

TMC | PULSE

NEWS OF THE TEXAS MEDICAL CENTER – VOL. 4

NO. 8 – SEPTEMBER 2017

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WILLIAM F. McKEON

President and Chief Executive Officer, Texas Medical Center

We are in the midst of a transformation that is changing every aspect of our lives. Each day, nearly every conceivable product or service we use is connected through sensors emitting data that is processed and analyzed, producing valuable knowledge and insights.

Today, the Texas Medical Center holds more medical information than any other campus in the world. Our hospitals and clinics capture data in each of the 10 million patient encounters that occur at the medical center annually. It is a staggering amount of information and it grows significantly each year. It is important to recognize that this data is highly protected through multiple layers to ensure patient privacy.

Historically, this medical information offered an overview of the tests, procedures and care provided to each patient. However, with the advances in data science, we are now just beginning to explore new ways to better understand how these large data sets can reveal new opportunities to improve care and possibly predict and prevent medical events. While each patient is completely unique and is treated accordingly, the tremendous advances in data science—including genomics, advanced algorithms, 3-D data imaging and machine learning—provide a host of tools that are delivering new insights to data scientists throughout the world.

We will soon gather the leaders across the medical center to explore new ways to leverage our collective data and expertise to further advance the care of people we are privileged to treat each day. The possibilities are endless.

A handwritten signature in black ink that reads "William F. McKeon". The signature is fluid and cursive, with the first name being the most prominent.

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ON THIS PAGE: Bhutanese refugees participate in group therapy at the Clinic for International Trauma Survivors, part of Harris Health System's El Franco Lee Health Center.

Clearing Out the Distractions

To de-stress, find a quiet corner and breathe

BY CHRISTINE HALL

Chronic stress can affect the body the same way a cold or flu does—by taking over the immune system.

Stress can make muscles tense. It can trigger hyperventilation and increase the heart rate. It can wreak havoc on gastrointestinal health.

But there's a way to tap into that anxiety and diffuse it.

The Institute for Spirituality and Health (ISH) works with people experiencing different types and levels of stress—from medical student burnout, to professional loneliness or fatigue, to death and loss.

"Some people can take time with their family, read a book and be fine," said Stuart Nelson, vice president of ISH, "but others need an opportunity for something more in-depth. In those cases, we ask people to question in what ways they are yearning to express themselves, but feeling stifled.

It takes some thinking."

Susana McCollom, director of ethnography and workplace chaplaincy at ISH, has interviewed individuals throughout Houston and found that one of the underlying causes of stress is the longing for genuine connection with other people. Individuals want to be acknowledged by others, to share moments that say "we are all in this life together," she said. In many cases, she added, this can be achieved by something as small as making eye contact.

McCollom encourages individuals to consider the word "stress" as an invitation to explore what stirs beneath. The word itself is so commonly used in society that people can risk losing touch with the emotions that fuel it.

"Recognize what is there and enter that space," Nelson said. "Allow for that recognition to emerge, take a few deep breaths, allow the clarity of mind, and



Guests at the Institute for Spirituality and Health participate in a mindful self-compassion training event that addresses different human characteristics and needs.

figure out what you are really feeling."

The body has an innate wisdom, he said, and can signal what is going on mentally, physically and spiritually.

"If you have tension in your chest, it might be because you sit slouched over at work, but it also could be that you are worried about something," Nelson added.

Life at work can, indeed, be stressful, but so can life at home. People are stressed about myriad situations: they're dissatisfied with their relationships, they're worried about where their next meal will come from, they fear being singled out.

In group work, Nelson helps people cultivate the power of awareness. For two minutes, he asks participants to start every sentence with "I notice." There is a stream of consciousness that happens, Nelson said, leading to an opportunity to clear out the distractions and allow participants to recognize what is going on in the body and mind, moment by moment.

"The powerful thing about simple exercises like this," he said, "is that you can go and find a corner in a hospital that is quiet, take two minutes, ask yourself what is going on, and breathe." ■

WHAT STORY ARE YOU TELLING?

Susana McCollom, director of ethnography and workplace chaplaincy at the Institute for Spirituality and Health (ISH), and Stuart Nelson, vice president of ISH, explain how to unpack stress.

First, take a couple of breaths, relax your body, clear distractions and drop into the moment. This space serves as a foundation of peace and presence as you consider the following questions.

What do you long for? Longing can be linked to feelings of stress. This serves as a good place to begin because it is open-ended but also a specific feeling. We all know what it is like to long for something, but this feeling appears differently for different people.

Do you support this longing? Do you push it away? This is a reminder to consider the ways in which you deal with inner life as feelings, emotions and thoughts arise.

Where do you experience beauty? We may lose sight of beauty even when it is right in front of us. Sometimes, in the thick of a struggle, beauty becomes more pronounced if we take time to investigate.

What does "stress" mean for you? In some ways, this is the inverse of the previous question. At this point, you have considered longing, beauty and stress, each of which contributes to a narrative.

As the summer makes way for fall, what is the story you are telling? What is the story you'd like to tell? Consider the story you tell as you live your life and go through the motions. Now, turn to the imagined story—what might you be longing for?

Who or what can you call upon to help tell that story? This question points to moving somewhere with intention. It could be to a trusted relative or friend, a health care professional or to a place like the Institute for Spirituality and Health—any resource where you feel the most comfortable and able to tell a story that is more authentic, less stressed and more connected to what you long for.



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Seeking Refuge from Trauma

Sophia Banu, M.D., directs Harris Health System's Clinic for International Trauma Survivors

BY SHEA CONNELLY



Bhutanese refugees perform breathing and movement exercises during a group therapy session.

“They may not necessarily have PTSD or major depression, but they may have symptoms of PTSD or depression that can be helped if we connect at the right time.”

— SOPHIA BANU, M.D.

Director of Harris Health System's Clinic for International Trauma Survivors

Several patients wait in a nondescript room at Harris Health System's El Franco Lee Health Center. Their colorful clothing stands out in contrast to the sterile surroundings—some wear traditional attire from their home countries, while others are dressed in typical American fashion, a visible symbol of a new start in a foreign land. In the room are refugees from Myanmar (Burma), Bhutan, Iraq, Afghanistan, Sri Lanka, Sudan and other countries. All have come to Houston in search of a better life and all have come to this room seeking help for trauma.

About 3 million refugees have been resettled in the U.S. since the Refugee Act of 1980 created standards for screening and admission. Houston, in particular, has been a safe haven since the arrival of thousands of refugees who left Vietnam by boat beginning in the late 1970s. Currently, refugees are fleeing their home countries at a record rate. There are 65.6 million forcibly displaced people worldwide, the “highest level of displacement on record,” according to UNHCR, the United Nations refugee agency.

To qualify as refugees, individuals must be able to demonstrate they were “persecuted or feared persecution due to race, religion, nationality, political opinion or membership in a particular social group,” according to the U.S. Department of Homeland Security. As a result of the trauma they often endure, refugees suffer from mental health issues at a higher rate than the average population.

“They may not necessarily have PTSD or major depression, but they may have symptoms of PTSD or depression that can be helped if we connect at the right time,” said Sophia Banu, M.D., an assistant professor at Baylor College of Medicine and director of Harris Health System's Clinic for International Trauma Survivors.

As countries worldwide seek ways to alleviate the growing mental health crisis among refugees, Banu's clinic offers help to the thousands of refugees who have settled in Houston. Inspired by her work at the Bellevue/NYU Program for Survivors of Torture, Banu set a goal of starting a similar program in the Texas Medical Center.

“In the beginning, I would go to resettlement agencies to tell them about the clinic,” Banu said. “I also trained caseworkers in how to identify clients with mental illness—‘if they say this, make sure you call me right away.’ Slowly but surely, the word spread, and it really started picking up in December 2013.”

(continued)

The clinic treats patients from all over the world. Wali, 46, who declined to share his last name, arrived in the U.S. from Afghanistan in November 2015. After he and his wife reported physical symptoms to their primary care doctors, including headaches and high blood pressure, they were referred to Banu's clinic.

"In Houston, the only person that I am sharing my problems with, telling what's in my head, is Dr. Banu," Wali said. "She's listening, she's evaluating properly and professionally, and she's giving me good advice."

Wali, his wife and four children, who range in age from 15 to 21, moved to the U.S. "for more security." In Afghanistan, Wali's daughter missed years of

“It's in me, part of what my parents and grandparents had to go through. Maybe I was destined to work with refugees.”

— SOPHIA BANU, M.D.

school because the Taliban would not allow girls to be educated, he said. One of the striking things he first noticed about the U.S. was people walking or driving at night.

"We could drive during the night in Afghanistan, but not safely or alone," Wali said. "If I had to go, I would take other people. Even here, when I go somewhere, I think alone is not good."

Now all of his children attend school. He no longer fears they will be kidnapped or attacked. His daughter, once denied an education, now dreams of working in medicine. Still, though grateful for his children's successes, Wali misses aspects of his former life.

"I worked for 10 years as a civil engineer. I had a good life, good income," said Wali, who now works in a construction-related job. "The life I had over there compared to here is not the same. But of course, if security is not good, you could have a roomful of food but you will not be safe."

Banu said that despite the trauma many refugees experienced, feeling homesick is not uncommon.



Kelly Aylsworth, M.D., a Baylor College of Medicine resident, addresses patients during a therapy session.

Life is so different in the U.S. that it can be overwhelming. Another patient, Aw Meh, a refugee from Burma, spent years in the jungle, surviving on food she grew, even giving birth to one of her children there. When she arrived in the U.S., she said she didn't know how to use a stove.

"She would say that, at times, life in the jungle was better because she could grow her food. She didn't have to figure out electricity," Banu said, as Meh nodded in confirmation. "Here you are in the city, and you have everything, but if you don't know how to use it or you don't know how to get it, it doesn't help."

Many patients who seek help at the clinic report difficulty navigating their new lives in Houston—both emotionally and physically. One of the biggest challenges patients face is lack of transportation. Banu said the bus stop in front of El Franco Lee Health Center, as well as its proximity to neighborhoods where refugees are settled, were key factors in choosing it as a home base.

"I thought it would be easier than Ben Taub, which is difficult to get to," Banu said. "But if they don't know how to get on the bus ... that's a struggle we deal with constantly. We're here, there are patients who need us, but there is not transportation."

Despite obstacles, the patients do their best to make it to the clinic. Some will get a neighbor or friend to drop them off, Banu said. For others, she asks caseworkers to teach them to use the METRO Houston system.

"They are here because they want to survive. For a majority, if you teach them how to get on the METRO, they will manage," Banu said. "They have survived so much, they would easily learn to get on a bus."

That will to survive is something Banu sensed among her own family members. After China invaded Tibet in 1950, her Tibetan Muslim family, "was a minority within a minority," Banu said. They were told to renounce their religion or leave. Fearing for their safety, they fled to India.

"It's in me, part of what my parents and grandparents had to go through," Banu said. "Maybe I was destined to work with refugees."

Soon Banu will further expand that work by seeing patients at Alliance for Multicultural Community Services, a non-profit located on Hillcroft Avenue.

"They come to the agency for other services, whether to get food stamps or education and employment services, ESL classes," she said. "When they



Group therapy participants use drawings to indicate sources of physical and emotional pain on their bodies.

come there, I can see them. They don't have to worry about someone having to take them to me."

Alliance already refers a large portion of the clinic's patients, including Laura Jacob, a pseudonym for a woman who requested that her real name not be used. Jacob moved to Houston from Iraq in November 2014. She worked on a project with the United States Agency for International Development that made her eligible for a Special Immigrant Visa. She said when she arrived in the U.S. she was "totally broken down."

"Beside all that I have seen throughout the last 15 years in my country, the war and all the troubles, I also lost my mother, I lost my house, I lost everything," Jacob said. "I was attacked, I was threatened, I was scared, whatever you can imagine."

The first time she visited Banu, Jacob said she spent the appointment crying while Banu listened.

"Imagine you are somewhere you don't know anything about and you have nobody," Jacob said, her voice breaking. "She helped me a lot, and thank God I made it. When you speak to someone and they listen to you and they advise you, it helps."

Though some patients require medication, Banu said often what a patient really needs is someone to listen—to make them feel validated.

"For us to say, 'That must have been so hard for you—how did you manage, what did you do?' Empowering them, giving them a sense of control," Banu said. "That is what helps them to do the things they need to do, and to move forward." ■



Banu speaks to a patient at Harris Health System's Clinic for International Trauma Survivors.

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Reducing the Cost of Health Care

George Masi, president and CEO of Harris Health System, offers solutions

BY RYAN HOLEYWELL

From his vantage point at the helm of Harris Health System, one of the largest county health systems in the country, George Masi knows better than most the pain points in health care.

As de facto safety net systems, county health systems are obligated to treat patients, even when they're uninsured, indigent and unable to pay. In Harris Health System, 62 percent of patients are uninsured; almost all of the rest are on Medicaid, Medicare or CHIP insurance.

So when Masi, the system's president and CEO, says his hospitals "are a reflection, in many ways of the system's failure," it's worth paying attention.

Masi has spent a lot of time lately thinking about the vast and rising

cost of health care in the U.S. In 2016, the country spent an estimated \$3.4 trillion on health care, representing about 18 percent of its gross domestic product, according to the Centers for Medicare & Medicaid Services. That's more than \$10,000 spent on health care for every man, woman and child. The figure is even more troubling given the often-cited estimate that a third of health care spending in the U.S. is wasteful, including unnecessary treatments and overpriced drugs.

"It's simply unsustainable," said Masi, who runs a system that includes Ben Taub Hospital, Lyndon B. Johnson Hospital and 19 community health centers.

Those sky-high costs are very much



George Masi is president and CEO of Harris Health System.

a direct result of a health care system that has a laser focus on acute care—short-term treatment for severe injuries and illnesses, mainly based on urgent needs, Masi said. That focus comes at the expense of earlier, more comprehensive interventions that he believes could save money and improve health.

In Masi's view, most people who walk through one of his emergency rooms are suffering from a condition that could have been lessened or prevented if there had been an earlier intervention. The adult patient who has a gangrenous foot due to diabetes could have been offered healthy food choices decades earlier as an obese child. A person injured in a car accident could have been saved if seat belts had been used. Whether it's disease or trauma, Masi said, many patients' conditions could be avoided or at least better managed.

A more rational approach to health care—that's more economical, as well—would start with promoting wellness, then disease prevention, then disease management before relying on acute care, Masi said. Yet today, we have a health system that focuses disproportionately on that last step, which leads hospitals to perform "heroics," as Masi puts it, that are also expensive.

An alternative approach, often called population health management, isn't exactly novel, and it's not glamorous either. But Masi thinks it's time for us to embrace it. "How much of the concept is taught in medical schools?

Much of what's taught in medical schools focuses on the acute care model. Our health system is behaving the way we designed it to behave."

Harris Health, for its part, is taking steps—admittedly small ones—to redesign the model. The system operates five school-based clinics and is working to launch telemedicine programs in the schools that can help counsel children and families about healthy lifestyle habits, including nutrition. It's also in discussion with the Houston Food Bank, exploring opportunities to help families understand good nutrition and where to access healthy foods. In green spaces around some of its clinics, Harris Health is planning to build community gardens with community groups to provide access to fresh produce. Masi knows these are small steps. "This will not happen overnight," he said. "But you must start to move the needle in the right direction."

He thinks GOP-led efforts in Congress to dramatically cut Medicaid are a mistake. Doing so won't reduce costs, Masi said, for the simple reason that sick and injured people seek medical treatment, regardless of their insurance status. "My emergency rooms are a testament to that," he said.

Generally, insured patients and their health insurance bear the costs of providing care to those without insurance. Costs are passed along to those who are insured. So to those who have insurance and think they aren't affected by rising health care costs, Masi says, "think again."

"Nobody escapes unscathed from this tremendously unbalanced health care model that we have," Masi said. "Long-term, everybody is going to have to pay." ■

George Masi will be a featured speaker at the TMC Health Policy Institute's Sept. 20 forum, "Reducing the Cost of Health Care: Current Innovations, Future Possibilities." Free registration is available at: tmchealthpolicyforum.eventbrite.com

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Plenty of Houstonians wake up to the voice of **ROD RYAN**, whose edgy, high-energy radio show airs 6 to 10 a.m. weekdays on 94.5 The Buzz (KTBZ-FM). After nearly 30 years on the air, Ryan has built a loyal following with his larger-than-life personality. A Houston transplant by way of Buffalo and New Orleans, Ryan is as committed to raising awareness about breast cancer and prostate cancer as he is to *The Rod Ryan Show*.



Q | Growing up, did you dream of becoming a radio host?

A | No. I was a failed rock star. I was playing in bands—one was called Cracked Alley. No, we didn't do crack; we weren't druggies. I don't even have a good story about the name, it was just silly, hair band metal. We did a big show for Warner Bros. and they passed on us and I said, 'That's it.' We were packing up and we were going to go to Los Angeles. This is pre-Nirvana, so everyone looked a little different and sounded a little different, too. I just said, 'No, I'm not going,' and I quit the band. We had done a bunch of radio interviews and stuff when I was in the band and I said, 'Well, if I can't be the band, I'll be the guy who interviews bands. Maybe I'll go for radio.' But I wasn't talking into my hairbrush when I was a little kid.

Q | Was radio different than you expected?

A | I was always a huge fan of the radio and music was a huge part. Most people get into radio because they love music. Anybody that wants to intern here or work here—outside of people who already know and have done radio before—I break their hearts and I say: 'We aren't, like, rocking out in there. We're not jamming out, like, This is awesome! We are in there shuffling paper, getting traffic ready and news stories. We aren't listening to what we are playing on the air, we're just trying to get ready. I've got three minutes to figure out what I'm going to talk about next. When we get off the air, I'm here until 2 p.m. and I'm not planning any musical thing. I'm thinking about how I'm going to sell more t-shirts for the charity, this sales person wants me to do an appearance here, and how do I make this client happy?'

Q | *You've been doing this show for almost 20 years. Have you gotten used to waking up so early?*

A | I wake up at 3:20 a.m. every day. I have heard people say that you get used to it, but I don't think you ever do. I don't get up and complain about it, but I'm not waking up skipping and whistling around my house either. I just get up and do it. It's hard to imagine a time when I wasn't just a little tired, but that comes with the gig. It's the most high-profile position, most high-profile time slot and not everyone wants to be the quarterback. I want to be the quarterback. The morning show sets up the whole station for the whole day, so there is a lot of pressure and I want that pressure. I want that.

Q | *Because your show is so high-profile, do you feel a certain level of responsibility to do something with your influence?*

A | Oh yes, absolutely I do. My plan was to get involved in some charities and not push them down people's throats and hopefully choose things that not only we were passionate about, but that people would also be passionate about. We are talking being here in Houston and kids in Houston needing backpacks. Sending money to Zimbabwe is great, but it just seemed like more of a harder sell, and I wanted to give back to the community. So the big one is the backpack drive for the kids. We also adopted a team of doctors at MD Anderson about nine years ago, and we do a lot with the Houston Furniture Bank and the Houston Food Bank. We have been working with Houston Boxer Rescue to get dogs adopted.

Q | *Can you describe how your partnership with MD Anderson came about?*

A | We have the world's greatest medical center in our city, so we kind of thought instead of just making pink spatulas, we would give our money to this team of doctors whose job every day is to go in and cure cancer.

And they have been so great. They are so appreciative of what we do, and these guys are probably getting million-dollar checks every day for grants and whatnot, and here we are coming in with our \$75,000. We look up to them because of the job they do, and we tell them how proud we are.

Q | *Which cancers do you specifically support?*

A | We do "Boobs Rock" in October for breast cancer awareness and the "Kick Ass" campaign for prostate cancer awareness in September. We sell shirts and whatever else we have schlepped our name on to raise money, but it's really about sharing the experience. Guys have emailed and they say, 'OK, I went in because you were talking about it on the show.' You have to do it. We all know now that prostate cancer is one of the most curable cancers if it's detected early.

Q | *When did you realize people were really listening to your show and taking action because of it?*

A | The biggest wake-up call to me was here in Houston. When you are in radio, you are kind of involved in charities—you go, you emcee, you lend your time. The things that we have done here in Houston have just gone to another level. Hurricane Katrina we broadcast on the air. I wanted to stay on the air and play whatever people wanted to hear, but to raise money, they had to pay for us to play their song. So I came up with a rate card: \$50 for a song we normally play—Stone Temple Pilots. Say you wanted to hear Fleetwood Mac—you would pay me \$75. And then if it was really ridiculous and you want to hear Frank Sinatra or if you are a local band, I'll play your song for \$100. I talked my bosses into it; we went on air Wednesday at 6 a.m., not really knowing what was going to happen. We stayed on until Friday at noon—50-some hours, three days straight, no sleep—and we raised \$504,000, the area code of New Orleans. All of the money went to the Red Cross. I can't plan that,

Ryan's tattoos record his journey: from Buffalo, to New Orleans, to Houston.



write that or project that. People would say, 'Here's \$1,000, play this song.' And that is when I said, 'Wow.' I had no idea. I had done charity stuff before that and I had been in radio a long time before that, but it was Hurricane Katrina when I realized this community will step forward and help when asked.

Q | *How do you decide what to talk about on your show?*

A | No one really tells you when you start out that you are going to give up so much of yourself. We talk about what's going on in our lives, but you are walking that balance. I do a ton of show prep for the show every day; we have to know what's going on. Everybody has access to the same things we do now. The internet has leveled out the playing field. Before, the guys on the radio knew more about music than your average guy—they had access to the AP wire. We were supposed to know more and now, we don't. We just know what you guys know and nine times out of 10 you know more than us. We mostly talk about lifestyle stuff. We are just trying to plug in and make that connection—whether it is pulp in the orange juice or a bad haircut. There is a balance between lifestyle and what is happening in the news. I try

to walk that line because I'm kind of the director of what we do and what we are going to talk about.

Q | *Are there any topics you stay away from?*

A | I try not to get into politics, but it's impossible not to mention it at all. That is something that people are so passionate about. There are things that are happening with Donald Trump and even Obama, things that we have to mention. And as soon as you say something about one side, people will say, 'Why don't you say something about the other?' If I made fun of Hillary during the election, people would say, 'Why didn't you make fun of Trump?' You have to walk that line. It isn't hard for me, because I don't love Trump, and I'm not upset that Hillary lost. But it is a big trigger for a lot of people.

Q | *You recently got married at the age of 47. Why now?*

A | It just happened. I wasn't thinking, 'Oh, you've got to get married.' I wasn't getting pressure. I guess you just meet the right person and it happens. We met on St. Patrick's Day at Lucky's Pub. She didn't know who I was.

(continued)

“ We have the world's greatest medical center in our city, so we kind of thought instead of just making pink spatulas, we would give our money to this team of doctors whose job every day is to go in and cure cancer. ”



She's not a big partier, so it's bizarre that she was there, but we met and she wasn't impressed with me or who I was, and it was awesome. Then she started listening and I got worried. She has never once told me not to talk about something on the radio. We have been married just over a year.

Q | What are your favorite things to do outside of work?

A | I like hanging out with my wife and my dog, Voodoo Ryan—she's a rescue

from Houston Boxer Rescue. I like the weather here, so I like being outside. I know it's hot, but this is coming from someone who shoveled snow for 25 years. I like getting outside; I'll go for a run today. I don't feel like enough people do it because it's so hot and it's not a walking city. That is my one ding on the city—we don't walk around.

Q | What is your favorite restaurant in Houston?

A | It is hard to pick one, but I have

“ We mostly talk about lifestyle stuff. We are just trying to plug in and make that connection—whether it is pulp in the orange juice or a bad haircut. There is a balance between lifestyle and what is happening in the news. I try to walk that line because I'm kind of the director of what we do and what we are going to talk about. ”

to say Pappas Bros. Steakhouse on Westheimer. Man, you can't go wrong there. I just get meat. I mix it up. If you really want to impress somebody from out of town, that's the place. The service is killer.

Q | What are your hopes for the city of Houston?

A | To get some kind of a breakthrough, like curing cancer, to come out of Houston, that would be great. Houston, to me, has a bit of an identity crisis. I love the city. It has been so good to me, but when I told my friends I was moving here—I was living in New Orleans—people said, 'For what?' I said, 'It's the fourth biggest city in America!'

People don't know that about us. We did great during the recession when the rest of the country was getting dumped on, but I just don't think people know how great this city is. And if something like that broke out of the medical center—God that would be amazing. It would be amazing for the actual cause and it would be great for the city. And winning a Super Bowl. ■

Rod Ryan was interviewed by Pulse staff writer Britni N. Riley. This interview was edited for clarity and length.



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A Driving Force in Biomedicine

Houston Methodist Research Institute partners with Automobili Lamborghini

BY SHANLEY CHIEN

The Houston Methodist Research Institute is gaining momentum on new ways to use carbon fiber materials in biomedicine. Earlier this year, the institute and Italian luxury sports car manufacturer Automobili Lamborghini announced a partnership to study innovative medical applications for new carbon fiber materials.

"We may be in different fields, but they are the best of the best of the best," said Mauro Ferrari, Ph.D., president and CEO of Houston Methodist Research Institute. "We always want to be working with people who are at the top of whatever it is they're doing. We make it a point here to interpret the very best technologies that are out there in all fields of technologies worldwide, connect and bring them into clinical research and, ultimately, into clinical practice."

Lamborghini first began exploring carbon fiber materials in 1982, when employees who previously worked for Boeing applied their aeronautic engineering skills to high-performance sports cars. Since then, the supercar manufacturer has made a name for itself in the research and development of carbon fiber technology for the automotive field. Now, Lamborghini has set its sights on medicine.

Alessandro Grattoni, Ph.D., chair of the department of nanomedicine at Houston Methodist Research Institute, will lead the three-year study to evaluate the biocompatibility of Lamborghini's carbon fiber composite materials in humans. These materials could potentially be used to create stronger, lighter and safer medical tools—including implantable prostheses and nanotechnology-based devices.

"The most exciting aspect of the study is the investigation of new materials. Out of new materials you can generate new ideas, devices and technologies," Grattoni said.

The conventional structure of carbon fiber consists of long, thin strands of material that range from .005 to .010 mm in diameter. These fibers, which are made of tightly interlocked carbon atoms, are woven together to create sheets of cloth-like material that are placed over large molds and embedded in epoxy resins to contain their shape.

In contrast, the new carbon fiber material uses short carbon fiber strands, which opens up a world of opportunity in 3-D printing. Lighter, more moldable materials of different sizes, shapes and complexity might be possible.

"With 3-D printable materials you can create structures and devices that are tailored specifically for each



Houston Methodist Research Institute is studying Lamborghini's carbon fiber composite material.

patient. This gives you an edge in the personalization of technologies and treatments," Grattoni said.

Most prosthetic implants for reconstruction around the body—including the skull, mandible or femur—are built out of titanium, with an expensive and cumbersome manufacturing process. External fixators, used in orthopedic surgery to support and stabilize fractured bone, are often made of stainless steel or titanium, as well. These materials are visible on X-rays and can obstruct the view of the bone and surrounding anatomy.

Carbon fiber, on the other hand, is radiolucent to X-rays, making it a particularly useful composite material for medical applications where imaging is key.

"Carbon fiber materials are not radio-opaque. In orthopedic applications, carbon fiber composites may offer high mechanical properties without obstructing radiographic assessments of bone, fractures or defects being treated," Grattoni said. "These same properties make these materials useful tools for neurosurgery, where imaging is critical to guide you to the right place."

In the field of nanotechnology, Grattoni has already developed an implantable drug delivery system that contains dry reservoirs of drugs that are released through a silicon nanofluidic membrane.



Carbon fiber technology used in Lamborghinis is now being applied to biomedicine.

As the drug is released from the reservoir, it diffuses through the membrane to the body at a constant and controlled rate.

"This has allowed us make implants that deliver drugs always at the same rate, always the same dose for many, many months, potentially years," Grattoni said.

But patients may require different doses. The nano-channels need to be tailored to treat each individual. Accordingly, patients may need different implant sizes and shapes.

The implant drug reservoirs are currently made of implantable titanium or a medical-grade plastic called polyether ether ketone. Since the new carbon fiber material is moldable, 3-D printable and highly customizable, it could allow for more robust and thinner structures that can be tailored in size and shape to fit each individual patient.

"Additionally, the shape of some carbon fiber materials can be modified via an applied electrical potential," Grattoni said. "It's a very cool feature that has been used in the automotive industry with Lamborghini cars."

Carbon fiber that can alter its shape could be used to develop nanogates that can be opened and closed remotely to control drug release, Grattoni said.

"A system such as that would allow you to modulate drug release via Bluetooth," he said. "Doctors could interview patients via phone or internet and adjust the dose remotely."

With the diversity of expertise in engineering and medicine, this unlikely pairing of a hospital research institution and a luxury sports car manufacturer will likely produce cutting-edge solutions.

"It is perhaps unusual, but that is by design how we think of things in a different way," Ferrari said. "We are not incremental. We are divergent." ■

Giving the Heart a Rest

A new medical device is poised to help heart failure patients without invasive surgery

BY CHRISTINE HALL

An entrepreneur, an engineer and a doctor walked into a lab more than four years ago and created a medical device that could help millions of heart failure patients who cannot be helped by medication alone.

Aortix is a catheter-deployed heart pump that provides circulatory support without surgery. Procyrion, the company born in the Texas Medical Center that created Aortix, recently completed a successful trial of the device in six humans who were receiving stents.

The pump was implanted successfully in patients for a few days to reduce the workload of the heart.

About three inches long and thinner than a No. 2 pencil, the pump can move approximately as much blood as a native heart—about six liters per minute, according to Benjamin Hertzog, Ph.D., president and CEO of Procyrion.

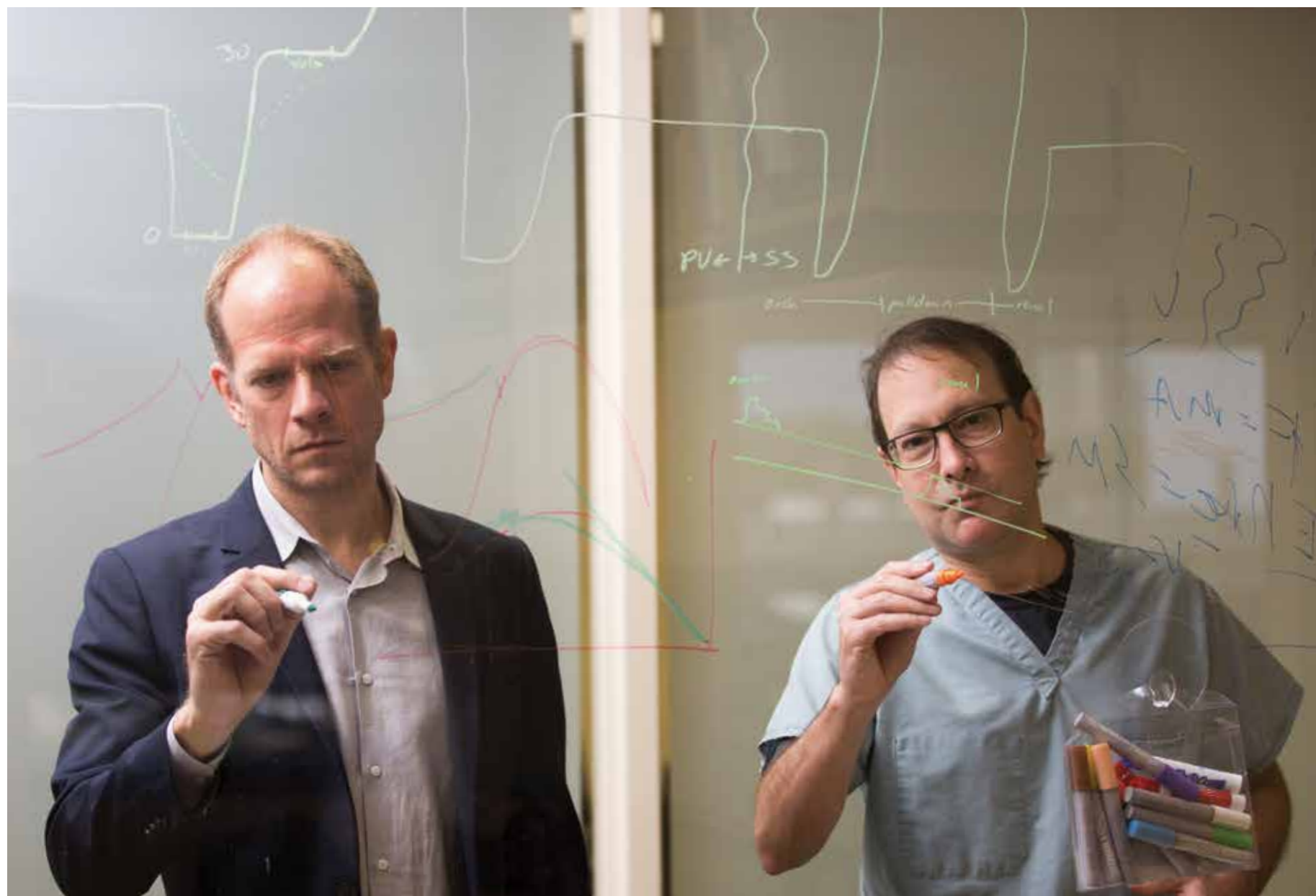
The removable pump's concept was developed by Reynolds Delgado III, M.D., founder and chief medical officer of Procyrion and medical director of

mechanical assist devices in heart failure for the Texas Heart Institute and Baylor St. Luke's Medical Center.

"Originally, bypass surgery was the only way to treat coronary disease, then stents came along, followed by cardiologists and cath labs," Delgado said. "Instead of replacing the valve by opening the chest and putting the patients on a heart-lung machine, now you can do it with transcatheter aortic valve replacement and a cath lab."

Delgado's idea was to place a small pump in the body, downstream of the heart, so it would not interfere with the failing heart and would also reduce some of the work pumping blood that the failing heart was struggling to do.

The Aortix pump takes about 10 minutes to implant into the descending thoracic aorta through the femoral artery in the groin. When in place, little anchors that look like slim, metal fingers spring out and hold the device in the aorta.



Jace Heuring, Ph.D., chief scientific officer for Procyrion, and Reynolds Delgado III, M.D., founder and chief medical officer of Procyrion, demonstrate how their medical device helps heart failure patients.

“There is an impeller in there that spins, so it pumps blood in from top, and out of the bottom,” Hertzog said. “The blood comes out in these little high-velocity jets pointed downstream, and it’s those little jets that transfer energy to the native blood. So, it’s like the lazy river you take your kids to—that whole body of water is moved by these little bitty jets of water on the side.”

Moving the blood in this manner is known as fluid entrainment, a process also used in industries such as fracking. Aortix represents the first time this process has been applied to the human body, Delgado said.

‘We will decrease the need for transplants’

Heart failure is a progressive disease, which means that people experience different levels of failure. There are 6 million people in the U.S. with heart failure, Hertzog said, but few transplants are done because few organs are available. And transplants are risky and expensive. A heart transplant and one year of care can cost close to \$1 million per patient, according to some estimates.

That’s why left ventricular assist devices (LVADs) and heart pumps, some of which were invented in the medical center, are being utilized. But implanting these devices is invasive surgery, Hertzog said, and reserved for those who are the sickest, because it is also risky and expensive—more than \$700,000 for implantation and therapy, according to studies.

Procyron is going after 2 million of the 6 million patients with heart disease—those who need more than medication to treat their heart problems yet are not sick enough to need LVAD surgery.

“If we can get to those patients before you need to crack their chest, maybe we can turn around their heart failure and prevent them from ever needing that,” Hertzog said. “There’s never been a device that can treat those patients. ... We can put this tool in the hands of the cardiologist, and all of a sudden, you have a device that’s low-risk, low-cost. It’s a simple procedure, and now we can get to those patients.”

Procyron’s plan isn’t to replace the LVAD and BiVACOR artificial heart, which Delgado’s boss at the Texas Heart Institute, O.H. “Bud” Frazier, M.D., is refining, but instead to expand heart care into a different area.



Benjamin Hertzog, Ph.D., president and CEO of Procyron, displays the Aortix device.

“We will decrease the need for transplants, and that’s good because there are only 2,000 donors available yearly,” Delgado said.

Reducing the workload

Aortix is designed to do some of the work the heart would normally do.

“Heart failure develops one heart-beat at a time, over months and years,” said Jace Heuring, Ph.D., chief scientific officer at Procyron. “This device would help it resolve the same way, one heart-beat at a time.”

Patients with heart failure typically end up in the hospital, short of breath and retaining fluid. That’s because when the heart weakens, the kidneys don’t get enough blood to do the job they need to do. The fluid weeps into the lungs and leaves patients unable to breathe, Hertzog said.

During the human trials for Aortix, patients were fitted with the pump, while undergoing a percutaneous coronary intervention—having a stent inserted to open up blood vessels in the heart. Aortix was put in first, reducing the workload of the heart, then the stent was put in and Aortix removed a few days later.

“Our pump was in periprocedurally, while they were placing the stent, and we had a perfect safety record,” Hertzog said. “All the patients did great. We were able to show that we reduced the workload of the heart, we increased blood flow and we got the kidneys working in these patients.”

Procyron’s next steps include performing trials in patients with acutely decompensated heart failure; Aortix would be left in for up to seven days. Hertzog expects that to



begin next year. If the trial goes well, a following trial is expected to move Aortix toward U.S. Food and Drug Administration approval, a pivotal step for mainstream use of the product.

Procyron recently kicked off its third round of funding and is looking to raise \$25 million to carry the company through its first approval. There is interest in what Procyron is doing, Hertzog said, and Aortix has already

gained attention from a major medical device company.

“When we put this device in, it does some of the workload that the heart would have to do otherwise,” he said. “The heart gets to rest. It gets stronger and then we imagine taking this out, and hopefully, it would change the trajectory of the disease for that patient. Hopefully, they never need a device again. They never need a transplant.” ■

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What to pack in a healthy



By
Britni N. Riley

Success at school and at work has a lot to do with the type of fuel people put in their bodies.

Making a healthy lunch promotes good eating habits, is cost-effective and ensures that people of all ages will make it through the day with the energy they need.

Providing a healthy lunch for children also helps build a foundation for healthy eating.

“Putting carrots in your child’s lunch instead of chips, or giving them milk or water instead of a sugary beverage, is important—especially in lunches that you give them every day,” said Deanna Hoelscher, Ph.D., R.D., director of the Michael & Susan Dell Center for Healthy Living and John P. McGovern Professor in Health Promotion at The University of Texas Health Science Center at Houston (UTHealth) School of Public Health. “These things add sugar to



kids’ diets, and they don’t really need those extra calories. It also kind of sets kids up when they are drinking; they think it has to be sweet.”

Hoelscher conducted a study of sack lunches prepared by parents who were sending their children off to preschool. That study led to a nutrition education program that aims to increase the vegetables, fruits and grains that end up in kids’ lunches.

“Lunch is in the Bag is a program we started and it teaches parents how to pack a healthy lunch for their preschool kids,” Hoelscher said. “Most preschools offer a hot lunch, but there are a certain number that require parents to send a lunch, and that can be in high- and low-income settings. What we found, regardless of the parent income, is that most parents were not packing healthy lunches.”

Hoelscher said many of the lunches parents packed lacked the fruits and vegetables that are essential to a well-balanced meal. Instead, the lunches were filled with foods with added sugars.

“Many of the lunches contained foods that parents perceived to be healthy—granola

bars, fruit leather, fruit drinks, apple sauce and canned fruits,” Hoelscher said. “If you have the choice, a piece of fruit is much healthier than fruit leather or a fruit juice.”

Another obstacle she and her team encountered was the perceived eating habits of children. Hoelscher and her team found that many of the unhealthy options parents packed in their children’s lunches were chosen because they didn’t think their children would eat healthier options.

“Interestingly enough, when we talk to other teachers, the teachers say the children will try other foods in the school setting,” Hoelscher said. “The kids are in a different environment, they see what other kids are eating and the teachers might be encouraging them to eat different foods.”

In her work as a clinical dietitian at Texas Children’s Hospital, Stacey Beer, MPH, R.D., L.D., witnesses similar food struggles.

“I do encourage eliminating the words ‘picky eater,’” Beer said. “There are foods we like, there are foods we are learning and foods we may not prefer. But overall, it takes about 15 times for you to know if you like something. I encourage parents to mix foods with foods they know their child likes to try to get them to accept new foods, but I really try to stay away from labeling kids as picky eaters.”

So what goes into the perfect lunch?

"I think an ideal lunch really focuses on balance—multiple food groups within a meal to ensure you are receiving all of the vitamins and minerals you need," Beer said.

Beer recommends starting with a main dish and working from there. One of her favorites to make for her own children is a tortilla roll-up. Start with a tortilla, add a little mustard, turkey and cheese, then roll it up and cut it up into pinwheels. Next, Beer suggests fruit—grapes, watermelon, apples or strawberries are popular—and vegetables, such as carrots or celery. If you want to add even more, she said, hummus and pretzels make a great snack.

In Hoelscher's study, she and her team ranked lunches on a healthy eating index to show parents different options for easy, nutritious lunches.

"One with a high score had a banana, a peanut butter and jelly sandwich on whole

grain bread, crackers, milk and carrots," Hoelscher said. "All of that is really easy to prepare and it is very healthy."

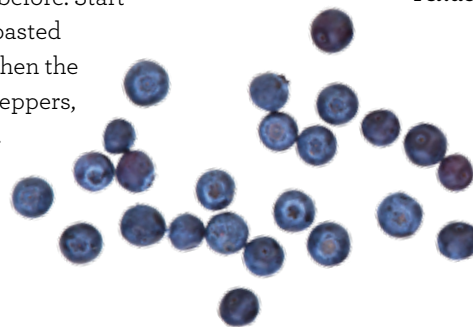
Many of the options Beer and Hoelscher suggest are also cost-effective. For added efficiency, Beer believes packing a lunch the night before makes a big difference, because mornings are rushed for most families.

Parents also need to remember to pack a lunch for themselves, as it will take less toll on their wallets and waistlines than buying a lunch.

"If you have dinner, cook a little bit more and bring that as leftovers the next day," Hoelscher said. "You can also make a salad in a mason jar the night before. Start with dressing at the bottom, roasted chickpeas, chicken or turkey, then the heavier vegetables—tomato, peppers, carrots—and lettuce at the top. For lunch the next day, just turn it out on a plate." ■

“I do encourage eliminating the words ‘picky eater.’ There are foods we like, there are foods we are learning and foods we may not prefer. But overall, it takes about 15 times for you to know if you like something.”

— STACEY BEER, MPH, R.D., L.D.
Clinical dietitian at
Texas Children's Hospital



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Ivory Lindsey

Horse bite

Ivory Lindsey has been riding horses for nearly 50 of his 57 years, but nothing could have prepared him for what happened on May 1, 2016.

Lindsey was leading his horse, Jo Jo Dancer, on a cool-down walk in the early evening when another horse named Sarge, who was grazing on the far side of a low fence, swung around and locked onto Lindsey's throat with his teeth.

"I had turned to call my son when the horse grabbed me by the throat—and he crushed it," Lindsey

said. "I never saw it coming."

Lindsey does not remember any pain, but he does remember watching blood gush onto his boots, the result of a deep horizontal gash across his neck.

"All I can remember is suffocating," Lindsey said. "I could take in air, but I couldn't put any out."

Eventually, he made his way to the emergency room at Ben Taub Hospital, where Robert Todd, M.D., medical director of the trauma department, was working. Todd has had extensive experience with neck trauma, a stroke of luck for Lindsey. Over the next 28 days, Lindsey endured seven surgeries to repair the bones, muscles and vocal cords Sarge crushed with his sudden bite.

No one expected Lindsey ever to speak again, but each day he kept trying to find his voice.

"During the mornings and nights, I would always be trying to talk," he said, "but nothing would come out."

Until one morning, alone in his room, Lindsey placed one of his hands over the hole in his neck—he'd had a tracheostomy so doctors could insert a breathing tube in his windpipe—and pushed out a noise. His voice was coming back. Soon after, Todd arrived with a group of medical students and a nurse handed Lindsey a pen and paper so he could write answers to their questions. Lindsey put the pen and paper aside, looked up at the small crowd and said: "What did you

want to ask me?"

"They all jumped and looked," he recalled. "They were all shocked. It was a big deal."

Lindsey got back on Jo Jo two weeks after leaving the hospital. He tells everyone his survival story and praises the doctors who helped him.

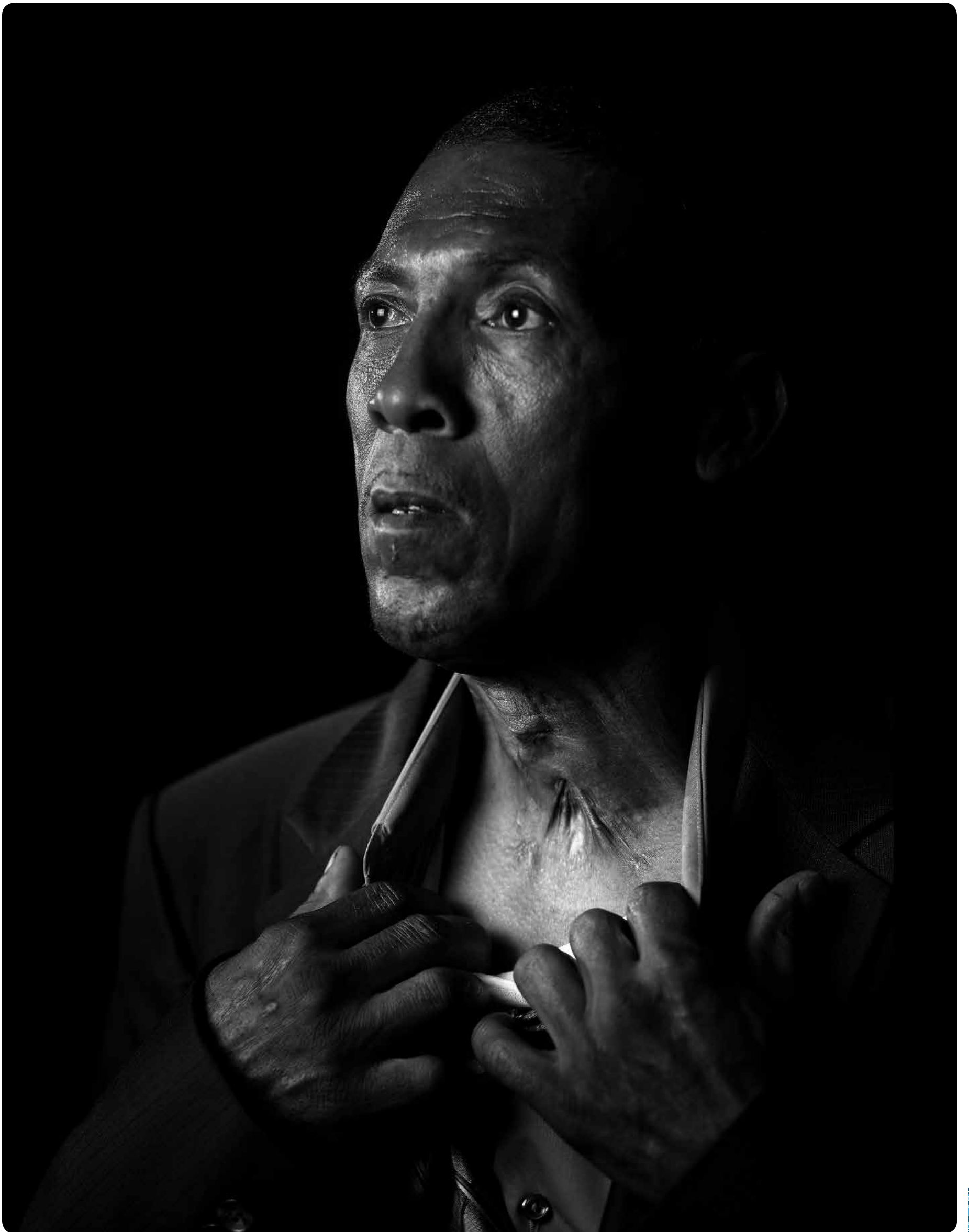
And his scar?

"I never think about it," Lindsey said, "but I carry it with pride, yes I do. I carry it with honor."

For him, the scar is an emblem of his survival against formidable odds.

"I call it a blessing from God," Lindsey said, "and it's also a reminder of what God is able to do."

—Maggie Galehouse





K

Kechi Okwuchi

Airplane crash

This summer on *America's Got Talent*, Kechi Okwuchi captured the hearts of judges and fans with her powerful rendition of Ed Sheeran's "Thinking Out Loud." Beyond her beautiful voice, listeners were also captivated by her dramatic story of survival.

On Dec. 10, 2005, Okwuchi and 61 of her classmates at a Jesuit boarding school were flying home for the holidays, into Port Harcourt, Nigeria. Okwuchi, who was 16 at the time, remembers it as an uneventful flight until the plane began its descent in stormy weather.

In those final minutes, she knew something was wrong with the aircraft.

"I was just in that shocked state because I really couldn't believe this was happening," Okwuchi said. "I had one of my very close friends there on the aisle seat right next to me. ... She held my hand and we kind of looked at each other and then she was like, 'What do we do?' kind of in a panicked voice. And then I was like, 'I don't know, maybe we should pray.' And that's the last thing I remember saying. The next thing was like a metal scraping sound that I remember hearing in my head, and then I remember waking up five weeks later in the hospital in South Africa."

The plane made a crash landing and burst into flames. Ultimately, Okwuchi was one of two survivors of the 109 passengers on board. But she was not unscathed. When she arrived at Milpark Hospital in Johannesburg, more than 65 percent of her body was covered in third degree burns and she was given a 30 percent chance of survival. She spent five weeks in a coma.

"When I woke up, I could see my eyes and my nose and my mouth," Okwuchi said. "Those things were still there and I knew I had scars and stuff but I remember being kind of relieved that it wasn't as bad as what I pictured in my head. ... I couldn't really see well and I thought all of my features would be gone—just a mask of scars. When I saw my eyes staring back at me and my mouth, I was just like, it's not even that bad."

While she was in a coma, Okwuchi's mother played music for her—some of her all-time favorite songs, as well as new music. When she came out of the coma, she was able to recognize some of the new music she first heard while in a state of deep unconsciousness—specifically, "Stand Up for Love" by Destiny's Child. Music became a saving grace for Okwuchi throughout her healing process.

"Music was the one thing I could just sit back in bed and listen to," she said. "When I got my voice back, it seemed kind of different, even better than before. I would just lie there singing my favorite songs."

After seven months at Milpark, undergoing surgeries every week, Okwuchi returned home to Nigeria. But not for long. Because of the damage done to her body, she required reconstructive surgery that could only be done in the United States. A Nigerian hospital made arrangements for Okwuchi to be treated at Shriners Hospitals for Children-Galveston and, in February 2007, Okwuchi and her family came to the United States.

"I had a feeling it would be permanent, because there was no way I would be able to live permanently in Nigeria anymore," said Okwuchi, who lives in Pearland. "Because of the skin grafts that cover my body, I don't have any pores. So I cannot sweat—there is no relief. In Houston it gets so hot, but I can come inside and get immediate relief in the air conditioning. That is not a guarantee in Nigeria; it is a third world country."

Once in Houston, Okwuchi's father bought her a karaoke machine and she was hooked, performing daily for her family. When she got to Shriners, she began singing with a child-life specialist at the hospital. That helped her get through the immense pain she was feeling after physical therapy sessions and surgery.

"I would just tell myself, 'despite how painful this is, after this, you get to go spend an hour singing and playing instruments.' We actually put on a concert in the hospital and it became a beautiful part of my healing that was incredibly vital."

This year, Okwuchi, now 27, expanded her audience by performing in front of millions on NBC's *America's Got Talent*. She recently made it through the second round of auditions and will be competing on the live shows this fall.

She tries not to dwell on the 'whys' of the plane crash. "I don't really consider the whys because it is a slippery slope and I would never be able to get the answers to those questions," Okwuchi said. "No one was able to explain why the two people who survived, survived. It was just a miracle. So many lives were lost. ... I feel like it would also be an insult to their memories to just live in a 'why' mentality that would lead to hopeless and negative feelings that would project onto their memories. I don't want to do that. I want to be an example of how their lives could have been."

—Britni N. Riley





Halle Spivey

Congenital heart abnormalities

When her infant daughter is older, Autumn Spivey will tell her that her scars are symbols of her inborn courage, of “how brave she has been through all of this, even though she may not remember.”

Halle Spivey was born Dec. 5, 2016, with congenital heart abnormalities, including a double inlet left ventricle, where the left and right atria of the heart are connected to the same ventricle; transposition of the great arteries (TGA), in which the two main arteries leaving the heart are reversed; and hypoplastic aortic arch, indicating a blockage in the aorta.

Just three days after her birth, Jeffrey S. Heinle, M.D., associate chief of congenital heart surgery at Texas Children’s Hospital, performed lifesaving surgery on Halle, reversing her TGA and inserting a Blalock-Taussig (BT) shunt to increase pulmonary blood flow. On Jan. 15, 2017, she had a second, unexpected surgery, to address a narrowing of her coronary artery.

Then on April 4, Heinle performed a third surgery on Halle, replacing the temporary BT shunt with a Glenn shunt and re-routing her superior vena cava to a pulmonary artery. He also inserted a pacemaker to help control the speed and rhythm of her heart. Eventually, Halle will

undergo a Fontan procedure to help direct blood to her lungs.

Since this photo of Halle was taken in May, she has undergone additional surgeries and one very close call. At a certain point, when her heart rate became elevated and her breathing fast, doctors were forced to inject medicine via intraosseous (IO) infusion—through the bone and into the marrow.

“They needed to intubate her to help take the workload off her heart, and when they did, she coded,” Autumn explained. “They pushed the meds and performed CPR for 27 minutes. They called for ‘last pulse check’ and there was no pulse. They pulled me over to her bed to say goodbye before they called it, and her heart started beating after I kissed her little hand! It was seriously like a movie! I heard ‘get a line in,’ and was moved away from the table.”

Although doctors stabilized Halle, the IO had leaked into her blood vessels, causing them to constrict. She never regained blood flow back to her right leg and, as a result, the leg had to be amputated through the knee.

But Halle rallied. And on Aug. 7, after 245 days at Texas Children’s Hospital, she was released. On Facebook the following day, Autumn thanked everyone who was and will continue to be part of her daughter’s journey:

“We have been truly blessed by close, personal friends, as well

as strangers who follow her story. ... Our families have been incredibly helpful and encouraging, and willing to drop everything to do whatever we needed of them. ... The wonderful nursing staff at TCH has also been a HUGE support for me. They have made being at the hospital day in and day out one of the best parts of this experience. I have made many friendships with them that I know will continue after our stay. Lastly, my fellow heart moms! Without them, I’m not sure how I would have survived. This life is not made for the weak, and I have never thought of myself as strong, but these women have helped me find my strength and advocate for Halle.”

Now that Halle is home, Autumn said, it’s hard to even think that she spent her first eight months in a hospital.

“She seems like a completely normal baby, besides all the medications, of course,” she said. “She is taking everything in, and loves being outside in her stroller. She has been sleeping through the

night, and adjusting well. She’s a little night owl, though, like her older brother. Ha! That just means we get to sleep a little later in the morning.”

—Alexandra Becker, Maggie Galehouse

Maica Walker

Heart disease

Maica Walker’s energy is irrepressible. The fast-talking financial advisor is quick to laugh or make a joke and has been known to spend three hours at the gym—happily. Another detail about Walker that is impossible to ignore: A scar running down the length of her sternum, the result of three open heart surgeries.

There was a time when she may have casually rested a hand on her chest or worn a high-necked shirt to hide the scar.

“I used to be kind of ashamed,” Walker said. “I didn’t want to show my scar for years. I felt like it made people see me as weak, and I didn’t



talk about it much.”

But as she grew older, and her first surgery at age 10 turned into a second at 17 and a third at age 30, she began to view the scar in a different light. She recalled the time a stranger approached her and asked if she’d had open heart surgery. When she answered yes, the woman replied, “I have to have open heart surgery. And I’m looking at you, and you look so healthy. I’m not as nervous anymore.”

A typical childhood illness left unchecked led to Walker’s heart issues. Strep throat missed by her pediatrician turned into rheumatic fever, which advanced into rheumatic heart disease. It destroyed her mitral and aortic heart valves.

“When I had my first heart surgery, I was 10 and weighed about 47 pounds—50 at the most. I was pretty much skin and bones,” she said.

Walker had valve replacement surgery in 1985 at Texas Children’s Hospital, under the care of legendary heart surgeon Denton Cooley, M.D. Seven years later, on the verge of adulthood, Walker had outgrown the valves and underwent a second surgery by Cooley, this time at CHI St. Luke’s. And in 2004, doctors discovered cartilage had built up around the valves and replaced both.

“I always feel this rejuvenated energy when I come out of surgery. When you go under the knife, you really have to go in there preparing for that to be it,” Walker said.

Before her last surgery, she wrote notes to close friends and family that she left on her bed, in case she didn’t make it through the procedure.

“When I come out of it, I have all this urgency and energy toward trying to do everything,” she said. “Life is so short. We have this finite amount of time and we have to get everything done.”

That sense of urgency has compelled her to speak openly about her experiences and to give her time to the American Heart Association to raise awareness of heart-related issues.

“We only get one heart, and you have to really know how to take care of it and know the signs

when something’s not right,” Walker said.

While she emphasized the seriousness of heart disease, she also said she wants people to know life can be just as full after open heart surgery.

“It doesn’t have to be a death sentence, or you walking around with a cane or in a wheelchair,” she said. “I do everything everybody else does.”

In a quiet room, the audible ticking of her valve replacements is a constant reminder of life after surgery. Sometimes other people notice. “What’s that noise?” they ask. As a kid, it embarrassed her. Now, the ticking and the scar are just a part of who she is.

“It’s a badge of honor. A warrior scar. You’ve been through some things,” she said. “Everybody has scars, it’s just that you can actually see mine.”

—Shea Connelly

Jacy Jordan

Car accident

Jacy Jordan danced and leaped her way through childhood. Trained in several dance disciplines and gymnastics, Jordan was in her element whenever she was in motion.

But a horrific car accident 13 years ago threatened to take it all away from her.

On Oct. 2, 2004, her mother was driving them home from the Pasadena Livestock Show & Rodeo, where Jordan, then 7, was named Miss Pasadena Rodeo. A car in the next lane suddenly merged in front of them, forcing her mother to swerve violently out of the way. The car flipped four times, throwing Jordan out of the vehicle.

The accident broke Jordan’s left leg in two places. The skin on her leg was completely scraped away, from her hip down to her toes.

Jordan was rushed to Ben Taub Hospital, where doctors told her mother she might not make it through the night. The damage to her leg was extensive and there was a chance they would have to amputate. If they did, it would



mean hindering her ability to do what she loved: dance. Thankfully, doctors were able to salvage her leg. After more than 20 surgeries and eight pins, Jordan had reason to hope again.

She underwent intense physical therapy five times a week and eventually regained the use of her left leg. She began walking and dancing again, while the extensive scarring remained a constant reminder of her strength and resilience.

“I can’t change what happened,” Jordan said. “I’m going to be with it forever, so you might as well learn to love it and see how it makes you unique and how it makes you your own person.”

Jordan, who spent most of her childhood competing in pageants, said her scar has redefined her perception of beauty.

“In beauty pageants, it was all about what you wore and how you looked on the outside,” she said. “But now I think that beauty is all about what’s on the inside and how you see yourself and being confident despite whatever happens to you—whether it leaves you physically, emotionally

or mentally scarred.”

After the accident, Jordan continued to train in dance and gymnastics. For two years, she wore a bandage around her leg during practice to hide her scar. But one day, she decided to accept her leg, flaws and all. It was who she was and there was nothing she could do to change it.

“It’s learning to love yourself, being okay with people staring and looking at you in public, and just knowing that your scars are what make you unique,” she said. “There’s literally no one else that has the same exact scar as you do.”

Now a sophomore majoring in biology at The University of Texas at Dallas, Jordan said she was inspired by the care she received at Ben Taub and is determined to pursue a career in medicine in hopes of one day helping others the way the doctors helped her.

“I think it’s amazing how they were able to change my life so much,” she said. “I’m just really thankful for that. If I could do that for someone else, that would be everything to me.”

—Shanley Chien

Daniel Langford

Motorcycle accident

A concrete curb half a mile from home sent Daniel Langford and his motorcycle straight into the air. Langford hit the ground 100 feet away and his 2011 Harley Davidson Street Glide landed on top of him.

He wasn't wearing a helmet.

It was the day before Thanksgiving 2015. Langford was out riding with two buddies, doing 60 or 65 miles per hour down a side street in Katy.

"I was in a curve, and I'd been down this road a million times," Langford said. "More times than not I wore a helmet. But not this time. I ended up hitting a curb not even two feet wide, but I hit it dead center."

His friends yanked the motorcycle off him and could see that he was bleeding badly, blood pooling by the side of his head.

"They saw me choking on my own blood and turned me on my side to allow the blood to drain out," Langford said. "They called the cops and the ambulance. Then Life Flight came."

Langford remembers next to nothing about the accident and the hours following.

"I have one glimpse of a memory of being on the stretcher," said the husband and father of three. "Apparently, I repeated my wife's phone number—I don't remember this—as a nurse was trying to stick a tube down my throat. I told her to wait and she took down the number."

Langford's wife, Kari Langford, works as a nurse in the NICU at Children's Memorial Hermann Hospital. When the Memorial Hermann Life Flight helicopter carrying her husband landed on the roof, she was working just a few floors below.

"The nightmare began and I promised her I'd never get back on a motorcycle," Langford said.

"I stepped away from the motorcycle club. I still dream about motorcycles every night, but family and kids come first. It's horrible what I put them all through."

Langford spent three-and-a-half weeks at Memorial Hermann. He had a broken neck and fractured vertebrae in eight places. His arm was badly burned from the Harley's exhaust pipes. And the middle and right side of his face, which were crushed in the accident, had to be reconstructed.

In addition, Langford's brain was bruised and swollen. There was talk of brain surgery, he said, but in the end it wasn't necessary.

Still, doctors didn't know what to expect.

"After two weeks, they made me stand up and try to walk," Langford said. "My head was still swollen. I had to wear an eye patch over my eye. They said my sight might not come back in my right eye. I had to learn how to move, sit down, put my shoes on. I was having trouble making my body do what

I wanted it to do. Balance was a big issue."

Nearly two years after the accident, Langford, now 40, says he has a different outlook on life.

"My scars are a life lesson to remind me of the road I was going down," he said, referencing a literal and a figurative road. "I'll always have them and they will always be there to remind me not to be stupid again. I think that was God thumping me into the curb, saying, 'Straighten up your act and pay a little more attention to your family.'"

Langford doesn't try to hide the physical reminders of that day in 2015.

"I've got a shaved head," Langford said. "I've got the scar for all the world to see. People look at me. They look at the head first and then they see the arm. It's a Freddy Krueger-looking arm. It's pretty cool."

—Maggie Galehouse



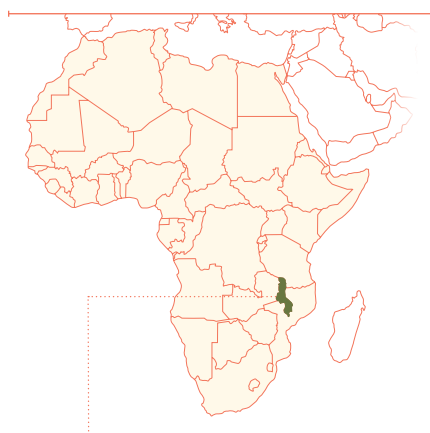
Mission to Serve in Malawi

Anne Alaniz, D.O., is building medical facilities in her homeland

BY SHANLEY CHIEN



Anne Alaniz, D.O., founded the Pothawira Foundation with her father, Peter Maseko, to meet the needs of the Salima District of Malawi.



Malawi, Africa

Malawi is bordered to the north by Tanzania, to the east and south by Mozambique and to the west by Zambia.

Anne Alaniz spent most of her childhood in Malawi watching her father care for ailing men, women and children. Those formative years drove Alaniz, now a gynecologic oncologist at Houston Methodist Hospital, to build an outpatient medical center and other facilities in the Salima District of Malawi.

In the rural village where she grew up, her father, Peter Maseko, worked as a clinical officer at one of the district hospitals, often with women delivering babies.

"I would always be sad when I saw people crying because somebody died," said Alaniz, 41. "Every time I would hear the voice of somebody wailing, it would

always be rough. I would think about that all night long. What could have happened? What went wrong?"

While most maternal deaths are considered preventable, maternal mortality and morbidity remain prominent health concerns in Malawi due to a lack of access to birth control, a poor health care system and a critical shortage of health care professionals in overcrowded facilities.

A study on maternal mortality trends by the World Bank, UNICEF and other organizations found that, in 2015, 634 maternal deaths per 100,000 live births in Malawi were a direct result of hemorrhage, infection, unsafe abortion, pre-eclampsia or

eclampsia and obstructed labor. The prevalence of malaria, anemia, HIV/AIDS and tuberculosis also contributed to the high rate of maternal deaths.

When Alaniz was young, women from rural villages would walk great distances with their children to get medical care. Some would walk 30 miles, only to wait in a line with 300 or 400 sick patients in front of the hospital. There was no 911 service; there were no ambulances to transport the sick.

Families grateful for her father's care would bring him chickens, eggs and goats as tokens of their profound appreciation for healing their loved ones. But not every patient survived.

"I remember ... being there and my dad was wrapping dead babies and putting them on the moms' backs, who were walking home on foot," Alaniz said. "I always thought that giving birth was a dangerous thing."

As the oldest child of seven, Alaniz became aware of the life-threatening risk her mother, Emma, went through each time she went into labor. Each time, Alaniz was convinced her mother was going to die.

Like most of the eldest girls in Malawi, Alaniz's mother trained her to take over household responsibilities at a young age. At 10, Alaniz learned to cook, clean, take care of a baby and go to the market for supplies. She had to be prepared to take over as the matriarch of the family if her mother didn't survive childbirth.

"I would always know when she was in labor because she would call me and start preparing me," Alaniz said. "Shortly after that, she would leave and go to the hospital."

Alaniz remembers returning home from boarding school one day when she was 15. As she got off the bus, she saw her mother walking towards her with a protruding belly: She was pregnant again, much to Alaniz's dismay and disbelief.

Credit: Global Health Innovations

"I remember being upset with her. I remember feeling angry," Alaniz said. "I thought, 'How could she do this again? To put herself through danger again? How irresponsible.'"

Coming to America

In 1994, Donna Ivey, M.D., a former emergency room physician at Harris Methodist Hospital in Fort Worth, arrived in Malawi to visit friends who were working with Alaniz's father as part of a medical mission trip.

Ivey witnessed the injustice, poor health care conditions and lack of access to basic resources in Malawi and decided to bring Alaniz to the U.S., where the teenager could pursue her dream of becoming a doctor.

By helping to change the life of this one child, Ivey reasoned, she might be able to save the lives of many.

"The story with Anne is the proverbial rock thrown in the pond: The ripples go out and you never know where the ripples are going to end," Ivey said. "God just happened to let me throw the rock in the pond, and that rock was Anne. The ripples have now washed on



Credit: Global Health Innovations

Above: The outpatient clinic operated by the Pothawira Foundation. Above right, Alaniz's father, left, at the clinic.

the shores of an orphanage, a clinic, a school, her life and her sisters' lives, so I'm just blessed that God let me pick up the rock."

Alaniz, then 17, stayed with Ivey and her family in the U.S. She enrolled as a high school senior at Community Christian School in Mineral Wells, Texas, and then attended Dallas Baptist University, where she majored in biology and chemistry as a pre-medical student. In between courses, Alaniz earned an income babysitting and tutoring in the writing lab, and sent

the money home to help cover her siblings' school fees.

She returned to her home country the summer after completing her first year of college. As the plane made its final descent into the international airport, Alaniz looked out at the vast canvas of nothingness—just trees, dirt roads and huts as far as the eye could see. It was so different from the soaring skyscrapers, vast concrete highways and bevy of cars to which she had grown accustomed in Texas.

"All of a sudden this stark contrast

was so clear to me," Alaniz said.

Revisiting her childhood and watching her father in the clinic, she became awestruck and devastated by the conditions plaguing her country.

She had grown up accepting that children died of malaria, diarrhea or water contamination. That women died during childbirth. That HIV/AIDS, malnutrition and poor sanitation were widespread. It was all she knew as a child, but after she returned as an adult, these realities suddenly filled her with sadness. (continued)



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"I had come to the realization of the plight of my family, the plight of my friends, the plight of my country, and the shocker that this was the life I was meant to live forever. How could they lead a life like this—still in this world—while I had just come from my life in the U.S.?" Alaniz said. "It wasn't even in the same universe."

She returned to the U.S. with a renewed sense of purpose. As a way of reconciling the guilt she felt, she vowed to buy property in Malawi to one day turn into a clinic.

During her second year of medical school, Alaniz and her colleagues organized a garage sale and raised \$1,500 over two weekends. Thanks to a donor who agreed to match the amount they raised, Alaniz used the \$3,000 to buy land in Salima, Malawi.

In 2008, Alaniz and her father used the land to establish the Pothawira Clinic, an outpatient clinic that serves more than 150 miles of rural Africa. They have also built a church, a school, an orphanage and, recently, a birthing center on the property.

Alaniz and her team treat 300 to 400 patients each day at the clinic during her annual medical trips to Malawi, just as her father did throughout her childhood.

"I believe it was part of God's plan to bring me here for me to do what I do," she said.

The return

Within the past two years, Alaniz climbed Mt. Kilimanjaro twice to raise money for clean water and the birthing center in Salima.

Her first trek in 2016 was a test of faith and perseverance. Seven hours into the climb, she and her group finally reached Stella Point, located 18,652 feet in elevation, just before the summit. Overwhelmed by exhaustion, blurry vision and a headache, Alaniz fell to her knees, crying hysterically. She had vomited several times and was physically incapable of taking another step.

"It clicked to me that there was a

time when I said to God, 'Use me until you use me up.' I couldn't see myself being any more used up than I was when I was on the summit, but it all made sense to me," Alaniz said. "It seemed to me that the physical pain I was feeling was nothing in comparison to what a lot of women and children are still going through in Malawi."

After Alaniz finished the climb to the top of Mt. Kilimanjaro, she went to work in the district hospital where her father worked. As she walked into the labor and delivery ward, she saw a line of nine or 10 women lying on black trash bags on the floor, delivering their babies.

One woman sat silently in a corner with a trail of blood next to her. She was hemorrhaging. Alaniz ran over, put on her gloves and began pulling clots of blood out of the woman.

Other women came to the hospital with ruptured uteri and dead babies floating in their abdomens: they had walked on foot to the hospital after being in labor for hours. Others came in with obstetric fistulas caused by babies who had died and were stuck in the women's birth canals for days.

"These were the rooms I didn't go to before," Alaniz said. "Here I was finally seeing why my mother was in danger every time she got pregnant. This was the hospital where my mother delivered. She came here seven times and survived. I don't know how."

As a gynecologic oncologist in the U.S., Alaniz treats women who are facing their mortality because of cancer. Although the patients she treats in the U.S. are different than those she sees in Malawi, there is one distinct similarity. Both groups recognize the preciousness of life, Alaniz said.

But regardless of whether she's in Malawi or the U.S., the goal remains the same: to serve.

"My philosophy in life is to serve others," Alaniz said. "As Mahatma Gandhi said, 'You won't really ever truly find yourself until you lose yourself in the service of someone else.'" ■

“It seemed to me that the physical pain I was feeling was nothing in comparison to what a lot of women and children are still going through in Malawi.”

— ANNE ALANIZ, D.O.

Gynecologic oncologist at Houston Methodist Hospital



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HOW TMC EMPLOYEES SPEND THEIR SPARE TIME

Born in Salzburg, Austria, Christopher Scott, Ph.D., grew up hardwired for the outdoors.

His father, who served as a captain in the Austrian mountaineering corps, often brought Scott to the Alps to learn how to ski and climb. Scott loved being outdoors, but he also gained a deep appreciation for nature on an existential level.

"The breathtaking beauty of nature is something that has a deep moral satisfaction to people, for me, too," Scott said. "We're so small compared to what the world has for us, especially in the mountains. It's really a scale comparison. I've never felt so human and also more insignificant in nature."

After he moved with his family to Colorado, Scott continued to mountain climb in high altitudes, staying along the Continental Divide for weeks to scale mountains more than 14,000 feet in elevation—"14ers" as they're known among mountaineering aficionados. When he wasn't traversing ice and snow to reach the peak of a mountaintop, Scott volunteered with search and rescue teams in the mountains.

"As a goal-directed person, I always like to say that I got to sit on ice on a glacier," Scott said. "That's a big deal. Most people say, 'Are you nuts? Why would you think that's something that's wonderful?' But it just is."

As a bioethicist, Scott studies the ethical, legal, social and political implications of emerging biotechnologies and clinical medicine. But these sorts of musings are not limited to his work. While he basks in the glory of Mother Nature, he often contemplates moral problems and challenges from an environmental perspective: As people, how should we treat the outdoors to preserve it for future generations? How do extreme conditions and situations shift the moral boundaries of what we think is right and wrong?

For example, Scott was involved in a genetic research



Credit: Courtesy photo

Scott on Mount Rundle in Canada's Banff National Park.

NAME: Christopher Scott, Ph.D.

OCCUPATION: Dalton Tomlin Chair of Medical Ethics and Health Policy at Baylor College of Medicine

INTEREST: High-altitude mountaineering

study that examined the blood of climbers as they ascended Mount Everest. The clinical trial took the climbers' blood to see if there was a genetic basis for resistance to acute altitude sickness, which can cause lung problems, swelling of the brain and death. Once climbers reach a certain altitude, Scott explained, they no longer have complete capacity because they're breathing in thin air that

causes their cognitive abilities to decline.

"There's always this provision in clinical trials that you can withdraw your consent if you feel, at some point during the study, that you don't want to do it anymore," Scott said. "For climbers who are working without oxygen and have reduced decision-making capacity, what does that mean for their ability to withdraw?"

Scott recently climbed the Grand Tetons in Wyoming, which he ranked as one of his top three climbs, along with Mount Chimborazo in Ecuador and Mount of the Holy Cross in Colorado.

"I love all of those because they were uncrowded, magnificent in their own way and in the most beautiful settings you can imagine," Scott said. "There's

something about being alone in the vast emptiness of a climb that's really appealing to me."

He is also a cycling enthusiast and uses his bike as a way to stay in shape for his hikes. High-altitude excursions are arduous and require intensive training.

"The best way to train for climbing is to go climbing," Scott said simply.

In preparation for his higher climbs, Scott often spends weeks in the Colorado mountains. He establishes his camp at 9,000 feet and climbs up to 14,000 feet and then down again each day to train. For the bigger mountains, having good snow technique and knowing how to use the various climbing equipment is critical.

"Some of those climbs will be 70 degrees or more, which feels like you're pretty much vertical," Scott said. "You're hammering in the ice axe and pulling yourself up on the axe every time you step up the face of the glacier."

While Scott has already conquered big peaks across the continental United States, South America and Asia, he is already planning his next challenges: Denali in Alaska and the Eiger in the Bernese Alps of Switzerland. ■



Credit: Courtesy photo

ON THE SIDE

BY SHANLEY CHIEN

A Different Approach to the Heart

Joseph Lamelas, M.D., is perfecting minimally invasive heart surgery

BY BRITNI N. RILEY



Joseph Lamelas, M.D., with his wife and nurse practitioner, Shay Lamelas, making rounds at Baylor St. Luke's Medical Center.

Joseph Lamelas, M.D., has pioneered an advanced form of minimally invasive cardiac surgery. Born in Cuba and raised in Florida and New York, Lamelas joined Baylor College of Medicine as associate chief of cardiac surgery in the division of cardiothoracic surgery in January.

Q | You are known for developing a minimally invasive heart surgery and for teaching hundreds of physicians this new technique. When did you realize a need for this type of surgery?

A | At the beginning of 2004, it came to me that I needed to do something to differentiate myself and also to tap into all of the new advances in the field of cardiology. I figured I needed to do surgery a different way. I started working on this new technique, a minimally

invasive approach. I went around to see a few people who were doing it at that time and then I evolved the technique. What's nice about it is that it can be applied to all subsets of patients. No matter the risk category or a patient's age, just about everyone is a candidate.

It developed to a point that I saw the necessity to create new instruments to be able to do this operation. That led to me going around to all the big companies, but none of them listened, so I developed my own company called Miami Instruments.

Q | For you, what is the specific allure of heart surgery?

A | My uncle is a physician and I got to go into the operating room early on, and that piqued my interest in surgery. It is one of the few specialties where you

actually do something to the patient and you see an immediate result. Cardiac surgery patients are pretty spectacular because they are very sick, you do a big operation on them, and then the next day they are sitting up.

Cardiac surgery is also very dynamic. It is a specialty that always has a lot of innovation. When you think about it, the other organs in the body are pretty static. But with the heart, you have to think about it three-dimensionally. It's not just science, but an art.

Q | What do you remember about your early years in Cuba?

A | I don't remember any of my time in Cuba; all I know are stories from my parents. I was born in Cuba in 1960. At the beginning of 1963, after the Cuban Missile Crisis and Fidel Castro taking

over, my family fled. My two grandmothers, my mother, my father, my older brother and I came to Miami, and we had to start from scratch.

Q | How did your family get out of Cuba?

A | Pan American had planes leaving. I know because when my mother gave me my passport, in the back there were a bunch of papers and there was a Pan Am airline ticket dated January 1963. My father scrambled around to get tickets on the last plane leaving Cuba, but when we got there, the airport was closed. So he gave his home away to a communist couple and they were able to get us tickets on one of three Red Cross boats leaving Cuba that were bringing survivors of the Bay of Pigs back to the U.S. We landed in Ft. Lauderdale and when we got off the boat, there was a band playing to welcome back the soldiers.

Q | What was your life like after arriving in the U.S.?

A | I remember for Christmas when I was growing up, you could buy packages of little green soldiers. My parents would buy those and divide them up because there was no money. We were living in very rough times, three or four families in one home. Someone picked up a sofa from the street and my grandma knew how to reupholster it. My younger brother slept in a cabinet after he was born because we didn't have enough money to buy a crib.

But my father always emphasized that it was important to have an education. They can take everything away from you, like they did in Cuba, but they can't take your education. So he was instrumental in making sure we all had careers. I grew up in West Palm Beach and New York. We moved up there because at the time, there was more of an opportunity for jobs. We lived there for 14 years and then moved back to West Palm Beach.

Q | Where did you go to medical school?

A | I went to medical school in the Dominican Republic because my parents couldn't afford to send me to school in the U.S. I did my training for general surgery at The Brooklyn Hospital Center and my cardiac surgery training at the State University of New York Health Science Center at Brooklyn. I spent seven years there and then moved back to Miami, thinking it was a great opportunity because of my Cuban heritage and being fluent in Spanish and English. I joined a group for a year and then I went out on my own and, for my first 18 years in practice, I went between seven hospitals and built my group. In 2008, I was offered the position as chief of cardiac surgery at Mount Sinai Medical Center in Miami Beach. The hospital was not doing well at the time. Their cardiac surgeons all left, so they made an offer for my group and myself to go there. We built the program up. Now they are building a \$350 million tower.

Q | What are the distinct skills you bring to the Texas Medical Center?

A | I have been in practice for 26 years. I've performed 14,000 cardiac operations and I've done over 5,000 minimally invasive operations. Dr. Todd Rosengart, professor and chair of Baylor's department of surgery, offered me a position to come here as associate chief of cardiac surgery and help build the program and bring new ideas and unique skills. I've trained over 700 surgeons from around the world and I have done more of these operations than

anyone in the world. These operations were all done with two-inch incisions on the side of the chest—the least traumatic way to approach and operate on the heart. We've seen patients recover a lot quicker from the procedure, the hospital stay is diminished and patients go back to a normal lifestyle very quickly. Young patients who are reluctant to have surgery because they don't want the big scar down their chest accept this operation more than having their breastbone cut. The recovery rate after one of these minimally-invasive procedures is two weeks.

Q | You've been here for nine months now. How many surgeries are you performing each week?

A | I have been doing an average of eight surgeries per week. Not as busy as I was in Miami, but in a very short time it seems to be a good amount. I am always looking for more because I know my capacity and I like to have a more significant workload. We have a tremendous amount of resources at the medical center and here at St. Luke's ... and that is a big plus.

Q | Have patients in Houston been responding well to the minimally invasive technique?

A | The patients I am working with at St. Luke's are coming from all over, many from outside of Houston and the state. These are patients that come looking for me, who heard about me on the internet from other physicians or other patients who have had a good result with this surgery.

(continued)



Patient James Moncrief with Joseph Lamelas, M.D., at Baylor St. Luke's, two days after surgery.



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“When my father came to this country, he washed dishes, cleaned toilets, patched holes in golf courses, did whatever he could. For a man who had a lot of pride and several businesses his grandfather left him, it must have been hard to go from one life to the other. But he did it because he had to. My work ethic comes a lot from him.”

— JOSEPH LAMELAS, M.D.

Associate chief of cardiac surgery in the division of cardiothoracic surgery at Baylor College of Medicine

Q | *Your wife, Shay, is your nurse practitioner. How did you meet and how do you balance your professional and personal lives?*

A | Where else? In the hospital. I spend my life in the hospital, so it is kind of hard to meet someone anywhere else. We have been working together for 20 years. It makes our relationship stronger because she understands what I do for a living; she's never held me back. I taught her how to manage the patients after the surgery and what to look for before the surgery so she has been my eyes and ears. She thinks exactly the way I think and she knows the way I like things so it makes it even easier. I think it is a win-win situation.

Q | *Do you think your daughter, Lily, 13, will follow in your footsteps and go into medicine?*

A | She loves science, but I think you have to let kids decide what they want to do or else they won't be happy in the future. There are not that many children of physicians who become physicians because they see the work their mother and father have to go through—they see it is very time-consuming and it's a decision they need to make themselves. I don't know if she fully understands what I do now, but one day she will.

Q | *What are your thoughts on Fidel Castro and his influence on your homeland?*

A | That's a very touchy subject. Fidel Castro came in as the savior of Cuba and everyone thought he would make things better. Communism on paper is a utopian sort of government, but when it is practiced, it is totally the opposite. Castro killed a lot of people in Cuba, imprisoned a lot of people, took everything my family had. Now Castro has died, but his brother is still a pretty vicious dictator himself and the regime

is not over. The sad thing is that Fidel Castro was never put on trial for what he did. Dying was probably the easy way out.

My father passed away in 2001, but my mother is still alive and she tells me stories. We had a few homes in Cuba, several businesses, and we were pretty well off. But everything was taken away. Right now, imagine someone told you to empty your purse and then took you to Russia and dropped you off in Moscow. Let's say you have kids and older parents to take care of. Where would you start? How would you start?

When my father came to this country, he washed dishes, cleaned toilets, patched holes in golf courses, did whatever he could. For a man who had a lot of pride and several businesses his grandfather left him, it must have been hard to go from one life to the other. But he did it because he had to. My work ethic comes a lot from him. I was doing 700 cardiac operations a year before coming here. The average heart surgeon does 100 to 150 per year. Work has never bothered me because my father instilled that in me.

Q | *What's the current state of health care in Cuba?*

A | Terrible. The Cuban surgeons that have come to visit me ask for aspirin and for heparin, which prevents the formation of blood clots. One came to watch me and I asked him how many surgeries he was doing and he said, 'Well, we haven't done one in a couple of months because we haven't been able to get heparin.' People die over there because the resources are not there.

When Cuba is a free country, I would love to go back and see where I was born. My father didn't want to go back until it was a free Cuba, so I want to honor his wishes. ■

CURATED

The Intersection of ARTS and MEDICINE

By Britni N. Riley

Known in Mexico as *la heroína del dolor*—the heroine of pain—artist Frida Kahlo was plagued by grave health issues for the majority of her short life.

A bus crash in Mexico City in 1925 left her with a broken pelvis, a broken spinal column, a shattered leg and foot and serious abdominal issues. Bedridden for two years during the healing process, she began to paint. In 1926 she completed her first self-portrait.

In the decades to come, Kahlo's paintings incorporated Mexican history and folkloric traditions but also continued to reference personal experiences, including the bus accident, painful surgeries and miscarriages.

Some of Kahlo's work, along with the work of many of her Mexican contemporaries, is currently on view in *Paint the Revolution: Mexican Modernism, 1910-1950* at the Museum of Fine Arts Houston.

"This is one of the most important periods not only in Mexican art, but also in 20th-century art," said Mari Carmen Ramirez, the Wortham Curator of Latin American Art at the MFAH and organizing curator of the exhibit. "The revolution of 1910 to 1917 really brought Mexico into the 20th century. Everything that we know about Mexico today goes back to that period, and the revolution put the artists at the top of the social pyramid and gave them a role to play in painting the new face of Mexico. This exhibit tells the story of that."

The exhibit boasts three of Kahlo's paintings, in addition to several works by her husband, Diego Rivera, and other Mexican artists, including José Clemente Orozco, David Alfaro Siqueiros and Rufino Tamayo.

"This exhibition is about representing the vernacular elements of Mexican culture," Ramirez said.

"It's about what the revolution did—to bring attention upon Mexico as a nation, its culture and its traditions."

Kahlo used art to respond to the world. After moving to Detroit with Rivera in 1932, she painted *Self-Portrait on the Border Line between Mexico and the United States*, which is part of the MFAH exhibit.

"She was very much divided," Ramirez said. "She was not very happy about what she found in the states, and this is about her being on the border of these two worlds. She is representing Mexico with the pyramids and the pre-Columbian legacy and all of the things that tie her to her roots, versus the industrial United States that is colder and more anonymous."

Another celebrated painting, *The Suicide of Dorothy Hale*, is also part of the exhibit.

"Dorothy was a writer and actress who committed suicide," Ramirez said. "Her friend, Clare Boothe Luce, asked Frida Kahlo to make a commemorative painting in



The Suicide of Dorothy Hale

her honor. Frida got so involved with how the suicide took place that she ended up representing it—the act of suicide."

Luce, then the publisher of *Vanity Fair*, was famously unhappy with Kahlo's painting, hoping for something more celebratory.

The painting depicts Hale falling from a skyscraper in New York

City to her death, which is, indeed, how the actress ended her life. Kahlo paints her descent in three stages, as white brush strokes at the top of her fall give way to oranges, reds and browns when she meets her death on the sidewalk. This work is painted in the manner and format of *retablos* or *ex-votos*—devotional paintings in Mexican folk art that depict dramatic events or dangerous situations.

Many of the paintings in the exhibit explore the relationship between life and death.

"The whole idea of death means something celebratory in Mexico," Ramirez said. "It is part of the Catholic tradition. Death is seen as the passage of heaven, to a different life." ■

Paint the Revolution: Mexican Modernism, 1910-1950 runs through Oct. 1 at The Museum of Fine Arts, Houston, 1001 Bissonnet. Information: mfah.org or 713-639-7300.



Self-Portrait on the Border Line between Mexico and the United States

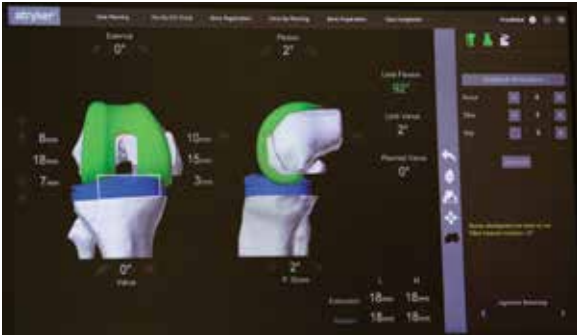
A Robotic Arm Assist

Technology helps surgeon optimize total knee replacements

By Christine Hall



Adam Freedhand, M.D., an orthopedic surgeon affiliated with Memorial Hermann Memorial City Medical Center and UTHealth, uses the Mako robot during total knee replacement surgery.



A 3-D image of the patient's knee helps Freedhand before and during surgery.

Total knee replacements help patients regain their ability to move spontaneously and actively. More than 600,000 total knee replacement surgeries are performed each year in the United States. By 2030, that number is expected to exceed 3 million, according to research published in *The Journal of Bone & Joint Surgery*. Yet orthopedic research studies have found that 20 percent of patients are not satisfied with their knee replacements. Much of that dissatisfaction has to do

with increased pain and a decreased range of motion. Some patients are unable to achieve satisfactory motion despite physical therapy. Others may complain that the knee feels unnatural, or that they lack confidence in their leg. Adam Freedhand, M.D., an orthopedic surgeon affiliated with Memorial Hermann Memorial City Medical Center and The University of Texas Health Science Center at Houston (UTHealth), began using the Stryker Mako robot for partial knee replacements

in 2008, and for hip replacements in 2010. He is one of the few surgeons in the Houston area now using the robot for total knee replacements.

Freedhand, who has performed more than 100 total knee replacement surgeries with the robot, sees his patients achieving milestones more quickly than they would with manual surgery.

"The robot is able to make bone cuts accurately, and we can measure the gaps between the femoral component and the tibia component to balance the knee," Freedhand said. "By using this technology, I think we will improve the outcomes for our total knee replacement patients."

Before surgery, the Mako software system can take a CT scan and turn it into a 3-D model that allows Freedhand to pre-size the knee implant and tinker around with the positioning.

"There are no 'a-ha' moments with the Mako," Freedhand said. "With the manual technique, you can narrow it down plus or minus one size, but with the robotic planning, you always know the size, and it won't change. It will be accurate every time. ... We can figure out the size and position without even touching the patient or getting into the knee."

The Mako robot doesn't actually perform the surgery. Freedhand plans the surgery and then guides the robotic arm to remove diseased cartilage and bone.



Freedhand checks the position of the implants during surgery.

Then he implants a few prosthetic components: a femoral piece on the end of the thigh bone, another on top of the tibia, and another piece fits on the knee cap. Some patients think the term "replacement" actually means removing a large amount of the bone in the

middle of the leg, but in reality, the surgery removes the worn out covering of the bone in the joint and treats it by attaching the prosthesis, which is shaped like a normal joint, Freedhand said.

During the operation, the surgeon can very precisely measure the cuts and the distance between the bones to help balance the knee ligaments, which is critically important to the function of the knee.

"We are looking at the patient's knee with our eyes, but then we are also looking at computer screens for the right angles and range of motion to make adjustments for the best outcome," Freedhand said. "When we are happy with the range and balance, we make cuts with the robotic arm."

Following surgery, Freedhand has observed better range of motion and sometimes less physical therapy to help align and balance the knee.

The delivery of health care is both an art and a science, he said, and the Mako robot is helping improve the patient experience.

"It's a really exciting time to be in orthopedics," Freedhand said. "I encourage my residents and fellows to train on this. We don't want to be stagnant, but have an eye out for anything offering benefits for patients." ■

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[1] **JUSTIN BAHL, PH.D.**, associate professor of epidemiology, human genetics and environmental sciences at The University of Texas Health Science Center at Houston (UTHealth) School of Public Health, has been awarded the 2017 Charles C. Shepard Science Award for a paper he coauthored, titled “Viral deep sequencing needs an adaptive approach: IRMA, the iterative refinement meta-assembler.” The award is presented annually through the Centers for Disease Control and Prevention.



[2] The Royal College of Surgeons elected **BARBARA L. BASS, M.D.**, an honorary fellow at a July 11 ceremony in London. Bass is the John F., Jr. and Carolyn Bookout Presidential Distinguished Chair in the Department of Surgery at Houston Methodist Hospital and a professor of surgery at Weill Cornell Medical College.



[3] Texas Medical Center employees **LANESSA CALLANDRET, ALEXIS CAMPOS, DANIEL MARTINEZ** and **BELINDA RODRIGUEZ** watch the lunar eclipse on Aug. 21.



[4] Nurse Andrea Wyche tightens her tourniquet during a training session for the national Stop the Bleed campaign. The local coalition consisting of **CHILDREN'S MEMORIAL HERMANN HOSPITAL, HARRIS HEALTH SYSTEM, TEXAS CHILDREN'S HOSPITAL** and the Houston Independent School District, led by the **RED DUKE TRAUMA INSTITUTE**, taught more than 300 HISSD nurses how to identify the source of bleeding, apply pressure to a wound, pack a wound and apply a tourniquet.

[5] Texas Woman's University College of Nursing Professor **ANNE KOCI, PH.D., RN, FNP-BC, WHNP**, has been named a Fellow in the American Academy of Nursing.



[6] **JIMMY HOLDER, M.D., PH.D.**, assistant professor of neurology at Baylor College of Medicine, has been awarded the Clinical Scientist Development Award by the Doris Duke Charitable Foundation. The \$495,000 award will support Holder's work in neurodevelopmental disorders.

[7] The Roman Catholic Church's Pontifical Academy for Life has chosen **MAURO FERRARI, PH.D.**, president and CEO of Houston Methodist Research Institute, to serve as a corresponding member of the academy.

[8] Texas Heart Institute (THI) received Alpha Phi Foundation's Heart to Heart Grant. The \$100,000 grant will fund research led by **DORIS TAYLOR, PH.D.**, director of the regenerative medicine research and the Center for Cell and Organ Biotechnology at THI, to study cardiac repair in women at the cellular level.

Credit: No. 1, 2, 5, 6, 8, 9, 11, 12, 13: Courtesy photo

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9



11



12



10



13



14



15

[9] **TEXAS WOMAN'S UNIVERSITY** has been awarded \$388,015 from the Texas Higher Education Coordinating Board's Minority Health Research and Education Grant Program to establish and maintain clinical rotation sites in underserved communities for physical therapy and other health sciences students.

[10] **RICHARD "RICH" SMILIE, D.V.M.**, a 51-year-old veterinarian, was among 240 students who received their white coats at a ceremony hosted by McGovern Medical School at UTHealth. The white coat ceremony is for students who are just starting to pursue their medical degrees. Smilie and the other students pledged to be ethical practitioners of medicine.

[11] **RICARDO NUILA, M.D.**, assistant professor of medicine and in the Center for Medical Ethics and Health Policy, was selected as the Ralph A. Johnston Fellow in the Dobie Paisano Fellowship Program, which is sponsored by the Texas Institute of Letters and The University of Texas at Austin. This fellowship gives creative fiction and non-fiction writers the opportunity to live on a ranch outside Austin and write for an extended period. Nuila was accepted based on his articles about health disparities in Texas.

[12] **HUDA ZOGHBI, M.D.**, professor in the departments of pediatrics, molecular and human genetics, neurology, and neuroscience, is the recipient of the 2017 Switzer Prize from the David Geffen School of Medicine at UCLA for excellence in biological and biomedical sciences research. Her research includes identifying a gene mutation that causes Rett syndrome, a severe genetic disorder that mostly affects girls.

[13] Officials from the Texas Medical Center, the Smithsonian and the city of Houston helped The Health Museum celebrate its status as a Smithsonian Affiliate, including Houston Mayor **SYLVESTER TURNER**; **MELANIE JOHNSON, ED.D.**, president and CEO of The Health Museum; **DAVID SKORTON**, Smithsonian Secretary; and **RODNEY ELLIS**, Harris County Commissioner.

[14] **BAYLOR COLLEGE OF MEDICINE** held its white coat ceremony for the class of 2021 at Bayou City Event Center in early August.

[15] **THE TEXAS MEDICAL CENTER INNOVATION INSTITUTE (TMCx)** kicked off a four-month accelerator program in early August by welcoming 19 startup companies to introduce their medical devices to the Houston health care market. Included are seven local companies, nine companies from outside Texas, and three companies from outside of the United States.



6

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8

A Primary Care Career: The View From the Rearview Mirror
Lecture by Jeffrey Steinbauer, M.D.
Friday, 12:10 p.m.
Baylor College of Medicine
Cullen Auditorium, 1 Baylor Plaza
julia.bernstein@bcm.edu
713-798-4710

12

Rice University Farmers Market
Tuesdays, 3:30 – 6:30 p.m.
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Parking Lot Entrance 13B
5600 Greenbriar Dr.
ricefm@rice.edu
713-348-5445

15

Living with Moebius Syndrome: A 30 Year Retrospect
Lecture by Steven Maldonado
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Cullen Auditorium, 1 Baylor Plaza
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14

Charlie's Law: Increased Access to Stem Cell Interventions in Texas

Panel Discussion

Thursday, 8:30 – 11 a.m.

Texas Heart Institute
6770 Bertner Ave.

Registration recommended at
bakerinstitute.org/events/1883
krwm@rice.edu
713-348-4784

20

Reducing the Cost of Health Care: Current Innovations and Future Possibilities

Forum

Wednesday, 9 a.m. – 4 p.m.

Third Coast Restaurant
6550 Bertner Ave., 6th Floor

Free; registration appreciated at
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susie@tmc.edu
713-791-8821

26

Second Annual Texas Medical Center Hispanic Transplant Symposium

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