s who had Alzheimer's disease, said Anthony Busacca, chief operating officer of SIRE.

The organization has been at its current horse farm in Hockley since the mid-1990s, which was SIRE's first permanent home. It then acquired its Spring site in 2001 and Fort Bend site in 2006, Busacca said.

In addition to its riders, SIRE also works with Texas Children's Hospital in an ongoing relationship that involves patients going out to SIRE, as well as working with the hospital on the Pin Oak Charity Horse Show that took place March 29 through April 3 of this year.

Although there are already Texas Children's patients going out to SIRE, one of Pin Oak's goals is to create a designated fund to enable more children to go to SIRE that need the therapy, said Mary Jones, charity liaison and a member of the executive committee for Pin Oak, who also serves on Texas Children's Leadership Cabinet for its Promise Campaign. The fundraising effort aims to help the hospital address current challenges and anticipate the present and future needs of patients.

SIRE is also wrapping up work with The University of Texas Medical Branch at Galveston. Over the past several years, UTMB, led by Tara Patterson, Ph.D., an assistant professor specializing in rehabilitation science and kinesiology, has been bringing occupational therapy students to SIRE as part of a \$5,900 MS Entrepreneurial Grant, received from the National Multiple Sclerosis Society, to study the benefits of riding for those with MS.

Her study, titled “HOOT – Horses Offering Occupational Therapy,” covered eight participants going to SIRE for two one-hour classes per week.

Patterson, a horseback rider, had a passion for occupational therapy and saw many studies out there about riding, but not many specifically for multiple sclerosis.

“People with MS are unique because there are a multitude of impairments they can get,” she said. “In addition, most of the studies only looked at lower extremities for gait and balance, but I wanted to measure both upper and lower extremities.”

So far, Patterson has been able to look at data from two riders and plans to submit a paper on her results.

“We found there was generalized improvement in the upper extremities with motor function, and in the lower extremities with gait,” she added. “All of the participants thoroughly enjoyed it. Not only were they able to get comfortable around the horses, but they were able to enjoy an overall feeling of quality of life.”

A Professional Association of Therapeutic Horsemanship International master instructor, Busacca has been with SIRE for six years, but has been in the profession for over 25 years, even training instructors all over the world.

While working with clients, he has seen riding help delay the onset of people’s symptoms, particularly in those with Alzheimer’s and multiple sclerosis. For children with cerebral palsy, the idea is to do as many interventions as possible, Busacca said.

“The activity of riding helps with fine motor skills,” he added. “Riding is a total body system exercise. Every time the horse takes a step, it is felt in the total body—physical, mental and emotional.”

For example, as the horse walks, it rocks the body back and forth, so the muscles get a constant, natural workout that can’t be duplicated by any machinery, Busacca said. People who depend on wheelchairs for mobility aren’t using a lot of their muscles, while riding enables them to work those muscles.

“Even on a short, 30-minute ride, the rider is going to feel 2,000 to 3,000 steps,” he added. “Plus, when you think about someone in a wheelchair, they are constantly looking up at people; this is the only time when they can look down at people. That gives them an emotional and psychological advantage. It’s abstract, but when you spend your life looking up at people, being able to look down from a horse is powerful.”





“ The activity of riding helps with fine motor skills. Riding is a total body system exercise. Every time the horse takes a step, it is felt in the total body—physical, mental and emotional. ”

— ANTHONY BUSACCA

Chief Operating Officer at SIRE Therapeutic Horsemanship

Busacca cited studies and research showing riding helps people produce chemicals in their bodies, including oxytocin and adrenaline, both hormones that are good for the body, he said.

A majority of the riding students have some degree of autism spectrum disorder. In addition to students with cerebral palsy and other neuromuscular conditions, SIRE works with veterans with post-traumatic stress disorder and brain injuries.

Not all students, however, are able to ride. For example, if they display spinal column issues that

could keep them from riding, or even other issues with physical, cognitive, social or emotional behaviors, Busacca and his team will evaluate if riding is a good fit.

Even some of the horses don't make the cut. SIRE, for the most part, partners with horses that are donated, but also purchases some.

“We literally have to look at 10 or 20 horses to find one or two,” Busacca said.

That's because the horses need to be calm, quiet and sound: some horse owners may decide to donate



their horse when it becomes a little lame, but any irregularities don't provide the therapeutic benefit the rider needs, he added. Instead, the horse needs to be sound on all three of its gaits—walking, trotting and cantering.

Horses are matched up to riders based primarily on physicality. Depending on the breed, horses have narrow, medium and wide bodies. Riders with cerebral palsy or a traumatic brain injury that causes tightness in the muscles fit better on a narrow-bodied horse. Riders with Down syndrome or other neurological disorders that cause weaker muscle tone are good on wider horses for stability.

When the horse walks with a long, relaxed stride, it helps a rider with spasticity—good for lowering muscle tone and tightness. For another rider, a quick, choppy stride helps to improve muscle tone where it is weak.

The idea is for the horse to challenge the rider, so students will progress from horse to horse and in the type of activities they do, Busacca said. Some riders may start out going in big, wide circles on one horse and end up later walking in smaller, tighter circles on another.

Riders do get attached to their horses, so the SIRE team uses the transition as a way to teach positive change.

"Things change, friends go away and family dynamics change, so switching horses is a good way to help them learn to accept that," Busacca said.

Meanwhile, as Emelly and Broadway headed into the paddock for their weekly ride, Maria Martinez commented that her daughter enjoys riding, and she is seeing the benefits: Emelly sits up straighter, and she keeps her head up the longest while she is riding.

"She also displays more emotion and is more vocal when she is riding," Martinez said. "A lot of the time, she thinks she is having fun, but really she is working." ■

A HORSE CLOSER TO HOME



The horse simulator was created at Rice's Oshman Engineering Design Kitchen, where students design and build projects to address real world challenges. Credit: Jeff Fitlow/Rice University

For patients who can't get out to a horse farm like SIRE Therapeutic Horsemanship, some Rice University engineering students are working on a solution that will bring hippotherapy, or equine-assisted therapy, a little closer to home.

A team of students who call themselves the "Hippo Riders" developed a robotic horse simulator, complete with a toy horse head that neighs, to enable patients to have a similar riding experience, but indoors. The project is part of their senior capstone design project at Rice's Oshman Engineering Design Kitchen, that they demonstrated at the university's annual Engineering Design Showcase on April 14.

At the beginning of the project, the team performed market research and found that the number of patients who could benefit from hippotherapy was high, but the number of people familiar with the therapy was low.

They noted, however, that the American Hippotherapy Association Inc., an organization that helps educate people about the therapy and finding a therapist, says there are nearly

700 clinics that perform hippotherapy, and each of those see between 10 and 20 patients per day.

The robotic horse was crafted using \$1,200 in parts. Brett Berger, a mechanical engineering student on the team, said they have been able to source materials for additional horses at around \$1,500 and are working on developing a manufacturing plant so they can help get costs down.

Ultimately, the goal is for patients, who are mainly children, to be able to either have one of the horses in their house, or at a nearby physical therapy clinic, the team said.

"All of us were drawn to the project because this particular device could help people much more than some of the other projects we saw," Berger said.

"We focused on the benefits, but we also know that physical therapy can be boring at times, so if it looks and feels like a horse, that adds a different element to it," Amy Ryu, another mechanical engineering student on the team, added. ■



BARBARA J. STOLL, M.D., DEAN OF THE McGOVERN MEDICAL SCHOOL AT UTHealth AND THE H. WAYNE HIGHTOWER DISTINGUISHED PROFESSOR IN THE MEDICAL SCIENCES, SAT DOWN WITH WILLIAM F. McKEON, EXECUTIVE VICE PRESIDENT AND CHIEF STRATEGY AND OPERATING OFFICER OF THE TEXAS MEDICAL CENTER, TO TALK ABOUT HER ILLUSTRIOUS CAREER AND THE DECISIONS THAT ULTIMATELY BROUGHT HER TO THE TEXAS MEDICAL CENTER.

Q | Where were you born? Where did you spend your formative years?

A | I grew up in New York City and still consider myself a New Yorker—although I’ve adopted other home cities over the years—Atlanta and now Houston. I went to high school and college in New York, and that’s also where I completed my residency in pediatrics.

Q | Where did you spend your high school years?

A | I am a proud graduate of the Bronx High School of Science. Bronx Science is well known as the secondary school whose graduates comprise the highest number of Nobel laureates.

Q | That’s fascinating. And why did you select Barnard college?

A | I was probably afraid of going away from home. It was close enough, but far away enough. It turned out to be a wonderful school and experience, and I’m very loyal to Barnard. I mentioned that Bronx Science is known for its Nobel laureates; Barnard has one of the highest proportions of women physicians, Ph.D.s and CEOs. Barnard introduced me to wonderful professors who reflected the best qualities of educators and scholars and had a real affection for students. Located across the street from Columbia University, we had full access to Columbia courses but still lived in the intimacy of a small, all-girls school. As much as I am a great proponent of co-education, looking back there was something protective about learning and growing in an all-women school.

Q | You then went on to Yale for medical school. Tell us about that experience.

A | It was a terrific experience. Yale was a vibrant academic community with wonderful professors and wonderful students. At the time I went to Yale, the medical school had no exams and no grades. My husband for many years joked, ‘Would you go to a doctor who went to a school like Yale with

no exams and no grades?’ But it gave you the freedom to think broadly—and beyond medicine. I was a dorm mother for Morse College freshmen, living on the old campus in Vanderbilt Hall, frequently attending Yale University lectures.

Yale was a remarkable place. Yale Medical School required students to do a scholarly thesis long before other medical schools considered such a requirement. The independent thesis was an important and formative part of our education. Although there were no exams or grades, students still spent many hours in the library studying and I suspect were equally competitive as students elsewhere. There was an expectation at Yale that you would do big things in your career.

Q | You also spent a good deal of time overseas?

A | I got married in medical school to someone I met when I was 19. My husband, Roger Glass, is incredibly smart and creative, always curious, always interested in others and always full of adventure and wanderlust. He was a Fulbrighter in Argentina; lived in Argentina, Brazil, Oxford and the former Soviet Union before we got married. So the fact that we then went on to live overseas should have been no surprise to me.

For quite some time, I was the poster child of a trailing spouse. After medical school, I went back to NYC because my husband was there, and we moved to Atlanta because Roger went to Centers for Disease Control and Prevention (CDC) to enter the Epidemic Intelligence Service (EIS) program. My life and career have been a winding road of opportunities. When

those opportunities arise, it’s important for all of us—but especially for women—to seize them and have fun with new challenges and new adventures.

I completed my fellowship in neonatology in Atlanta, and Roger completed the two-year EIS training program. We were ready for an adventure. We considered a number of different options and ended up deciding to go to the International Centre for Diarrhoeal Diseases Research in Bangladesh (ICDDR,B). We signed on for two years and ended up staying for four. I went from being a neonatal fellow in Atlanta, an environment of high-tech neonatal intensive care medicine, to being confronted with maternal and child health issues in Bangladesh, at the time, one of the poorest countries in the world with one of the highest rates of infant mortality in the world. Those years expanded my worldview and changed the direction of my career. Although I returned to a much more traditional U.S. academic career, I have always been interested in the broader aspects of health disparities, social determinants of health and health as a human right.

I look at Bangladesh as a real gift. We often said that Bangladesh was to health and development, certainly at the time, what Paris was to fashion. If you’re a fashion designer and you’re young and you’re excited, where do you go? You go to Paris or New York. If you want to learn about global health problems, health disparities and economic development, where do you go? You go to Bangladesh. When we went overseas in the early ‘80s, few young academics left a U.S. academic career to work in a developing country. In fact, one of my mentors at Emory

counseled me, ‘Please don’t do this. You’re throwing away a promising academic career.’ And the irony is that when I came back to Atlanta some years later, he was doing global health. After Bangladesh, we went to Sweden and lived in Gothenburg for almost a year, working with outstanding scientists. We’ve had other adventures—worked in a Cambodian refugee camp in Thailand and spent a wonderful year at the World Health Organization in Geneva working on issues of global neonatal health and survival.

Q | Tell us about what attracted you to come to the Texas Medical Center to lead UTHealth’s medical school?

A | I was not looking for a move. I had a perfect job. I was chair of a wonderful department that I had helped build over 12 years. During my tenure as chair the department grew from approximately 150 faculty to over 400 clinicians, educators and investigators. I had the opportunity to build clinical programs, training programs and research programs and to help forge a close partnership between the medical school and children’s hospital. We had remarkable growth in extramural grant funding, moving from 51st in National Institutes of Health (NIH) funding to the top 10.

As I said, I was not looking for a job. I thought if we had one last fling, we would go back overseas, especially since I had ongoing collaborations with people in India and in Pakistan. My husband is the associate director of global health for NIH and director of the Fogarty International Center. If I called him up today and said, ‘Let’s move to India, or Kenya, or...’ he’d say, ‘What’s your frequent flyer number?’ He breathes adventure.

“My life and career have been a winding road of opportunities. When those opportunities arise, it’s important for all of us—but especially for women—to seize them and have fun with new challenges and new adventures.”



“Ten years ago, no one would have imagined the clinical powerhouse we are today. Leadership matters, vision matters, community support matters—people matter.”

After telling the search firm that I was very happy in Atlanta and not interested in a move, I was approached by a close colleague at UTHealth. Jon Tyson and I were principal investigators on the same multicenter NIH grant and saw each other many times over 20 years. We knew each other very well and trusted each other. Jon cornered me at an NIH meeting and said, ‘What if you’re our draft choice?’ And I said, ‘Jon, I don’t know anything about sports, but I don’t think that’s how you choose a dean.’ His immediate response, ‘My president would like to fly up and have dinner with you. Is that okay?’ That’s a hard offer to turn down. So, I said, ‘Sure. I’m flattered. Absolutely.’ He and UTHealth’s President Giuseppe Colasurdo came to Atlanta. I was immediately taken by Giuseppe. First off, he has incredible warmth. Giuseppe is an extraordinary guy—a wonderful combination of sharp intellect, big vision, love of people and humility. That is a refreshing combination.

During our dinner meeting, it became clear that Giuseppe is committed to the institutions he has served for many years and committed to the well-being of the people he works with. I immediately liked him, was flattered that he and Jon had visited me, but still had no interest in leaving a job and faculty I loved. Giuseppe’s a very smart

guy. He called me the next day, and said, ‘We were gracious enough to visit you, the least you can do is be gracious enough to visit us.’ I thought he was right and agreed to visit. The school orchestrated a very thoughtful and busy visit. I had a great time. I was struck by the people I met—smart, committed, interested in making a difference—and struck by the collegiality of the medical school. We started a courtship during which I became increasingly intrigued by a new adventure and by the extraordinary opportunities at UTHealth. Over the last decade, Giuseppe transformed the clinical program, more than doubled the size of the faculty, and we are now a major player in Houston as well as recognized nationally for a number of our clinical programs. He recruited new department chairs and outstanding groups. I was intrigued by the possibility of mirroring that clinical growth with expansion and growth of academic programs—something I had done in Atlanta.

Q | Why leadership—first chair and now dean?

A | I had no interest in any leadership roles 12 years ago; no interest in becoming a department chair. I was about to do a project in India for a few months when I was asked to be the chair at Emory. I almost said no, but ultimately said yes to becoming chair for some

of the same reasons that convinced me to become dean of UTHealth. I was excited by the new challenge, but equally important, I said yes because there were so few women department chairs in the U.S. At Emory, there had only been one woman medical school department chair, Dr. Luella Klein. Dr. Klein, an icon of maternal-fetal medicine, was an absolutely unsung heroine, who went on to become the first woman president of the American Congress of Obstetricians and Gynecologists. I had a sense that if a woman is asked to take on a senior leadership role and says no, the next choice is unlikely to be a woman. Being a chair turned out to be the best and most rewarding job I’ve ever had; an extraordinary opportunity to build bridges between institutions, to build alignment between physician groups, to build programs, to lead and inspire others.

Q | As you know, there have been a lot of initiatives in the last three years since Dr. Robbins arrived to further drive collaboration. That seems to resonate with a lot of things you’ve done in your past. What do you see as exciting opportunities for the medical school going forward?

A | I am excited about the many collaborative possibilities between people and institutions in the TMC and in Houston. Among our most important collaborators, Memorial Hermann has a new CEO, the first physician to lead the organization. I am optimistic that he will be a great partner and hope that I can help usher in a new era of health care/academic collaboration, so we both can do great things for our patients, for our missions, for the community. Harris Health is an equally important partner to the medical school—a venue to provide care for patients and to teach medical students and residents. These health care partners are essential as we think broadly about population health, define the population we serve, consider innovative programs, and work to make a measurable impact on their health. We also have the opportunity to build strong partnerships within the six schools of UTHealth as well as with other academic institutions, and to attain a level of academic excellence that we can’t even imagine today. Ten years ago, no one would have imagined the clinical

powerhouse we are today. Leadership matters, vision matters, community support matters—people matter. You need the confluence of all of these to build strong programs. I think the stars are aligned for success at UTHealth and our newly named McGovern Medical School.

As I reflect on an academic career, early on you’re a trainee and you have big aspirations. You work very hard to become an expert, a virtuoso. At some point you have the opportunity to be an orchestra director—leader of a team, a division, a department. I’ve learned that it’s really fun to be an orchestra director. I never knew what conductors did. I’d go to the symphony and think, ‘I understand the value of the soloist, the concertmaster, but what does that guy do up there?’ Well, now that’s what I do, and part of being a good leader, a fine conductor, is finding those virtuosos, providing them with resources and allowing them the freedom to flourish, and making sure they collaborate and work well together to make beautiful music.

Q | What is your impression of Houston?

A | I really like it here. Houston is an interesting and vibrant city. People have been open and very welcoming. I love my second city, Atlanta, but I’m excited to live in a bigger city and excited by the vibrant arts community with wonderful museums, an opera, a ballet, a good symphony and creative theater. This is a big city with a small-town feel.

Q | Any closing thoughts?

A | I’m fortunate to be here. I pinch myself that I was smart enough or lucky enough to make the decision to come here. It’s human nature to worry after you’ve made a decision. Was it a good decision? People are always on their best behavior when you visit. The people I’ve gotten to know are extraordinary, even better than I thought they were—smart, hardworking, mission driven. We have exciting opportunities to build collaborations, to build programs, to foster innovation and to make an impact on the city. I’m humbled by the thought that I have the opportunity to play a small part in making a difference at UTHealth and in the broader Houston community. I’m delighted that I’m here. ■



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ADVANCING HEALTH

Destigmatizing Mental Health

Mental health has long been kept a suppressed and sanitized topic, but individuals affected by mental illnesses welcome a new shift in bringing it to the forefront of discussion

BY SHANLEY CHIEN



Neil Puri, M.D., engages in a conversation in the Menninger Clinic's meditation garden, where he and patients can visit during their sessions.

By all appearances, 35-year-old Houston native Elizabeth Smalling Shulak is a happy, young professional working at Memorial Hermann with her life in order. She enjoys her stable job, has an apartment that she loves, and is surrounded by supportive friends and family. On top of that, she's basking in marital bliss with her new husband, who she recently married in March.

However, life was never always this picturesque for Shulak. At an early age she experienced a series of traumatic events and dark moments that inevitably ushered in her childhood depression. She witnessed her grandmother's fatal car accident at 10 years old, a suicide at the high-rise apartment building where she lived and her parents' divorce.

She occupied herself by playing soccer, cheerleading, practicing karate, creative writing and taking up photography—all coping mechanisms as she went through cycles of depression and mania. Although she knew she needed help, it wasn't until her sophomore year of college in Colorado that she was diagnosed with bipolar disorder and obsessive compulsive disorder, a diagnosis that came on the heels of the Sept. 11 attacks and the death of her dog.

"I got depressed and even more depressed. I'd drink to cope and end up in the hospital again," said Shulak, who has been hospitalized 15 times in her life as a result of her bipolar episodes. "It's been a road of going to school, doing really well, going to the hospital,

doing well at work, and then going to the hospital. It was getting to be way too much for anybody to handle."

After spending an intensive 12 years in various mental health treatment centers, and with the help of her dedicated doctors, Shulak finally achieved a balanced existence without being defined by her illness.

"It's about going step-by-step with what life gives you and overcoming those challenges and seeing life in baby steps," said Shulak, who recently spoke about her journey at the second annual World Bipolar Day March 30, which was held at The University of Texas Health Science Center Harris County Psychiatric Center and presented by McGovern Medical School's Department of Psychiatry and Behavioral Sciences. "Looking back, I can say, 'Wow, this is how far you've come,' in the bigger picture as I piece these things together."

While many people are swept up in grand ambitions and lofty ideas, Shulak—who once hoped to pursue a career as a pediatrician—said she gave up on her long-term goals because of her condition but keeps things in perspective by appreciating other aspects of life.

"I never thought I'd have my own apartment. I never thought I'd be married. I never thought all of those things, but all of those things happened," she said. "I really try not to set big dreams anymore, but I just try to think about how to make each day better and focus on the small days because they end up being really great things."

According to the National Institute of Mental Health, bipolar disorder is the sixth leading cause of disability in the world, with 2.6 percent of the U.S. population diagnosed with the mental illness each year. While Shulak is one of the 5.7 million American adults who are

“ We need to be shepherds of decreasing stigma, as well—even by recognizing the bias amongst physicians toward patients and mental health disorders. ”

— NEIL PURI, M.D.

Staff Psychiatrist at the Menninger Clinic and
Assistant Professor of Psychiatry at Baylor College of Medicine

diagnosed with bipolar disorder, she is also a part of the larger mental health community.

According to the National Alliance on Mental Illness, 43.8 million American adults—nearly one in five people over age 18—experience some form of a mental illness, whether it is bipolar disorder, major depression, anxiety or schizophrenia.

Although there continues to be negative judgments and social bias around mental illness, those living with a condition, their loved ones and the medical community are gaining momentum in dismantling the stigma attached to it.

“People being open about their mental illness is one thing that can really combat the stigma, and we notice that,” said Neil Puri, M.D., staff psychiatrist at the Menninger Clinic and assistant professor of psychiatry at Baylor College of Medicine. “As more and more people become open about their depression, about their bipolar disorder, about their anxiety in the media, more attention gets paid to people’s mental illness.

“[As TMC doctors,] we don’t speak of mental illness in terms of stigma. We help patients get better access to care and help embrace it as a disorder that can be treated,” he said. “We need to be shepherds of decreasing stigma, as well—even by recognizing the bias amongst physicians toward patients and mental health disorders.”

While Virginia Woolf, Vincent van Gogh and Sylvia Plath are recognizable historical figures thought to have had bipolar disorder, numerous celebrities—including Demi Lovato, Jean-Claude Van Damme, Catherine Zeta-Jones, Carrie Fisher and recently deceased mental health advocate Patty Duke—have publicly discussed their illnesses and used their celebrity statuses to open up the conversation for mental health awareness. The prevalence of social media provides a platform to share personal experiences and journeys, engaging the public in an open dialogue about problems that historically have been kept secret. Their stories force people to acknowledge the existence of mental illness and talk about the real issues that affect a great deal of people rather than suffering in uncomfortable silence.

“Talking about [mental health] is probably the most important thing,

but a lot of celebrities now talk about mental illness, so that makes it easier,” said pediatric psychiatrist Iram Kazimi, M.D., residency training director and assistant professor of psychiatry and behavioral sciences at McGovern Medical School. “We know that adolescents tend to look up to people who have a certain status—like celebrities and stars—and that has been really helpful in helping kids think it’s not that bad.”

Previous studies have shown correlations between mental health and creativity and, although there is no evidence to support a direct link between the two, Kazimi said her pediatric patients have a myriad of talent—enough so to be famous in their own right and to potentially help others like them in the future.

“I never tell my kids to idolize anybody because it’s so different,” Kazimi said. “For those kids, I tell them, ‘You’re going to be your own celebrity. You’re going to make your own mark.’ We really try to encourage that because, gosh, sometimes the kids we see are rapping better than any rapper I’ve ever seen. Some are artists like you’ve never imagined. I tell them to think about what it was like for them when they started their journey [because] they might be able to help someone else.”

Diagnosing patients with mental illness early on and getting them on the proper medication regimen can greatly improve their chances for better quality of life, but Shulak said recovery is possible for everyone.

“It just takes a lot of education, a lot of patience, and being in a support system with your family, friends, doctors and the community and applying that to your life so you can get better,” Shulak said. “Everybody wants you to get better, so they’ll all be there for you if you ask for help.” ■

MENTAL HEALTH *and* BIPOLAR DISORDER *Statistics**

Approximately

43.8 MILLION (OR ONE IN FIVE)



American adults are affected by mental illness, including bipolar disorder, major depression, anxiety and schizophrenia.

Approximately

5.7 MILLION

of the U.S. adult population have been diagnosed with bipolar disorder.

The average age of bipolar disorder onset is

25 YEARS OLD,

but it can start in early childhood or late in adulthood.

2.6% of the U.S.

population is diagnosed with bipolar disorder each year.

Bipolar disorder is the

SIXTH

leading cause of disability in the world.

Bipolar disorder is

HEREDITARY.

People who have relatives with bipolar disorder have a 10 to 15 percent chance of developing it.

If one parent has bipolar disorder, there is a

15 to 30%

chance of passing it along to their kids. If both parents have bipolar disorder, the chances jump to 50 to 75 percent.

** According to data from the National Institute of Mental Health and National Alliance on Mental Illness*

CONCEIVING AFTER CANCER

By integrating a desire to have children into care plans,
MD Anderson and Texas Children's are ensuring dreams of
building a family are not dashed by cancer

By SHEA CONNELLY



An ultrasound screen lights a small room at Texas Children's Pavilion for Women. Patricia and Michael Lingerfelt watch with bated breath as the image of a 13-week-old fetus flickers onto the screen—their first child, a girl. It's a sight that, at times, the Lingerfelts thought they might never see.

In 2014, after years of trying to have a child, the couple was dealt an additional blow: a routine annual exam and mammogram showed Patricia had breast cancer. The call came a week before they were scheduled to see an IVF specialist. The cancer diagnosis was frightening enough in itself, but for the couple, already in their 40s, it presented another setback to starting a family that they never expected.

"The very first doctor who gave me the diagnosis told me I would not be able to have kids, that I could just kiss that goodbye," Patricia said. "At that point, I'm already devastated. One, I have cancer, and two, the doctor is saying I will not be able to have kids ever. When I got to MD Anderson, finding out that there was still a possibility changed everything."

During a pre-surgery appointment at The University of Texas MD Anderson Cancer Center, Patricia happened across a pamphlet about preserving fertility before, and building a family after, cancer treatment. For a couple whose hopes for a family had so recently been dashed, it felt like fate. That was their first introduction to Terri Woodard, M.D., a reproductive endocrinologist who holds joint appointments in MD Anderson's Department of Gynecologic Oncology and Reproductive Medicine and Baylor College of

Medicine's Division of Reproductive Endocrinology and Infertility.

The American Cancer Society estimates over 800,000 women are diagnosed with cancer in the United States each year. A cancer diagnosis brings numerous questions and fears—"What stage is it? Will I need surgery, radiation or chemotherapy? What is my long-term prognosis?" With so many immediate concerns, thoughts like, "How will this affect my future fertility?" can easily fall by the wayside. A close relationship between MD Anderson and Texas Children's Hospital seeks to ask that question before it's too late, and to make its answer a part of treatment plans.

Patricia and Michael had their first meeting with Woodard before Patricia's surgery. Luckily, her cancer was stage one and would not require chemotherapy. The plan was for her to undergo a lumpectomy surgery, followed by six weeks of radiation treatment. Through close teamwork between Woodard and Patricia's oncology team, the Lingerfelts saw their desire to have children worked into her care plan from the very first step.

"It's hard for me to put into words how we went from being nervous and scared to just comforted and reassured, feeling like we knew what was going to happen from that very first visit," Michael said. "We said, 'We still have this dream and desire of having kids.' For them to say, 'We can integrate that into the plan of what we're going to do and how we proceed forward,' it gave us total comfort and peace of mind."

The American Society of Clinical Oncology published its first guidelines for fertility preservation in cancer patients back in 2006, but it's still a topic that is



Terri Woodard, M.D., a reproductive endocrinologist with joint appointments at MD Anderson and Baylor College of Medicine.

not routinely discussed among all cancer patients. Furthermore, few cancer centers even of the caliber of MD Anderson have a reproductive expert actually embedded in the center as Woodard is. The spirit of collaboration that is a central part of the Texas Medical Center makes it easier for patients to deal with such a complex issue.

"One of the big barriers in fertility preservation in general is trying to navigate the system. Having to go out to another practice somewhere and tell your story again," Woodard said. "Here, I talk with the oncologist every time I see the patient. Everyone is on the same page. When the patient is done getting her eggs harvested, we call the oncologist and say, 'She's done. She's all yours.' It really makes for streamlined care."

Patients like Patricia come to Woodard in a variety of ways. Some are referred by their primary providers, some come across pamphlets like the one Patricia found, and others are already cancer survivors who never had the opportunity to talk

about their fertility before treatment and are curious about their options.

Each consult with Woodard involves several major parts. First, they discuss medical history and determine the patient's current ovarian status—and whether there is any prior history of infertility.

"Based on that assessment we talk about their risk for infertility based on their testing, their age, their medical history," Woodard said. "From there, we move into the different options for fertility preservation. We talk about the pros and cons of each of those, the time required, the costs and the side effects."

Cancer treatment affects fertility in a variety of ways: Chemotherapy drugs can damage or destroy a woman's eggs, or cause early menopause. The intense energy used in radiation therapy can also damage the eggs. The type of surgery required for certain cancers may remove integral parts of the reproductive system, including ovaries, uterus, cervix and surrounding tissue. Finally, some medications recommended for use after treatment, such as tamoxifen, essentially require the use of birth control because they can cause severe birth defects. While tamoxifen itself does not cause infertility, the now 10 years recommended use can put a woman past childbearing age.

The main options offered to women prior to treatment are egg or embryo cryopreservation, or freezing.

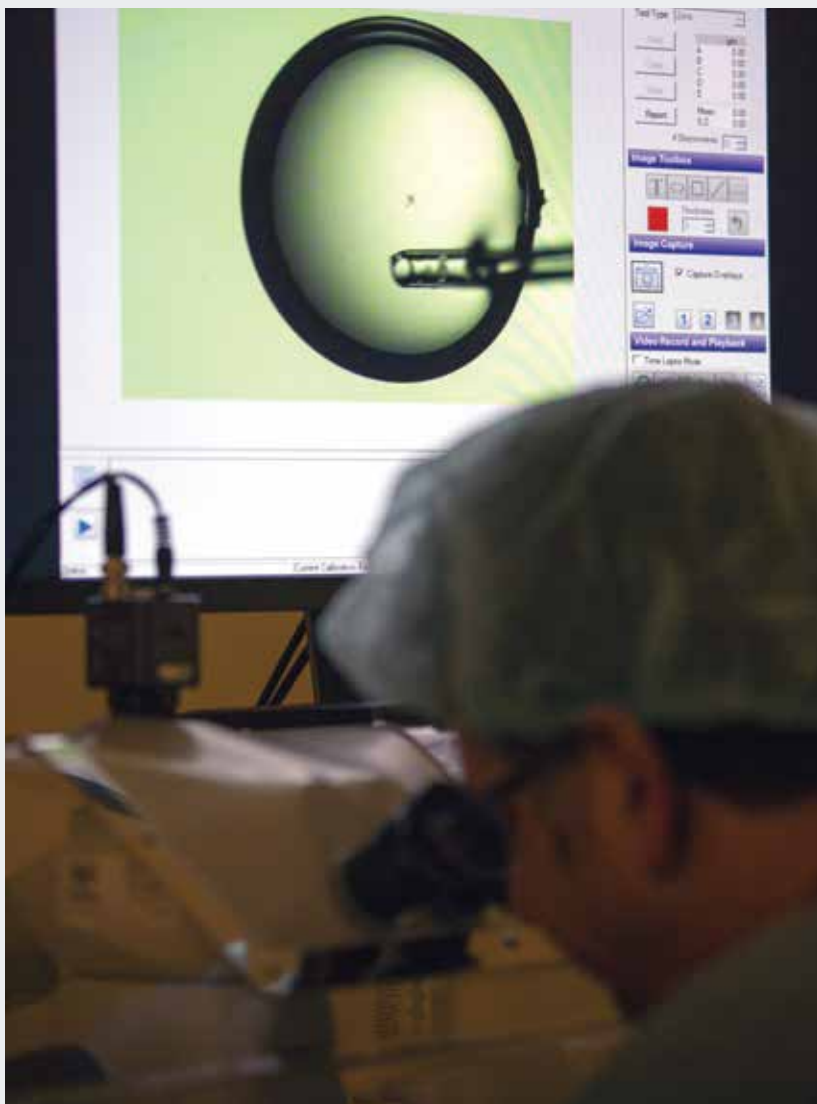
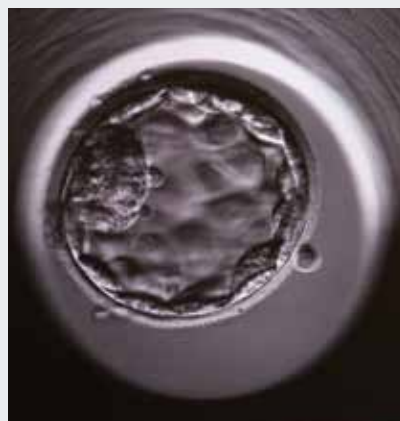
“We said, ‘We still have this dream and desire of having kids.’ For them to say, ‘We can integrate that into the plan of what we’re going to do and how we proceed forward,’ it gave us total comfort and peace of mind.”

— MICHAEL LINGERFELT
Father-to-be

“We want women to know their dreams of motherhood don’t have to be squashed. There are so many ways to build families now, and if they’re open to it, they can still be a parent.”

— TERRI WOODARD, M.D.

Reproductive Endocrinologist at MD Anderson’s Department of Gynecologic Oncology and Reproductive Medicine and Baylor College of Medicine’s Division of Reproductive Endocrinology and Infertility



Top left and bottom: Khalied Kaskar, embryologist and laboratory manager at Texas Children’s Hospital Family Fertility Center, uses a pipette to move an egg in a drop of culture media.

Top right: A five-day-old embryo, or blastocyst, contains two types of cells—the inner cell mass, which will develop into the fetus, and the trophoblast cells, which will develop into the placenta.

For both of these processes, hormone injections stimulate the ovaries to produce multiple eggs. The eggs are then retrieved while the patient is under sedation, and either immediately frozen or fertilized with sperm, in the case of embryo freezing. The embryos are allowed to develop for several days and are typically frozen. For Woodard’s patients, these processes take place at the Family Fertility Center in the Texas Children’s Pavilion for Women.

“Until a few years ago, we didn’t do a very good job of freezing eggs,” Woodard said, noting that the water content in eggs lent itself to the formation of ice crystals, which can damage the eggs to the point of destruction. “Now we’ve become a lot better at it, so that has really expanded the options for women who don’t have a partner at the time of treatment and don’t want to have to pick a sperm donor. Furthermore, it gives women reproductive autonomy; her eggs will always be her eggs.”

Another recent improvement that has made egg and embryo cryopreservation a more viable option for women is the fact that it’s no longer dependent on a woman’s natural cycle. The process used to take up to eight weeks, and many patients simply did not have the time to delay treatment for that long.

“We’ve come a long way in realizing that we can do what’s called a random start. We can start a stimulation at any part of a woman’s cycle,” Woodard said. “I had a patient that the day I met her, she started her stim that night. Twelve days later she had her retrieval, and that night she was getting her chemo. We can do this in less than two weeks now.”

Even with these options available, the discovery that mutations in the BRCA1 and BRCA2 genes can

cause an increased risk of breast and ovarian cancer, made some patients hesitant to have biological children, not wanting to pass that gene to future generations. Thanks to the advent of preimplantation genetic diagnosis (PGD), it’s now possible to test embryos for specific genetic conditions, like BRCA mutations, before implantation and then use only those embryos without the condition.

A more experimental option for preserving fertility that is not widely available is ovarian tissue freezing. This involves surgically removing pieces of ovarian tissue. This is the only fertility preservation option for girls who have not gone through puberty yet.

“In that ovarian tissue, there are immature eggs,” Woodard said. “The tissue is frozen and after treatment you can thaw and re-implant it. Almost 70 babies have been born this way.”

Researchers are working on maturing eggs from this tissue in the lab so that one day, they won’t even have to transplant the tissue back into the body. Though this option is not currently offered at MD Anderson, Woodard said they are working on a protocol to get a program up and running in the future.

Another fertility preservation option is ovarian suppression—using injectable medications called gonadotropin-releasing hormone agonists to make the ovaries quiescent during treatment.

“It’s thought that an ovary that is not actively cycling might be more resistant to chemo than one that is,” Woodard said. “However, this is experimental, and the data is mixed about whether it really works or not. But for most women, the risks of using it are low and if a woman is willing to try it, it might be better than nothing.”

In terms of the issue with tamoxifen, some patients will opt to take it for several years, then stop while they try to conceive and restart once again after the child is born. Other patients may opt to delay tamoxifen to try to have a child immediately, or even delay indefinitely.

While there are more options today than even just a few years ago, Woodard said after consulting with patients and oncologists, sometimes

the best and safest course of action is to begin treatment immediately. But that doesn't have to mean the end of the road for cancer patients who want to start a family.

"I never feel like the door is closed," Woodard said. "Unfortunately a lot of these procedures aren't covered by insurance, but we want women to know their dreams of motherhood don't have to be squashed. There are so many ways to build families now, and if they're open to it, they can still be a parent."

After discussing with Woodard and the oncology team at MD Anderson, the Lingerfelts made several decisions prior to treatment. First, due in part to their age and desire to try to conceive immediately, they elected to delay tamoxifen indefinitely. Patricia tested positive for a mutation of the BRCA2 gene, putting her at higher risk for developing breast and ovarian cancer, so they have also discussed prophylactic removal of the breast tissue or ovaries within the next five years or so. Finally, they chose to begin IVF very soon after the conclusion of her cancer treatment.

"I finished radiation in January 2015, and two months after that, we started the first cycle of IVF to retrieve eggs," Patricia said.

Unfortunately, that first round resulted in only one embryo that was not high quality. The couple chose to wait to do another cycle, which they began in October. This time they had four embryos sent to genetic testing and were left with one to implant.

"We transferred the one on Feb. 1, and two weeks later found out we were pregnant on my birthday," Patricia said.

For the Lingerfelts, this pregnancy is the realization of a dream over a decade in the making—one that quite a few times they thought might be a lost cause. Now, not only are they expecting their first child, but they also have the hope of potentially having a second.

"We're super excited to see the possibility of that dream becoming a reality," Michael said. "It's taken a little while for it to sink in. To see that first ultrasound, when we saw the baby and saw the heartbeat—there was a lot of emotion in that moment." ■



Jennifer Litton, M.D., associate professor in the Department of Breast Medical Oncology at MD Anderson.

CANCER TREATMENT DURING PREGNANCY

Cancer knows no timeline, and sometimes it can strike in the midst of the joy and possibility of a new pregnancy. In previous years, patients were advised to terminate the pregnancy for their own health. Today, there are treatment options for pregnant cancer patients that are safe for both mom and baby.

Jennifer Litton, M.D., an associate professor in the Department of Breast Medical Oncology at MD Anderson, has treated women diagnosed with breast cancer after becoming pregnant.

"No, you don't have to terminate a wanted pregnancy," Litton said. "There's no data that shows doing that improved outcomes."

While adjustments need to be made to accommodate pregnancy, treating a pregnant cancer patient is much like treating a non-pregnant patient. Surgery can still be performed, and many chemotherapy drugs are safe after the first trimester, once the organs have developed. Chest X-rays and mammograms can also be done with fetal shielding.

"The steps are what we do for our non-pregnant patients and that's really key to why patients have done so well here," Litton said, adding that, unlike many physicians, she also prefers to let patients go into labor naturally.

"I know a lot of doctors take the baby super early, but for me, if I still have treatment to give, I think it's so much better if they don't have a NICU baby at 30 weeks," she said. "There's no reason because it doesn't change outcome. Our average birth week was 37 weeks, and I think that's a big part of why our kids are doing so well, too."

Treating pregnant patients involves working closely with the patients' obstetricians, as it involves much more fetal monitoring than an average pregnancy.

"Before chemo, I want them to see their maternal-fetal medicine specialist and have a good ultrasound so they can assess the fetus, the fluid around the fetus, the cord growth," Litton said. "Then what happens is they show up with a handwritten note or the doctor calls me and says we're good to go. They come across the street and we start the chemo that day."

The same process repeats before every dose of chemotherapy.

"If you give someone the regular therapy you would give a non-pregnant patient, just in the right timing," Litton said, "we've shown in studies here and in Europe that they do just as well as non-pregnant breast cancer patients." ■



CANCER AND FEMALE FERTILITY

A diagnosis that threatens fertility can be frightening for women of childbearing age, but there are options, both established and experimental, for women to try to preserve their fertility through treatment.

HOW DO CANCER TREATMENTS AFFECT FERTILITY?



Chemotherapy

A number of chemotherapy drugs can damage or destroy a woman's eggs, affecting future fertility. The severity depends on a variety of factors, including age, the type of drug and the dosage.



Radiation Therapy

The intense energy used in radiation therapy, whether from X-rays or other sources, can damage the eggs, causing difficulty conceiving or carrying a child.



Surgery

The surgical procedures that can be required in female reproductive cancers, such as hysterectomy or ovary or cervical removal, can result in fertility challenges or infertility.

WHAT ARE SOME OPTIONS FOR PRESERVING FERTILITY?

Egg or Embryo Cryopreservation

This method involves the use of drugs to induce the ovaries to produce multiple eggs, removing those eggs from the body and either freezing the eggs immediately or fertilizing and allowing them to grow into embryos before freezing.

Donor Eggs or Embryos

If the uterus is still healthy after cancer treatment, a woman can undergo in vitro fertilization using donated eggs or donated embryos.

Ovarian Tissue Freezing

Ovarian tissue is surgically removed and frozen. The tissue can later be transplanted back into the body once cancer treatment is over.

Ovarian Suppression

An experimental method that involves using an injectable medication to make the ovaries dormant during treatment. The hypothesis is that an ovary not actively cycling may be more resistant to effects from chemotherapy.

Play Ball

NCAA All-Stars made a special visit to the patients of Shriners Hospitals for Children – Houston before the 2016 Reese’s All-Star Game

BY BRITNI N. RILEY



The NCAA All-Star players had more than basketball on their agendas when they came to Houston in March. Student-athletes from the East and West teams made a special visit to patients at Shriners Hospitals for Children – Houston before the 2016 Reese’s All-Star Game.

The All-Star teams are made up of 20 outstanding NCAA Division One student-athletes from around the country. This year, the All-Star game was played at NRG Stadium on Final Four Friday, preceding the Final Four matchups between Villanova and Oklahoma and North Carolina and Syracuse.

“We try to get our athletes out as much as possible to showcase not only how great they are athletically, but also

to show what great people they are,” said NCAA All-Star coach Andy Stark of Stevenson University in Baltimore, Maryland. “This is a great opportunity for us to give back to the community and we are excited to spend time with the Shriners patients.”

The Houston Shriners Hospital provides care to patients suffering from pediatric orthopedic and neuromusculoskeletal disorders and diseases, as well as cleft lip and palate and patients who need sub-acute care or inpatient rehabilitation. In addition to providing patients with exceptional medical services, the hospital also strives to make each patient’s stay at the hospital as happy as it can be. Because of this, Shriners makes everything from the

interior of the hospital to the conversations patients have with doctors as inviting as possible.

Shriners was started as a charity hospital in Shreveport, Louisiana, and has grown into a system of 22 hospitals in three countries; 20 in the United States, one in Mexico and one in Canada. Today, Shriners Houston helps children from the surrounding areas in need of care. The hospital has 40 beds and works closely with other hospitals in the Texas Medical Center to provide the best treatment possible for patients.

“Over our 22 hospitals, Shriners has helped over one million children,” said Phillip Gragg, Board of Governors, Shriners Houston. “We think it is great

that these young men have taken time out of their schedules to come to our hospital and spend time getting to know our patients.”

Shriners patients, families and staff welcomed the teams with excitement and cheers before they began playing basketball together. During the All-Star visit, the student-athletes played wheelchair basketball with patients and practiced shooting and dribbling drills.

“We set up three areas on our central activity floor for the kids to maximize their experience with the All-Stars,” said Christina Hayden, a child life specialist at Shriners. “The main goal today is to let the kids be as independent as possible and have a great time.”

Emilio, from St. Louis, Missouri,



“We try to get our athletes out as much as possible to showcase not only how great they are athletically, but also to show what great people they are.”

— ANDY STARK
NCAA All-Star Coach

has been a Shriners patient since he was three years old during which time he has been treated at six Shriners Hospitals. After being born with spinal cancer, doctors gave Emilio only one year to live. It was by chance that he was brought to Shriners.

“I had been fighting with doctors for two years about Emilio’s condition and nothing was working or making sense,” said Cindy Lane, Emilio’s

mother. “We were golfing one day and a man came up to me and told me to get my son’s legs fixed at Shriners. At first I was skeptical, but the next day they ran every test you could think of and they were able to diagnose him with spastic legs and spinal cancer and they came up with an incredible treatment program for him.”

After 11 years of treatment and being in remission from spinal cancer,

Emilio is now 14 years old and is able to move independently because of several surgeries on his legs, as well as braces and crutches. Because of this, he had the chance to play basketball with the All-Stars.

“I have been playing basketball since I was little, so it was really cool getting to meet all of the players and shoot with them,” Emilio said. “It’s awesome because they came down here to support us.”

While most of the All-Stars had never played basketball in wheelchairs, they took to it very quickly and made the games exciting for Shriners patients. Because of the diversity of activities, patients of all ages were able to take their turn playing basketball.

“The athletes are way bigger in person than they are on television,” said Devin, a patient at Shriners. “It is so cool that they are really out here playing basketball with us in person.”

After the teams were done dunking, dribbling, shooting and playing around, the All-Stars had lunch with the patients and their families and signed autographs for everyone.

“It’s great being out here with the patient. They are a great reminder that regardless of your condition or what you are going through, you can always have a smile on your face and have fun,” said Wichita State senior basketball player Ron Baker. ■

THE PAINKILLER PARADOX

By Shanley Chien

THE CDC TAKES A HISTORIC STEP FORWARD TO PROMOTE SAFER AND MORE EFFECTIVE ALTERNATIVES TO TREATING CHRONIC PAIN IN AN EFFORT TO MITIGATE THE HIGH RATES OF OPIOID ADDICTION AND DRUG ABUSE

In a landmark move, the United States Centers for Disease Control and Prevention (CDC) recently issued a list of 12 new recommendations for prescribing opioid medications. The unprecedented guidelines are a first from a federal agency to establish ground rules for primary care clinicians to reduce the risk of addiction and curb the opioid epidemic sweeping the country.

In an effort to balance pain management with patient safety, the CDC's recommendations include opting for nonpharmacologic approaches and non-opioid therapies—such as ibuprofen, antidepressants and anti-inflammatory drugs—rather than morphine, methadone, hydrocodone, oxycodone and other opioid medications for patients outside of active cancer treatment, palliative care and end-of-life care.

“We hope that these guidelines will provide a standard that providers can look to that will improve the treatment of pain in the United States, and encourage providers to look at other options in addition to opioids—some of which may work better than opioids in a lot of circumstances,” said Debbie Dowell, M.D., senior medical advisor for the Division of Unintentional Injury Prevention at the CDC and lead author of the new guidelines. “We haven’t used the full array of treatments for pain in the last 15 to 20 years [because] we’ve relied on opioids increasingly and have forgotten some of the other treatments that may work just as well or better—and certainly have less risk of overdose and opioid use disorder.”

The country has maintained a long history of overprescribing opioid medications. According to the CDC's most recent study, approximately one in five patients with non-cancer pain or pain-related diagnoses are prescribed opioid medication by doctors. Although the number of opioid prescriptions are high among pain medicine, surgery

and physical therapy and rehabilitation patients, approximately half of those prescriptions are dispensed in excess through well-intentioned primary care providers—so much so that, in 2012, health care providers issued 259 million painkiller prescriptions, which was enough to supply each American adult with a bottle of pills, based on a report by the American Society of Addiction Medicine's 2016 report on opioid use. By 2013, about 1.9 million people in the country reported abusing or being dependent on prescription opioid pain medication in that year alone, according to the same report.

The new guidelines offer a glimmer of hope for reducing opioid abuse, but prescribing restrictions could also have less-than-savory consequences, particularly in the potential uptick of patients with painkiller addiction turning to illicit drugs, and fueling a current trend in illicit drug use, namely heroin.

“In terms of illicit drug use, heroin is the darling,” said Matt Feehery, chief executive officer of the Memorial Hermann Prevention and Recovery Center, whose organization treats approximately 200 patients daily who suffer from substance use

disorders. “If those people don’t go out and get help for their dependence or their addiction, then they’re turning to the streets or black market to buy heroin to replace the prescription drug they can’t obtain legitimately.”

Prescription opioids and heroin use are undeniably linked, with 94 percent of people suffering from opioid addiction admitting that heroin was a far more affordable and accessible alternative to prescription painkillers, according to a 2014 survey published in the *Journal of the American Medical Association*. Running about \$1 per milligram, a single 60-milligram pill of prescription painkiller would cost \$60 for the uninsured, so it comes as no surprise that people graduate from highly addictive prescription opioids to heroin for one-fifth of the price and 15 times the potency.

“People have that dependence, that need to feed the addiction,” Feehery said. “Their brain needs that drug. They want that feeling. That’s how the drive gets people to cross the line and go from a prescription medication, like Vicodin or oxycodone, [...] to take heroin.”

The discussion of the country’s widespread prescription painkiller habit is undoubtedly nuanced, hitting at multiple levels of health care and government policy, but the guidelines, in addition to President Barack Obama’s recent announcement in March to fight opioid and heroin abuse, serve as overdue first steps in addressing a long-established epidemic.

“People have that dependence, that need to feed the addiction. Their brain needs that drug. They want that feeling.”

— MATT FEEHERY

Chief Executive Officer of the Memorial Hermann Prevention and Recovery Center

“I think it’s a great start, but it’s almost a little too late,” said Alok Madan, Ph.D., director of the Pain Management Program at the Menninger Clinic and McNair scholar. “If you look at best practices, what the CDC has put out, we’ve known for awhile. We just didn’t have the political will to actually push forward.”

There’s insufficient evidence to show that prescription opioids have any long-term benefits in improving chronic pain, function and quality of life, but their rampant use has been deeply ingrained in the country’s approach to chronic pain management since the 1990s.

“We looked at how effective [opioids] seemed to work for acute pain and relief of suffering at the end of life. There were some small studies looking at a small number of hospitalized patients with chronic pain who seemed to do well on opioids,” Dowell said. “There was a lot of optimism, a lot of hope, that these medications could work for the long term as well as we’ve seen them work for the short term, but I think our optimism got ahead of the evidence.”

With the Joint Commission on Accreditation of Healthcare Organizations’ (JCAHO) push to improve pain management standards and assessment in 2001, health care providers were encouraged to document high levels of unrelieved pain and lift barriers in the health care system that prevented patients from receiving medication. The report essentially supported the use of opioid medications and downplayed the serious risks studies have since corroborated.

“Pain essentially became the fifth vital sign.”

— ALOK MADAN, PH.D.

Director of the Pain Management Program at the Menninger Clinic and McNair Scholar



Madan demonstrates a transcranial direct current stimulation device, which is currently being tested in clinical trials for patient use and has been shown to effectively treat chronic pain, depression and anxiety.



“Health care professionals [...] have inaccurate and exaggerated concerns about addiction, tolerance, respiratory depression, and other opioid side effects, which lead them to be extremely cautious about the use of these drugs,” the JCAHO report stated.

“Pain essentially became the fifth vital sign,” Madan said. “I think what we’re seeing today is the pendulum just swinging completely in the opposite direction from there. We might have gone a little too far with that.”

Madan leads a team of specialized clinicians at the Menninger Clinic to help treat patients suffering from chronic pain, using a combination of nonpharmacological interventions—including

cognitive behavior therapy, experimental brain stimulation technologies and genetic testing—with physical therapy, exercise and non-opioid medications. But because chronic pain is characteristically accompanied by comorbidities, such as depression, simply treating the symptoms rather than the cause can exacerbate the condition, prolong medication and risk drug use disorder.

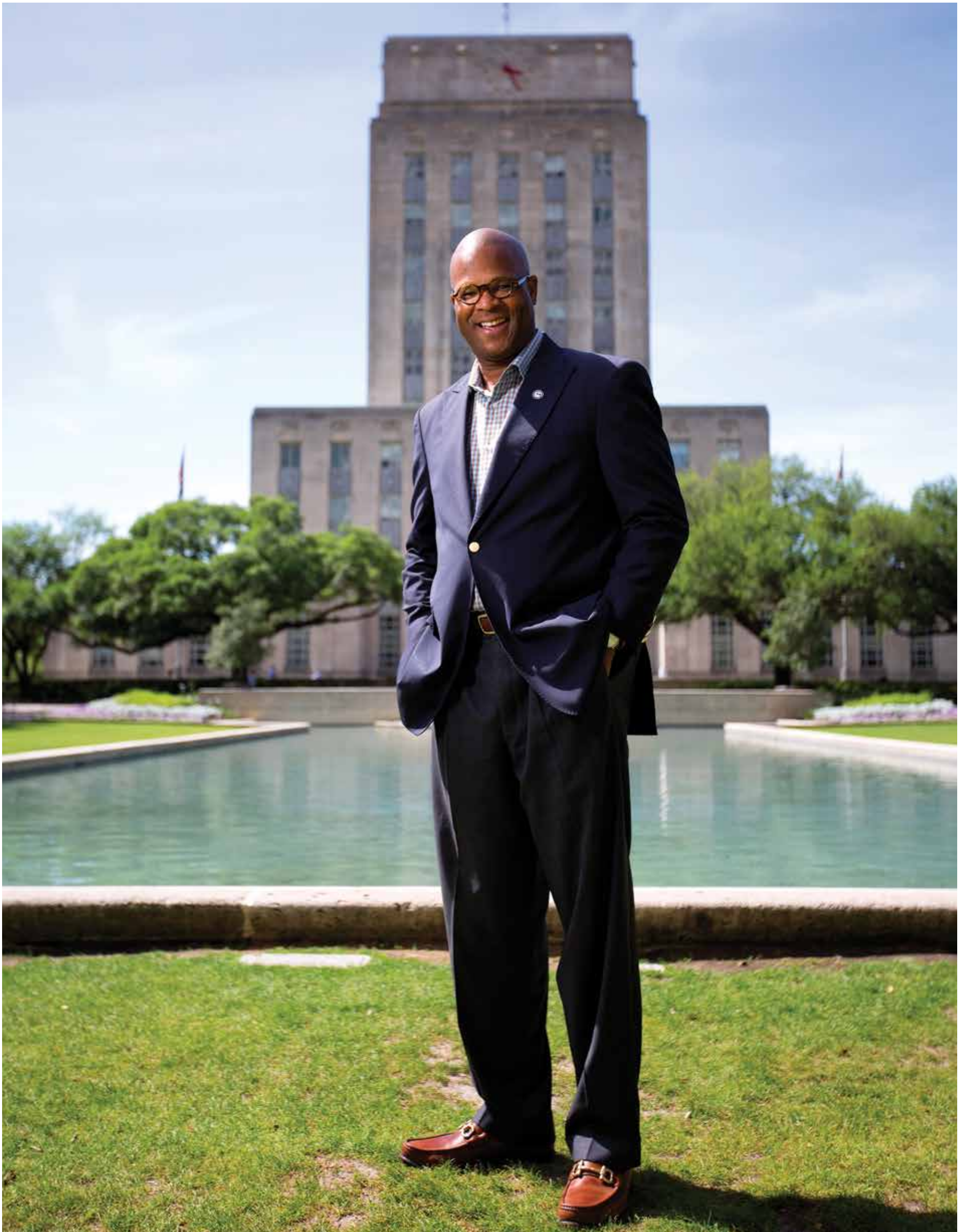
“You’re in chronic pain, so you can’t do as much as you did. You start getting frustrated, you start getting angry, you start getting sad, [and then] you start getting depressed,” Madan said. “Lo and behold, the depression makes your pain worse, so now you’ve got chronic pain with clinically significant depression on top of it. Both are feeding on one another and you’re spending more and more time in bed, you’re not getting out, you’re not even getting sunlight, not bathing, you’re not eating. You can see how this type of situation could quickly spiral out of control.”

“I think we have failed in trying the [nonpharmacological interventions] first,” he added. “We quickly go to second- and third-tier treatments, in large part because it can be hard to get patients to go to a physical therapy appointment, while it’s much easier for them to go to the pharmacist and fill up a bottle.”

Prescription opioid medication may provide patients with the path of least resistance, but experts agree that the uncertain benefits of those painkillers come with known risks of addiction and drug abuse, and that physicians should consider nonpharmacological and nonopioid approaches for successful, lasting outcomes.

So while national adoption of the CDC’s new guidelines has great potential to help curtail the opioid addiction epidemic, long-term change requires redefining the country’s approach to chronic pain management and refraining from either overprescribing or underprescribing. Just as Goldilocks navigated through the home of the three bears in pursuit of things that were not too much or not too little, the way forward lies in finding the happy medium of “just right.” ■





DWIGHT BOYKINS, HOUSTON CITY COUNCIL MEMBER, DISTRICT D, SHARES HIS VISION FOR HOUSTON AND WHY HE BELIEVES SECOND CHANCES AND A FOCUS ON COMMUNITIES SHOULD DRIVE POLICY CHANGE.

Q | First, tell us about your background.

A | I'm a native Houstonian. Born and raised in District D. I attended public schools in the southeast part of Houston; we call the neighborhood South Union. I was raised by a single parent with six other brothers in the projects. Our mother was always telling us to stay focused, keep our faith and have dreams, and we can be whatever we want to be. I went to Texas Southern University, graduated in business with a degree in marketing, and then went into the banking industry. I worked at Texas Commerce Bank before it was Chase Bank, so that's where I started my career. Then I got married, and I've been married for 26 wonderful years. We don't have any children. My wife and I believe God put us together because he knew he was going to use us to bless others. Through our church, at Windsor Village United Methodist Church with Pastor Kirbyjon Caldwell's leadership, we have been involved with a lot of community development projects throughout the City of Houston. As a council member, fast forwarding, I've always implemented programs with my past in mind, not forgetting where I come from.

Q | Tell us about your path to City Hall.

A | I had an opportunity to run for city council in '99. It was a citywide race and I didn't win. Then I ran again, I think in 2001. I came up close again and vowed I was through with it. Then Mayor Parker asked me to serve on the ReBuild Houston Oversight Committee to help put a program in place to address street and drainage issues throughout the whole city. I realized how important it was, the future development of our city. We're the fourth largest city in the country, working toward number three, and we're very diverse in terms of economy. So companies were coming, and they're bringing people. You have to have somewhere that's decent for them to live with a good infrastructure for floodwater and the whole nine yards. And I said, 'You know what? I think I'm going to give this one more run.' I talked to my wife and she gave me the green light. And it was the right thing, because I wanted to make sure my community received its fair

share of infrastructure dollars. It was a crowded field of 11 candidates, and I came up right at 44 percent. I almost won it, and then we won it in the runoff. And since I've been here, I think I've implemented some things that make a real difference in the community.

Q | Can you tell us more about that?

A | Absolutely. First, we're addressing needs for senior citizens in my district. Sixty-six percent of my population are seniors, and I would guess that about 58 percent are probably on social security or some kind of pension. And so, for me to know that and to knock on your door and ask for your vote—when your door is falling off—it goes back to my project days. How do you help the least and the last? So understanding their needs, but also that they have limited income, I decided to come up with a program called Seniors Minor Home Repair Program where we help seniors. We raise private money to help seniors with minor home repairs at no cost to them. We'll fix the door-frame, fix the room—they're minor problems, but we're keeping them from becoming major. And it has been very successful. Over 125 homes have been repaired, and that means 125 lives have changed. There was this one lady, who has since passed on, and she was a diabetic and had lost her leg. She was in a wheelchair but you would never know it. With her spirit and personality, she could have run a marathon. She was a very wonderful lady. But you could see that she wasn't able to take care of her house anymore, and probably pride kept her from doing anything about it. One of her doors was so narrow that she couldn't get through it in her wheelchair. So we took care of it, we found an angel contractor who gave it to us at no cost. We reframed the door and then put in a new sink for her. That's what matters to me. I want to make certain I'm known by the results of my efforts as a public servant, not a politician.

Q | Your Second Chance program is a great example of this.

A | I'm glad you brought it up. The Second Chance program was an initiative I came up with when I

realized that there was a major gap between unemployment and employers who were looking for individuals to hire. What typically happens is you have a process that allows elimination without a full vetting of the process. What I mean by that is you're looking for employees, and this employee is looking for a job, but this person made a mistake as a kid, a bad decision. Just bad choices. Seventeen, got pregnant, dropped out of school, never got a formal education, maybe was incarcerated due to drugs, hot checks, whatever. And then they have a pattern of five to 10 years of a clear record, and they're still paying the price when it comes to getting hired. I believe people deserve second chances. I really believe that. What a lot of people don't realize is that people usually develop a skill while they're incarcerated. They walk out of prison with a certificate for operating heavy equipment, for example. They can hit the ground running—you've just got to give them a chance. When you give people a second chance, crime goes down. A person's self-esteem goes up. I truly believe, by the grace of God, that people will make a difference with maturity and a second chance. I don't believe in being blessed and forgetting about others. Now let me be clear: I'm talking nonviolent, minor offenders. If you're imprisoned for something major, then that's a different story.



“I truly believe, by the grace of God, that people will make a difference with maturity and a second chance. I don't believe in being blessed and forgetting about others.”

Q | *It sounds like you're really working to make a difference for your community. Can you tell us what you would consider to be one of the most significant moments of your career?*

A | I would say graduating from the American Leadership Forum, the ALF. It's a 12-month program, and what it did was allow me to get into a circle of individuals that I otherwise would have never known. The ALF is a leadership training program that brings together nonprofits, CEOs from major corporations and influential political or business folks. It's a major self-development program and it teaches you what teamwork and respecting differences can do. My wife is a senior general counsel for NRG Energy, so she was tapped and went through it as well. In terms of professional development, I would say creating the Seniors Minor Home Repair Program. It really changes lives.

Q | *What about challenges in your career? Can you tell us about some of the things that have been most difficult?*

A | The biggest challenge is to be able to work with the different levels of the government to support the needs of the communities. I don't play politics when it comes to quality of life.

Q | *How would you like to see continued collaboration with the Texas Medical Center?*

A | That's a great question. What I would like to see is continued expansion outside the medical center. Non-emergency clinics. Say, for example, with Texas Children's. They set one up near my church off Post Oak so the residents don't need to tie up the emergency room for minor injuries. I would like to see more of that. And of course, outreach for employment opportunities.

Q | *You're on the Super Bowl Host Committee. Can you tell us how you're planning to leverage this opportunity to help the community?*

A | Well, it's a big opportunity for Houston. On the economic side, jobs will be created. But one of the biggest things is that the Super Bowl will not be in the downtown or Galleria area only. It's going to be out in the communities. So we'll have events in all 11 different council districts. I'll ask each council member to provide us with a local park in their district, then we'll



“I want to make certain I'm known by the results of my efforts as a public servant, not a politician.”

have a Hall-of-Famer or a retired NFL player host an event in one of the 11 districts in the morning. Then at noon they'll all leave from each park, 400-plus kids, and go to a restaurant in the neighborhood. Your local coffee shop or hamburger shop or pizza shop in the community will all benefit. So the economics are staying in the communities and the kids are getting to be a part of it since not everybody can get downtown.

Q | *What is your biggest hope for the future of Houston?*

A | The future of Houston is bright—very bright. We are close to becoming the third largest city in the country. It's amazing every time you talk to someone and you ask them where they're from, you may be lucky to get one out of five from Houston. People like our economy, they like our weather and the quality of

life here in Houston. In working with Mayor Sylvester Turner, one thing I do want to address is the number of homeless people we have in our city. We need to make certain that we encourage them to use the vacant rooms that are available for them, the psychiatric services, and all of that. My understanding is that there is a bed for every homeless person, they just don't all take advantage of it. But we also have to address the underlying issues—why they're homeless or why they're here in the first place. That's a big problem I'd like to help solve. ■

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Liquid Gold

How donated breast milk helps Texas Children's Hospital improve outcomes for its tiniest patients

BY ALEXANDRA BECKER



Amy Hair, M.D., neonatologist and director of the Neonatal Nutrition Program at Texas Children's Hospital, pictured inside the milk bank.

The quest to replicate biological matter is one of modern medicine's most promising endeavors, but also one of its greatest challenges. Be it synthetic blood, xenotransplantation efforts or extracellular matrix technology, the field has the potential to transform health care and save countless lives. The problem is, nature is just smarter than we are—at least for now.

Nowhere is this truer than in the case of infant formula. No matter how comprehensive the list of essential vitamins, minerals, proteins, fats and carbohydrates, even the best brands on the market can't touch the composition of breast milk. That's because breast milk is tailor-made to produce the nutrients a baby needs to grow and develop, including living antibodies for fighting infection as well as healthy bacteria which supports early development of the microbiome. Again and again,

studies have indicated that because of these factors, breast milk is beneficial for neurological development and general growth and is associated with a decreased risk of ear and respiratory infections, GI issues, asthma, eczema, SIDS, juvenile-onset diabetes, childhood obesity, allergies—the list goes on.

Its unique biological properties are especially important for premature infants whose digestive systems are underdeveloped and often have trouble tolerating formula. One of the most common and fatal conditions observed in low birth weight preemies—those weighing 1500 grams (3.3 lbs.) or less—is an illness called necrotizing

enterocolitis (NEC), in which the immature intestinal lining decays as a result of infection and inflammation. Research has shown that babies who receive breast milk are at a much lower risk of developing NEC, suggesting that the cow's milk proteins found in formula may contribute to the infection itself.

"After implementing an all-human milk diet in our NICU, we watched our intestinal infection rate of necrotizing enterocolitis fall from 14 percent to somewhere between two and three percent," said Amy Hair, M.D., neonatologist and director of the neonatal nutrition program at Texas Children's Hospital.

Their all-human milk protocol was initiated in 2009 in response to the overwhelming evidence emerging at the time that exclusive breast-feeding, put simply, saved lives.

"Breast milk is special," said Hair. "It's specifically designed for human baby bodies."

Hair explained that the composition of a mother's milk changes over time to meet the growing needs of her baby. The first type of milk a mother produces, called colostrum, is high in fat and protein and contains concentrated immune factors, and, like all breast milk, is easily absorbed in the intestine—it's exactly what a doctor would prescribe for newborns, especially preemies who sometimes have weeks, if not months, of gestational development left to complete.

"We were noticing over the years, since we began this in 2009, that our babies were just doing better," Hair said. "Our overall outcomes were better. So we looked at data from before we implemented this protocol to after, and what we found was that babies who received all human milk have less complications of prematurity. They had less severe retinopathy of prematurity, which leads to blindness, less chronic lung disease, less infections and less mortality."

The properties are so potent that even a few drops contribute to an overall improvement in health. Hair cited a few recent studies that showed even tiny premature babies who cannot be orally fed or fed with a feeding tube benefited from caregivers taking just a small amount of the mother's colostrum and swabbing their mouths with it.

"It was shown to decrease infection and start building their immune system and microbiome," she said.

SINCE TEXAS CHILDREN'S HOSPITAL LAUNCHED THE DONOR MILK BANK PROGRAM IN 2011, THE HOSPITAL HAS COLLECTED OVER 227,000 OUNCES FROM MOTHERS IN THE COMMUNITY.

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— AMY HAIR, M.D.

Neonatologist and Director of the Neonatal Nutrition Program at Texas Children's Hospital

The benefits of colostrum and the later stages of breast milk extend to all babies, not just those born prematurely. In fact, the Centers for Disease Control and Prevention, the World Health Organization and the American Academy of Pediatrics all strongly encourage mothers to breast-feed for six months to up to two years or longer if they can. The recommendations echo unanimous support across the medical profession that, as the saying goes, “breast is best”—which begs the question: Why don't all mothers breast-feed their babies?

The answers run the gamut from personal choices or cultural norms to medical contraindications or inability to produce. For example, if a mother is infected with untreated tuberculosis or HIV, or if she is taking antiretroviral medications or undergoing chemotherapy treatment that interferes with DNA replication or cell division, breast-feeding is not advised. The same goes for mothers who are dependent on an illicit drug or are engaged in any other lifestyle choices that may contaminate her milk enough to render it more harmful than beneficial. Some mothers cannot make milk, no matter how hard they try to increase their production, and for those who do, it generally takes a few days for their supply to “come in” after giving birth, especially for first-time moms or mothers who had premature babies.

“Just having a preemie alone, your body isn't ready to start making milk,” Hair said. “That was a challenge for us, because medical literature was starting to show that the earlier you feed these tiny babies human milk, the better. The time-frame mattered in the outcomes.”

So Texas Children's Hospital, in a push to adopt the all-human milk diet for their babies in the NICU, initiated a donor milk program to supplement those mothers who could not immediately provide their own milk. Although mother's milk is the first and best

choice due to it being custom-made in real time and filled to the brim with antibodies, donated human milk is second best (and, even after extensive pasteurization, retains some of the immune-boosting kick). The program worked successfully for two years, but in 2011, a nationwide shortage in donor milk led to the creation of a milk bank at the hospital itself.

“We wanted to protect our babies and make sure we could provide this milk for them,” Hair said. “We realized that Houston was the fourth largest city in the nation and there was nowhere for mothers with excess milk to donate. We're proud to have the only milk bank in Houston and to say that the milk our moms donate comes back to us for our babies. It's Texas milk for Texas babies.”

Here's how it works: mothers with excess milk supply, usually built up from pumping their milk and storing it in the freezer, contact Texas Children's to fill out the required paperwork. Once vetted, a phlebotomist will visit them at home or at work to draw blood (the screening process is actually far more rigorous than that for blood donation). If approved, a special cooler will be sent to the mother's home for her to fill up with bags of her excess milk. The cooler is then picked up and shipped to a large, pharmaceutical grade facility in California where it is tested and then combined with the other samples. Together, the donated milk is pasteurized, packaged, and sent back to Texas Children's where it is stored in the milk bank until it is needed.

“When you think about it, the program is all about babies giving back to other babies,” said Savanna Bowman, a local mother who started the donation process when she built up an excess supply with her first daughter. “That's so cool.”

Since Texas Children's launched the donor milk bank program in 2011, the hospital has collected over 227,000 ounces from mothers in the



Texas Children's adheres to safe handling procedures while using state-of-the-art technology to prepare donated milk for feeding.

community. In 2014 alone, the donations totaled 444 gallons of breast milk, which resulted in more than 56,800 feedings that year.

“Anyone can do it,” Bowman said. “If you pump, all it takes is just a few extra minutes and it really adds up quickly. Even just donating a small amount can make a big difference for these babies.”

Morgan Bryan, whose twins received donor breast milk in 2014 when they were in the NICU at Texas Children's, explained how that is especially true for low birth weight preemies.

“A little bit of milk goes a long way for these itty bitty babies,” she said. “An ounce of milk takes a preemie almost an entire day to finish, so every little bit helps.” In contrast, a full-term newborn drinks approximately 1.5 to 3 ounces every two to three hours.

Bryan remembered how helpless she felt when her twins were in the NICU and she was not yet able to produce her own milk.

“Knowing that at least they were getting human milk instead of something formulated gave us such peace of mind,” she recalled. “You feel so helpless, and there's not a lot that is natural to the process of having a baby in the NICU, so just knowing that they were getting the best nutrition available relieved some of the pressure and guilt.”

Sadly, one of Bryan's twins did not survive. Determined to provide her son with breast milk for as long as possible, she continued her same pumping routine and, within a few months, built a supply in excess of 3,400 ounces.

“Of course, we knew exactly what we were going to do with it,” she said. ■

Closer to a Cause

LifeGift puts on its thinking cap to recover a brain that will be used for autism research

BY CHRISTINE HALL

LifeGift, an organ and tissue recovery agency and one of the Texas Medical Center's 56 members, recovered its first brain on Feb. 25 of this year to further research on autism, a developmental disorder in which children will display social and communication challenges and engage in repetitive behavior.

The brain will be part of the National Disease Research Interchange's (NDRI) project to recover donor brains to help researchers at the University of Maryland's Brain and Tissue Bank examine the behavioral causes associated with the disorder. Autism affects one out of 68 births in the United States, according to Autism Speaks, a science and advocacy organization. The national study is being funded through a \$500,000 grant from the National Institute of Mental Health.

Recovering a brain for research, however, isn't the easiest thing to do. The brain LifeGift was able to get is only the third one in the U.S. to be procured for this study. The other two were recovered by the Pittsburgh-based Center for Organ Recovery and Education.

It is rare for several reasons: The frequency of deaths in the autistic population has not been accurately established, though it is estimated to be two to eight times more frequent than the death of a comparably-aged individual, said Horst "Ron" Zielke, Ph.D., division head of pediatric research at the University of Maryland School of Medicine, and a researcher with the Brain and Tissue Bank. In addition, many autistic donors are teenagers or younger, and death occurs infrequently at that age.

Adding to the challenge is where the death or pronouncement of death takes place, he explained.

"If death occurs in a hospital, the focus may be on the manner of death rather than that they were autistic, and it is less likely that efforts are made to consider brain donation for research," Zielke said. "If death occurs without medical supervision, the body will almost always go to a medical examiner's

or coroner's office. In this situation, a history of autism is usually noted."

Further complicating this is timing, and the fact that the primary role of medical examiners and coroners is to establish cause of death rather than support medical research. For human brain tissue to be of value to research, it has to be obtained usually within 24 to 30 hours after death, Zielke said. The time that a medical examiner interacts with a body is usually between 8 a.m. and noon, so permission has to be obtained during this time frame for recovery of the brain before the autopsy is completed, he added.

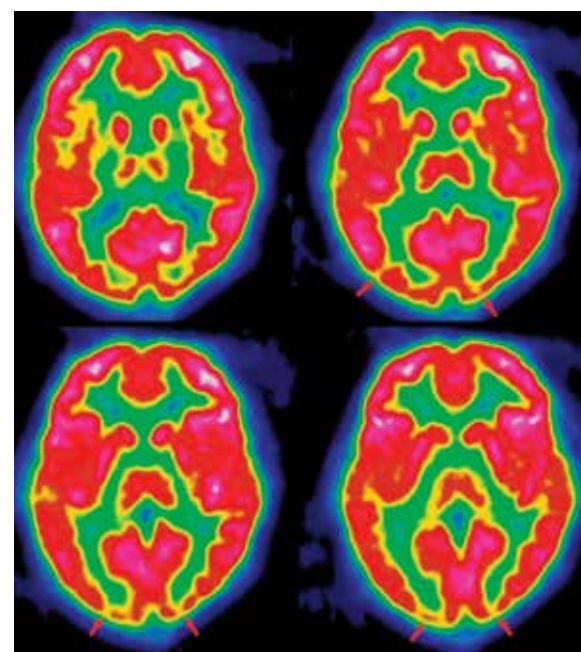
Once the family is contacted, it is necessary to explain how tissue donation can further research into the causes of autism and how research could lead to better care in the future, Zielke said. This conversation occurs at a time when the family is in grief and shock, so it is not surprising that up to one-quarter of the families say no, he said.

In the case of the brain that LifeGift was able to recover, its coordinators were aware of the autism study and kept that in mind talking with family members, said Kevin Myer, president and CEO of LifeGift.

"In talking with one of our families about tissue donation, during the history-taking they mentioned a history of autism spectrum, and our coordinator knew this would be a good candidate for the brain study," Myer said.

As part of the study, the Brain and Tissue Bank will be comparing 15 post-mortem donors diagnosed with autism to 15 donors without autism, all between the ages of two to 18 years old to explore the repetitive behaviors, developmental delays and communication deficits experienced by those diagnosed with autism, Asperger's and other developmental disorders.

Gene and protein studies can only be performed on actual brain tissue, Zielke said. Multiple genes have been identified as being associated with autism, and the donated brain tissue has facilitated the observation that alteration in brain structure occurred before



A brain PET scan of an 11-year-old male patient with an autism spectrum disorder. Credit: © ISM/Phototake

birth, supporting the conclusion that the potential for autism was present at birth, he added.

"It is hoped that future studies will provide an understanding of the critical alterations in the autistic brain and lead to the development of means to maximize the life potential of autistic individuals," he added.

Meanwhile, LifeGift will continue to support the study by pursuing additional donations. The autism study is one of three NDRI projects LifeGift is involved in as part of its innovation and research component, along with a study on traumatic brain injury and traumatic concussive encephalopathy. The NDRI asked the organ procurement organization to be one of nine to support the research, Myer said.

He likens the process to looking for a needle in a haystack, but said the scientific value for tissue recovery is immense, even for the donor family.

"In the case of the brain recovery, the donor family felt they were contributing to work to understand the disease," he said. "People may not know that autism affects the entire family, so they also want to help find a way to do more about finding a genetic marker or cure to help with this particular disease. This particular donation will hopefully result in 10 years of really valuable research." ■

“This particular donation will hopefully result in 10 years of really valuable research.”

— KEVIN MYER
President and CEO at LifeGift

TMC has Heart

The Texas Medical Center has formed a partnership with the American Heart Association to promote heart-healthy living in Houston

BY BRITNI N. RILEY

When cardiothoracic surgeon Robert C. Robbins, M.D., became president and chief executive officer of the Texas Medical Center in Nov. 2012, he brought with him his passion to reduce heart disease. Robbins is part of the Houston local board and the Southwest Affiliate Board of Directors for the American Heart Association. After creating the partnership between the medical center and the American Heart Association, Robbins enlisted the help of medical center executives and employees to help raise awareness about heart disease.

“As a surgeon, by the time patients get to me, it’s too late to talk about preventing heart disease,” Robbins said. “We need to work on prevention on the front end to reduce fatalities, and the partnership with the American Heart Association does exactly that.”

As the leading cause of death in the nation, preventing heart disease has always been important to Texas Medical Center Chief Financial Officer Denise Castillo-Rhodes.

“Heart prevention is near and dear to my heart. Not only is it the number one killer for all Americans, but being Hispanic, my family and I face even higher risks of cardiovascular diseases because of high blood pressure, obesity and diabetes,” Castillo-Rhodes said. “I love the work I am doing with the American Heart Association because I can see our work making a positive impact on our community.”

For the past year, Castillo-Rhodes has been serving as chair for the Go Red for Women campaign here in Houston. On May 6, Castillo-Rhodes and her committee will be hosting the annual Go Red for Women Luncheon at the Royal Sonesta Hotel Houston.

The luncheon focuses on preventing heart disease and stroke among women by promoting healthy lifestyles and providing fundraising for education, research and awareness of the disease. As city sponsor of the American Heart Association’s Go Red for Women campaign, the Texas Medical Center will be helping Castillo-Rhodes reach the American Heart Association’s fundraising goal of \$1 million.

“We will welcome 500 Houston community members, government officials, business professionals, the medical community and many others to celebrate women’s heart health and the collective passions women possess, while addressing the

“As a surgeon, by the time patients get to me, it’s too late to talk about preventing heart disease. We need to work on prevention on the front end to reduce fatalities, and the partnership with the American Heart Association does exactly that.”

— ROBERT C. ROBBINS, M.D.
President and CEO at the Texas Medical Center

importance of combating the number one and number five killers of women—heart disease and stroke,” Castillo-Rhodes said.

Larry Stokes, senior vice president of human resources and shared services at the Texas Medical Center, is the 2016 chair for the Houston American Heart Association Heartwalk. The annual walk is the premier fundraiser for the American Heart Association and is a critical piece of its campaign to promote physical activity and heart-healthy living while raising awareness about heart disease.

The walk, which will be held Nov. 5, will take place on the Texas Medical Center campus for the first time. Since the first responsibility of the medical center is to accommodate patients and hospitals, Stokes and his team were tasked with strategically planning entrances and exits for 30,000 walk participants as well as a route for them to walk in the medical center without interfering with ambulance and patient traffic.

Each walker sets their own personal goal for their walk and they can dedicate their walk to a loved one or a cause they believe in. More than fundraising, though, the medical center hopes to raise awareness of heart disease among all of the participants.

“We are planning to have 30,000 walkers come out for the Heartwalk and our main goal is to share information and knowledge with each walker,” Stokes said. “If someone sets a goal of \$5 or \$500, that is fine, but we are really focusing on raising awareness.”

Internally, the Texas Medical Center has implemented several initiatives to promote heart-healthy living among its institutions. TMC02 is a cross-institutional program that promotes making healthier choices in vending machines and in the cafeterias through a stoplight system based on calories. Employees have also participated in health and

wellness screenings, step-counting challenges and Weight Watchers.

“As a medical center, all of us are impacted in some form by heart disease, whether it be professionally or personally,” Stokes said. “This partnership gives the medical center and all of the institutions a chance to look across the street and remember how much we do have in common and how this collaboration with one another is a good thing for the medical center and those we serve.” ■



Texas Medical Center executives put their healthiest foot forward for the American Heart Association’s National Walking Day, which took place April 6. Credit: Scott Dalton

More Bad News for BPA

UTMB Galveston scientists have discovered a link between BPA and increased risk of preterm births

BY SHANLEY CHIEN

A team of researchers at The University of Texas Medical Branch at Galveston (UTMB) recently discovered a link between Bisphenol A, more commonly known as BPA, and preterm birth. The results of the three-year study, which was published in the *Journal of Maternal-Fetal and Neonatal Medicine* this past March, indicated that women with higher levels of BPA in their blood were more likely to give birth prematurely than those with lower levels.

According to the Centers for Disease Control and Prevention, preterm birth rates have steadily declined over the past decade, but it still affects approximately one in 10 babies in the United States. Because babies undergo critical growth in the final weeks of pregnancy, preterm birth increases the potential risk of underdeveloped organs (such as the brain, lungs and liver), cerebral palsy, developmental delays and vision impairments.

Led by reproductive and perinatal biologist Ramkumar Menon, Ph.D., assistant professor of obstetrics and gynecology at UTMB, the team analyzed BPA concentration levels in maternal plasma and amniotic fluids in selected samples from a biobank of more than 3,500 pregnant women.

“My lab is looking at causality and pathways of preterm birth and maternal health from a fetal perspective, meaning, ‘What is the response of the fetus if the mother is getting exposed to environmental toxicants like BPA?’” Menon said. “We wanted to know why

it has distinct effects on the mother and the baby’s tissues during the pregnancy period. Those are the investigations that are ongoing because sometimes we can prevent some of these issues by knowing if it goes here, certain things will happen.”

Based on the chemical nature of BPA, the compound can be easily metabolized through the liver or detoxified in the placenta, made inactive and secreted from our bodies, but consistent exposure to BPA can lead it to accumulate either in its active or inactive form.

“The liver modifies the chemical and makes it an inactive or inert compound, but it can still be detected in your assay, blood or amniotic fluid,” Menon said. “If the exposure level is high, detectable levels of BPA are getting accumulated in the amniotic fluid and maternal blood and those high levels of BPA are linked to preterm birth.”

The prevalent use of BPA has caused the scientific community to closely examine its effects on the human body, particularly in pregnant women and children. Because BPA and estrogen share structural similarities, BPA is able to bind to estrogen receptors and chemically mimic the female hormone when introduced in the maternal blood or amniotic fluid.

“If you look at the normal parturition in humans, estrogen increase is associated with normal labor and delivery,” Menon said. “What happens when the mother is exposed to BPA, or what we call xenoestrogen, is that they mimic



estrogen in their chemical nature. The system is getting fooled by these xenoestrogens and [causing] inflammation—the same type of response as you would expect from estrogen at term but from the xenoestrogen prematurely.”

The industrial chemical compound has been widely used since the 1960s in common household products, such as water bottles, epoxy-lined canned foods and water piping. In addition, BPA can be found in less conspicuous applications, including the dental sealants used in teeth fillings, sports equipment and even cash register receipts.

Although decades of research have shown BPA to be a known endocrine disruptor chemical that interferes with estrogenic signaling and a contributing

factor in brain and reproductive development problems, BPA is still one of the highest volume chemicals produced worldwide, with approximately six billion pounds produced each year, according to the CDC. The heightened safety concerns surrounding BPA in consumer goods have led many food and beverage companies to rethink their approach to packaging.

In 2012, the Food and Drug Administration officially banned the use of the chemical in baby products in response to growing public concern and a petition filed by the chemical industry’s main trade association, the American Chemistry Council. A number of manufacturers have followed suit, but even though many plastic bottles and food containers now tout “BPA-free” labels, Menon’s colleague on the study, Cheryl Watson, Ph.D., professor of biochemistry and molecular biology at UTMB, said those descriptions create a false sense of security and safety.

“BPA is an incredibly common plastic, and people like it because it’s clear

BECAUSE BPA AND ESTROGEN SHARE STRUCTURAL SIMILARITIES, BPA IS ABLE TO BIND TO ESTROGEN RECEPTORS AND CHEMICALLY MIMIC THE FEMALE HORMONE WHEN INTRODUCED IN THE MATERNAL BLOOD OR AMNIOTIC FLUID.

“I call it ‘Whack-an-EDC,’ instead of Whack-a-Mole. Every time we knock one down, one pops up a new hole that there’s no evidence about, so we spend the next five years tracking down the next one. This is just insane.”

— CHERYL WATSON, PH.D.

*Professor of Biochemistry and Molecular Biology at
The University of Texas Medical Branch at Galveston*

[and] cheap to make,” Watson said. “So many plastic items will have BPA in them, but they’ll also have other plastics that have their own characteristics that are also hormone disruptive.”

The most popular substitute for BPA in manufacturing plastic consumer products and thermal paper is its cousin, Bisphenol S, another EDC in the Bisphenol family. Although BPS was once considered to be a safe alternative to BPA, Watson and her colleagues have conducted studies that show BPS causes the same hormone disruptions as BPA.

“I call it ‘Whack-an-EDC,’ instead of Whack-a-Mole,” Watson said. “Every time we knock one down, one pops up a new hole that there’s no evidence about, so we spend the next five years tracking down the next one. This is just insane.”

While preterm birth is still an understudied and underfunded area, Menon, Watson and their team plan on continuing their research efforts to better understand the mechanisms and molecular pathways responsible for the link between environmental factors and inflammation in hopes of developing targeted interventions.

“We haven’t reduced the rate of preterm birth at a global level in 30-plus years, partly because we have a universal approach in treating preterm labor,” Menon said. “Manifestation of risk and

risk-induced biochemical changes are different in each woman, so we really need to understand what leads to preterm labor in a given subject so that we can personalize interventions.”

In addition to studying BPA as it relates to preterm births, other environmental factors Menon and his team are investigating include carbon monoxide exposure, pesticides, flame-retardant chemicals, behavioral risk factors like smoking and alcohol abuse, and microbial infections, including risks like Zika virus. Although their research has not yet identified the precise cause-and-effect mechanisms behind preterm birth, Menon said knowing the full scope of the correlation between those risk factors and maternal health could hold the key to improving the quality of life for future generations.

“[Maternal and child health] exaggerates the need for this research,” he said. “Society is basically formed in utero and any toxic exposures have pronounced impact in shaping an individual’s future and that needs a whole lot more attention, especially when it comes to preterm labor and delivery. It means that babies may be programmed to have an adult disease at a very early stage of their life.” ■

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SUSAN M. BLANEY, M.D., deputy director of Texas Children's Cancer Center and professor and executive vice chair of the Department of Pediatrics and vice president of clinical and translational research at Baylor College of Medicine, recently received the Pioneer Award for pediatric neuro-oncology from the Children's Brain Tumor Foundation. Blaney has extensive experience in clinical translational research with a focus on the development of new treatment strategies for children with brain tumors and other refractory cancers.



LARRY L. MATHIS, retired president and chief executive officer of Houston Methodist Hospital System (now Houston Methodist), was inducted into the Healthcare Hall of Fame in Chicago. The award was established in 1988 at the Pennsylvania Hospital in Philadelphia, the first hospital in the country to recognize the men and women who dramatically impacted the future of health care. With this induction, Mathis joins 100 other industry luminaries, including: Benjamin Franklin, Clara Barton, Senator Ted Kennedy, Dr. Michael DeBakey, Dr. Denton Cooley and Dr. Mickey LeMaistre.



AVERY CLOUD has been named vice president of innovation for the CHI Texas Division at CHI St. Luke's Health. Cloud previously served as CHI St. Luke's Regional Chief Information Officer. In this new role, Cloud leads CHI St. Luke's operations focused on technology and business innovation, IT strategic planning and execution, clinical engineering, biomedical informatics, performance excellence, and continued integration.



SANKAR MITRA, PH.D., professor of radiation oncology at the Houston Methodist Research Institute, has been chosen by the American Association of Indian Scientists in Cancer Research (AAISCR) to receive its Lifetime Achievement Award. The AAISCR presents the award to an outstanding scientist who has made significant fundamental contributions to cancer research, including treatment, either through a single scientific discovery or a body of work.



MICHAEL H. COVERT chief executive officer for CHI St. Luke's Health, has recently been elected to the Texas Hospital Association Board of Trustees. He took office Jan. 1 and will serve a two-year term. Covert was named to his current position with CHI St. Luke's Health System in 2014. Previously, he was president and CEO of Palomar Health in San Diego, California.



REBECCA RICHARDS-KORTUM, PH.D., the Malcolm Gillis University Professor at Rice University's Department of Bioengineering, has been presented with the American Institute for Medical and Biomedical Engineering's highest honor, the 2016 Pierre Galletti Award. Richards-Kortum, who is the first woman to receive this honor, was recognized for her global leadership and exceptional innovation. Richards-Kortum directs both the Rice Institute of Biosciences and Bioengineering and the Rice 360° Institute for Global Health.



LATOYA MASON, M.D., assistant professor at Baylor College of Medicine Department of Anesthesiology, has been selected as one of the National Minority Quality Forum's 40 Under 40 Leaders in Minority Health. The award recognizes the accomplishments of young professionals in the health care field and acknowledges their potential to continue impacting minority communities. Mason was also selected for one of Xavier University of Louisiana's 40 Under 40 Young Alumni Awards in Nov. 2015.



PEGGY SMITH, PH.D., director of the Baylor Teen Health Clinic, was named one of Houston's 50 Most Influential Women of 2015 by Houston Woman magazine. She was recognized for her commitment to community health care for vulnerable populations and for finding innovative approaches to improve outcomes for at-risk youth.

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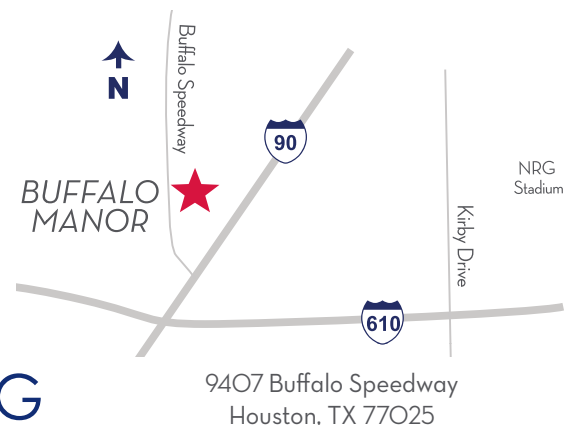
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Winners Announced After Oshman Engineering Design Showcase



For the first time, two senior engineering teams, Brays Yourself and Rice Outstenting, tied for the top prize in the George R. Brown Engineering Design Showcase, held April 14 at Rice University's Tudor Fieldhouse. Each was granted the top prize of \$5,000 for the Excellence in Engineering Award.

"Even simple solutions can make a big difference in people's lives," said Margaret Watkins of the Rice Outstenting team, which designed a device to simplify the process of removing ureteral stents from children. "This whole project was focused on streamlining it and making it as fast as possible."

The win completed a great week for the team, which also won the grand prize for student design at the annual Design of Medical Devices Conference in Minneapolis on April 12. "We're absolutely amazed," Watkins said.

Brays Yourself designed modifications to portions of the Brays Bayou channel in Southwest Houston and redesigned the corresponding Greenbriar Bridge. The team's goal was to reduce the 100-year floodplain

throughout the bayou in order to protect commercial development and the Meyerland neighborhood, which suffered extensive damage in the 2015 Memorial Day flood and April 2016 flooding.

"This is huge because, traditionally, we don't see a lot of civil engineering teams winning the showcase," said team member Kasia Nikiel. "It's more people who make really cool prototypes. So this is really big. We worked really hard on this and we think it's a really great project."

The annual public event, put on by the George R. Brown School of Engineering and the Oshman Engineering Design Kitchen, features senior capstone design and other projects by Rice undergraduates. Over 80 judges made up of engineering alumni and local industry helped with the poster session competition, which is open to all engineering design projects for each discipline of engineering. ■

—Mike Williams, Rice University

EXCELLENCE IN ENGINEERING AWARD (\$5,000)

Brays Yourself; Rice Outstenting (tie)

WILLY REVOLUTION AWARD (\$5,000)

Team Wombox

WILLY REVOLUTION AWARD (\$2,500)

Rice Eclipse

\$1,000 PRIZES

Excellence in Freshman Engineering Design Award: OxyCal

Excellence in Underclassman, Multiyear or Club Engineering Design Award: Express Yourself 2.0

Excellence in Capstone Engineering Design Award: Tube Much; (com)post-haste; Pre-ictal Predictors (tie)

\$750 PRIZE

Best Interdisciplinary Engineering Design Award: Just Keep Swimming

\$500 PRIZES

Best Conceptual or Computational Modeling Engineering Design Award: Yung Stat Squad

Best Technology for Low-Resource Settings Design Award: Swole in Space

Best Energy-Related Engineering Design Award: Control Release

Best Medical Device Technology Award: RevIVe

Best Computational Technologies for Health and Wellness Design Award: D.O.P.E. Engineering

Best Gaming, Creative or Innovative Technology Award: Carpal Diem

Best Aerospace or Transportation Technology Award: Shell Shock

People's Choice Award: RevIVe

May 2016

5 **2016 Alzheimer’s Association
Conference for Professionals**
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Congregation Emanu El
1500 Sunset Blvd.
jkutac@alz.org
800-272-3900

6 **Nora’s Home at the Kentucky
Derby Gala**
Friday, 7:00 p.m. – 11:00 p.m.
Royal Sonesta Hotel Houston
2222 West Loop South
713-588-4130

7 **American Cancer Society Presents
Relay for Life of Houston**
Saturday, 6:00 p.m. – midnight
Houston Sports Park
12211 Kirby Dr.
cherrelle.duncan@cancer.org
713-706-5652

**Converging Roads Conference:
Human Dignity at the End of Life**
Saturday, 7:30 a.m. – 6:30 p.m.
St. John Paul II Foundation
7730 Westview Dr.
info@forlifeandfamily.org
832-779-1070

11 **“A Stamp of Approval:
The Ongoing Story”**
Wednesday, 2:00 p.m. – 4:00 p.m.
UTHealth School of Nursing
6901 Bertner Ave.
partners@uth.tmc.edu
713-500-2003

14 **Houston Walk to Cure Arthritis 2016**
Saturday, 8:00 a.m. – 12:00 p.m.
Buffalo Bayou / Fish Plaza
501 Texas St.
jtorres@arthritis.org
713-253-0688

16 **U.S. China Innovation and
Investment Summit**
Monday, 9:00 a.m. – 12:30 p.m.
TMC Innovation Institute
2450 Holcombe Blvd., Suite X
jgilford@tmc.edu
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17 **An Evening with Chancellor
William H. McRaven**
Tuesday, 6:15 p.m. – 10:00 p.m.
The Westin Galleria Houston
5060 West Alabama
jxvaron@texaschildrens.org
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18-20 **Medical World Americas
Conference and Expo**
Wednesday – Friday, 10:00 a.m.
George R. Brown Convention Center
1001 Avenida De Las Americas
www.medicalworldamericas.com
713-437-5551

24 **Baylor St. Luke’s Medical Center’s
Ninth Annual Clinical Research
Symposium**
Tuesday, 7:30 a.m. – 4:00 p.m.
Denton A. Cooley Auditorium
Baylor St. Luke’s Medical Center
6720 Bertner Ave.
research@stlukeshealth.org
832-355-7734



MAY: NATIONAL STROKE
AWARENESS MONTH

Stroke affects approximately 795,000 Americans and causes 129,000 deaths each year nationwide. A person experiences a stroke every 40 seconds and is killed by one every four minutes, making it the leading cause of disability in the U.S. and the fifth cause of death in the country. Although the national death rate for stroke has dropped 34 percent over the past decade, it’s important to remember that many stroke cases are preventable with healthy lifestyle changes and treatable with the proper response.

This month, the Texas Medical Center, the American Heart Association and the American Stroke Association observe National Stroke Awareness Month. The national campaign is designed to promote awareness around the condition and empower individuals to save lives by recognizing the warning signs with F.A.S.T. (face drooping, arm weakness, speech difficulty, time to call 911).

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