

TMC | PULSE

THE OFFICIAL NEWS OF THE TEXAS MEDICAL CENTER — VOL. 2 / NO. 10 — NOVEMBER 2015

Going Global

.....
*TMC members build partnerships
in all corners of the world*

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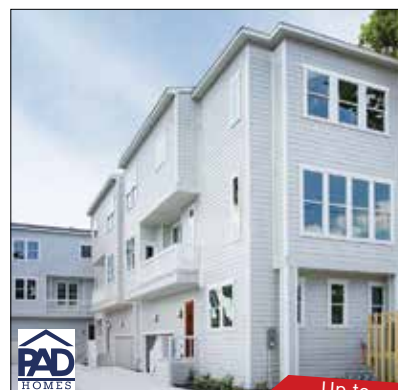
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(Credit: Alex Bierens de Haan for the Houston Astros)

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WHAT DO THE ASTRONAUT CORPS AND THE HOUSTON ASTROS PLAYERS HAVE IN COMMON? WHEN IT COMES TO THE WORK OF ONE HOUSTON METHODIST ORTHOPEDIC SPORTS MEDICINE SURGEON, THE ANSWER IS A LOT MORE THAN A NAME.

ON THE COVER: After going into labor, a young mother is carried down from her mountaintop village in Uganda to a hospital—a trip that lasts just 30 minutes. The Baylor International Pediatric AIDS Initiative has been working in Uganda to reduce the maternal and infant mortality rate. (Credit: Smiley Pool)



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

Delegations come here from all over the world to learn about the work being done within the Texas Medical Center and the resources available to international patients and visitors. We continue to make meaningful connections with countries around the world, to help support global outreach efforts through research, education and patient care. In this issue of TMC Pulse, you will read more about the value of these relationships, both here on our campus and in locations around the globe, and the true reach of the medical center as a leader in health care and life science.

Last month, we were pleased to welcome members of Houston's Consular Corps—the third largest in the country, with over 90 consulates—to TMCx for a Consular Forum seminar on innovation in health care, part of a series leading up to Mayor Parker's Houston Consular Ball. Innovation is at the heart of the work being done across the medical center each day, and the forum allowed the international delegates to hear more about the campus' commitment to leading the development of global health care solutions.

One very interesting example is the work being done by Baylor on their Emergency Smart Pod—repurposed shipping containers designed to be deployed as emergency pharmacy, lab or triage units for remote or underserved areas. While their pod was initially developed in response to a challenge earlier this year by President Barack Obama to address the Ebola crisis, the team has since been awarded a \$1.5 million grant to develop the concept further to allow for broader global emergency response.

We look forward to the continued growth of our campus' international outreach efforts, and the opportunities to partner in research, education, and patient care, to improve human health around the world. International collaboration has been and will continue to be vital to the success of our mission as a global leader in human health and life science.

Robert C. Robbins

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ADVANCING HEALTH

Innovations in the Making

The nation's first permanent medical makerspace opens at The University of Texas Medical Branch at Galveston

BY ALEX ORLANDO



“The process of nursing incorporates both an art and a science to it. [...] Being able to sit there and figure out what’s going to work for that exact patient—and then having the tools and resources at MakerHealth to bring it into reality—is a great way to leverage both sides of the profession.”

— JASON SHEAFFER
Blocker Burn Unit Nurse at UTMB

Nestled inside the John Sealy Hospital at The University of Texas Medical Branch at Galveston (UTMB), nurses and health care professionals are tinkering away. Safety goggles rest on shelves next to engineering manuals, Velcro, zip ties and multipurpose plastic coating. A pristine white cube harbors a 3-D printer while a sewing machine, laser cutter and soldering iron add to the illusion of a grown-up’s designer playground. Crisp red letters stamped on the wall neatly delineate different workstations, from “Digital Design and Fabrication” to an area dubbed “Build and Assemble,” fully stocked with enough wrenches and power tools to fulfill any workman’s wildest whim.

An elegant hybrid of high-tech prototyping equipment, traditional workshop and design tools, and an everyday supply closet, the MakerHealth

Space at UTMB—the first permanent makerspace in the country for health care providers—is poised to change the way we think about innovation in health care. The result of a unified effort by MakerNurse and UTMB, with the support of the Robert Wood Johnson Foundation, the MakerHealth Space will empower nurses and other medical staff to bring their ideas for improving care to life—and spread their innovations throughout the health care system.

“Everybody is looking for ways to do things more efficiently in health care,” said David Marshall, head of nursing at UTMB. “We think it makes sense to have the space in the hospital near where patient care is provided. This way, if there is some time during the day where providers have an idea in mind, they can go up to the space and explore their idea.”



“We wanted to make certain that the space was in an accessible location for those staff who work with our patients.”

— DAVID MARSHALL
Head of Nursing at UTMB

We think that one person’s innovation could inspire others, so as we catalogue what people come up with, we want to publish those for others to see.”

Over the past two years, MakerNurse—which has launched mobile makerspaces in several hospitals and nursing schools across the country—has uncovered resourceful nurses using everyday materials to improve upon and create new tools and devices that catalyze better ways of caring for patients: cough pillows composed of hospital blankets wrapped in medical tape; tactile patient call buttons using tongue depressors and pieces of silk; popsicle drip cups to keep pediatric patients from making a mess of things. These simple solutions to practical problems demonstrate the blank canvas for innovation that exists in hospitals throughout the country.

“Maker spaces are on the rise,” said Anna Young, co-founder of MakerNurse. “You’re seeing them in schools, libraries and communities, so we’re at a time where prototyping tools and materials have become more affordable and the software that interfaces with them is more approachable. You don’t need to be an engineer and have an engineering degree to learn how to rapid prototype and design.

“What’s unique about the MakerHealth Space at UTMB is putting those tools in the context of a health care system that’s providing basic care,” she added. “When you walk into the space, it’s a combination of rapid prototyping tools and materials that you would see in a traditional workshop mixed in with the hospital supply closet.”

Medical staff can use the makerspace to prototype a new tool, upgrade an existing hospital device—such

as adding a sensor to a take-home pill bottle to monitor use—or to customize materials for individual patients. All devices made in the makerspace are sterilized and tested through a quality improvement or institutional review board study before being used on the hospital floor. Located on a patient floor of the John Sealy Hospital, the MakerHealth Space is well situated to ensure that ingenuity and making become embedded in the care delivery process.

“We wanted to make certain that the space was in an accessible location for those staff who work with our patients,” Marshall said. “Space like that is at a premium in pretty much any health care organization, but we found 120 square feet of temporary workspace so that we could get the space up and running as quickly as possible, and really start to fabricate and prototype.” UTMB is in the process of finalizing the construction of a new, larger workshop space in the Jennie Sealy Hospital. They’ll be relocating in early 2016.

Closer to the bedside than conventional engineering labs and most other medical professionals, nurses are uniquely positioned to spot suboptimal technology and design breakthrough solutions to improve care. Too often, their ideas float nebulously through the backs of their minds or remain scribbled on a napkin. The makerspace at UTMB provides nurses with direct access to the tools, resources, and expertise to build prototypes and test their ideas.

“I think nurses have been innovating ever since Florence Nightingale went over to Crimea to take care of the wounded soldiers there,” Marshall said. “While it’s probably waxed and waned throughout the history of the profession, nurses have been consistently coming up with ideas about how we can make patients more comfortable, safer, and enable caregivers to be more efficient.”

“Nurses are at the forefront of care, really,” Young added. “They have the most contact with patients, both while the patients are being diagnosed and receiving treatment and then even when they’re discharged. Making and prototyping are all about these small, incremental changes that happen at the individual level, so nurses are a really well positioned group to start with. And they’re already doing it, which is what’s so exciting—they’re just too busy to tell anybody about it.”

Nurses like Jason Sheaffer, who works in UTMB’s Blocker Burn Unit, have already seized the opportunity presented by the MakerHealth Space.

“Essentially, we’re trying to use simple tools to make better use of the resources that we have,” he noted. “The engineers at MakerNurse have given us the chance to come up with solutions. That’s exactly what I did—I came up here, told them what I was looking at, and we put together a design and built the device.”

In the Blocker Burn Unit, patients who have sustained serious burns lay down on a table, where they’re washed via an extendable hose that dispenses filtered

water. While that works the majority of the time, every now and then Sheaffer and his colleagues encounter a patient who has suffered a chemical injury—those patients need to be irrigated for a very long time, until the chemical is totally washed out. This necessitates a nurse or technician holding the water hose for hours at a time.

“The staff that work back here are more than just the people who wash patients—they’re critical care nurses,” Sheaffer said. “I wanted to come up with a simple irrigation system that would attach to the existing water source and wash the whole patient, all at once, in certain targeted areas. That would free up the hands of the staff to do other things in critical care.”

A testament to pragmatic ingenuity and resourceful thinking, Sheaffer’s contraption is strikingly simple: constructed out of PVC piping, it uses custom-made clips to secure to the edge of the table, while a 3-D printed connector hooks onto the unit’s water source. Lightweight and completely customizable, it uses three filtered shower heads—the standard of care in the unit—to direct the water exactly where it needs to be dispensed.

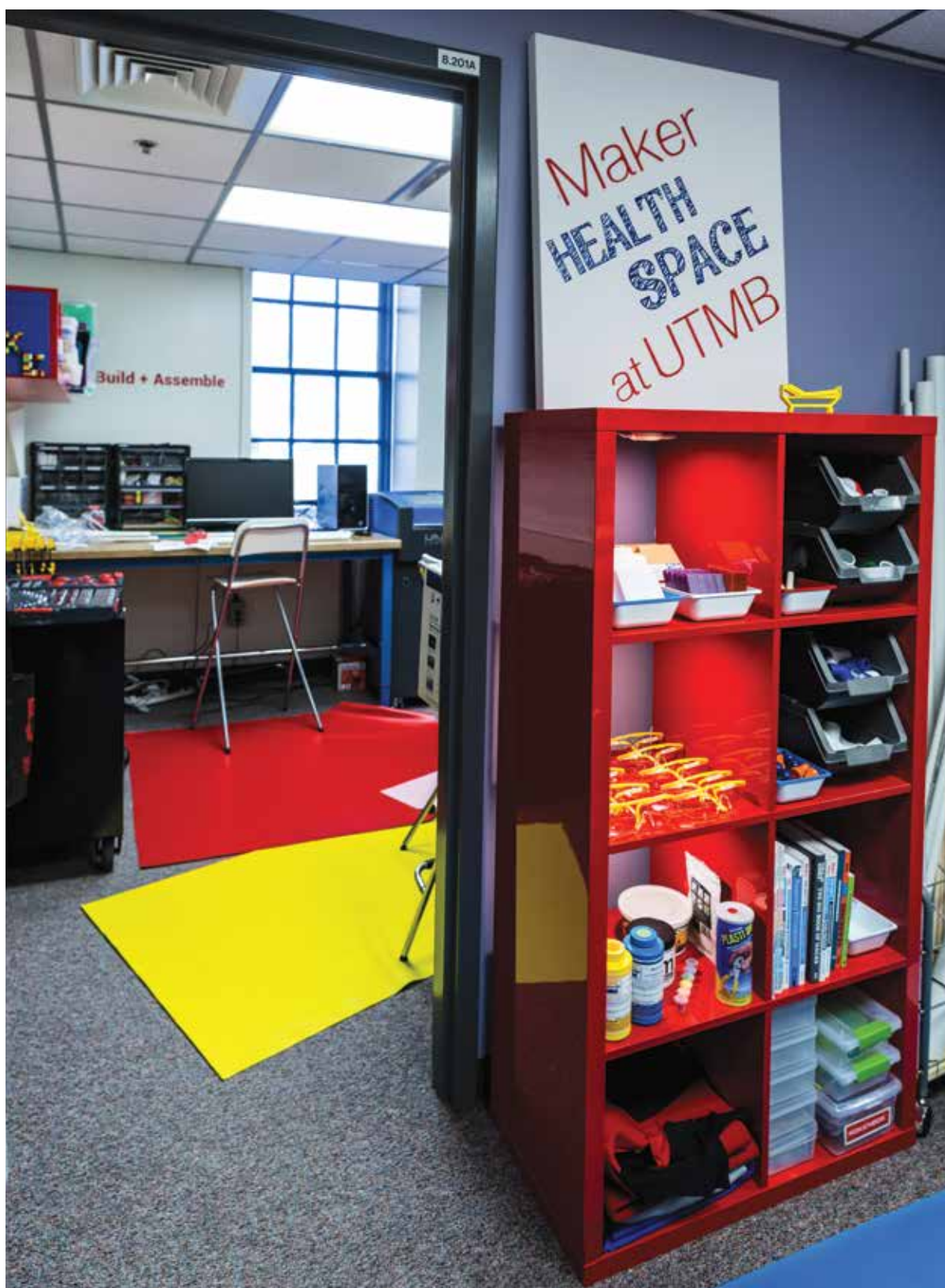
While spearheaded by nurses at UTMB, the makerspace will be open to all medical staff and health professions students. Nurses also envision themselves working with patients and caregivers to create personalized devices that work for them. As an outlet for creative medical professionals who problem solve for a living, the MakerHealth Space at UTMB will continue to enable them to take their ideas from conception to reality—and implement them throughout their daily practice.

“The process of nursing incorporates both an art and a science to it,” Sheaffer said. “There’s definitely

a science to the job, especially the components that we’re taught in school and what we learn about health and assessment, but there’s also an art to it that can’t be taught. It can only be figured out and experienced. Being able to sit there and figure out what’s going to work for that exact patient—and then having the tools and resources at MakerHealth to bring it into reality—is a great way to leverage both sides of the profession.” ■

“What’s unique about the MakerHealth Space at UTMB is putting those tools in the context of a health care system that’s providing basic care.”

— ANNA YOUNG
Co-Founder of MakerNurse





ALICIA MONROE, M.D., PROVOST AND SENIOR VICE PRESIDENT OF ACADEMIC AND FACULTY AFFAIRS AT BAYLOR COLLEGE OF MEDICINE, SAT DOWN WITH TEXAS MEDICAL CENTER EXECUTIVE VICE PRESIDENT AND CHIEF STRATEGY AND OPERATING OFFICER WILLIAM F. McKEON TO REFLECT ON HOW A STRONG SUPPORT SYSTEM HELPED SHAPE HER CAREER, AND WHAT ROLE SHE HOPES TO HAVE IN BUILDING BAYLOR'S FUTURE LEADERS.

Q | Can you tell us about your formative years?

A | I grew up in Indianapolis, Indiana. I am a middle child—I have two sisters and a brother. My mom and dad were not college graduates. My mother was a beautician and my dad was a postal worker. As a young girl, the two careers that were most fascinating to me were teaching and medicine. Along my journey, I had great role models and mentors who introduced me to those fields.

My pediatrician, who happened to be an African-American female, encouraged my interest in medicine and offered advice. As early as middle school, I thought I would go to medical school and become a pediatrician, but my love for teaching and learning was always there. My other early mentor was my maternal aunt who has a passion for

literature and poetry, and who pursued a career in elementary education. I was able to observe my aunt in the classroom and the enthusiastic response of her students. At one point, I recall having a conversation with my aunt about my interests, and I told her I was interested in both medicine and teaching. Her response was, 'If you have an opportunity to go to medical school and become a physician, by all means you should pursue a career in medicine.' So that wasn't the reason I chose medicine, but I certainly had those two passions, both for teaching and for health care.

I grew up in a family where there has been a lot of premature death—from cardiovascular disease and cancer. My paternal grandfather died at age 44, and none of my father's brothers lived beyond age 56. My paternal grandfather

expired following a hemorrhagic stroke, and my father's brothers all had hypertension and died following massive myocardial infarcts. My dad lived to age 57, but he died of lung cancer. My mother died at age 44 from Hodgkin's disease. She experienced a delay in receiving an accurate diagnosis and had many disappointing and hurtful interactions with her physicians. She didn't feel that she was listened to or that the physicians took her complaints seriously. Although she was ultimately diagnosed with Hodgkin's disease, she was initially told that her symptoms were psychosomatic. I would say she was disillusioned with regard to her interactions with physicians. Those less-than-satisfactory relationships with physicians, the prevalence of chronic illnesses in my family and

my community, and a strong desire to improve access to care and the quality of physician/patient interactions were the primary reasons I chose medicine. However, the physician/patient relationship and cross-cultural communication have been areas of scholarly interest throughout my career.

Q | What led you to Brown University?

A | While I was preparing for college, I had a conversation with my pediatrician to gather her recommendations regarding schools to consider. She encouraged me to consider women's colleges. In particular the seven sister colleges—Barnard, Bryn Mawr, Mount Holyoke, Radcliffe, Smith, Vassar and Wellesley. When I looked at those schools, Smith College, in Northampton, Massachusetts, was

most attractive to me. I applied to Smith and some other smaller liberal arts schools. I also applied to Purdue University. About December of my senior year, I received an application from Pembroke College, which was the women's college at Brown University. Pembroke students enjoyed many of the benefits of being at a women's college, as well as access to the new curriculum that was being implemented at Brown University, and that was very attractive to me. I applied and was admitted to Pembroke College at Brown University and the rest is history!

Q | What was your experience at Brown like?

A | Brown is an outstanding institution, but at that point in history, there were a number of ironic paradoxes, if you will. It had a really interesting cultural and academic environment that was simultaneously rigorous and permissive. The biomedical sciences were demanding, but the paucity of requirements offered me freedom to explore a variety of disciplines including dance, art and film studies. It was a great place to learn.

The first time I was ever in Rhode Island was when I arrived for orientation. I can remember feeling a little bit like what 'Alice in Wonderland' must have felt. The campus is marked by historic architecture, rolling hills, beautiful flowers and green spaces. Brown is right in the middle of a residential neighborhood, but at the same time it still has a distinctive university feel. At least that's what I have likened to a 'university feel.' I can remember meeting an impressive group of very accomplished young women from all over the country. We had a particularly outstanding group of sophomore African-American women who were smart, determined and principled. They had participated in the '1968 Walkout,' which was a decisive moment in the history of Brown University.

On Dec. 5, 1968, 65 black students from Brown and Pembroke Colleges left campus and boycotted classes to protest what they saw as a lack of commitment to minority students. The protesters requested an increase in minority student enrollment. I was a beneficiary of their courage and I matriculated in the most diverse class Brown had ever admitted in the fall of 1969. You know where the country was at that time in history—we were in the midst of the Vietnam War and we

were reeling from the assassinations of Martin Luther King Jr. and Robert Kennedy. It was a very tumultuous time. It was a very interesting time to come of age and to be at an institution that had a deep historical relationship to the trans-Atlantic slave trade. In 2003, Brown University President Ruth J. Simmons formed a Steering Committee on Slavery and Justice to investigate and publish a report on the University's historical relationship to slavery and the trans-Atlantic slave trade.

I went to a public high school in Indiana. The way in which Indianapolis chose to desegregate its schools was, frankly, to give students the opportunity to attend any school they wanted to within the metropolitan area. So I chose to go to Broad Ripple High School in a relatively affluent neighborhood.

I think I had a good high school education, but in the fields of math and science, I was woefully underprepared for Brown. I was very fortunate to get through those early years. Certainly freshman and sophomore years were the toughest. Once I could find study groups and a supportive professor or two, I was able to 'thread the needle,' graduate and go on to medical school.

During my sophomore year at Brown, my mom's cancer progressed and she passed away. Ironically, organic chemistry was a welcome distraction from the heavy burden of grief I carried for my mom. It was a season during which I became very focused and clear about my goals and persevering toward those goals. My mother put very strong foundational roots in all of her four children. She planted seeds of love, faith, hope, strength, perseverance and optimism that have encouraged and sustained me over time. After she passed away, my maternal grandmother took up the mantle of teacher and encourager for my siblings and me. I lived with her during medical school to save money, and it was a very special time for me to get to know her as an adult. I am very privileged to have grown up in a family with extraordinary people, especially women.

Q | You have won numerous awards in teaching. What is it about teaching that excites you the most?

A | My passion for teaching is rooted in my sincere regard for students and trainees, and my desire to support their aspirations as outstanding professionals, educators and leaders. There is a

“My passion for teaching is rooted in my sincere regard for students and trainees, and my desire to support their aspirations as outstanding professionals, educators and leaders. There is a natural synergy between excitement about sharing new ideas and concepts, and excitement about helping young people to excel.”

natural synergy between excitement about sharing new ideas and concepts, and excitement about helping young people to excel. I teach with passion and enthusiasm and I adopt the principle of being learner-centered. My goal is to bring flexibility to each session so that I can customize the teaching to the needs of the learners, while meeting the course objectives. My goal is not only that they would grasp the content, but more importantly, that they would be excited about learning the content. Not just to pass a test, but to help them be more effective in the current or next phase of their educational work or leadership roles. My teaching is a blend of content, inspiration and encouragement.

Q | What was it that attracted you to Baylor College of Medicine?

A | I was very content in Florida at the Morsani College of Medicine. We had started a new leadership track that was flourishing, and we had attracted some great students and faculty. I was mentoring outstanding faculty members, and I think the program was really evolving. What initially caught my eye in regard to this position at Baylor was, frankly, Baylor's reputation as an outstanding institution. I was aware of Baylor's academic and research excellence and its long and distinguished history with regard to diversity programs. So the institution's history attracted me, but the fact that the provost role was a new position peaked my curiosity.

I have had the great privilege of previously serving in two new positions, and I found each of them to be exciting and rewarding. I had the opportunity to apply my skills, experience and creativity in shaping a new organizational role that met the needs of the institution. New positions signal that an organization is undergoing culture change and to play a role in the evolution of an institution is a gift. I can discover what the institution wants and needs, and how can I be a positive contributor. I became more excited about the position as the

recruitment process progressed. The outstanding programs, excellent faculty, staff and students were very attractive. We have lots of silos of excellence, lots of outstanding individuals and great schools, and we have the chance to align and leverage our internal strengths through new partnerships and collaborations. The opportunity to come here and facilitate that work was really very exciting for me.

Q | What are some of the things that you hope to see evolve during your tenure here at Baylor?

A | Well, certainly to reengineer our faculty mentoring program, to establish leadership circles for both students and for faculty and to implement an intergenerational leadership model. This leadership model would connect emerging leaders with existing leaders to create a safe space for bidirectional learning and leadership development. I would like to see Baylor actively cultivate the next generation of leaders who are prepared to take on leadership roles at Baylor or other institutions. I would like to enhance centralized infrastructure to optimize excellence across the education mission (academic programs, student learning, professional development and career advancement). I also envision that we will add new academic programs that will respond to workforce demands, as well as right-size some of our existing programs that need to expand.

Q | How have you been enjoying Houston?

A | After a year and a half, I would say I'm settling in. I think Houston has a lot to offer. It is a great place. There is a lot to see and do, and I have barely begun to scratch the surface. There are a lot of culture festivals and events, a lot to do for families and singles, and it is a vibrant community. I look forward to having a bit more time in the near future to enjoy the environment, but I am getting there. ■

Discovering Diversity

RESEARCHERS EXPLORE HOW FOREIGN-BORN HEALTH CARE WORKERS ARE IMPACTING THEIR COMMUNITIES AND CONNECTING WITH PATIENTS IN THE ONE OF THE MOST ETHNICALLY DIVERSE METROPOLITAN AREAS IN THE COUNTRY

BY ALEX ORLANDO

In 1988, Maregina N. Shankar, currently nurse manager for the Head and Neck Specialty Clinics at Harris Health System's Ben Taub Hospital, looked across the expanses of the Texas Medical Center for the first time. For Shankar, who traveled to Texas from the Philippines, the world's largest medical center reflected a prism of possibility. Arriving on the cusp of a large immigration influx—roughly 25,000 Filipino nurses immigrated to the United States between 1966 and 1985—her journey is just one example of foreign-born health care workers sharing their expertise in one of the most racially and ethnically diverse metropolitan cities in the country.

"I came to Houston thanks to a very good friend who was hired by a

“As Houston has diversified, so has the number of patients coming in who need people who are culturally sensitive and versed in other languages.”

—STEPHEN M. CHERRY, PH.D.

Associate Professor in the Department of Sociology at University of Houston-Clear Lake

recruiting agency based here in the city,” Shankar said. “There were 10 of us, all from the same hospital in the Philippines, who came here together and were hired by Harris Health System—they hired something like 20 to 30 nurses from different countries across the globe that year. Actually, that same close friend is still working here at Ben Taub Hospital, where we’ve both been for the past 27 years.”

The American health care industry relies heavily on foreign-born workers

like Shankar. In 2010, according to the Migration Policy Institute, 16 percent of all U.S. health care workers—1.8 million people—were foreign-born. Among physicians and surgeons, 27 percent are foreign-born, in addition to 22 percent of nurses, psychiatrists and home health aides. While it’s clear that immigrant health care employees play a vital role in the fabric of the Texas Medical Center and Houston at large, the dynamic between those workers and the evolving culture of

the city itself is less transparent. How are foreign-born health care workers in Houston assimilating to American culture and changing the city’s DNA in the process?

In an effort to lend some clarity and precision to an almost overwhelmingly expansive question, researchers Stephen M. Cherry, Ph.D., and Amy E. Lucas, Ph.D., from the University of Houston-Clear Lake, wanted to take a closer look at that relationship between foreign health workers and the city. Entitled, “Assimilation and Transformation through Healthcare: Case of Houston Foreign-born Healthcare Workers and their Community Engagement,” the study was commissioned by Rice University’s Kinder Institute for Urban Research.

“A study like this is really a big deal,” said Cherry, associate professor in the department of sociology at University of Houston-Clear Lake and the lead author of the report. “It gives us some insight in understanding that we have a high percentage of people who are native-born but aren’t following through with their degrees. That’s particularly the case with nursing, where there’s a disproportionate number of native-born citizens who go into nursing and then never use their degree. They might go through their training and realize, ‘This is a tough job.’ So you have this influx of foreign-born folks who are coming in.”

The researchers based their findings on a combination of data from the U.S. Census Bureau and interviews with members of nurse associations for Filipino, Indian, Nigerian and Vietnamese immigrants working in Houston-area hospitals.



Stephen Cherry, Ph.D., associate professor in the department of sociology at University of Houston-Clear Lake and the lead author of the report, wanted to examine the relationship between foreign-born health care workers and the city of Houston.

“In this particular case, what’s really interesting is that here’s a situation where many health care workers, and not just high-level doctors, are immigrating from other countries and winding up working at the Texas Medical Center,” said William “Bill” Fulton, director of the Kinder Institute for Urban Research at Rice University. “What’s fascinating to me is the relationship between their work at the medical center and their influence in their communities where they live.”

The study provided a wealth of information to sift through. The researchers found that foreign-born health care workers were transforming Houston’s health care industry by improving its ability to effectively treat racially and ethnically diverse populations. Due to their ability to speak certain patients’ native languages and an awareness of specific cultural sensitivities, foreign doctors and nurses have a unique advantage over native-born professionals.

“As Houston has diversified, so has the number of patients coming in who need people who are culturally sensitive and versed in other languages,” added Cherry. “It’s like when you’re upset, you want to revert back to your native language, even if you’re completely fluent in English. We’re finding that these employees are able to address those populations.”

Effectively treating patients who share the same ethnic background doesn’t end at an enhanced ease of communication—foreign health care professionals can also raise awareness of health risks within certain communities. The Filipino community, for example, needs more attention for high blood pressure, while *Helicobacter pylori* infections disproportionately affect the Vietnamese community. At the end of the day, simply understanding might have the most profound impact.

“I’m often on the street throughout the Texas Medical Center during my commute, and I run into a lot of

people—they might be white, they might be black, they might be immigrants from Asia or Latin America—and they’re all really intimidated to be here. It’s this gigantic, kind of intimidating atmosphere,” Fulton said. “And for foreign-born health care workers in TMC institutions, to be able to understand the cultural and social cues and fears that these people might have walking through these hospitals, I think it makes for much better patient care. It allows the patients to relax and have much more confidence in the institution.”

In addition to the conclusion that foreign-born workers are doing much more to improve care than simply filling a demand for labor, the study aimed to determine whether those workers were joining large, community-based organizations and engaging with Houston’s broader civic conversations.

“A lot of the people who were interviewed for the paper talked about how, number one, ethnic diversity is an attraction to them,” Fulton said. “Number two, the fact that employees at the Texas Medical Center are well-paid is an economic asset to those communities. And number three, they spoke of a sense of commitment to their own ethnic community, bringing both their expertise in health care and that dedication to their communities to try and make them better places to live.”

Communities like Fort Bend County—now the most racially and ethnically diverse in the Houston area—attract immigrant groups not only due to their proximity to the TMC, but because of that vitality and ethnic diversity. While previous research paints a picture of a slow, steady march toward upward mobility for immigrants, medical professionals today are able to buy homes in Fort Bend County almost immediately.

“One of the important elements in understanding what this all means is that, because of their professional backgrounds and socio-economic status,



Maregina N. Shankar, nurse manager for the Head and Neck Specialty Clinics at Harris Health System’s Ben Taub Hospital, came to Houston in 1988 from the Philippines.

FOREIGN-BORN WORKERS ACCOUNT FOR OVER 16 PERCENT OF ALL U.S. HEALTH CARE WORKERS—1.8 MILLION PEOPLE IN TOTAL.

those employees are able to move into rather diverse, multiracial, multiethnic neighborhoods, and quickly engage those communities,” Cherry said. “They have a lot of social capital. So when you look at civic engagement and health or resource fairs that are happening in Houston, they’re largely being staffed by foreign-born workers.”

According to Cherry, that commitment to civic engagement can send ripples throughout communities that billow into waves of potential impact. From voting percentages and volunteering rates that are higher than among average Houstonians, to the ability to quickly mobilize people and resources to address important issues, “in terms of what [foreign-born workers] bring to civil society, it’s just incredible.”

In contrast to previous theories about an immigrant population’s assimilation into American cities, a slow process where those immigrants would become indistinguishable from native-born residents, these health care workers are making an immediate impact on their communities and professions. Challenging previous assumptions about how immigrants integrate into their new homes and participate in civic life upon arrival, it’s an interplay that will only add to Houston’s richness

and vibrancy. Many foreign-born health care workers like Shankar will continue to cherish and preserve their own distinct heritage.

“To be honest with you, I can identify as both Filipino and American,” Shankar said. “I guess it’s all about how you were brought up—whether you were going to church every Sunday, for example, or making sure that you have time to spend with your family. I still go home to see my parents and I still feel like I need to have that connection with my roots at home, which is why I long to go back to the Philippines pretty much every year. You never lose that need to reconnect with your friends and relatives back home.”

For Cherry and his colleagues, they envision the study as a pilot project for a much larger survey of the Texas Medical Center—and all of the people who make it what it is today. “There is still so much to learn,” he said. “It’s just the surface of what we can understand, especially considering that it’s such a large institution, but if we start negotiating those boundaries now, there’s a lot more that we can discover about the medical center.” ■

“What’s fascinating to me is the relationship between their work at the medical center and their influence in their communities where they live.”

— WILLIAM “BILL” FULTON

Director of the Kinder Institute for Urban Research at Rice University

Second Chances

The Baby and Mother Bonding Initiative aims to reduce recidivism by nurturing the relationship between Texas inmates and their newborns

BY SHEA CONNELLY



“That was me then, this is me now. I’m ready to be the mother I know I can be.”

With voices nervous but steady, a group of young women take turns sharing their thoughts. How do you feel about moving forward? What do you want to leave behind? Which old relationships do you want to maintain? The women carefully contemplate each question, babies bouncing on their laps. There are occasional tears but more often laughter, smiles, and nods of understanding.

This group therapy session is part of a program for women incarcerated in Texas called the Baby and Mother Bonding Initiative (BAMBI). It’s a place for leaving the past behind, for second chances.

BAMBI, operated by the Texas Department of Criminal Justice and The University of Texas Medical Branch at Galveston (UTMB), offers pregnant offenders the opportunity to live with their babies after delivery, rather than sending the infants away to family or foster care, which is the norm across the country. Housed in the Santa Maria Hostel, a chemical dependency treatment facility, it feels more like a college dorm than a prison.

BAMBI opened in Santa Maria in 2010 with four women. Today there are over 20. As soon as the women and their newborns are discharged from the UTMB hospital where they give birth, they are taken to Santa Maria. They remain there until their

sentences are over—anywhere from a few days to around 15 months.

“Most of these girls didn’t have role models, and they didn’t get the love they needed in those first years,” said Liz Moore, BAMBI program liaison. “Now they have this second chance to do something that is almost innate, but can be robbed from you. They get the opportunity to grow emotionally.”

From the moment the women arrive, Moore and BAMBI Case Manager Joanne Marshall work to help them bond with their babies and set them on the path to a successful, independent future. This includes regular activities like group therapy, one-on-one therapy, parenting classes and GED classes.



“I want her to know that, yeah, her mother fell down sometimes, but she was able to pick herself up and remain sober, even when it was hard.”

— DANIELLE
Mother of Journi



“I want my daughter’s future to be bright and so much better than mine has been.”

— ASHLEY
Mother of Kynzlee



“Nothing in my past will stop me. From now on my daughter will only see the positive things and I will make a way for her to not have to repeat the cycle. It stops now.”

— LINDA
Mother of Jerasia

“We also set up a plan to figure out what they would like to do with their life,” Marshall said. “I help them get into college and find transitional living if home will not be a safe place for them.”

The idea behind BAMBI is that allowing the mother and child to bond and preparing them for an independent future will make the mother less likely to reoffend. So far, it seems to be working. A recent Bureau of Justice Statistics study showed over 75 percent of state prisoners in 30 states, including Texas, were rearrested within five years. In the five years BAMBI has been active, its recidivism rate is just about eight percent.

Danielle, 22, has been at BAMBI for three months

with her daughter Journi. She also has one older child, a seven-year-old who is in the foster care system. Before being accepted to BAMBI, she planned to send the baby home to her parents. She learned she would be heading to BAMBI on Mother’s Day.

“This was a second chance,” she said. “When I lost my older daughter, I continued to fall backward. This made me realize I don’t want to go back to that old lifestyle. I want to keep pushing forward, to be the mother and the daughter I’m supposed to be.”

Like many of the women at BAMBI, Danielle has seen a lot of heartache. She spoke of her sister who was murdered by a friend, and the lasting effect that had on her ability to relate to others.

“After that I lost all trust,” she said. “Being here made me realize it’s OK to open up and talk to people. They’re not here to judge me. I’ve learned to be assertive.”

That ability to change thought processes is a key to success for the women at BAMBI. That includes both being able to accept constructive criticism and learning to stand up for themselves.

“We help them to recognize when they have faulty thinking and to be able to own that—to say, ‘Yeah, I shouldn’t have done that and this is why,’” Moore said. “We also want them to understand it’s OK to tell people, ‘You can’t treat me this way.’”



“Most of these girls didn’t have role models, and they didn’t get the love they needed in those first years. Now they have this second chance to do something that is almost innate, but can be robbed from you. They get the opportunity to grow emotionally.”

— LIZ MOORE

Program Liaison for the Baby and Mother Bonding Initiative

Linda, 28, has been at BAMBI for six months with her daughter, Jerasia. She thanked the program for giving her a new perspective.

“It really made me change my attitude, my way of thinking,” she said. “I like the new me. I’m happy, I smile more, I’m more open-minded.”

Linda will soon be leaving BAMBI for a transitional living program in Dallas. Though her family is in Tyler, a short drive to Dallas, Linda is ready to make it on her own.

“I’m very nervous, but I’m excited. We’ll be living in an apartment, just me and Jerasia,” she said. “I’m going to keep in touch with my family, but visiting? I’m OK. I did it by myself here and I want to go ahead and take the journey by myself.”

As Linda plans for life after BAMBI, Ashley, 30, is at the other end of the spectrum. She and her daughter

Kynzlee have been at BAMBI for just two weeks, but Ashley already feels changed.

“I also have a 10-year-old daughter and a three-year-old son,” she said. “I’ve always been able to go to my parents or go to somebody for help, but now I know I don’t have to. With Kynzlee, I can take care of her on my own and be able to do everything. This is helping me strive for a better future for me and all my children.”

As one of the more recent additions to the program, Ashley said she finds inspiration in the women who have been at BAMBI longer. It’s comforting to have people she can relate to, who can give her a glimpse of the future.

“Sometimes when you make the choices and mistakes you make, you feel like you’re the only person doing that,” she said. “I like that I have support and

am able to go to someone that has been here for a little while and talk to them and gain knowledge from them.”

Moore said they encourage that type of connection by pairing new BAMBI members with “big sisters” who have been with the program for a while. The women support one another, but they also learn constructive ways to call out negative behavior.

“We have a process where they get to come and say, ‘I didn’t appreciate it when you did this and it made me feel this way,’” said Moore. “It’s not all hugs and kisses and everything is going to be OK, because it won’t be unless you do the work. It can get harder before it gets easier.”

The journey through BAMBI has its ups and downs, and the idea of independence can be scary. With that fear, however, comes the feeling of unlimited potential, often for the very first time.

“I feel more alive. I don’t have so much hatred and bitterness. I have a lot of love,” said Linda, while reflecting on her impending departure. “Before, I could say ‘I love you’, but I didn’t know the meaning of love—when somebody really cares for you and is really trying to help you. I feel different in a lot of ways and I thank BAMBI so much.” ■



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Left: Guillermo Gomez, MD
Director of the Center for Obesity and Metabolic Surgery

Center Left: Joseph Sonstein, MD
Minimally Invasive Urologic Surgery

Center Right: Kimberly Brown, MD, FACS
Minimally Invasive Liver and Pancreatic Surgery

Right: Sami Gokhan Kilic, MD, FACOG, FACS
Chief of Minimally Invasive Gynecology & Research

The four surgeons featured here are representative of the more than thirty UTMB surgeons using state of the art minimally invasive surgical techniques across a wide variety of medical specialties.

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GOING GLOBAL

BY SHEA CONNELLY

PROGRAMS ACROSS THE TEXAS MEDICAL CENTER ARE COMMITTING RESOURCES TO PROVIDING MEDICAL CARE AND EDUCATION AROUND THE WORLD

At a pediatric HIV/AIDS clinic in Romania, a small child is given the antiretroviral drugs that will save his life. A premature infant in Malawi breathes easier thanks to a cost-effective and location-appropriate device, while down the road, budding Malawian doctors train to provide care for their countrymen. Each of these events is connected by a common thread: a Texas Medical Center institution that has embraced the idea that medicine knows no borders, no socioeconomic background, no race or ethnicity. That part of being a world-class provider of health care and education means giving back on a global scale.

From clinical care to research and education, TMC institutions have committed resources to dozens of countries. One of the longest-running global outreach programs in the medical center is the Baylor International Pediatric AIDS Initiative (BIPAI). In 1996, a chance encounter with a member of Romania's parliament brought BIPAI President and Founder Mark Kline, M.D., to Constanta, Romania, then the pediatric AIDS capital of the world. During a recent presentation to Baylor medical students, Kline recounted that first visit.

"Everywhere I went, I saw HIV and AIDS-infected children warehoused, waiting to die, without any prospect of antiretroviral drugs that were being used to treat children in the U.S.," he said. "Whole wards of abandoned children in hospitals with no medical treatment, no socialization."

Kline, now the J.S. Abercrombie Professor and chairman of the department of pediatrics at Baylor College of Medicine and the Ralph D. Feigin Chair and physician-in-chief of Texas Children's Hospital, returned with a new sense of purpose. He gathered enough funding from a variety of sources, from Elton John to Catholic

nuns, to found the first BIPAI clinical center of excellence in an abandoned orphanage in Constanta.

"We saw 165 people the day we opened and we never looked back," Kline said. In just a few years, the death rate in Constanta dropped from 13 percent to less than one percent. Today, BIPAI continues to treat patients in centers of excellence around the world.

"We still have a strong commitment to HIV/AIDS work, but we do work in a number of other areas as well," Kline said. "We never want to turn a child away, whether he has HIV or meningitis."

Additionally, BIPAI founded the Pediatric AIDS Corps, now known as the Texas Children's Global Health Corps—essentially a Peace Corps for physicians. Global Health Corps physicians commit a year or more to working in one of BIPAI's locations around the world.

"To the extent possible we hire local physicians, but in many of the places there are almost no doctors," Kline said.

Take Botswana, for example. Over the course of several decades, the government sent nearly 3,000 students abroad to study medicine. Very few ever returned.

“We’re committed to working with people in these countries for years. You’re not going to get much done in one visit—it takes relationship building.”

— JOAN EDWARDS, PH.D.

Associate Professor and Director of the Center for Global Nursing Scholarship at Texas Woman's University



Left: A young mother from a remote mountaintop village in Uganda prepares to be taken to the hospital. Right: A mother carries her child to a checkup in Uganda. (Photos: Smiley Pool)



Left: An ambulance is prepared to transport complicated cases from a Ugandan village. Right: A lab worker in a clinical center of excellence at Mulago Hospital, Uganda.

To combat the so-called “brain drain,” Baylor and BIPAI teamed up with the University of Botswana to found a medical school. Major Bradshaw, M.D., formerly dean of student affairs and education and senior vice president at Baylor, served as the founding dean and lived in Botswana for three and a half years.

Bradshaw described a strict curriculum to prepare students for working independently early on in their careers.

“They graduate from medical school, they do an internship and then they’re assigned by themselves to a remote village,” he said. “They have to be able to deal with whatever comes through their door.”

For the first year, Bradshaw was the sole medical school faculty member. By the time he left, the school had 26 faculty members. The first class of the Botswana School of Medicine graduated in October 2014.

This need for doctors inspires the work of another TMC initiative: the Global Women’s Health program operated by Texas Children’s Hospital and the Baylor Department of Obstetrics and Gynecology. The program is based in Malawi, where there were 12 OB-GYNs for a country of over 13 million people when it was founded in 2012. The Global Women’s Health program aims to change that by training Malawian doctors in their own country.

“They will then train the coming generations and at some point, they won’t need us,” said Michael Belfort, M.D., Ph.D., obstetrician and gynecologist-in-chief at Texas Children’s and chair of the department of obstetrics and gynecology at Baylor. “That’s the goal.”

There are currently 12 residents in training, which means when all are fully trained, the number of OB-GYNs in the country will double.

“[The residents] are already thinking about how they can give back to the program and keep it going,” said Susan Raine, M.D., vice chair of Global Health Initiatives at Texas Children’s and an associate professor in the department of obstetrics and gynecology at Baylor. “In five or 10 years, we hope they want us to be there, but we don’t want to be needed.”

In July, the program initiated the Global Women’s Health Fellowship. In Malawi, the fellows learn and provide care in ways they never will here in the United States.

Obstetric fistula, for example, is a condition caused by prolonged or unattended labor that results in incontinence. While it is almost unheard of in the U.S., it is commonplace in many parts of the world.

“In all of my training in this country, I saw it twice,” said Raine. “In Malawi, our doctors will do maybe eight of these surgeries a week. Even though we don’t see it here much, it still enhances the skill sets of our trainees coming back to practice here.”

The Global Women’s Health program also works to increase the resources available to doctors in Malawi. A current objective is to establish a laparoscopic surgery program.

“One of our goals is to create an environment where doctors want to stay in Malawi because they have those tools,” Raine said. “Right now, they haven’t had the ability to gain and maintain the equipment. People can donate, but if it breaks and there’s no one to fix it, the program stops.”

Rebecca Richards-Kortum, Ph.D., Rice University’s Malcolm Gillis University Professor and professor of bioengineering, made a similar observation.

“If you had a big checkbook and could just buy all the same devices we use in Houston,

you would find those devices stop functioning because they break or you don’t have the resources to use them safely and effectively,” she said. “You need to design for the environment where you actually need to use the technology.”

Designing for low-resource environments is a cornerstone of Richards-Kortum’s work as director of the Rice 360° Institute for Global Health Technologies. Since 2007, Rice 360° has been working in Malawi to engineer innovative solutions to health problems, with an emphasis on pediatric technology. Working with the Queen Elizabeth Central Hospital in Blantyre, Rice 360° developed a continuous positive airway pressure (CPAP) device to help premature infants in respiratory distress.

Traditional CPAP machines cost close to \$6,000 and require infrastructure not available in Malawi. The prototype Rice 360° built cost \$160.

“We worked with physicians at Texas Children’s Hospital to show that it did deliver the right amount of flow and pressure, and we carried out a clinical evaluation of it at Queen Elizabeth Central Hospital,” Richards-Kortum said. “We were able to show that for the premature babies with respiratory distress, survival improved from 24 to 65 percent.”

The device is now being used at 28 hospitals in Malawi, as well as hospitals in Tanzania, Zambia, South Africa and a number of other African and Southeast Asian countries.

Rice also offers a minor in global health technology. Students work in teams to tackle a design challenge with the goal of developing a prototype by the end of the semester to take back to Malawi.

“Often when you hear about global health disparities in the news, it’s hard to understand

“We never want to turn a child away, whether he has HIV or meningitis. We’re care and treatment focused.”

— MARK KLINE, M.D.

President and Founder of the Baylor International Pediatric AIDS Initiative (BIPAI)

what the impact of that is on an individual level,” Richards-Kortum said. “When our students travel and have the opportunity to be part of the team that’s trying to provide care in a setting like that, they come back with a new sense of purpose and inspiration to address health disparities.”

In our increasingly connected world, a global perspective has become a priority for students. With that in mind, TMC institutions are offering more opportunities to study and practice outside the United States. One such program, the Center for Global Nursing Scholarship (CGNS) at Texas Woman’s University, dispatches students around the world, with trips to China, Indonesia, Korea, The Netherlands and Peru, just to name a few.

“We want our students to have an appreciation for what nursing is globally and what they can do to contribute during their professional lives,” said Joan Edwards, Ph.D., an associate professor and director of CGNS at TWU. “We are so blessed in the United States with our knowledge and resources, and we need to share that.”

Edwards emphasized that the goal of all trips is to be mutually beneficial to TWU students and the citizens of the countries they visit.

“It’s not like, ‘Hey, we’re here and we can teach you everything.’ It’s that we can learn from each other,” she said. “They have circumstances that they have been creative in solving to advance nursing, and we can learn from that and both benefit.”

The program began in 2001 and was approved by the Board of Regents as an official Center of Texas Woman’s University in 2012. CGNS goes on several trips each year. Students work on research and in clinics, and participate in international nursing conferences. A group of students recently had the unique opportunity to interview Japanese nurses who treated victims of the Hiroshima atomic bombing.

CGNS has been involved in some locations for years. The intent is not to travel to a place once, do what they can and then move on to the next location. CGNS is looking to establish true partnerships and collaborations in each country.

“This is long-term work,” Edwards said. “We’re committed to working with people in these countries for years. You’re not going to get much done in one visit—it takes relationship building.”

For Sheryl McCurdy, Ph.D., principal investigator of the Tanzanian AIDS Prevention Project (TAPP) and an associate professor at The University of Texas Health Science Center

at Houston (UTHealth) School of Public Health in the department of health promotion and behavioral sciences, local relationship building is a key to success.

Through in-depth interviews, McCurdy discovered Tanzanian women injecting heroin were sharing blood, a practice called “flashblood,” to help friends avoid withdrawal. McCurdy also presented findings showing 42 percent of intravenous drug users in Dar es Salaam were HIV positive. As a result, the Tanzanian government, along with the CDC and PEPFAR, issued a call for outreach programs, leading to the development of TAPP—a partnership between UTHealth and Muhimbili University of Health and Allied Sciences in Dar es Salaam.

With the help of Tanzanian community-based organizations (CBOs), TAPP maps out areas where intravenous drug users congregate. TAPP trains CBOs and sends mobile vans to those areas to conduct outreach and educational activities. The program began by offering bleach kits and teaching people to sanitize needles. In 2011, TAPP expanded to connecting users with their families and bringing the users into its new methadone clinic, the first public access clinic in Africa. There are now three addiction treatment clinics in Dar es Salaam that have enrolled nearly 3,000 people, and Kenya has opened two

methadone clinics based on TAPP’s model.

McCurdy’s next goal is to expand to help smokers. When TAPP began, 60 to 90 percent were injecting, she said. Now, 10 percent of users are injectors, while the rest are smokers.

“Smokers want in, too, and the Tanzanian president wants to upscale the program around the country for everyone,” she said. “In 2014, I worked on a policy document with Tanzanian colleagues to show how that would work and how it would go through the Ministry of Health.”

McCurdy also recently received a Fulbright Scholarship to follow people in recovery through March 2017. Meanwhile, other countries in Africa are looking at TAPP as a model program for starting their own clinics.

Becoming integrated into the fabric of local communities was a common thread among the Texas Medical Center global programs. These are not one-off trips—to be impactful, they must be in for the long haul.

That commitment is embodied by BIPAI, the oldest of these four programs. Twenty years in, BIPAI has grown significantly from the orphanage-turned-clinic in Constanta, Romania, though that first clinic is still operational.

In an auditorium packed with young, eager medical students, the next generation waiting in the wings to affect global change, Kline summed up the feeling he had when he first saw success in the developing world—a feeling shared by the globally minded across the medical center.

“The experience was nothing short of addictive,” he said. “When you see little stunted, wasted children begin to grow tall, put weight back on, go to school. Once you have that experience, you want to do it over and over and over again.” ■



A Ugandan mother takes her infant for an antenatal doctor's visit.

WHERE IN THE



GUATEMALA

Students Improving Global Health in Texas UTHealth

Through Students Improving Global Health in Texas (SIGHT), UTHealth medical students have traveled to Guatemala, Honduras, Panama and more with the goals of increasing awareness of global health issues and creating sustainable relationships with underserved communities.



DOMINICAN REPUBLIC

Center for Global Health Education The University of Texas Medical Branch at Galveston

The Center for Global Health Education works to establish international, mutually beneficial partnerships with the goal of training tomorrow's global health workforce. In the Dominican Republic, UTMB students and faculty worked with the Universidad Central del Este to collect field data for a Chikungunya virus outbreak.



COLOMBIA

Molecular Genetics and Antimicrobial Resistance Unit at Universidad El Bosque

UTHealth

Cesar Arias, M.D., Ph.D., an associate professor in the Division of Infectious Diseases at UTHealth, operates research labs in the U.S. and Colombia to develop a better understanding of the mechanisms of antibiotic-resistant bacteria, or "superbugs," as well as ways to fight them.



PERU

Center for Global Nursing Scholarship Texas Woman's University

The CGNS seeks to help students and faculty develop an appreciation of nursing on a global scale and to establish relationships and partnerships in countries like Peru, The Netherlands, Indonesia and more to advance the field of nursing worldwide.



ANGOLA

Angola Sickle Cell Initiative Baylor College of Medicine / Texas Children's Hospital

The Angola Sickle Cell Initiative provides treatment and screening for sickle cell disease in Angola, which has one of the highest rates of the disease in the world. Since the program was established, 121,000 babies have been screened and more than 1,700 are now in treatment.

WORLD IS TMC?

ROMANIA

Baylor International Pediatric AIDS Initiative (BIPAI)

Baylor College of Medicine / Texas Children's Hospital

Since its first center of excellence opened in Constanta, Romania, in 2001, BIPAI has been committed to providing high-quality, family-centered health care focused on HIV/AIDS, as well as tuberculosis, malaria, malnutrition and other health conditions worldwide.



TANZANIA

Tanzanian AIDS Prevention Project (TAPP)

UTHealth

TAPP is an HIV/AIDS prevention program targeted at intravenous drug users. TAPP partners with community-based organizations to reach out to local heroin users, and from 2011-2014, TAPP enrolled 874 clients into a medically assisted treatment program at its methadone clinic.



MALAWI

Rice 360°: Institute for Global Health Technologies

Rice University

Founded in 2007, Rice 360° works with communities around the world, including the Queen Elizabeth Central Hospital in Blantyre, Malawi, to engineer cost-effective and location-appropriate solutions to global health problems. Rice 360° also offers students a minor in global health technology.

BOTSWANA

University of Botswana School of Medicine

Baylor College of Medicine

The first medical school in Botswana was developed through a partnership between Baylor College of Medicine and the University of Botswana in an effort to combat "brain drain" due to physicians receiving training outside the country. The school graduated its first class in 2014.



One Giant Leap

In an unprecedented collaboration, Houston Methodist teams up with NASA to care for Space City's most valuable players

BY ALEXANDRA BECKER

In the opening scene of the movie *Gravity*, long before George Clooney's character (spoiler alert) drifts off into the boundless intergalactic unknown forever, he and a biomedical engineer played by Sandra Bullock are in the midst of upgrading a component on the Hubble Space Telescope. Dressed in spacesuits modeled after NASA's own Extravehicular Mobility Units, or EMUs, the scene is made realistic by the awkward, rigid movements one

would expect when insulated beneath 14 layers of life-preserving fabrics and gadgets. While the sheer heft of the EMU spacesuit has proven highly successful in its many missions protecting human skin from the vacuum of space, it hasn't come without its costs—namely those of the musculoskeletal variety.

To address these issues, NASA enlisted the help of Patrick McCulloch, M.D., an orthopedic surgeon at Houston Methodist Hospital and, as of a 2012

Congress-backed Space Act Agreement between NASA and Houston Methodist, the official orthopedic consultant for the Johnson Space Center. It turns out astronauts launch a relatively high number of complaints relating to back, knee and shoulder injuries compared to the general population—so many that it seemed advantageous to bring an orthopedic specialist onto their team of physicians—known as flight surgeons—certified athletic trainers and ASCRs

(astronaut strength, conditioning and rehabilitation specialists).

Each Wednesday, McCulloch's team travels to the Johnson Space Center to provide orthopedic consultation and care to members of the astronaut corps. The onsite clinic is managed by NASA flight surgeon Rick Scheuring, D.O., who, in a previous life, worked as a small-town family practice sports medicine doctor in Northwest Illinois. On the evening of 9/11, he went for



“We have a real source of national pride here in Houston at the Johnson Space Center, and we have another one here in the Texas Medical Center, and the ability for us to contribute mutually in this regard is imperative for us as a leading health care institution and important for us as Americans.”

— PATRICK McCULLOCH, M.D.

Orthopedic Surgeon at Houston Methodist Hospital

a bike ride and somewhere between the Mississippi and Lake Michigan, decided to join the U.S. Army. He simultaneously completed a two-year aerospace medicine residency and musculoskeletal ultrasound fellowship along the way. With three tours under his belt and an Army Reserves lanyard around his neck, Scheuring, along with McCulloch, provides a unique expertise to a small population of individuals who, as far as jobs go, work in a field about as specialized as you can get.

“The competition is fierce,” McCulloch said, when asked about the astronaut selection process. “Screening is based on physical fitness and health, but they also require special skills and abilities that are uncommon. A lot of our astronauts are active or former military, many of them played college sports, and they understand the importance of teamwork and discipline. By the time they actually go into space, most of them are in their mid-40s, so we’re working with what is akin to an aging athlete population that is prone to having some musculoskeletal injuries as a result of their age, the training requirements, and the fact that the job is just physically demanding.”

By providing an onsite clinic, the astronauts are able to focus on training and rehabilitation rather than traveling to and from the Texas Medical Center for specialized orthopedic care.

“Before the clinic, astronauts would have to go see a doctor, get a referral, go see another doctor locally or in the medical center, get an MRI ordered, and then follow up again—that’s a big interruption to their already packed schedules,” McCulloch explained. “With Houston Methodist being at the Space Center weekly, we’re not only picking up on issues earlier and therefore preventing more injuries, but should anyone need an orthopedic surgery, we’ve streamlined the process so time outside the Space Center is minimal. The stakes are just higher for

astronauts—they don’t have weeks or months to deal with an injury when they have a launch date set.”

McCulloch added that the program is beneficial to his fellows as well because it provides them exposure to practices unique to aerospace medicine, like the use of musculoskeletal ultrasound in place of X-rays, MRIs and CTs. Considered the stethoscope of orthopedics, it is currently the only imaging modality available in orbit and can be used for diagnostic purposes or to guide procedures or injections. Astronauts are trained to use the machines, and flight surgeons are proficient in reading and interpreting the images in real-time back on Earth—telemedicine at its finest.

Of all the injuries common to the astronaut corps—between knee complaints, back pain and herniated discs, which may or may not be related to the two to six centimeters you grow in space—shoulder issues eclipse them all. This is partly explained by the fact that arms and shoulders replace the legs as the primary mode of mobility—in microgravity, one doesn’t so much walk as pull or propel. Likewise, astronauts are forced to put pressure on their shoulders by strapping them down for routine activities such as sleep or exercise.

“It’s very difficult trying to come up with a training program for astronauts in space to help them maintain their bone density and muscle mass, which inevitably decreases in the absence of gravity,” McCulloch said. “You can’t lift weights because they don’t weigh anything. Instead, we secure crewmembers to a treadmill with bungee cords that attach around their waist and a harness that goes over their shoulders, but having 40 percent of your body weight pulling through your shoulders while you’re running is not exactly a natural phenomenon.”

Perhaps the biggest bearer of blame, however, is the spacesuit itself.



Rick Scheuring, D.O., flight surgeon for NASA and the Johnson Space Center, and Patrick McCulloch, M.D., orthopedic surgeon at Houston Methodist Hospital, walk the halls at NASA after a recent Wednesday clinic.

Although weightless in microgravity and only worn for missions outside the shuttle, astronauts log hundreds of hours of training in the suit in preparation for each trip.

“We do a lot of training in NASA’s Neutral Buoyancy Laboratory, which holds the world’s largest swimming pool. The astronauts essentially go scuba diving in the spacesuit and practice their mission on a life-sized mock-up of the Space Station, which sits at the bottom,” McCulloch said. “Unfortunately, it is not a perfect simulator for true weightlessness.”

Neutral buoyancy is more accurately described as “hovering.” Because microgravity could not be replicated here on Earth at the scale necessary for NASA’s rigorous extravehicular activity training requirements, the sensation of half-floating, half-sinking would have to do. The disadvantage, of course, is that the astronauts still feel their weight and the weight of the suit—all 300 lbs. of it.

“They may be down there for hours working with tools and moving in awkward positions, and the spacesuit restricts some of their motion, so often they’ll be sore in their shoulders after doing these repetitive tasks over long periods of time,” McCulloch said.

While the pesky issue of gravity on Earth can’t exactly be resolved, McCulloch, Scheuring and a team at NASA have recommended several modifications to the training process to help astronauts reduce injuries while working within the constraints of the

EMU. Moving forward, NASA has recruited the duo to advise its team of engineers and designers as they build the next generation of spacesuits. By evaluating the musculoskeletal physiology of suited-up astronauts engaged in activity, they hope to identify key features that will help minimize risk and maximize performance.

“We’re looking at the factors that we believe cause injuries in some astronauts so that we can ensure we don’t engineer those into the new spacesuit,” Scheuring explained. “The problem is, the spacesuit is very complicated, so you don’t want to fix a problem with the shoulder but then cause a different problem with the elbow or the wrist or the lower back. It’s an intricate process.”

Although the new suits will almost certainly allow for improved range of motion in the shoulders and neck, NASA doesn’t expect to unveil a sleek, ergonomically pleasing design anytime soon. Because the primary requirement of the spacesuit is to provide a pressurized volume compartment to protect the oxygen-loving, temperate-adapted crewmember while exploring non-Earth environments, the EMU’s trusted bulky layers are here to stay.

“You have to think of it as a personalized spacecraft,” Scheuring said. “Ultimately, a few consolations in design have to be made for overall crew safety.”

“I essentially view the astronaut corps as another professional team. They’re a select group of highly specialized, highly valuable individuals required to work in a high-stress environment, and they’ll have periods of downtime followed by periods of high-demand physical performance with no room for error.”

— PATRICK McCULLOCH, M.D.

Minute Maid Park, home stadium of the Houston Astros, is about 30 miles northwest of Johnson Space Center. There are days when McCulloch makes the trek there after a Wednesday clinic at NASA to go to his other, other full-time job: Astros team physician. (He is also the team physician for the Houston Ballet and Rice University athletics, but that is for another story.)

After working closely with both groups—astronauts and Astros—McCulloch began noticing some similarities. Aside from the obvious moniker comparisons, both engage in comparably rigorous training programs and push their bodies to the limit for maximum performance under pressure—all in the face of sleep deprivation and demanding travel schedules.

“I essentially view the astronaut corps as another professional team,” McCulloch said. “They’re a select group of highly specialized, highly valuable individuals required to work in a high-stress environment, and they’ll have periods of downtime followed by periods of high-demand physical performance with no room for error.”

Even more, both groups exhibit uncanny parallels in their incidences of injury—specifically in regards to the shoulder. As it turns out, McCulloch discovered, the analog for astronauts in a spacesuit is a major league baseball pitcher. Leveraging the cutting-edge sports medicine practices available to the Astros, McCulloch organized a consortium to bring the two medical teams together to identify injury prevention tools and rehabilitation solutions for the common problems he observed.

“Already we’ve adapted a rotator cuff injury prevention program we use in baseball to the astronaut corps,” McCulloch said. “And it’s a two-way street. In working with astronauts, especially once they’re in space, all of the variables change. It makes you question every aspect of why we do what we do and if there is a better way to do it. So it’s really led to a lot more critical thinking about the way we address every problem and whether we are doing it in the most efficient way possible, and that has spilled over into the care of all of my patients.”

The overlap of NASA’s innovative methods and the everyday life of the average American is nothing new. Modern-day energy bars were originally adapted from food created for consumption in space, technology developed for the Hubble Space Telescope was responsible for recent breakthroughs in improved digital imaging and biopsy for breast cancer patients, and a non-invasive blood analyzer planned for use during future lunar or Mars missions could eventually transform the lives of millions of diabetics who need to monitor their blood sugar daily.

“We have a real source of national pride here in Houston at the Johnson Space Center, and we have another one here in the Texas Medical Center, and the ability for us to contribute mutually in this regard is imperative for us as a leading health care institution and important for us as Americans,” McCulloch said.

The opportunities for collaboration are truly infinite, especially as missions to space become longer in duration



(Credit: Alex Bierens de Haan for the Houston Astros)

and potentially farther away than ever before. According to NASA, setting foot on Mars could become a reality in the 2030s, and the technology developed for that kind of feat would undoubtedly have revolutionary applications in the Texas Medical Center and beyond.

“I can only imagine the problems we’re going to solve on our way to Mars,” Scheuring said. “It’s a great investment. If the president came by tomorrow and said, ‘You know what? Let’s get this accomplished by 2020 or 2025,’ we’d figure out a way to do it, just like we did with the moon. It’s a matter of having the mission and that will drive everything else. And it’s no different in medicine. I got to know

Neil Armstrong well in the last couple years of his life, and that was one thing he really tried to get out there: get a difficult mission and everything else will follow—we’ll figure it out, we always have.” ■

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TMC O2 AIMS TO REDUCE OBESITY RATES IN THE TEXAS MEDICAL CENTER BY ENCOURAGING HEALTHY EATING AND THE OPTION TO PARTICIPATE IN A DIET PROGRAM

BY BRITNI N. RILEY



Arthur "Tim" Garson, M.D., director of the Texas Medical Center Health Policy Institute, holds salad bar tongs that have been color coded to reflect the "traffic light" calorie counting system.

The overweight and obesity rate in the United States is at an alarmingly high 69 percent of the population. In Texas, the percentage is down to 66 percent, but a recent study done by The University of Texas Health Science Center at Houston (UTHealth) School of Public Health showed that 78 percent of Texas Medical Center employees are obese or overweight.

Shreela Sharma, Ph.D., associate professor of epidemiology at the UTHealth School of Public Health, and her team conducted the study by screening 780 Texas Medical Center Employees. Upon reviewing the results, they found obesity to be a significant issue among participants.

As a result of the study, UTHealth and the Texas Medical Center Health

Policy Institute created the TMC O2 (obesity and overweight) challenge: three interventions to reduce overweight and obesity rates in the Texas Medical Center by 20 percent by the year 2020.

The TMC O2 challenge also addresses two categories that are problematic for obese and overweight workers and their employers—excess medical and productivity costs. Productivity costs include time missed for work due to obesity and also time at work that is wasted.

"There are different productivity metrics that we have looked at in addition to direct costs of being obese," said Arthur Garson, M.D., director of the Texas Medical Center Health Policy Institute. "We have seen that obesity

rates account for absenteeism and 'presenteeism,' which is defined as being present at work for the day, but being unproductive."

According to a study done by The George Washington University School of Public Health and Public Health Policy, the average annual cost for excess medical expenses for overweight and obese workers is \$1,474 per employee. The annual cost for excess medical and productivity costs for overweight and obese employees is \$3,763 per employee. That would mean that within the Texas Medical Center, overweight and obese employees cost an additional \$118.5 million annually.

"After seeing the results of the study, it is clear that we have a problem with obesity in the Texas Medical Center," Sharma said. "Our hope with the TMC O2 challenge is to change those numbers and create a better lifestyle for Texas Medical Center employees."

All 56 member institutions of the Texas Medical Center, as well as the Texas Medical Center Corporation itself, are participating.

"This is the first time in memory that all the members are working together in a single program," Garson said. "One of the Health Policy Institute's goals is collaboration and this is a wonderful way to achieve that goal."

The first intervention of TMC O2 is participation in an evidence-based national diet program. Eleven Texas Medical Center members chose to participate in this program and decided on Weight Watchers and iDiet. Weight Watchers is built around food, support, behavior change and activity tracked by a points system. iDiet is a behavioral program that "retrains" the way your brain thinks about food by controlling five key instincts that drive humans relationship with food: hunger,

availability, variety, familiarity and calorie density.

“Our goal for this project is to implement these evidence-based programs and see if they are successful in reducing obesity,” Sharma said. “Health care work is considered high stress, and health care workers work long hours. I think the diets will improve their quality of life both at home and at work and help them manage their weight.”

The second intervention element is the use of a traffic light labeling system in the vending machines across the Texas Medical Center. Traffic light labeling is showing food as green for the healthiest choices, yellow to enjoy in moderation and red to slow down. Thirty-three of the 56 member institutions have opted to implement this color-coding system.

Traffic light labeling was proven to be successful at the University of Virginia. When Garson was dean of the University of Virginia School of Medicine, he implemented the program and focused on “front of label” packaging, which expresses calorie content only through the green, yellow and red system.

“Front of label packaging is simple and easy for everyone to understand,” Garson said. “When I was at Virginia, we had a number of vending machines with this system for a year and at the end of the year, sales on the green went up 15 percent, yellow went up 30 percent, sales on the red went down five percent and total sales went up 6½ percent. It is marvelous because we gave people healthy



choices and they went to the vending machines more frequently.”

The third intervention is the implementation of the traffic light labeling system in cafeterias. Institutions can individually choose what constitutes a green, yellow or red rating.

The program officially begins in January 2016, but the Landmark Café at the Nabisco campus and the Trevisio Restaurant in the John P. McGovern Commons have been testing out the traffic light labeling since June. In Trevisio, every item is color-coded—red for items above 550 calories, yellow for those above 450, and green for those under 450.

Jeremy Bauer, food service director at the Texas Medical Center, believes the program has been a success so far. “Since we have implemented the traffic light system in the Landmark Café, we have noticed a substantial change in sales,” Bauer said. “Our total sales are up 21 percent. Sales of red items are down by 13 percent and we



have seen an eight percent increase in yellow sales, and five percent increase in green.”

Over the course of the next two years, Sharma and her team will be tracking the progress made by each institution and recording their findings. They will then address the issue of which programs are likely to be most effective in helping people to lose weight. If overweight and obesity rates drop by 20 percent by 2020, the Texas Medical Center will be the largest major



group of institutions in the world to significantly reduce overweight and obesity rates in their workforce.

“My vision for TMC O2 is to make obesity prevention a priority in the workplace, and to build a culture of health within TMC as a whole,” Sharma said. “I want to see if we can collectively work towards a goal and achieve it. ■

THE TMC O2 CHALLENGE AIMS TO REDUCE THE OVERWEIGHT AND OBESITY RATES IN THE TEXAS MEDICAL CENTER BY 20 PERCENT BY THE YEAR 2020.





IN HIS WORK AS VICE PRESIDENT OF PARTNERSHIP AND EVENT DEVELOPMENT FOR HOUSTON FIRST CORPORATION, MICHAEL HECKMAN HAS A BEHIND-THE-SCENES LOOK AT WHAT IT TAKES TO MAKE SOME OF THE CITY'S BIGGEST EVENTS POSSIBLE. HE SAT DOWN WITH TEXAS MEDICAL CENTER EXECUTIVE VICE PRESIDENT AND CHIEF STRATEGY AND OPERATING OFFICER WILLIAM F. McKEON TO DISCUSS SOME EXCITING PLANS FOR THE FUTURE, AND HOW IT TOOK COMMUNITY INVOLVEMENT TO BRING THE SUPER BOWL TO HOUSTON.

Q | Tell us about where you grew up.

A | I grew up in a rural part of South Central Pennsylvania called Franklin County. I always tell people that it really is a great place to be from. A lot of my extended family lived within the area and my grandparents had a farm that they owned and worked for more than 50 years, which was really a great thing for me and my brother and my cousins. We felt like there are few things better as kids than to have the farm nearby. You have plenty of space, there are fun things to do, and you can let your creativity and your imagination run wild.

So that was a big part of what we did when we were growing up. Another big thing was sports. Sports were always a central theme in my family. My father and my uncle were heavily involved in coaching sports

as we moved up, and I always appreciated that, with the time that they spent and the commitment that they had to spending time with us. My uncle was the athletics director at my high school and my father on the coaching staff, so that made for a lot of great memories. I've always felt like sports are a good training ground for your professional career. Sports help shape character, work ethic, teamwork and commitment. Plus you can have fun along the way and build some great relationships.

Q | What was your college experience like?

A | I focused on business and communications. I went to a small school in Maryland, which, fortunately for me, is also where I met the woman who would later become my wife. I didn't know exactly what I wanted

to do down the road, I think not unlike a lot of people. I knew I wanted to work in sports, but I didn't necessarily have a clear path as to what that would look like, which is why when the internship came available with the ball club, I decided to jump on that.

In the area that I grew up, as I mentioned it was a great place to grow up, but I knew that there was always greater opportunity that I wanted to pursue. I got the opportunity with Hyatt here in Houston in 2002 and decide to make the leap. It was a big jump for my wife and me to relocate to a city the size of Houston, but we were happy to get here. Originally, we didn't know how long we would be here, but truly the professional and personal opportunities here have been more than we could have imagined, and Houston has made a wonderful home for us for the past 13 years.

“You can only do great things when you can marshal the people and the resources and the talent together to be able to do them, and I think that’s a key part of my job and what we do.”

Q | Seems like working for Hyatt would have been a great foundation upon which to build your career here in Houston.

A | Well, it certainly was because we were deeply involved with the Greater Houston Convention and Visitors Bureau, and that’s where I really began my first type of relationship with the CVB and its leadership. Through that I was able to meet a ton of people. And the timing couldn’t have been better because that was in our run up to hosting Super Bowl XXXVIII in 2004. I was able to serve in a number of key planning capacities there with the Super Bowl Host Committee because of some relationships I had and was able to learn a tremendous amount about what it takes to organize an event of that magnitude...even though I probably wasn’t really ready to do all those things at that point. But it was trial by fire. We were also in the process of bidding on the Final Four at that time. I was able to help craft that bid that we organized in 2003, which was ultimately for the Final Four that we held here a few years ago in 2011 and I was grateful that I was in a position to play a role in Houston being able to do some special things. Like you said, it was really a foundational element for me here in Houston, to begin working with the CVB and to start to know who a lot of the players were in town.

Q | Tell us about your role with Houston First.

A | The business unit I lead really breaks down into four areas—event development and management, revenue generation, sponsorship marketing and management of Houston First’s relationships with the Final Four Local Organizing Committee and the Super Bowl LI Host Committee. A couple of those are groundbreaking initiatives at either Houston First or the GHCVB. A few years ago, at the CVB, our leadership implemented an organizational initiative to start and create annual events here for the City of Houston that would highlight our business demographics, and also have an economic impact for the city each and every year. It’s a very European model of conventions and conferences—most of theirs are done that way—where they are owned by the destination. Here in the United States, it is much different than that. Traditionally, destinations pursue events to be held in their cities. We pioneered this approach among U.S. cities to pursue this in any meaningful way. These are like managing a portfolio of startup business ventures, which is challenging, but also a great opportunity. When there was the alignment between Houston First and the GHCVB, those initiatives merged and

turned into an even larger portfolio, and an additional initiative was developed of commercializing Houston First assets that we would manage from the standpoint of developing additional revenue streams that can help us market and promote the city with even greater resources. At the same time, it sort of put on steroids this event development effort that we had started to be able to organize these events and create flagship events for Houston.

Part of what makes that especially gratifying for me is the number of extremely talented, very busy, very important professionals that come together and volunteer their time to help make these go. Folks like Dr. Robbins providing his leadership to chair Medical World Americas, Bill, your time and many of the other professionals who not only help us do Medical World Americas but also the Space Commerce Conference and Expo—including Dr. Ellen Ochoa and Johnson Space Center. I don’t even want to try to name all of the names, because I would certainly be leaving people out. But suffice it to say, to be able to sit in the room with people who are expert in these fields and listen and be merely a facilitator to help bring the right people in the room to make these things happen, to me, is one of the great privileges that I have with my job.

Q | In addition to Medical World Americas, we have Super Bowl LI coming our way. That was a tremendous feat. Tell us a bit about what it takes for our city to win a Super Bowl.

A | Because the Super Bowl is one of only a few global brands for sporting events, it is incredibly sought after here in the United States. So you have FIFA World Cup, you have the Olympics, you have Formula One Racing and then you have the NFL Super Bowl. Those are really the crème de la crème of the most recognized sporting event brands in the world. So we had last hosted in 2004—we hosted Super Bowl XXXVIII—and the community did a tremendous job of execution. Bob McNair was able to negotiate Houston hosting as part of his acquisition of the Texans back in the early 2000s, and the community did a wonderful job when it was our turn to shine and play host.

Now, I think we assumed we would get it back sooner than we did, but it’s very, very competitive from the NFL cities to host it, and with good reason. The economic impact, depending on where you are at, the study is somewhere around \$500 million. The impact of the exposure is truly immeasurable. If you think about it, on Feb. 6, 2017, the Monday following

the Super Bowl, Houston will be on the cover of every newspaper in America. Or with digital, it will lead almost every headline online that day. As a community, you just cannot buy that for any amount of money.

So we had bid a few times to try to get the game back. It is a very, very competitive process. The NFL then changed a bit of the process to make it more organized going forward. Our bid was for two years—either Super Bowl L in 2016 or Super Bowl LI in 2017—and we were competing against Miami and San Francisco. So three cities bidding and only two games to award. And what happens in the process is you name a chair of the bid committee, and fortunately we were able to have Ric Campo chair that for the community. He did just a fabulous job in leading the bid. We hired Sallie Sargent to come in and help pull the pieces together, because there’s actually a book of bid specs from the NFL that you have to fulfill every single specification in the bid book, and then detail whatever enhancements you want to put in, because you have to convince 32 billionaires to vote for your city.

We were fortunate that Mr. McNair felt strongly about the game being here, and he and Jamey Rootes did a great job supporting on the team side, and Ric and the Bid Committee did a magnificent job of pulling the bid together in a way that was meaningful to the NFL owners. I think it hit on the things that the NFL was looking for, by way of thematically looking at the NFL’s next 50 years, the enhancements that the community put in, and the commitment from Houston on what the ownership and the media would experience for Super Bowl LI. And then ultimately, in May 2013, the owners voted for Houston to host, which was a tremendously exciting day.

Q | Any final thoughts?

A | I think, I sort of mentioned it before, but you can only do great things when you can marshal the people and the resources and the talent together to be able to do them, and I think that’s a key part of my job and what we do. We are also fortunate to have tremendous leaders who volunteer their time to take on challenges that sometimes seem insurmountable. And I think that’s one of the takeaways, one of the things that enables our job to be done, is that kind of commitment from around the community. ■

For the full interview, visit TMCNews.org

Shadowing for Solutions

Follow the fellows of TMC Biodesign—from the operating room to the emergency department—as they look to identify persistent problem areas impeding patient care

BY ALEX ORLANDO

In the emergency department at Harris Health System's Ben Taub General Hospital, the shuffle of hurried footsteps and the squeak of stretchers whistling past reverberate through the halls. Punctuated by the sharp, irregular beeping of all types of monitoring equipment and the hum of urgent conversation, a symphony of controlled chaos is conducted. At the center of it all, Dave Morris scribbles diligently in his notebook. Occasionally flattening himself against the wall to avoid a collision, he surveys the scene with the mindset of a hyper-vigilant reporter.

"We're really looking for any kind of inefficiencies, redundancies or rote tasks being performed," said Morris, a digital health fellow in the inaugural class of TMC Biodesign, the Texas Medical Center's one-year innovation fellowship that brings together talented, multidisciplinary individuals to create digital health solutions and new medical devices. "If you stop someone and say, 'Hey, why did you do that?'

“ [Physicians] aren't trained to push back against [our training] and ask, 'Why do I have to do it this way?' That's the skillset that these biodesign fellows are trying to cultivate. It'll be interesting to see what they come up with. ”

— WILLIAM “BILLY” E. COHN, M.D.

Director of the Center for Technology and Innovation at Texas Heart Institute

you can find all kinds of interesting things about that process. Through our questioning, we really dig in and try to get medical professionals to tell a story about why they did something a certain way.”

Several blocks away at Texas Heart Institute, medical device fellows act as silent sentinels in the cardiovascular surgery operating room. As anesthesiologists, nurses and surgeons maneuver their instruments in tandem, the fellows keep a keen eye on the proceedings, trying to distill potential problem areas from a visually tangled tapestry of tubes, wires, organs and veins. In every operation, from coronary bypasses to

valve replacements and left ventricular assist device (LVAD) implantations, that guiding question is the same: “Why did they do that—and is there any way that they can do it better?”

“We're really trying to understand how these procedures are performed, what steps the practitioners take and how we can identify anything that stands out as inefficient or clunky from an engineering standpoint,” said Jessica Traver, a TMC Biodesign medical device fellow. “We see the surgery differently than the people who do it every day, so we look to see if the process seems hindered by any obstacles, or if it takes substantial time and effort to get it right.”

Traver and Morris—and their teammates in the medical device and digital health tracks, respectively—are currently in the “identify” stage of the biodesign process, an established methodology for streamlining innovation cultivated by Paul G. Yock, M.D., at Stanford University. The first part of the program's curriculum, the “identify” stage involves the fellows going through an immersive clinical shadowing experience, during which they closely monitor patients and providers in distinct clinical settings. Afterward, they use those initial observations to

catalogue unmet needs that might benefit from the creation of a new medical device or digital health technology. This stage is followed by two more: “invent” and “implement.”

For the four members of TMC Biodesign's digital health team, the emergency department at Ben Taub Hospital—a bustling, Level I trauma center that cares for more than 100,000 emergency patients each year—was ripe for disruption.

“A lot of our emergency departments across the country are afflicted with the problem of having too many people in the waiting room and triaging patients to appropriate care areas,” said Farzad Soleimani, M.D., assistant professor of emergency medicine at Baylor College of Medicine and co-associate director of TMC Biodesign. “They're also seeing problems with transitions of care. There's a certain disconnect in the emergency room—you see a snapshot of a patient, unfortunately, at the moment when they're the sickest. One of the themes that's emerging is how to provide the necessary infrastructure, tools and IT insights to allow the health care providers to get a better sense of that patient's journey through the medical system.”

While the digital health fellows have been keeping pace with the frenetic atmosphere of the ER, the medical device team has become embedded in the world of cardiovascular medicine. From the operating room and the clinic to the electrophysiology suite, they've gracefully accepted their roles as informational sponges, piecing together the intricate patchwork of cardiovascular health from as many angles as possible.



Farzad Soleimani, M.D., co-associate director of TMC Biodesign and assistant professor of emergency medicine at Baylor College of Medicine, confers with digital health fellow Dave Morris.

8 FELLOWS

were selected out of

510 APPLICATIONS

the acceptance rate was

1.6%

MEET THE FELLOWS OF TMC BIODESIGN



SHAWN DIMANTHA

Digital Health Fellow

Shawn Dimantha is a digital health entrepreneur leveraging a robust background in venture capital, entrepreneurship, data science, market research, biopharmaceutical commercialization and management consulting. Most recently, Shawn was at the health care venture capital firm Radius Ventures, where he focused on sourcing investments and supporting health care technology and services portfolio companies.



DAVID KIM

Digital Health Fellow

David Kim, M.D., is a tech entrepreneur and neuroradiologist focused on developing next generation digital health care software applications. He is a former mergers and acquisitions investment banker at Credit Suisse First Boston, strategy consultant, and founder of a National Science Foundation-funded artificial intelligence startup.



DAVE MORRIS

Digital Health Fellow

Dave Morris is a software developer with expertise in web development, mobile application development, software architecture, business intelligence and user interface design across a variety of platforms and languages. Dave has spent the past eight years working as a technology consultant at Pariveda Solutions' Houston office.



JASON PETERSON

Digital Health Fellow

Jason Peterson matches his passion for health care with a strong background in policy, finance, market analysis and an understanding of the medical device and health IT marketplace. Most recently, Jason was a health care equity research associate at Oppenheimer & Co., where he analyzed various health care industries and recommended investments.



YASHAR GANJEH

Medical Device Fellow

Yashar Ganjeh, Ph.D., brings over 10 years of experience in product design and manufacturing to the medical device Biodesign team. Yashar did his Ph.D. research at the Nanoscale Transport Laboratory at the University of Michigan, where he designed, manufactured and tested new scientific instruments to study thermal physics.



XAVIER GARCIA-ROJAS

Medical Device Fellow

Xavier Garcia-Rojas, M.D., Ph.D., is an abdominal radiologist and physician-scientist interested in medical device development and technology commercialization. Xavier's professional and research interests include minimally invasive tumor therapies, the use of focused ultrasound energy for tissue ablation and targeted drug delivery, and the design and commercialization of new medical technologies.



NICOLE MOSKOWITZ

Medical Device Fellow

Nicole Moskowitz leverages a firm foundation in biomedical engineering and product development. She brings proven success in hardware and software development, including skills in MATLAB programming and graphical user interface development, 3-D modeling, experimental design, and signal processing from her various project, research and leadership positions.



JESSICA TRAVER

Medical Device Fellow

Jessica Traver blends expertise and passion in product development and design with a strong technical background in mechanical engineering. She has participated in and has led a wide variety of research projects, ranging from sports injuries and concussion prevention to customizable prosthetics and exoskeletons.

“If you look at cardiovascular devices, in the past decade the number of new technologies and techniques that have been introduced is mind boggling,” said William “Billy” E. Cohn, M.D., director of the Center for Technology and Innovation at Texas Heart Institute, as well as director of the department of surgery incubator at Baylor College of Medicine. “Some of the techniques we use might prompt someone to say, ‘Wow, that’s awfully barbaric.’ And upon reflection, they’re right—some of the stuff that we used in the operating room is fairly low-tech, such as using a needle and thread to sew things together, but that’s been the genesis for most of the major innovations in cardiovascular surgery in the past decade.”

In addition to their shadowing experiences throughout the Texas Medical Center, the fellows have been participating in a robust educational curriculum that exposes them to guest lecturers, while solidifying the biodesign methodology itself.

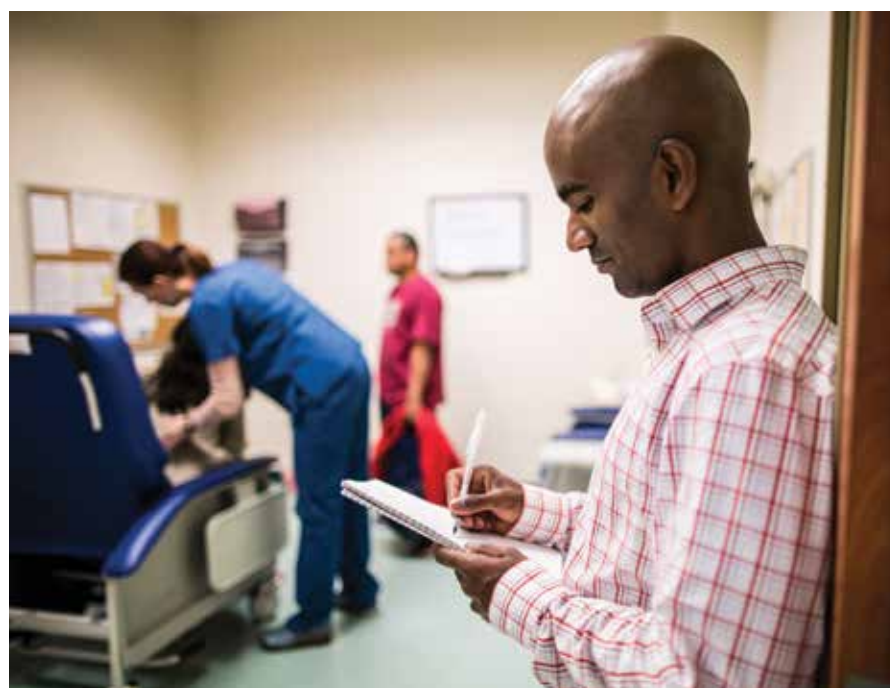
“Through our questioning, we really dig in and try to get medical professionals to tell a story about why they did something a certain way.”

— DAVE MORRIS
TMC Biodesign Digital Health Fellow

75%
of the program
APPLICANTS
came from
OUTSIDE TEXAS

“What we’re trying to do on the education side is teach them the methodology for observation and needs identification,” said Eric S. Richardson, Ph.D., co-associate director of TMC Biodesign and a lecturer at Rice University. “It’s about teaching them how to not just observe, but how to look, specifically, for unmet needs. How do you act as a social scientist as well as an engineer? We want them to shut down the engineering side of their brain and think more about pain points, processes and flow. Those are the elements that will lead to interesting design projects.”

As the eight fellows look down the road at the next chapters of their



biodesign journey—the “invent” stage, where they’ll prototype multiple devices and technologies simultaneously, and finally “implement,” where they focus on development strategy and market integration—their aspirations for the program itself are beginning to coalesce.

“I think developing a startup is a very ideal outcome, but I don’t think that should be the only outcome,” said Yashar Ganjeh, Ph.D., a TMC Biodesign fellow focused on medical devices. “I think going through the biodesign process, networking with advisors and

mentors, and all of the entrepreneurs that are present throughout the weekly events, are the most important components of this program. Going through the product development process is way more important than actually making a company. For me, success is measured in what I learn throughout the experience and all of the resources provided here.”

“The idea of cultivating that skillset and learning to look through those lenses of viewing every step, device, procedure and diagnostic process as an opportunity for innovation and improvement is a completely different way of looking at the world,” added Cohn, an avid supporter of TMC Biodesign since its inception. “For health care professionals, we look at what’s been given to us, memorize the procedure and carry on. That series of prescriptive steps is something that you learn and master—we aren’t trained to push back against that and ask, ‘Why do I have to do it this way?’ That’s the skillset that these biodesign fellows are trying to cultivate. It’ll be interesting to see what they come up with.” ■



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NEEDS
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Getting Un-Lost in Translation

Texas Medical Center institutions are overcoming language barriers to help international patients navigate health care in the United States

BY SHANLEY CHIEN



Pediatric interpreter Maria Elena Sacio interprets in Spanish as nurse Hanna Stelly explains Jose Miguel's IVs to his parents.

Houston is known for many things: barbecue, oil and gas, the Johnson Space Center, ZZ Top, Beyoncé—the list goes on. But another point of pride with many Houstonians is the city's diversity. Houston has been ranked as one of the most ethnically diverse cities in the U.S. in numerous studies, with foreign-born residents making up 28 percent of the population and more than 90 languages spoken throughout the area. On top of that, the Houston Convention and Visitors Bureau estimated over 800,000 foreign travelers visited Houston in 2013 and the Texas Medical Center saw 14,622 international patient visits last year, according to the TMC

International Affairs Advisory Council.

As a result of the rich cultural diversity in Houston, overcoming language barriers is a common challenge in the health care industry, and focusing on just the diagnostic and treatment process can easily eclipse the intimate human element of the medical experience. The stress of dealing with health issues, coupled with the anxiety of coming to a foreign country, can be an emotionally overwhelming experience for many, especially the patients and family members.

For Miguel Avila and wife Carina Coronel, bringing their nine-year-old son, Jose Miguel, from Venezuela to The University of Texas MD Anderson

Children's Cancer Hospital five months ago meant dealing with a foreign language on top of their child's leukemia diagnosis.

"At first, there was that shock of a new language. In Venezuela, we don't speak a lot of English," Avila said, through Spanish pediatric interpreter Maria Elena Sacio. "Just getting onto the airplane, everything was in English. Right from the beginning, it's very different. And when we got here, I can only say 'hi,' 'bye,' 'up,' 'down.' That's it.

"One thing we're very thankful for at MD Anderson is that there's always either a physician available or someone to translate," Avila said, adding that it's

“At first, there was that shock of a new language. In Venezuela, we don't speak a lot of English. Just getting onto the airplane, everything was in English. Right from the beginning, it's very different.”

CARINA CORONEL

Patient Jose Miguel's Mother, through Translator Maria Elena Sacio

important for them to have some sort of interpretation available.

Sacio, who is part of MD Anderson's Language Assistance team, which works closely with the institution's International Center, began working with Avila and Coronel upon arrival, helping them communicate more easily with the doctors and nurses who treat their son. The team employs 30 staff interpreters, who specialize in seven languages, and appoints them to assist non-English speaking patients—both international and domestic—with translating clinical documents and communicating with doctors on an as-needed basis.

"The language assistance department at MD Anderson has a highly qualified team of medical interpreters and translators who strive to provide caring and compassionate language services to our patients and providers," said Cesar Palacio, director of language assistance at MD Anderson. "At the same time, we work hard on continuously improving the quality of our services and operational efficiencies."

MD Anderson has long been committed to assisting patients from first contact through their treatment journey to returning home, and is equipped with technological solutions to minimize the difficulties of dealing with a language barrier. In the event an in-person interpreter is unavailable or if the hospital is unable to locate someone who is fluent in a particular language, there are various alternatives to assist with the communication between doctors and foreign patients. For instance, a dedicated phone line is available 24/7 in 95 different languages, and the hospital recently added iPads that connect directly to an interpreter via Skype on every hospital floor.

In similar fashion, Houston Methodist Hospital manages the language barrier by bridging the cultural gap between international patients and health care providers.

“The needs of the global patients are very different in that our health care environment in the U.S. is very complicated and it’s very scary,” said Summer Dajani, vice president of global patient services and business development at Houston Methodist Hospital, which serves patients from over 95 countries, including the Latin American, Middle Eastern, and northern African regions.

International patients are assigned to a liaison who matches them up with physicians and maps out their medical itineraries, detailing their accommodations, scheduled appointments, treatment plans and expectations to help them navigate the U.S. health care system. But the liaisons don’t only help them plan; Dajani said they “become like family to the patients,” serving as trusted companions and interpreters to communicate in English and the patients’ native languages throughout the entire process—from doctor visits to lab work, imaging appointments to surgery preparation, pharmacy visits to prayer, and so on.

“We call them liaisons, but they truly are like case managers. They manage everything, not just the service only,” Dajani said. “They’re very knowledgeable in what they do and, by default, they create very special relationships with the hospital’s systems to be able to expedite their patients.”

Both MD Anderson’s International Center and Houston Methodist Hospital’s Global Health Care Services embody the “global” aspect of each organization. Liaisons and interpreters have extensive international training—whether that be in Morocco, Saudi Arabia or Mexico—and they apply their diverse backgrounds to understand cultural nuances that underlie communication, lending itself well to better patient care.

However, hospitals are not the only places that deal with language barriers. In the same vein as MD Anderson’s dedicated phone line, Ronald McDonald House Houston uses CyraCom, a translating company that donates its service, to make 50 different languages available to house managers and families. RMH Houston provides a “home away from home” for families with sick children and regularly sees a diverse group of people with limited English-speaking skills.

Mariyah Pavlyukh, who has volunteered at RMH Houston for the past two years, said she understands the hardship and emotional stress of dealing with a communication disconnect in a new country.

“I remember when I first came to the United States [15 years ago], I wanted more than anything else just to hear my native language and be able to speak it,” said Pavlyukh, who also helps interpret and translate documents for families from Ukraine, Russia and Kazakhstan. “I can so much attest to that and empathize with them because I was in their shoes, except I did not have to battle these devastating illnesses. In addition, fighting these illnesses can add so much stress and burden, so I was very pleased to know that they found comfort in knowing there was someone in the house who speaks their language and can help translate.”

Pavlyukh said it’s “been a big blessing” to work with global patients and families. “To endure all that, you have to have such strength, so I ask myself, ‘Do I really help them, or do they help me?’” she said. “When I see them smiling and staying so positive, it really inspires me so much.” ■



“The needs of the global patients are very different in that our health care environment in the U.S. is very complicated and it’s very scary.”

SUMMER DAJANI

Vice President of Global Patient Services and Business Development at Houston Methodist Hospital



Top right: Houston Methodist Global Health Care Services liaison Ghada Darwich, center, and medical referral specialist Fady Ali, right, consult with a patient about her case. Lower right: Medical referral specialist Mohammed Nassif, left, and liaison for the Arabic team Faten Ashrawi, right, discuss a patient’s case.

ACCOLADES



PHILIPPA ASHFORD, MSN, R.N., nurse manager of the assessment and stabilization unit at The Menninger Clinic, has been named a 2015 Outstanding Nurse by the Texas Nurses Association – District 9. Ashford has practiced nursing for more than 30 years and has devoted the majority of her career to caring for patients who have a mental illness. Among her many accomplishments that this award recognizes, Ashford co-developed an algorithm that mitigates medical deterioration due to the severity of alcohol withdrawal.



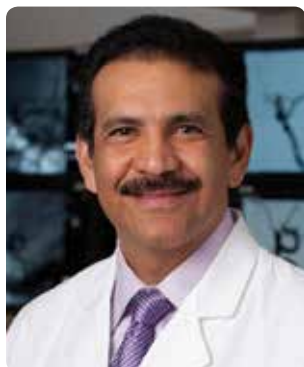
LYDIA KAVIRAKI, PH.D., Noah Harding Professor of Computer Science and a professor of bioengineering at Rice University, has been named the winner of the 2015 Award for Technical Leadership by the Anita Borg Institute. The institute, which promotes the progress of women in technology, will present the award to Kaviraki at the 2015 Grace Hopper Celebration of Women in Computing. The award recognizes women who demonstrate leadership through contributions and achievements that increase the impact of women on technology.



SUSAN BLANEY, M.D., deputy director of Texas Children's Cancer and Hematology Centers, was recently elected to serve as chair of the Cancer Prevention & Research Institute of Texas (CPRIT) Advisory Committee on Childhood Cancers (ACCC). Blaney, who has been a member of the committee for three years, will serve a two-year term. The ACCC advises CPRIT's Oversight Committee on issues surrounding childhood cancer. In collaboration with pediatric oncologists throughout Texas, the committee provides information and opportunities for innovative research as it relates to the treatment, care, prevention and control of childhood cancer.



JANE MAHONEY, PH.D., R.N., received the 2015 American Psychiatric Nursing Association's Award for Excellence in Research. The award recognizes Mahoney for successfully implementing evidence-based nursing practices at Menninger based on translational research into practice. Her role as coordinator of Menninger's nurse internship program was also touted, highlighting leadership in educating nurses in the field of mental health. As the principal investigator for Menninger's nursing research, her research interests include patient safety, clinical outcomes and understanding the illness experience of patients.



ORLANDO DIAZ, M.D., interventional neuroradiologist at Houston Methodist Hospital, was named president of the South American Society of Interventional Neuroradiology (SILAN). SILAN promotes the growth of neuroradiology by training health professionals from around the world in advanced neuroradiology techniques and practices. Diaz, who directs the Interventional Neuroradiology Fellowship Program at Houston Methodist Hospital, will be in charge of running SILAN's international meetings during his two-year term as president.



MICHAEL J. MCBRIDE, FACHE, was named president of suburban hospitals by CHI St. Luke's Health (CHI St. Luke's), effective Nov. 9, 2015. He will focus on CHI St. Luke's six suburban hospitals (The Woodlands, Lakeside, Sugar Land, Patients Medical Center, The Vintage, Springwoods Village) by working with each hospital's leadership team to advance strategic initiatives and improve operational efficiencies. With more than 25 years of health care administration experience, McBride joins CHI St. Luke's from SCL Health, where he served as president and CEO of St. Mary's Hospital and Regional Medical Center in Grand Junction, Colorado.



GERARD E. FRANCISCO, M.D., chairman of physical medicine and rehabilitation at The University of Texas Health Science Center at Houston (UTHealth) Medical School and chief medical officer at TIRR Memorial Hermann, received the American Academy of Physical Medicine and Rehabilitation Distinguished Member Award for his invaluable service to the specialty of physical medicine and rehabilitation. Francisco, who managed the rehabilitative care of wounded U.S. Rep. Gabrielle Giffords, is collaborating with Rice University and University of Houston researchers to develop a brain-robot device designed to help stroke survivors who can no longer manipulate their arms and wrists.



LORIE SHOEMAKER, DHA, R.N., MSN, was named by CHI St. Luke's Health as its chief nursing officer. In this role, she will work directly with the three CHI markets included in Texas: CHI St. Luke's Health in Houston, CHI St. Luke's Health Memorial in Lufkin and Livingston, and St. Joseph Health System in Bryan/College Station. Shoemaker joins CHI from Palomar Health, where for more than 28 years she fulfilled progressive management positions—most recently promoted to System Vice President of Palomar Medical Center from her role as Chief Nursing Executive for the system, which she held for 10 years.



BY

ARTHUR GARSON JR., M.D., MPH

Director of the Texas Medical Center Health Policy Institute

OBAMACARE: A PRIMER FOR UPCOMING DEBATES >> PART 3: QUALITY OF CARE

Now that the Supreme Court has decided and the election season begins to boil, it seems likely that the Affordable Care Act (ACA), known as “Obamacare,” will be one of the pervasive issues.

It is worthwhile to have an understanding of what Obamacare was supposed to do, what it has done to date, the problems remaining and what could be done now—“the fix.” Health policy issues can be organized by four pillars: insurance coverage, access, quality and cost. In the last issue of TMC Pulse, I discussed access. Today is quality of care. The final pillar, cost, will be discussed next month.

The Problem

America has great health care, right? Wrong. In fact, America is 51st in the world in life expectancy and 34th in the world in infant mortality. A lot goes into health care indices, and, in fact, it has been estimated that in terms of what determines life expectancy, 40 percent is lifestyle, 30 percent is genetics, 20 percent is public health and only 10 percent is medical care—which is what doctors, nurses, hospitals and patients do. But our medical care is great, right? Wrong. We are the worst out of 18 developed countries in avoidable deaths such as appendicitis, measles, colon cancer and deaths due to heart attacks. Fortunately, we are the best at something: breast cancer mortality. How can this be? Certainly, part of the problem with our medical care and our health care is our lack of health insurance. But even for those with health insurance, we have problems with care coordination, appropriate access to care in terms of the time it takes to see a physician and, for many, high costs that they cannot meet for health care and prescription drugs.

The public assumes we have great quality. In a recent Texas Medical Center Nielsen poll of 1,000 Texans, not one ranked quality as the most important among access, coverage, cost and quality.

What Obamacare Did

The Affordable Care Act created the Center for Medicare and Medicaid Innovation (CMMI), which is to address improvements in both cost and quality. In fact, it has supported important innovations, but unfortunately, few have led to major changes in health care quality. Equally unfortunately, the entire budget for CMMI is \$10 billion over five years, which is 0.2 percent of the total Medicare and Medicaid budgets.

The Continuing Problem

Given the fact that Obamacare really did not address health care quality, the same problems that existed before the Affordable Care Act continue. As we have stated previously, current incentives for quality improvement are not aligned. Physicians who are paid fee-for-service continue to provide more services, at least some of which are unnecessary. Hospitals are incented to admit patients by paying for each admission. The federal agency responsible for improving the quality of care to the public is the Agency for Healthcare Research and Quality. This agency reports quality indicators every year and has shown a one to three percent improvement in these quality indicators per year over the last 10 years. Of note, the cost of health care has increased more than double the rate of improvement in quality.

The Fix

1. | Patients must insist on quality. This means that they must understand quality indicators. The University of Virginia has created a questionnaire called Tailored Educational Approaches for Consumer Health (TEACH) that will place health

care consumers into one of eight groups and then customize the health information in a way desired by the individual consumer. TEACH questionnaires must be used so that the half of Americans with an IQ of less than 100 are as informed as the other half. If this were possible, it might be more reasonable to approach health care as a market. Until the information asymmetry is addressed, it is folly to consider health care a market. With better information, it will be reasonable to provide the sorts of incentives that could lead to behavior change and seriously address lifestyle issues such as obesity, smoking and drug abuse. Perhaps a good starting point would be in efforts to reduce patient-induced demand by, for example, having patients pay more for non-emergency visits to emergency departments. Patient understanding will be increasingly important as patients are required to spend more of their own money on medical care.

2. | Promote integrated health systems. My discussion in past issues of Pulse about the value of integrated health systems is important to improvement in quality: new payment mechanisms will improve quality as more patients are likely to get what they need and not more; electronic health records will provide the kind of decision support for how best to help a patient in increasingly important ways over the next five years. Recently, the concept of the Accountable Care Organization has been proposed. This is a specific type of integrated system, and others will emerge. These systems must be promoted by the federal government and by states.

3. | Texas has the largest percentage of uninsured in the country. It is true that 1.4 million of these people are undocumented, but at least 3.6 million are not. We must find ways to improve access to care for the uninsured. This is not only a matter of doing the right thing, it is also a matter of addressing the economic ripple effect caused by paying for the uninsured, including premium rate and tax increases, and ultimately our ability to be competitive in attracting business to Texas. There are a number of proposals that have been made that could use federal dollars to pay for the vast majority of the uninsured. They should be considered carefully, and if they are not acceptable, alternatives must be developed with the same goal in mind.

What does this mean to you? The most important issue a patient or potential patient can tackle is to pay attention to quality. Insist that your practitioner explain what medical problems you have and ask if other practitioners would approach your problem the same way. This is a better question to ask than, “What would you do?” since the practitioner is not you, and you have preferences that may differ from those of the practitioner. On a broader scale, ask your practitioner what you can do to improve access to care for all citizens. It is worth repeating that being uninsured is lethal to them, costly to everyone through increased insurance premiums and higher taxes, and makes Texas less competitive. ■

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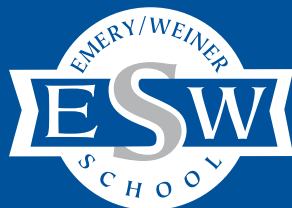


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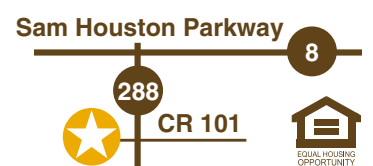
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Chemotherapy and the Cure of Acute
Lymphoblastic Leukemia in Children**
Wednesday, 12:00 p.m. – 1:00 p.m.
University of Texas Medical School
at Houston – MSB B.605
6431 Fannin St.
thomas.cole@uth.tmc.edu
713-500-5970

**Physician-Patient Communication:
Time for a Checkup**
Wednesday, 6:00 p.m. – 7:30 p.m.
Rice University
McNair Hall
6100 Main St.
dhn3@rice.edu
713-348-3056

5 **A Session on Pediatric Innovation**
Thursday, 5:00 p.m. – 8:00 p.m.
Trevisio Restaurant
6550 Bertner Ave., 6th Floor
jgilford@tmc.edu
713-791-8804

5-6 **Third Biennial Advances in Cancer
Survivorship Practice: A Conference
for Health Care Professionals**
Thursday – Friday, 8:00 a.m.
MD Anderson Cancer Center
1155 Pressler St.
Duncan Building, Floor 8, Rooms 1-8
egagneau@mdanderson.org
713-745-0080

7 **Houston Methodist DeBakey Heart
and Vascular Center Adult Congenital
Heart Symposium**
Saturday, 1:00 p.m. – 8:00 p.m.
Houston Methodist Research Institute
6670 Bertner Ave.
dicet@houstonmethodist.org
713-441-6507

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Saturday, 11:00 a.m. – 4:00 p.m.
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jgilford@tmc.edu
713-791-8804

7-8 **The Utilization of MRI in LDR and
HDR Prostate Brachytherapy: From
Diagnostics to Response Assessment**
Saturday – Sunday, 7:00 a.m. – 12:15 p.m.
MD Anderson Cancer Center
1155 Pressler St.
Duncan Building, Floor 8
festelle@mdanderson.org
713-792-0083

10 **Seizures and Epilepsy in Children,
Advances in Genetics and Treatment**
Tuesday, 7:00 p.m. – 8:15 p.m.
Children’s Museum of Houston
1500 Binz St.
geneticevenings@bcm.edu
832-822-4280

12 **Nursing Celebration 2015**
Thursday, 5:00 p.m. – 9:00 p.m.
Westin Galleria Houston Hotel
5060 West Alabama St.
tna9@tnadistrict9.com
713-523-3619

13-14 **2015 Oncologic Emergency Medicine
Conference**
Friday – Saturday, 7:30 a.m. – 12:15 p.m.
MD Anderson Cancer Center
Onstead Auditorium
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MANAGER
PHARMACY



Preanka Desai

ADMINISTRATIVE SUPERVISOR
RADIOLOGY



Shannon Holland

ASSISTANT CLINICAL DIRECTOR
NURSING



Melissa Murrah

DIRECTOR
RISK MANAGEMENT



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