

# TMC | PULSE

NEWS OF THE TEXAS MEDICAL CENTER — VOL. 5 / NO. 2 — MARCH 2018

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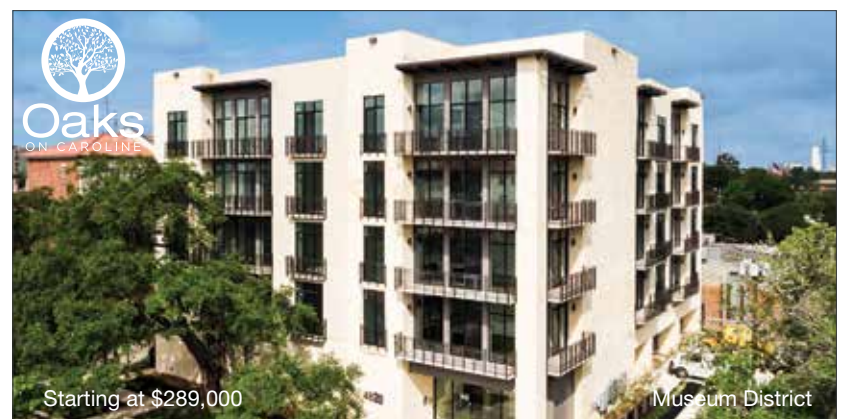


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**WILLIAM F. McKEON**  
*President and Chief Executive Officer,  
Texas Medical Center*

When I look out my office window, I see the towering structures that make up the Texas Medical Center and take pride in the world-class research and clinical care that happen every day inside their walls. But I have to admit: I've been disappointed by what happens outside those walls.

Despite welcoming more than 100,000 workers here every day, our campus is lacking in vibrant, urban, outdoor activity. For too long, we've lacked the green space, bicycling infrastructure, and retail and entertainment offerings that are the hallmarks of any lively city space. That's about to change.

But first, how'd we get here? In 1885, builders constructed the world's first skyscraper in Chicago, and cities around the world followed suit, rapidly densifying major metropolitan areas. It's an efficient model, but it comes at a cost: the concrete jungles gradually restricted light and air. Here in the medical center, we've become a victim of our own success. The collection of facilities we built to serve patients has crowded out much of our green space, an essential component of a healthy, vibrant, sustainable community.

Today, cities across the globe have recognized this oversight and are taking bold steps to create accessible green spaces that contribute to the health and well-being of the public. Houston's philanthropic community and civic leaders are making strides to reclaim and energize our city with an increasing number of parks and a connected bayou greenway system. We're doing our part, by bringing more green space to our TMC campus and shifting our infrastructure emphasis from cars to people.

This year the TMC will launch its bike-share program and install 14 bike stations throughout the campus, in addition to financing three bike-share stations in the Museum District. When we shared our plans with our colleagues across the street at Rice University, they doubled the number of stations they planned for their campus.

But what we're most excited about is completion of the initial design phase of TMC<sup>3</sup>, our new city center which will be a true "live, work, and play" environment. It marks the first time in our history of more than 70 years that we're developing one campus to support multiple institutions.

The TMC<sup>3</sup> campus—dubbed the "double helix" for its design that evokes the shape of a DNA molecule—stretches nearly 30 acres and will serve as the nerve-center for collaboration and interaction. The base floor of the campus consists of three plazas filled with trees and vegetation, as well as restaurants, retail, commercial and entertainment space to support the community throughout the day and evenings.

The second floor contains shared laboratories so that member institutions can work together with each other and alongside industry experts.

The top of the double helix will be a park that rises 60 feet from the ground and features regular programming. We'll provide the community with amenities such as walking and running trails, bocce courts, yoga, tai chi, chef gardens, reading hammocks, children's education gardens, and more. The "helix" park will also bridge across to the bayou greenway system which will provide access points to the entire Houston community.

The campus and park will be beautiful, but that's not the reason we're building them. These amenities are essential if we want to attract and retain the millennials who will go on to become the intellectual cornerstone of our medical city.

We are just beginning our journey to transform the Texas Medical Center, and we will continue to work closely with our partners. I'm confident that before long, I'll see something totally different when I gaze out my window across our bustling medical city.

A handwritten signature in black ink that reads "William F. McKeon".

## TMC | PULSE

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# Say Hello to the SaberCats

*Houston's new rugby team is partnering with Baylor College of Medicine*

BY SHANLEY PIERCE

Houston has long been a sports city, with devoted fans cheering on the Astros, Texans, Rockets and Dynamo. This year, the city welcomes the SaberCats—a new rugby team—whose health will be managed by a medical team at Baylor College of Medicine.

One of the most popular sports worldwide, rugby has gained a strong fan base in the United States. Major League Rugby, a new entity, launched seven teams this year and will kick off its inaugural season in April.

"In life, it's very rare to have the opportunity to formulate something

from the ground up, so I feel very privileged, as we all do here at the SaberCats, to be part of the launching of Major League Rugby," said Houston SaberCats coach Justin Fitzpatrick, who went from professional rugby star to coach after three prolapsed discs in his neck ended his career in 2010. "It's very exciting times."

Those unfamiliar with rugby might be surprised by the high level of contact and collision involved in a sport with minimal protective gear. Rugby players do not wear pads or helmets like football players.

Baylor College of Medicine will

oversee all aspects of player safety and health, including concussions, which have become a prominent concern in high-impact sports.

"[Rugby's] track record is actually better than in football just because of the way they tackle," said SaberCats lead team physician Jason Ahuero, M.D., assistant professor of orthopedic surgery at Baylor College of Medicine. "They don't hit with their

head. You can do that once and then you learn your lesson because you'll get hurt pretty severely."

According to Ahuero, who has worked with rugby teams for the past four years, many rugby concussions are due to accidental knee-to-head or head-to-head contact. By contrast, Ahuero said, football players "use their helmets as a battering ram and come in full speed to hit somebody."

Although rugby players come into full contact with each other throughout the game, the rate of concussions is generally considered to be lower than football due to strict reinforcement of proper tackling techniques. A 2008 study published by the *British Journal of Sports Medicine* found that collegiate rugby game injury rates were lower than rates reported by the National Collegiate Athletic Association Injury Surveillance System for American football.

"As with any collision sport, there's an element of risk," Fitzpatrick said. "We feel that with our partners at Baylor, the screening work and the medical expertise that we've got, we limit as much of that as possible. You can never protect a player on the pitch completely any more than you can anybody in life. With a collision sport, pretty much any sort of injury can happen. However, we pride ourselves on the way that we prepare our athletes, the way that they're conditioned for the game and the way that they're

looked after before, during and after by our Baylor medical team."

In addition to concussions, other common rugby injuries

include shoulder dislocations, clavicle fractures and knee injuries. Neck injuries can also occur during the scrum, a formation used to restart play in which both teams lock arms, pack tightly together and push against each other with



SaberCats lead team physician Jason Ahuero, M.D., assistant professor of orthopedic surgery at Baylor College of Medicine, left, with SaberCats coach Justin Fitzpatrick.

Credit: Judy Teasdale

heads down in an effort to gain possession of the ball.

"There's thousands of pounds of pressure on their necks," Ahuero said. "If that scrum collapses, the guy in the center, what they call the 'hooker,' is particularly vulnerable to a neck injury. That's a unique rugby injury that can be catastrophic."

But Ahuero and his team will keep a watchful eye on the SaberCats players. Unlike football, in which physicians and athletic trainers stand along the sidelines, rugby physicians "stay on the ball," following the play up and down the field and even running onto the field to tend to an athlete while the match is underway.

"It's not like football where a whistle blows at the end of a play," Ahuero said. "[Rugby] stops occasionally if there's a penalty, but really, the play is much more continuous."

The SaberCats, who play their home games at the Sugar Land Skeeters' Constellation Field, are currently playing pre-season exhibition games.

Fitzpatrick said the team is determined to make Houston fall in love with rugby.

"I think it's going to be a really exciting day out," Fitzpatrick said. "Whether people are familiar with rugby or not, once they've seen it up close and seen some of the athletes we've got, they're going to have a good time." ■



Credit: Photo by Leslie Plaza Johnson/Icon Sportswire via AP Images

Houston SaberCats lock Justin Allen wins the ball during a match against the Capital Selects in February at Constellation Field in Sugar Land, Texas.

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# Correcting a Gene that Causes Blindness

*The FDA approves gene therapy to treat patients with inherited vision loss*

BY ALEXANDRA BECKER

Sixteen-year-old Amanda Martin lay on the operating table under full anesthesia, her body covered in sterile cloths one shade shy of peacock blue. Only her right eye was exposed, the word “yes” scribbled in marker above it—visual verification that it was, indeed, the correct eye. Numbing drops pooled over her cornea and spider-like surgical equipment held her lid wide open in preparation for surgery.

Within minutes, Christina Y. Weng, M.D., assistant professor of ophthalmology-vitreoretinal diseases and surgery at Baylor College of Medicine’s Cullen Eye Institute, would begin a pars plana vitrectomy (PPV) to remove the vitreous gel from Martin’s eye. For Martin, the procedure would create space for an artificial lens, but a PPV is also part of the groundbreaking genetic therapy recently approved by the U.S. Food and Drug Administration to treat a rare form of blindness—the country’s first directly administered gene therapy approved to target a disease caused by mutations in a specific gene.

## ‘A remarkably beautiful ballet’

Pharmaceutical company Spark Therapeutics got the green light in December to market Luxturna, a



*Christina Y. Weng, M.D., assistant professor of ophthalmology-vitreoretinal diseases and surgery at Baylor College of Medicine’s Cullen Eye Institute, scrubs in for Amanda Martin’s surgery.*

drug injected directly under the retina to correct a mutation on a gene called RPE65. One of the most common conditions associated with the mutation is Leber congenital amaurosis, or LCA, which is characterized by severe visual impairment at birth. Until now, no treatment options were available.

“It’s a very exciting time for the retina world right now,” Weng said. “It’s taken giants in the research and clinical worlds to really consolidate their efforts toward developing something that

could finally treat disorders that we once thought were untreatable.”

The mechanics of vision are multifaceted. Light meets the cornea, travels through the pupil, the lens, and finally penetrates the gelatinous material in the center of the eye, called the vitreous, to reach the retina—a membrane lining the back of the eye that converts light information into electrical signals for the brain to understand.

“There is a lot of complexity in how the retina does that—there are lots of moving pieces,” said Timothy Stout, M.D., Ph.D., director of the Cullen Eye Institute. “Typically, these are proteins that are expressed in the retina that allow this conversion from light information to electrical information to take place. There are hundreds of thousands of moving parts that do that. It’s a remarkably beautiful ballet.”

But as with everything in the human body, one small mutation in the genes that code these protein parts can wreak havoc on the whole system. How that translates to vision impairment depends on the gene affected.

“You can have some mutations that are in certain moving parts that are so absolutely deleterious that you can’t see light from day one of life,” Stout said. “Then, on the other end of the spectrum, there are problems with proteins in your retina that may be so mild that maybe when you’re 70 or 80 you may have some issues, but other than that, you’re good.”

What typically happens in Stout’s clinic is that parents notice a problem—their child fails a school screening or can’t see well when the lights go out or has trouble distinguishing colors. That information, he said, helps guide him toward which moving parts might be problematic, though some form of gene sequencing is required to make a conclusive diagnosis.

“I might find out that the reason Johnny can’t see well is because he’s got a mutation in both copies of gene ‘X,’” Stout said. “So what we’ve started to say is, ‘If Johnny’s not seeing because he doesn’t have a normal copy of the gene ‘X’ and can’t make protein ‘X,’ what if we put a normal copy of that gene into a virus and then put the virus near the cells that are affected, infect those cells with the virus, and then have that normal protein be expressed?’”

And that’s exactly what they did for RPE65.

*(continued)*



*Amanda Martin waits in pre-op with her mother, Patricia Martin. Facing page: Weng performs a pars plana vitrectomy on Amanda Martin’s eye to make room for an artificial lens.*





## Fourth-grade graduation

Leber congenital amaurosis is so rare it is thought to affect only a few thousand individuals in the U.S. But it presented a perfect opportunity for gene therapy trials because it is caused by a relatively straightforward mutation. The disease typically manifests when both parents carry and pass on a copy of the mutation, an inheritance pattern known as autosomal recessive.

“What we’ve done is we’ve put a normal copy of the human RPE65 gene into an adeno-associated virus, which infects the right cells inside the eye but doesn’t cause disease,” explained Stout, who worked on the research trials that led to the development of Luxturna. “Viruses have evolved over millions of years to be gene delivery systems. They’re really, really good at doing that. Adeno-associated viruses are expressed for a long time—we believe that they express forever—which is something we want for an inherited disease. The virus goes into the cell, infects the cell, then it’s over.”

That, in a nutshell, is gene therapy. Once the corrective copy of the defective gene infects the abnormal cells, genetic information should start processing correctly. In the case of RPE65, that means making a once-missing protein.

The surgical procedure to inject the drug requires special technical skill. Currently, the

therapy can only be administered at eight U.S. sites; Baylor College of Medicine is one of those sites and four surgeons there are trained to perform the surgery.

The first step is the pars plana vitrectomy. Surgeons make micro-incisions through the wall of the eye and use a special hollow needle housing a blade whirring 2,500 times a minute to remove the jelly-like vitreous, which is too viscous to simply suction. Once the PPV has cleared a path to the retina, an even smaller needle—about the circumference of four strands of brunette hair—is used to inject a small blister of Luxturna just underneath the retina. That injection is loaded with the adeno-associated virus carrying the corrected RPE65 gene.

Clinical trials showed extremely promising results, although Stout and his fellow researchers did observe that the treatment worked best in younger patients, perhaps because their cells carrying the RPE65 gene had not yet reached a point of no return.

“You probably can’t treat dead cells, right? Once you’re dead, it’s kind of game over,” Stout said. “But what we don’t know is where in the disease process those cells become fated to never be repaired. So we’re expecting that there’s going to be a spectrum of susceptibility for gene therapy for different diseases and different genes.”

Still, many of his patients were able to see for the first time in their lives, and the trial’s success has paved the way for the development of genetic therapy treatments for other inherited diseases.

“One of the young girls I treated in Oregon did so well that she invited me to her fourth-grade graduation,” Stout said. “She was in the Washington State School for the Blind and she invited me to graduation because they were kicking her out. The school threw a big party—they’d never been able to kick anybody out before.”

Baylor is currently working on additional trials involving other genetic mutations that cause ocular disease, but will continue the research and surgeries that are literally shedding new light on their patients’ lives.

For Martin, who had the lenses in both eyes removed at age two due to complications from congenital cataracts, that means not wearing glasses for the first time ever. To celebrate, her aunt took her to buy a pair of Ray-Ban aviators, but she’s most excited about going back to Disney World. A roller coaster junkie, Martin can now ditch the special goggles with lenses as thick as magnifying glasses.

“I’m excited, because I’ll actually be able to see the rides this time,” she said. ■

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# Poison Control

*Local experts tout the importance of poison centers*

BY BRITNI N. RILEY

Any chemical can be poisonous, depending upon how much is eaten, inhaled, injected or absorbed. That means many items in our own homes—including cleaning products, pesticides and cosmetics—have the potential to harm us.

Poisoning is the leading cause of death by injury in the United States, killing more than 52,000 people per year—surpassing motor vehicle-related deaths, according to the National Center for Health Statistics. Since 1962, the third week of March has been recognized as National Poison Prevention Week to raise awareness of the dangers of unintentional poisoning.

“It’s an opportunity to teach the public what they really need to know about keeping themselves and keeping their kids safe,” said Spencer Greene, M.D., director of medical toxicology and assistant professor of emergency medicine and pediatrics at Baylor College of Medicine. “We are in a time where there is a lot of misinformation out there.”

Greene is the only board-certified medical toxicologist in the city of Houston. He regularly serves Ben Taub Hospital and Texas Children’s Hospital, and responds to calls from many other hospitals in the area. In addition, he is a consulting toxicologist for the Southeast Texas Poison Center.

“Poison centers exist to save lives and to save money,” Greene said. “God forbid, there is an exposure—if there are any life-threatening emergencies, call 911, but if it is not, you should call the poison center. The phones are answered by specialists in poison information—typically nurses and pharmacists. They can field these phone calls to tell you what is dangerous and what is not.”

Established in 1959, the



*The Southeast Texas Poison Center receives between 120 and 140 calls per day. The majority of calls are related to children consuming household cleaning products, according to Jean Cleary, PharmD, director of the center.*

Southeast Texas Poison Center (SETPC), housed at The University of Texas Medical Branch at Galveston, was the first poison center in the state. Today, there are six poison centers across Texas, but calls from Houston are directed to SETPC.

“We get calls for overdoses, suicides, doubling-up on medications, drinking or ingesting an unknown substance,” said Jean Cleary, PharmD, director of the center. “Most of the cases we see are accidental poisonings with kids. Our best customers are under the age of two. ... The majority of our calls are for kids eating household cleaning products.”

To avoid exposing children to dangerous substances, Greene recommends thinking like a kid.

“Get on the floor,” Greene said. “What is accessible and attractive to a kid? If you open up the lower cabinets ... are there cleaning agents or pesticides that may be enticing to a child?”

Other common accidents involve ingesting mystery fluids

from mislabeled or unlabeled containers.

“Always, always, always keep things in the original packaging,” Greene said. “About once a week I get a call about someone drinking a cleaning agent out of a Gatorade bottle to make it more portable. Do you know what happens when you put cleaning products in a Gatorade bottle? Someone will think it is okay to drink.”

Cleary said that active listening is key when taking a call at the center.

“I’ve been here for 30 years and you never really get used to it,” she said. “You need to know what kind of questions to ask and how to ask those questions and you need to be an extremely good listener. What they are telling you and what they are really saying may not be the same thing.”

Once Cleary and her team of 12 at the call center have accurately identified what a caller has ingested, they can offer help.

“With the exception of severe overdoses and highly toxic exposures—those are sent to the

emergency room—we can answer callers’ questions immediately, give general first aid,” Cleary said. “About 90 percent of cases just require drinking fluid and monitoring for symptoms.”

Greene helps the center with particularly difficult cases, including snake bites.

“You learn by doing this how to ask the right questions so you can get an idea of what is going on without actually seeing the patient—what they smell, feel and hear,” Greene said.

For patients who need to be seen in person, a variety of treatment options are available depending on the toxin to which they have been exposed.

“We generally do blood tests on patients unless we know what they took and we know that it is not toxic. On rare occasions, we give patients charcoal,” Greene said.

Activated charcoal, an emergency decontaminant, helps absorb toxins in the gastrointestinal tract.

“We do not pump stomachs anymore,” Greene added. “We have known since the late ’80s that it doesn’t work and that it is harmful.”

Greene and Cleary urge people who believe they have been exposed to toxins to call the poison center.

“People need to know to call the poison center when there is an exposure that is not an immediate life threat,” Greene said. “A lot of times the patient will be able to stay home—the call center can do things to help the patient and we can prevent them from doing things that are more harmful.” ■

## **Southeast Texas Poison Center**

The toll-free number for the call center, which is open 24 hours a day, seven days a week, is 800-222-1222.

**JOEL COWLEY** is slightly allergic to livestock. Nonetheless, since he first showed two lambs at a Wyoming fair as a young boy, Cowley has built a professional life around livestock and rodeo. Since 2013, he has served as president and CEO of the Houston Livestock Show and Rodeo, a nonprofit with an annual commitment of more than \$26 million to scholarships, research and other educational programs.

**Q** | *You first visited the Houston Livestock Show and Rodeo in 1985. What was it like back then and how has it changed?*

**A** | When you grow up showing livestock, you know about the Houston Livestock Show and Rodeo. In 1985, I was a junior college student and I came here as a member of the junior college livestock judging team. At that time, the contest was still held in the Astrodome—which I had only seen on TV and in *The Bad News Bears*. I can remember pulling up on the grounds that morning—it was me and my teammates and coach in a station wagon. It was a really, really foggy morning and we drove up and, all of a sudden, the Astrodome just appeared. It was huge. I went down on the floor and judged the contest, but I had never seen a building like that.

Since then, the Houston Livestock Show and Rodeo has grown and moved into the NRG Center. This building is incredible. It is 1.4 million square feet; the main exhibit hall is 700,000 square feet.

**Q** | *How did you get into livestock judging?*

**A** | I have agriculture on both sides of my family and rodeo on my father's side. The summer after my father died, I was 8 years old. My grandfather bought me two market lambs to show—Fred and Barney, named after characters from *The Flintstones*. My mother helped me raise and show them at the fair. They placed about fourth and fifth and

they both qualified for the auction. I cried when I sold them, but when that check arrived a few months later, I thought, 'I might want to do this again.' Unfortunately, that December my mother passed away of breast cancer. At that point, my paternal grandparents brought my two brothers and me to Fort Collins, Colorado. My grandfather knew how valuable and how powerful these 4H programs were. He knew how much I loved showing those first two lambs while I was still in Wyoming, so he leased property just outside of town in Fort Collins so that my two brothers and I could raise sheep and show market lambs.

Believe it or not, I am slightly allergic to livestock. I'm allergic to the dander of the animals. When I was in high school, I would shear sheep and I would definitely notice my allergies when I was doing that. But through showing lambs, I got enough courage to go out for wool judging, which is where you actually evaluate which fleece is the best. After that, I finally went out for livestock judging—sheep, swine and cattle. You apply logic and critical thinking to rank the animals and then you have to stand in front of an expert and explain why you ranked the four steers or four pigs the way you did, which for me was absolutely terrifying. But I actually ended up being pretty good at it, and eventually became a member of a national champion 4H livestock judging team and then that led to a scholarship to junior college. Half of my

undergraduate education was paid for through scholarship.

**Q** | *How did you make your way back to Houston?*

**A** | I graduated from Colorado State University with a bachelor's in Animal Science, was on the collegiate livestock judging team there and then came to Texas A&M University to work on a master's in Animal Science. When I came to Texas A&M and coached the livestock judging team, I would bring the judging team to the Houston Livestock Show and Rodeo—starting in 1988 through 1995. When my oldest daughter was born and I thought maybe I should get a job, Michigan State University was hiring. I went to work full-time as an extension beef cattle specialist, helping producers evaluate their herds from a production and a financial standpoint. I started working on a Ph.D., but I completed an MBA at Michigan State University. From there, I went to Certified Angus Beef in Ohio—the largest branded beef program in the world.

I still came back to every Houston Livestock Show and Rodeo when I was at Michigan State and Certified Angus Beef to help out judging contests or judge junior commercial steers. I have been to every Houston Livestock Show and Rodeo since 1988, either as a judging team coach, a judge, to help out with the judging team contests, or as an employee. In December of 2004, Mr. Leroy Shafer, who just recently

retired from the Houston rodeo after 41 years, gave me a call. I flew down the day after Christmas in 2004 and agreed to come to work as the executive director of agricultural exhibits and competitions.

**Q** | *What's it like to watch a younger generation compete at the rodeo, and what do you hope these young people will gain from the experience?*

**A** | I feel a very close connection with the show because of my background and seeing all of these young people who come here to compete—and knowing that was me. I am a product of the very programs and support that are offered by the Houston Livestock Show and Rodeo. This year, we have over 19,000 4H and FFA [Future Farmers of America] entries in a number







of contests and competitions. I know the value that provided to me growing up, by building confidence, speaking skills and critical thinking skills.

**Q | The rodeo is known for its devoted volunteers. How did that tradition start and how do volunteers support the mission of the rodeo?**

**A |** In 1936, the Houston Fat Stock Show added the downtown parade, the souvenir program, the rodeo, the horse show and formal volunteer committees. There were certainly volunteers before that, but they were now formally added to sell tickets and exhibitor space and that's really where it took off. The volunteer base grew as additional elements were added to the show. When I came here in 2005, we had

**“ I am a product of the very programs and support that are offered by the Houston Livestock Show and Rodeo. ”**

16,000 volunteers. Now we have over 33,000. Those volunteers serve different purposes. Each committee has its own mission that relates to the overall success of the show. Some are working committees that assist the general public—directing traffic, scanning tickets, driving trams and golf carts. We have outreach committees that make individuals aware of all the great things the show does, but they also raise money for scholarships. You have these committees pulling together that support every single area of the show.

**Q | Many people come to the Houston Livestock Show and Rodeo for fun and entertainment, but the rodeo also educates visitors about agriculture. Why is that so important?**

**A |** We are passionate about that because we cannot take agriculture for granted. Unfortunately, we kind of do. Hurricane Harvey was a great example of that. When you went in a store two days before the storm or four days after and you couldn't find a loaf of bread or a gallon of milk—what if it were like that all the time?

But we just take for granted that food is going to be there and I think the reason we take it for granted is that Americans spend less than 10 percent of their disposable income on food—that's the lowest percentage of any nation in the world. And that's because our agriculture production system is so efficient. But when you take a look at the 7.6 billion people on the planet today and projections having that at 9.8 billion by the year 2050, and you factor in that we are going to have to produce food with the same amount of land, that's going to take technology. I know that scares some people, but there is a way to sustainably and wholesomely feed the planet using technology.

*(continued)*

“Last fall, we purchased the remainder of the AstroWorld property, so now we own 102 acres across 610.”

**Q** | *Has the Houston Livestock Show and Rodeo always been such a star-studded event?*

**A** | The first show that was held in 1932, according to most records, sounded like it was a cattle show. And there were impromptu rodeos. I came across a newspaper clipping for an ad featuring a vaudeville performer—singing and dancing and what not. The organizers knew early on what value entertainment had. It wasn't until 1942 that we really hit upon our current format of combining a star entertainer with a



rodeo. That year we had Gene Autry, 'The Singing Cowboy.' He was the very first star entertainer to perform here. That was significant for two reasons. One, he was an incredible star at that time ... so he sold out his shows. But he was also a rodeo stock contractor, so he gave the show,

which was really struggling financially at that time, a really good deal on the rodeo stock—the bulls and the horses that are used in the rodeo. I pulled the financials, and the gross revenue between 1941 and 1942 grew 40 percent because of Gene Autry. From that point on, we have paired rodeo with star entertainers to draw people in and sell tickets.

**Q** | *In light of mass shootings around the world, how is the rodeo preparing for a mass trauma event and what would you say to those who may be anxious to attend?*

**A** | We work very closely with the police department and the Harris County Sheriff's Office and the Houston FBI, as well. They are constantly monitoring any threat assessments for any direct threats, and then we consult with them on our grounds security. We have made some enhancements this year compared to last year, primarily in the area of fencing around our carnival to make sure that it is more secure. We have added personnel, we have added lighting. The sheriff's office provides "eye in the sky," where officers are elevated to do surveillance.

In the world that we live in today, we all have to think about safety before we attend. But on the other side of that, we still need to live our

lives and go out and enjoy interacting within our communities. It is really a balance, I think. When it gets right down to it, we are in the experience business. If we provide everyone who comes to our grounds with a great experience, we will be successful—whether they are a livestock exhibitor, a rodeo contestant, a star entertainer or the general public. But you can't have a great experience unless you feel safe and secure in the environment, so that is an absolute priority for us.

**Q** | *What will the Houston Livestock Show and Rodeo look like 20 or 30 years from now?*

**A** | Because of the tremendous support both from the volunteer standpoint and the community at large, the show just has tremendous potential. We tend to outgrow facilities as soon as they are completed because of the demand for the product and for the experience. That's our biggest challenge. We are constantly looking at ways to add space and program space more effectively for those who come to the grounds. Last fall, we purchased the remainder of the AstroWorld property, so now we own 102 acres across 610. We did that because, looking forward, we want to grow our impact for those who come to our grounds to be entertained and to be exposed to agriculture. But we also want to grow our educational impact. There is additional need out there for educational support. If we are able to grow our event while still providing a great experience, we will be able to grow our support of education and agriculture. ■

*Joel Cowley was interviewed by Pulse writer Britni N. Riley. This interview was edited for clarity and length.*

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# CURATED

The Intersection of ARTS and MEDICINE

By Britni N. Riley

Music has the power to soothe, invigorate and inspire us, no matter where we come from or how we interpret the world.

Making and listening to music may seem second nature to us, but is there something in our DNA that compels us to tap, hum and sing, or did this urge blossom over time as part of our cultural evolution? *BioRhythm: Music and the Body*, a traveling exhibit now on display at The Health Museum, explores these questions.

"I think music is something that everybody plugs into, yet it is kind of an abstraction," said Conor Courtney, project lead for *BioRhythm* at Science Gallery Dublin, where the exhibit was curated. "It's a weird habit and it's kind of unique among animals to have that appreciation."

Throughout the interactive exhibit, *BioRhythm* encourages viewers to experience sound on many different levels.

"We are trying to get people to pause for a second and take a step back and think about why they like the music they like or how music has happened," Courtney said. "Why does a minor chord sound sad? Why are major chords celebratory? Is that just cultural? Is there an objective physiological or biological reason for that?"

Just down the street from The Health Museum, Jennifer Townsend, program manager of music therapy at the Center for Performing Arts Medicine at Houston Methodist Hospital, works on harnessing the body's natural inclination toward music to help heal her patients. Townsend and her team also

worked with the museum on the *BioRhythm* exhibit.

"The primary rhythm in the human body is that constant lub-dub of our hearts," Townsend said. "The heartbeat is a sign of our circulatory system working. The blood pumps through the lungs where it is oxygenated and the oxygenated blood travels to the brain, which controls the central nervous system and tells the body how and when to move."

"Chains of Love," one of the exhibit's attractions, explores the relationship between sound and touch. When visitors grasp two or more of the large chains suspended from the ceiling, the chains release different sounds.

"The galvanic skin response is associated with our emotional state, and fluctuations in that response are associated with being stressed or having an emotional response to something," Courtney said.

Visitors of all ages are challenged to think about how they send and receive sounds—even personal sounds that are subtle and involuntary.

"When we are excited or nervous, our respiration and

circulation rates increase, and when we are quiet or sleeping, they slow down," Townsend said. "This is an automatic response of our bodies."

From the "Optofonica Capsule," which converts sound into vibrations that pulse throughout the body, to a sonic bed that wraps users in an intimate soundscape, the exhibit allows visitors to see and feel their emotional response to music.

"We are basically jelly. We are full of liquid, so our bodies are sensitive to vibration—you can feel it," Courtney said. "We often get preoccupied with our ears being the most sensitive apparatus, whereas this is exploring the idea that our bodies are also sensitive in different ways." ■

.....  
*BioRhythm: Music and the Body*, a compilation of works by several artists, started in Dublin and has traveled around the world. The exhibit will be on display at The Health Museum, 1515 Hermann Drive, through July 31. Information: 713-521-1515 or [thehealthmuseum.org](http://thehealthmuseum.org)  
.....

Conor Courtney, project lead for *BioRhythm* at Science Gallery Dublin, uses listening devices that put the wearer into an altered sonic reality.



# #MeToo

## *How Texas Medical Center institutions are responding to a cultural revolution*

BY ALEXANDRA BECKER

Since the rise of the #MeToo movement, Mikiba W. Morehead has seen an increase in the number of Baylor College of Medicine students and employees sharing survivor stories about sexual abuse and harassment.

"We have seen a small uptick in individuals who want to share their stories and their experiences from multiple years ago, and they are attributing it directly to the #MeToo movement," said Morehead, the Title IX and student disability coordinator at Baylor's Office of Institutional Diversity, Inclusion & Equity. "We know from research and as practitioners that the more you talk about a topic, then the more it's demystified, the less taboo it seems, the more people become comfortable with speaking up."

Last October, when major figures in entertainment, news and politics started to be exposed as sexual predators who used their positions of power to victimize women and men, #MeToo became a rallying cry on social media—with survivors posting personal and intimate anecdotes alongside the hashtag. The movement gave voice to topics usually consigned to whispers.

In the Texas Medical Center, many institutions recognize the importance of this movement for empowering employees, students and patients.

Catherine Horn, Ph.D., executive director of the Institute for Educational Policy Research and Evaluation at the University of Houston, said the #MeToo movement is rekindling important conversations on campuses and in workplaces.

"It's giving us permission to speak up and speak out and really engage in thoughtful dialogue and conversation," said Horn, a professor and chair of the Educational Leadership and Policy Studies department. "One of the things that we've been talking a lot about at the University of Houston is ... how a culture of diverse dialogue is incredibly important to us and to our mission, and this is a moment that both reminds us of that and essentially emboldens us to continue down that path."

It's an important distinction—that this dialogue is not a result of the movement but rather fortified by it. Baylor and the University of Houston already have robust policies in place regarding sexual harassment and discrimination—be it sex-based, gender-based, identity-based or orientation-based.

"Are we making any changes in response to the #MeToo movement? The answer is 'No,'" Morehead said. "We've got solid things in place that we've been building and framing our conversation around for the past three years ... We are making sure that we continue to have open

conversations about it, that it's not a one-time snippet that's at our student orientation, but that it's constant in our culture and our landscape from your first day as a new student or a new employee, all the way to the time that you leave our community or retire."

Similarly, Rice University has spent the past few years bulking up programs for survivors of sexual abuse and harassment.

"While we always are alert to ways to improve our programs on preventing sexual misconduct, we have not made any policy changes in reaction to the #MeToo movement," B.J. Almond, senior director of news and media relations at Rice, said in a statement. "Over the past five years or so, Rice has implemented and enhanced programs intended to prevent sexual misconduct and provide support and services to survivors. We do plan to review our policy and procedures on sexual harassment this semester as part of our updates of university policies."

Memorial Hermann offers a 24/7 hotline and a centralized employee relations department that gives employees a way to anonymously and confidentially report any concerns or policy violations.

"We recognize that it takes constant vigilance and proactive measures to prevent harassment, discrimination and misconduct, which is why we consistently review our existing policies and procedures while proactively discussing new ideas for safeguards that allow us to continue fulfilling our promise to protect patients, employees and physicians," Lori Knowles, senior vice president and chief human resources officer at Memorial Hermann, said in a statement.

Rola El-Serag, M.D., medical director of the Women Veterans Health Program at the Michael E. DeBakey Veterans Affairs Medical Center Houston, has been working for years to cultivate a culture at the VA that provides privacy, dignity and security to women veterans. The #MeToo movement is timely, she said.

"We have a very unique, very sensitive population of women veterans here, so we have to ensure that they come and receive health care in a place that they feel secure and safe," El-Serag said. "Our female veterans already have a high rate of sexual trauma—23 percent is what's reported, which is probably a gross underestimate—and so it's challenging because we're talking about a culture change. And culture change is extremely hard



anywhere, especially in the military.”

El-Serag stressed the importance of a safe environment, citing studies that suggest harassment is associated with an increase in the number of no-shows to medical appointments.

“One event—it could be the smallest of things that could happen to them—could keep a woman veteran away from the VA for another year or two for critical care they really need,” she said. “We know that the implications of this harassment are very significant in terms of their overall wellness and their health care.”

The VA built a Women’s Health Center on its Houston campus and El-Serag is also heading up an “End Harassment” campaign, which focuses on accountability and training for all individuals associated with the VA—veterans, law enforcement, employees and staff.

“In the past, some of our complaints have come from frustration from patients that staff hasn’t acted on their behalf,” El-Serag said. “I think, ultimately, the most effective technique is accountability. If we follow through when that type of behavior is witnessed, then we stand up and let our veterans or whoever is doing the harassing know that this is not going to be tolerated. I think that is going to be the best way to spread the word and make people aware that this is not acceptable. Women veterans need to feel like we understand that this is a threat to them and that we are doing something about it.”

Baylor’s training curriculum also addresses what to do as a bystander who witnesses harassment.

“You’ve got a social responsibility when it comes to speaking up or providing resources, much like if someone had a heart attack on the sidewalk and you’re CPR certified. We’d want you to act,” Morehead said.

Special training around sexual harassment helps propel an organization’s ethos forward, El-Serag said.

“It’s not intuitive how to deal with these situations,” she said. “A lot of people will stay out of these situations just because they really simply don’t know what to do.”

El-Serag hopes her “End Harassment” campaign will help female veterans feel more comfortable reporting instances of sexual harassment and abuse.

“What we hope is that as a result of this campaign, we actually see an increase in the number of complaints at first, not a decrease. It may seem like, ‘Wow, why is this happening more and more?’ But the truth is that it’s always been happening, we just need to create an atmosphere where women

feel safe to come forward about it.”

In the Texas Medical Center and beyond, giving survivors a voice and a safe space to use it helps ensure lasting change.

“Even as we’re reminded that the kinds of issues that underlie the #MeToo movement are unfortunately ever-present, and are in many ways challenges of multiple generations,” Horn said, “we also understand that we have these opportunities to change the narrative and change the direction.” ■

“You’ve got a social responsibility when it comes to speaking up or providing resources, much like if someone had a heart attack on the sidewalk and you’re CPR certified. We’d want you to act.”

— MIKIBA W. MOREHEAD

*Title IX and student disability coordinator at  
Baylor’s Office of Institutional Diversity, Inclusion & Equity*



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# Fighting Epilepsy with Fat

*Today's popular ketogenic diet is actually a century-old treatment plan for epileptic children*

BY ALEXANDRA BECKER



*Sarah Ybarra sits with her daughter, Kristin, during an appointment at Texas Children's Hospital.*

The plastic container held cooked carrots and un-melted butter chopped into pieces. The ratio of fat and carbohydrates had to be perfect. For more than seven years, everything Kristin Ybarra has put into her mouth has been measured and monitored to ensure her body burned fat instead of glucose for energy. Since starting the diet, her hours-long, nonconvulsive seizures, which rendered her blank and unresponsive, had completely disappeared.

Originally developed in the early 1900s as a treatment for epilepsy, the ketogenic diet is high in fat and low in carbohydrates, which forces the liver to convert fat into fatty acids and ketone bodies as a replacement for glucose as its primary energy source. Typically, carbohydrates are converted into glucose, which is the body's

preferred form of energy, but in their absence, ketone bodies will do. This produces a state known as ketosis, and for reasons not completely understood, it leads to a reduction in seizures.

"Although the diet has been around for at least nine decades, and there has been a lot of research done, we still don't really know the exact mechanism for why the diet works for treating epilepsy," said Rebecca J. Schultz, Ph.D., RN, pediatric nurse practitioner at

Texas Children's Hospital Epilepsy Center. "In some way, we know that since it does have an effect on seizures, it alters the excitability of the nerve cells."

Some research suggests the ketogenic diet impacts potassium ion channels, which are cell membrane pathways that generate electrical signals in cells. Ketosis has also been shown to lower insulin levels and help train the body to become exceedingly efficient at burning fat. Add to that the absence

**“The portions are smaller because this diet is high in fat, so it's calorically dense. Fat has more calories per gram than carbohydrates, so although the meal looks small, it's the same number of calories and you get full.”**

— REBECCA J. SCHULTZ, PH.D., RN  
*Pediatric nurse practitioner at Texas Children's Hospital Epilepsy Center*

of carbohydrates—including all processed foods—and it's no wonder the diet has recently been touted by celebrities and social media influencers as a tool for dramatic weight loss. But using it to trim down is not without controversy, and Schultz emphasized the importance of medical supervision due to potentially harmful side effects.

"So many people come to me because they want off 'those poisonous medicines,' and to be on something they perceive as natural," Schultz said, referring to patients who want to replace their epilepsy medication with the diet exclusively. "One of my responses to them is, 'Wait a minute, think about this. What is natural about a high-fat diet? It can be harmful. You can die from this diet if it's not properly administered, or if you happen to have some underlying metabolic problem. When I talk about being high in fat for the strict ketogenic diet, we're talking 90 percent of the calories are coming from fat. It's a huge change in the way you're eating.'"

## Pressing the reset button

According to the Centers for Disease Control and Prevention, nearly 470,000 children in the U.S. have epilepsy. Approximately 70 percent of those patients can be managed with medication, said Dave Clarke, M.D., who recently joined Texas Children's Hospital as director of clinical epilepsy and pediatric neurology and developmental neuroscience. But the remaining 30 percent?

"We need everything in our arsenal," Clarke said.

One approach is the ketogenic diet.

"It has multiple benefits, independent of just treating seizures," Clarke said. "It sometimes helps



to improve mood, maybe because it decreases seizures. It may help sleep, and in some people, it may even help cognition a bit.”

For some types of epilepsy, the ketogenic diet is so effective that it becomes the primary treatment. Disorders of brain metabolism, including a genetic abnormality called GLUT1 deficiency syndrome and a neurodegenerative disorder called pyruvate dehydrogenase complex deficiency, respond especially well to the diet, Schultz explained.

“For those children, particularly the children with GLUT1 disorder, they can become seizure-free almost immediately once they’re placed on a ketogenic diet,” said Schultz, who recalled that one patient who was suffering from hundreds of seizures a day no longer experienced them after fewer than three days of the high-fat, low-carb regimen.

“The dramatic changes that you can see in those patients are quite remarkable,” Clarke added. “They may be severely impaired, unable to



*Rebecca J. Schultz, Ph.D., RN, pediatric nurse practitioner at Texas Children's Hospital Epilepsy Center, left, with the Ybarra family during a routine appointment.*

engage with parents or the outside world. But with that change in diet, many of these kids can interact appropriately and significantly alter their lives.”

Individuals with these types of epilepsies are encouraged to adhere to the restrictive diet throughout their lifetime; after all, they suffer from a genetic disorder that you can't outgrow. But that's not

necessarily the case for children with epilepsy caused by other biological errors, in which the standard of care is to follow the ketogenic diet for just two years.

“One reason we say that is, even though the diet has been around for 90 years or more, we still don't have any longitudinal data to tell us what the cardiovascular risks are,” Schultz said. “The thought is that two years

is a safe period of time to be on it, but beyond that we can't answer some of the long-term risks. Having said that, I have patients who have been on the diet for far more than two years because it's the most effective treatment for their seizures.”

Interestingly, for many patients, just two years on the diet can have lasting effects. Clarke described it as a “reset button” and explained that the diet sometimes helps stabilize the brain in a way that persists long after the reintroduction of glucose.

But patients like Kristin are the exception.

### **No falling, no thrashing**

Kristin was just 4 years old the first time her mother, Sarah Ybarra, noticed she was having a seizure. More than likely, Sarah said, it wasn't the first, but Kristin's seizures were not apparent. There was no falling to the floor, no thrashing—nothing like you see in the movies.

*(continued)*



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Dietitian Jillian Davis, left, with Schultz at Texas Children's Hospital.

Kristin was born with a congenital brain defect, so her mother was not unduly alarmed by her behavior. But one day, Kristin's occupational therapist suggested she might be experiencing something called "absence seizures."

"She would just check out. Her eyes would blink and blink, and then she'd come back," Sarah recalled.

She took Kristin to get an EEG at their local hospital in Dallas, where she was diagnosed with nonconvulsive status epilepticus, a condition

characterized by confusion or lack of responsiveness—as opposed to convulsions. According to the test, Kristin was having episodes 10 to 12 times a minute. Over time, the episodes grew longer, sometimes extending from six to eight hours.

"We didn't know what to do," Sarah said. "We tried different medications and nothing was making them stop."

Kristin's care was ultimately transferred to Texas Children's Hospital in Houston, where doctors suggested she try a strict ketogenic diet. Sarah agreed, and Kristin hasn't had a single nonconvulsive episode since.

Because of her congenital condition, though, Kristin still experiences other types of seizures, and Schultz and Clarke utilize all the tools in their arsenal, including medications and surgeries, to try to keep them at bay. Kristin is way past the two-year mark on the diet—come June, it will be eight—but her mother does not want to find out what might happen should she

come out of ketosis, and her physicians agree that, in her case, the benefits outweigh the risks.

"I had a mom friend who had a little boy who was on the ketogenic diet, and when he was in first grade, there was a party," Sarah recalled. "He had a cookie and ended up in the ICU."

### Peanut Butter Fat Bombs

Foods allowed on a ketogenic diet vary depending on the child and the ratio of fat and carbohydrates that works best for their condition, but some staples could include meat, eggs, butter, cheese, heavy whipping cream, oils, nuts, avocados, low-carb vegetables and small portions of some fruits. Kristin, who had to stop eating meat because it was growing increasingly difficult for her to chew, gets a large percentage of her calories and nutrients from a special formula through a feeding tube. She also eats two snacks a day that include a form of fat, such as butter, mayonnaise or heavy cream, and a small amount of carbohydrates like

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peas, carrots or green beans. Her favorite snack is strawberries with cream cheese.

"The portions are smaller because this diet is high in fat, so it's calorically dense," Schultz said. "Fat has more calories per gram than carbohydrates, so although the meal looks small, it's the same number of calories and you get full."

Maintaining ketosis is labor-intensive, and to be successful, everything consumed must be weighed and measured.

"You have to measure at a ratio to give her exactly what she needs, including fluids," Sarah explained. "Kristin is currently at a 2.5 ratio, so it's 2.5 times as much fat as everything else. If you don't eat everything in the bowl, you're not at that ratio anymore."

The diet's highly restrictive nature and lack of variety makes it difficult for patients and their families. It limits social opportunities, too. Kids on ketosis can't have even one sip of soda, much less Halloween candy or a celebratory ice cream cone.

"When we treat epilepsy, we don't just treat the child," Schultz explained. "There are a number of individuals that help to treat the child, and families have to be invested."

"It's our new normal," Sarah said. "It's our family, it's our life, and it's all she's known for so long. But initially, the biggest challenge was eating in front of her. You can't just come to dinner and sit there with your family and pile your plate with mashed potatoes and green beans. You can't just have pizza and you can't have birthday cake. You can't have all these things that are a part of a kid's life growing up. And when you have a twin sister and a brother who's 17 months older, that was a challenge."

Sarah said the diet was daunting at first, but ultimately became second nature.

"You have to prepare and think ahead," she said. "Figure out substitutions. You make some sugar-free Jell-O with heavy whipping cream

that's keto-approved. You take that extra step to make sure she doesn't feel left out."

Schultz and Clarke work with nutritionists to tailor each patient's diet as much as possible to minimize disruption to their lifestyles.

"It's important for kids to feel like part of the group and to be able to participate with their peers," Schultz said. "We tell parents, 'If you know that the classroom is having a party and they're going to have cupcakes, let us know, because we have recipes for ketogenic cupcakes and cheesecakes.'"

A popular favorite? Peanut Butter Fat Bombs.

"It's basically peanut butter with a lot of butter," Schultz said. "According to what my patients tell me, they make a wonderful, delicious treat."

Despite the diet's potential for treating epilepsy, families often find it too overwhelming, especially when kids are picky eaters. Sarah said that in some ways, it's easier to maintain the diet because Kristin is not a typical 14-year-old.

"She's not a teenager that's got to have it her way. If you're fully developmentally aware, that's going to be harder, because then you're aware of what you're not getting. Ultimately, families have to make the best decisions for themselves, but the diet is definitely worth a try."

As Sarah spoke, Kristin clutched her Elsa doll while she listened to music on her iPad. Her nails were painted a sparkly blue, another nod to *Frozen*, her favorite Disney movie.

"She's never going to be seizure-free; we know this," Sarah said. "Our goal is just to give her the best quality of life we can, and if that means we implement five different treatments, then we do." ■



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# Bracing for the Future

## SHRINERS - HOUSTON CLINICS AROUND THE STATE BRING MEDICAL CARE TO PATIENTS

BY SHANLEY PIERCE

On Dec. 8, 2017, Jesus Badillo Garcia and his mother, Patty Garcia, curled up in a 10-seat van parked outside a nondescript brick building off Interstate 2 in La Feria, Texas, a small town eight miles north of the Texas-Mexico border. It was 4 a.m. and a frigid 34 degrees. Jesus, along with other children who are missing limbs, waited patiently for the doctors from Houston to arrive. Though it was still pitch-dark outside, a thin blanket of snow began to coat the flat, brown Valley. It was the first time it had snowed in the area in nearly a decade.

Jesus and his mother had left their home in Mexico at 7 p.m. the evening before and headed to Monterrey, Nuevo León, where they caught a bus to the Pharr-Reynosa Bridge, some four hours away. After waiting three hours to get through immigration, they walked 15 minutes across the bridge to the U.S. side of the Rio Grande, carrying only their papers and something to drink. A white van, with “Shriners Hospital Children Transportation” emblazoned on the side, waited to take them and other families to the Rio Grande Valley Shriners Club of Al Amin in La Feria.

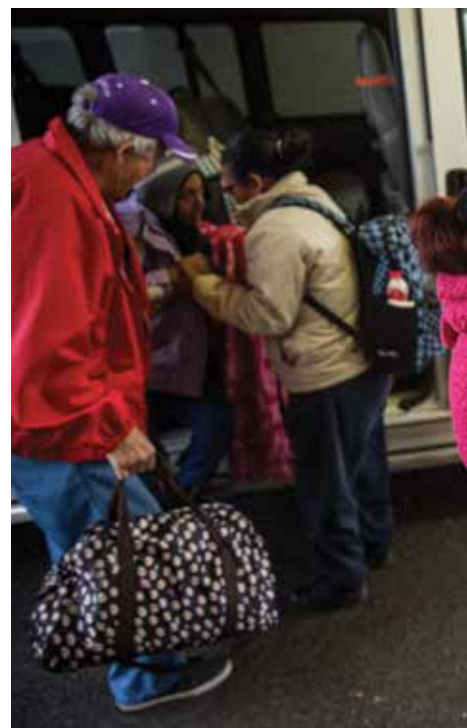
On any other day, the Shriners Club houses local meetings, bingo nights and small concerts for the community. But four times a year, the club transforms into a fully operational two-day outreach clinic that serves between 160 and 240 underserved and underprivileged children with limb deficiencies, club feet, hip dysplasia, cerebral palsy and other conditions that inhibit their motor abilities.

More than 30 doctors, nurses, social workers, physical and occupational therapists, radiology technicians and orthotic-prosthetic professionals from Shriners Hospitals for Children - Houston travel to La Feria to provide care at no cost to the families.

“Our goal is to take a child and help them function to the best of their ability,” said Lindsay P. Stephenson, M.D., a pediatric orthopedic surgeon at Shriners - Houston. “If that means that we can help them walk further—maybe they still walk with their walker or braces, but walk twice the distance and not be as tired—that’s life-changing.”

(continued)

**Top:** Jesus Badillo Garcia and his mother, Patty Garcia, pose outside the Rio Grande Valley Shriners Club in La Feria, Texas. **Bottom left:** Children and families are shuttled to and from La Feria in vans operated by Shriners volunteers. **Bottom middle:** A Shrine clown entertains a child. **Bottom right:** Devin Garcia tests out his newly-fitted prosthetic leg.















\* \* \*

In 1922, Shriners International, an offshoot fraternity of Freemasonry, established a network of hospitals across the country dedicated to treating children with orthopedic injuries, diseases and birth defects. The first hospital, located in Shreveport, Louisiana, was initially named the Shriners Hospital for Crippled Children. Since then, Shriners has expanded its scope to treat burns, spinal cord injury and cleft lip and palate.

But its mission remains beautifully simple: to treat any child up to age 18, regardless of race, religion or a family's ability to pay. No child is ever turned away.

"It's so refreshing that you can concentrate on the patient and their needs, rather than insurance status or anything else," said pediatric orthopedic surgeon Douglas Barnes, M.D., chief of staff at Shriners – Houston. "This is what makes it great to work here."

Each of the 22 Shriners Hospitals for Children across North America serves a designated area. Shriners – Houston treats patients from Texas and three northeastern states of Mexico: Tamaulipas, Coahuila and Nuevo León. Although patients south of the border are not American citizens, Shriners – Houston does not distinguish or discriminate when it comes to treatment. Whether they're from the U.S. or Mexico, patients receive the same level of care.

"We get to treat the patients the way they deserve to be treated without having to worry about ... all the governmental regulations and so forth," Barnes said. "If somebody needs something and it's medically necessary, we're going to get it. It doesn't matter if it comes out of our operational funds or whether it's then sourced from third-party peers. ... We're going to get whatever they need."

La Feria is the oldest of the four sites across the state where Shriners – Houston holds outreach clinics. The other clinics are held in Laredo, Amarillo and El Paso. Short of offering surgery, these clinics are equipped to take care of all the patients' needs.

The main hall of the 9,000-square-foot building in La Feria is sectioned into five different zones of organized chaos during the clinic: administration, where patient files and charts are managed; the clinic area, which is outfitted with examination tables; an imaging room for X-rays; a physical and occupational therapy zone; and an orthotic and prosthetic area for technicians to create casting molds for custom prosthetic limbs. A built-in workshop occupies an adjacent room, where technicians can make adjustments to orthotic and prosthetic devices right then and there.

Despite the snow outside, the La Feria clinic emanated warmth inside. Cartoon animal cut-outs and stickers adorned makeshift dividers set up throughout the building. Children scooted around the hall in their walkers and wheelchairs, navigating rows of metal folding chairs. The Shriners volunteers, dressed as clowns or sporting their trademark red fezzes, traipsed around the hall with the children and their families, offering food, drinks and holiday toys.

Many of the families had traveled six or eight hours to get to the clinic.

"Some of these children will come in with literally every article of clothing that they own on their body. They've traveled overnight. They're tired. They're hungry," Stephenson said. "You just appreciate the struggle that it must be to have a child with special needs."

*(continued)*



**Top:** Traci Phelps, an orthotist from the Hanger Clinic of Houston, makes adjustments to a prosthetic leg at the Shriners clinic in La Feria. **Bottom left:** Orthotist Dave Zaborowski cuts a cast off a child's leg at the clinic. **Bottom middle:** Markings indicate what adjustments need to be made to a prosthetic leg. **Bottom right:** Douglas Barnes, M.D., chief of staff at Shriners – Houston, assesses a child's arm in the clinic.

\* \* \*

Jesus, 17, was born with a curved tibia, a cleft foot and only three fingers on each hand. In 2004, when he was 4 years old, his mother took him to their local hospital to have his right leg amputated and replaced with a splint and shoe lift.

"It was a bit difficult to assimilate to the new condition," Patty said. "It was a little shocking for him whenever he woke up and no longer saw his leg."

Patty, who was born without a tibia, wears a prosthetic leg, as well. She knew that Jesus, like her, would eventually outgrow his splint and require a series of prosthetic legs as he got older. A prosthetic was necessary for his quality of life, but very expensive—a basic prosthetic typically costs between \$5,000 and \$7,000 in the U.S. Patty works for a car insurance company filing accident claims, but as a single mother, she worried about how she would pay for prosthetics for both herself and her son.

Later in 2004, a stranger on a bus told Patty about the Shriners – Houston outreach clinic in La Feria. She decided to take Jesus and get him outfitted for a prosthetic leg.

Of course, Jesus doesn't remember any of this. Any memory of his amputation has evaporated from his mind. As far as he is concerned, there was no physical disability to surmount, no tragedy over which to triumph. He never felt limited by his missing limb.

"Just like me, he doesn't really feel any different," Patty said. "We feel normal. There is no handicap."

Over the years, as Jesus continued to receive care at the Shriners – Houston outreach clinic, he met more and more children who were afflicted by congenital neuro- and musculo-skeletal disorders that curbed their mobility and movement. Some kids had legs of different lengths, some had arms with no hands, some had club feet.

"When I was younger, coming here and seeing other kids who were in worse situations

than me, I used to just shrug it off," Jesus said. "But as I've gotten older, I came to realize and appreciate that everything is okay. I've seen my disability from different angles."

He befriended other amputees, one of whom encouraged him to play soccer on a league created by a group of patients. An avid sports fan and natural athlete, Jesus joined the team and took up swimming and cycling shortly afterwards. He won competitions in both but fell in love with an altogether different physical activity: para dance sport, formerly known as wheelchair dance sport.

Jesus is a member of the adaptive sports dance team at the Álvaro de Obregón Technical High School of the Universidad Autónoma de Nuevo León. He and other students with lower

limb deficiencies perform in special wheelchairs and are often paired with standing partners.

"I have a lot of fun dancing, more than anything, because I do it with a team," Jesus said. "We're more than a team. We're a family. All of us have a lot of confidence and have fun."

\* \* \*

In previous years, Mexican patients and their families who visited the Shriners clinic in La Feria were able to cross into the U.S. with humanitarian visas. However, in 2015, the Mexican border patrol suddenly put a stop to this.

Stephenson and Barnes couldn't point to a specific reason why, but violent events in the area may have triggered tighter restrictions.

That year, Reynosa erupted in violence when gunfights broke out and vehicles were set ablaze, leaving at least three dead. The mayhem, Mexican federal police said, was sparked by members of the Gulf Cartel who blocked the city roads and attacked federal forces. Over the past year, violence spiked in the city due to rival drug gangs fighting to control border smuggling routes and trafficking operations.



**Above:** Jesus Badillo Garcia sits in the waiting room of the Shriners outreach clinic in La Feria.

**Right:** Orthotist Dave Zaborowski pulls vacuuming plastic over a foot and ankle orthotic to make a brace for a patient at the Shriners workshop in Houston.







Patty recalled trying to cross the bridge in the midst of the shootings. She and Jesus decided to travel by day to Reynosa and stayed in a hotel until they could leave the following morning.

"It was very dangerous," she said. "We had to arrive during the day when it was calm so we didn't expose ourselves to risk."

Violence along the border wasn't the only thing patients and their families had to worry about.

"When the cartel violence was really bad, people were leaving their houses and, when they'd come home, their house had been ransacked," Stephenson said. "The cartels would watch them leave. While they were gone, [the cartel] destroyed their houses. They knew they were leaving the country because they were getting information from Mexican border patrol."

Now, in order to cross the border, patients and their family members must present both a Mexican passport and visa, which could cost approximately \$400. As a result, some of Shriners' neediest patients are unable to cross and receive the care they need.

"As opposed to here, getting a passport in Mexico is very difficult. You have to have the father's signature to get a passport for the child," Stephenson said. "We still have an issue with families whose father is either in prison or has been likely murdered by the cartel, but there's no death certificate because there's no body. If you're in prison in Mexico, it's not like here where you know where they are."

Despite these challenges, Shriners - Houston continues to work diligently to help patients and their families get the financial support and necessary documents they need to get to the clinic.

"It's not what we physically do," Barnes said. "It's what we're doing to enable them to develop on their own and do amazing things. That's the rewarding aspect."

Jesus has traveled to New York and Canada to compete in para dance sport and is now one of the top medalists in Nuevo León. He hopes to one day compete in the World Cup of para dance sport, but for now is looking forward to going to college to study psychology.

He has a bright future, Patty said, and it wouldn't have been possible without Shriners.

"Before we arrived at Shriners, my world was closed. I didn't know what I was going to do with Jesus' treatment. I was in the dark, but God always had an angel that helped me see the light when I felt that there was no way," Patty said. "The people at Shriners are my angels." ■



NAME: **Kristin "Avery" Acker**

OCCUPATION: **Student at McGovern Medical School at The University of Texas Health Science Center at Houston (UTHealth)**

INTEREST: **Volunteering as a rodeo clown for the Houston Livestock Show and Rodeo**

Supporting a cowboy hat, a red and blue rodeo clown smock and a brightly painted face, Kristin "Avery" Acker can be found pumping up the crowd and chasing after sheep in the Mutton Bustin' arena at the Houston Livestock Show and Rodeo.

"I feel like a real Texan when I'm involved in the rodeo. It's a part of my culture. It's how I was raised," said Acker, 24, a second-year student at McGovern Medical School at UTHealth who is volunteering as a rodeo clown for the third year in a row. "You see so many smiles doing mutton busting and I really enjoy that. Life can get people so pessimistic, so it's great to have a breath of happiness

and fresh air."

The rodeo is very much in Acker's blood. Growing up in Freer, Texas, a small town 60 miles northeast of Laredo, Acker spent her childhood on a ranch and in the rodeo. Her mother, a cattle rancher, was involved in rodeo throughout high school. Her cousins and older brother are experienced ropers. And her grandfather, James Raymond "Bud" Walker Jr., was a professional rodeo bronc rider who will be inducted into the Texas Rodeo Hall of Fame in April. He passed away in 2010, but his legacy lives on.

"When I'm at the rodeo and I see people who resemble my grandpa," Acker said, "I feel close to him."

Mutton busting is a competitive event in which children between the ages of 5 and 6 latch onto a sheep and ride bareback, as the animal bucks and barrels down a dirt course. Children's scores are based on how long they are able to stay on the sheep.

"It amazes me every year how resilient kids are. They're so scared to do this, but then they hop on this sheep and they have the best time ever. They might cry a little bit, but they still love it," Acker said.

As a rodeo clown, Acker isn't just responsible for entertaining the crowds and cheering on the kids. She is there to ensure their safety during the ride, as well. After the sheep bursts from the

gate, Acker chases the animal down the course to make sure it doesn't run the child into the fence. Once the ride is over, she picks up the child to wave to the camera and the crowd, and then runs the child back to his or her parents near the opening gate before the next sheep is released.

"It's a lot of running. It's probably around six miles a day," Acker said. "You have to chase the sheep down, get the kid, run back with them, and do that 20 times in 30 minutes."

It's a high-intensity cardio job that requires a lot of energy, but "the kids get me pumped," she said.

Acker's commitment to medicine and her love for rodeo clowning have one important thing in common: people.

"In medicine, you aren't really practicing medicine, per se, if you aren't improving people's lives," Acker said. "I believe the rodeo improves people's lives, even if it's just through a smile." ■



# Don't Lose Sleep Over Daylight Saving Time

*How to regain that hour lost on March 11*

BY CHRISTINE HALL

In the fall, when we set our clocks back, most of us are happy to steal an extra hour of sleep. But on March 11, when daylight saving time begins and most Americans set their clocks forward, how do we recoup that lost hour?

Jerald Simmons, M.D., founding director of Comprehensive Sleep Medicine Associates and a neurologist specializing in sleep disorders and epilepsy, does not recommend going to bed earlier.

"The only control on your circadian rhythm is when you wake up," said Simmons, who was founding director of the Memorial Hermann Sugar Land Hospital Sleep Disorders Center.

Instead of setting the alarm for the normal time on March 11, give yourself an extra half an hour, he said.

And although it might be easy to reach for sleep aids, Simmons and other experts don't recommend them for coping with the one hour lost to daylight saving time. There are other ways to ensure a good night's sleep.

For starters, stop looking at technology at least two hours before bedtime and while in bed.

Simmons also recommends taking a bath before bed to raise the core body temperature. After the bath, the body begins cooling off, which enhances the feeling of relaxation. Don't wait more than 45 minutes to hop into bed, he said, and slipping into a cool bed in a quiet environment will help even more.

Toby Yaltho, M.D., a neurologist specializing in sleep medicine at Houston Methodist Sugar Land Neurology Associates, says bright light exposure affects melatonin levels. He recommends using light therapy to help overcome the hour lost by either getting outside in the morning or using an alarm clock with a wake-up light—often called a sunrise clock—that grows brighter over a period of 20 or 30 minutes.

## Getting enough sleep

Experts say most people aren't getting enough sleep. According to the Centers for Disease Control and Prevention (CDC), adults should get seven hours of sleep a night, but a third of U.S. workers get fewer than six hours.

In addition, individuals who reported getting fewer than seven hours of sleep a night were also more likely to report being obese and physically inactive.

Sleeping well leads to a good metabolism and good learning abilities, which helps in making good decisions, said Amee Patel, D.O., a sleep medicine expert and pediatric pulmonary specialist at Texas Children's Hospital.

A good night's sleep also helps with overall health: People who sleep fewer than six hours a night tend to have elevated blood pressure—even children, she said.

"When we sleep, you might think it is a still process, but actually we are very active," Patel said. "If you don't go into REM (rapid eye movement) sleep, you are going to miss out."

Memory is consolidated during the REM phase of sleep, she explained. When sleepers fail to enter that phase, it can be difficult for them to remember what they learned during the day.

## Helping children adapt

Infants need as much as 15 hours of sleep, adolescents need about nine and teenagers need eight hours of sleep per night. Unfortunately, two-thirds

of U.S. high school students sleep fewer than eight hours a night, according to the CDC.

Losing that one hour during daylight saving time is "a big deal," Patel said.

She hears from parents who are concerned about how their child will adjust. No matter the age, Patel said, some children adapt easily, while others do not.

To help children when the clocks are set forward an hour, Patel suggests shifting bedtime earlier at a slow rate, in 15-minute intervals, until the one-hour mark is achieved. For infants, babies and toddlers, she also recommends the 15-minute shift for feedings and nap time.

"Understand and expect that your baby may not tolerate it, and they may need to have an additional nap," Patel said.

For school-age children, she suggests starting the Friday prior to daylight saving time and putting them to bed half an hour later than normal, allowing the child to recover during the day on Saturday. Then on Saturday night, add another half hour to bedtime and give Sunday to adapt. Children who aren't overly sensitive to the change will be back on their regular schedule Monday morning. ■



Credit: Courtesy Texas Children's Hospital

Amee Patel, D.O., visits with a sleep patient at Texas Children's Hospital.

# How High Will Drug Prices Climb?

Experts explain how to reduce soaring costs

BY RYAN HOLEYWELL

**H**agop Kantarjian, M.D. has been practicing medicine for decades. But it was just five years ago that he began his crusade against the soaring cost of cancer drugs.

Kantarjian, who chairs the leukemia department at The University of Texas MD Anderson Cancer Center, noticed promising, new drugs to fight leukemia had price tags in excess of \$140,000 per patient. Even older drugs, once considerably more affordable, were approaching six-figures, as well.

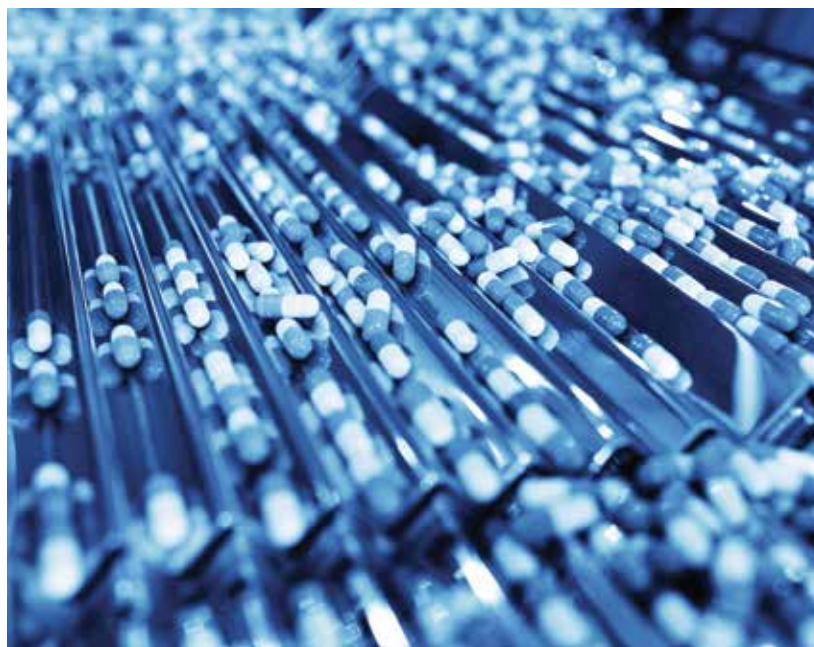
Since then, Kantarjian has written a petition, become a frequent media voice and authored more than 20 op-eds and journal articles decrying the high price of cancer drugs and arguing for ways to push costs down. His efforts are not paying off.

"The progress," Kantarjian said, "has been zero."

He's right. The average annual price of new cancer drugs per patient increased from less than \$10,000 before 2000 to \$145,000 in 2015, according to Rice University's Baker Institute for Public Policy, although patients are not necessarily responsible for covering the full cost of these drugs. Kantarjian estimates 40 percent of his leukemia patients are getting less than optimal care because they are unable to afford the leukemia drugs they need.

"They just disappear, and don't take the drug, and they die," Kantarjian said. "That's the reality of my clinic—every day."

The cost of drugs has emerged as a leading political issue. In recent years, extreme price hikes for drugs, including EpiPen and Daraprim, have become national, high-profile scandals. More than 75 percent of Americans say the cost of prescription drugs today is unreasonable.



“I look at these cancer drugs that add a few weeks or months of life, that cost hundreds of thousands of dollars, and I don't think it's worth it.”

— OSAMA MIKHAIL, PH.D.

*Professor of management, policy and community health at the UTHealth School of Public Health*

How did we get here?

Drugs represent a rapidly growing share of total health care costs, with retail prescriptions (those obtained at a pharmacy) now exceeding 10 percent of the \$3.3 trillion the U.S. spends annually on health care. If you add in chemotherapy and other drugs administered by doctors, that rate is even higher.

It hasn't always been this way. Until the mid-1990s, the U.S. spent about the same amount on drugs, per capita, as the rest of the developed world. Today, the U.S. is an outlier. U.S. per capita spending on retail pharmaceuticals is about \$1,000 annually. That's more than double United Kingdom spending and about 50 percent

more than spending in Canada and Germany, according to the Commonwealth Fund.

President Donald Trump, along with Health and Human Services Secretary Alex Azar and Food and Drug Administration Commissioner Scott Gottlieb, all say reducing drug costs is a major goal. Experts say a pair of plans the administration released in February attack the issue at the periphery but don't tackle the "list price" of drugs head on.

Meanwhile, any serious effort to reduce drug prices will almost certainly face opposition from a drug manufacturing industry that spends massive sums on lobbying—more than \$170 million last year alone. So how can the country reduce the soaring price of drugs?

Health policy experts agree on several key strategies.

## Let Medicare negotiate

In 2003, Congress passed a law that prevents Medicare from negotiating drug prices with manufacturers. Removing this provision, health policy experts say, could help reduce drug prices, given the negotiating power such a vast program would have.

Giving Medicare negotiating power could have reverberations across the health care sector, experts say, since private insurers often peg their reimbursement rates to those of Medicare. And there's precedent for such a move. The U.S. Department of Veterans Affairs, which *does* have negotiating power, has brought down drug prices in its programs.

## Allow the government to consider cost-effectiveness

When reviewing new drugs, the U.S. Food and Drug Administration must determine whether they are safe and effective. But many policy experts prefer the United Kingdom's model. There, drugs must also be deemed cost-effective to gain approval. The U.K.'s health agency measures "value" by examining how much a drug costs and how well it works. Unless a new drug provides greater value than existing drugs, it doesn't win approval.

Kantarjian suggests drug prices in the U.S. could be pegged to objective measures, like how many extra years of life they provide a patient, or to what extent they shrink a tumor. Many drugs entering the U.S. today provide questionable benefits, given their cost, and drug companies simply charge what the market will bear.



"I look at these cancer drugs that add a few weeks or months of life, that cost hundreds of thousands of dollars, and I don't think it's worth it," said Osama Mikhail, Ph.D., a professor of management, policy and community health at The University of Texas Health Science Center at Houston (UTHealth) School of Public Health and a former executive with drug maker Eli Lilly.

## End direct-to-consumer advertising

Since the mid-1990s, Americans have been treated to television advertisements of happy people practicing yoga, riding bicycles and relaxing in outdoor bathtubs, thanks to the power of prescription drugs. Historically, pharmaceutical firms only promoted their products to health care providers, but eventually they realized aging baby boomers were an untapped market.

Now, direct-to-consumer

advertisements are so controversial that the American Medical Association has called for them to be banned.

"Patients think because there's an ad, [the drug] must work for everyone who takes it," said Vivian Ho, Ph.D., director of the Center for Health and Biosciences at Rice University's Baker Institute for Public Policy. "That's why you should get rid of the advertising. It's not getting patients the information doctors would want them to have."

Doctors say consumers pressure them to prescribe the pricey drugs they see on TV, and often, those doctors are unwilling to say no for fear of losing the patient. When doctors acquiesce, everyone pays for it, and costs go up.

Banning the ads would be a dramatic move that could raise the industry's hackles, but it would actually put the U.S. on standing with the rest of the world. Only one other developed country, New Zealand, allows similar direct-to-consumer

prescription drug marketing.

## Require greater price transparency

Drug costs in the U.S. are largely based on supply and demand. When lives are at stake, the sky's often the limit for prices.

"They're like an unscrupulous grocery store in the middle of a hurricane that jacks up its prices to take advantage of people," said Stan Dorn, a senior fellow with the non-profit advocacy group Families USA.

The drug industry has long maintained that any efforts to curb costs could threaten innovation, but health policy experts are skeptical.

"I think we should attack the drug companies' continued refrain that whatever you do to them is going to stop innovation," said Arthur "Tim" Garson Jr., M.D., director of the Health Policy Institute at the Texas Medical Center. "They [shouldn't] say that anymore without showing us actual data."

A 2016 study published by a Tufts University research center estimated that the average cost to develop and get approval for a new drug is \$2.6 billion. But that number drew skepticism, with critics questioning the methodology of the study, the opaque nature of the data and the fact that the center itself is industry-funded.

A better number to focus on, some say, is the drug industry's profit margins. Kaiser Health News, for example, found that 10 of the top publicly traded U.S. drugmakers earned \$83.6 billion in profits on revenue of \$306 billion in 2016—a healthy 27 percent pretax profit margin.

A bipartisan bill by Sens. John McCain (R-Ariz.) and Tammy Baldwin (D-Wisc.) would require drugmakers to notify the federal government and submit a report if they raise certain drug prices by 10 percent in one year, or 25 percent over three years.

(continued)

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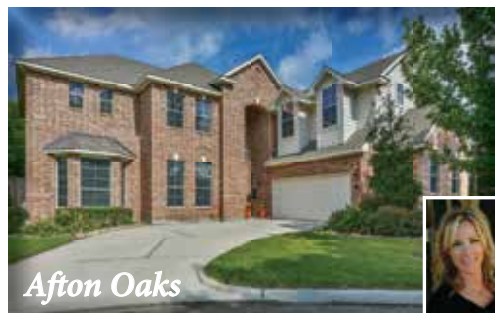


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If drugmakers hit those thresholds, they'd be required to provide justification for the hikes, report their net profits associated with the drugs, and list expenses associated with the drugs including manufacturing, research and development, marketing and advertising.

## Eliminate tactics that stifle generics

New drug patents last for 20 years, at which point generics can compete, but experts say it's common for name brand drugmakers to try to block generic competition. One practice that has gained a great deal of attention is the "pay-for-delay" arrangement, in which a branded drug maker will pay a generic competitor not to compete, preventing lower-cost alternatives from entering the market. The Federal Trade Commission says the practice costs consumers and taxpayers \$2.5 billion in higher drug costs annually.

Mikhail, the former Eli Lilly executive, said another tactic branded drugmakers use is to make a small variation to an existing drug—say, changing the chemical composition to allow it to be taken once a day instead of several times daily—in order to extend the patent. That process is known as "evergreening."

"Rather than creating new medicines, pharmaceutical companies are recycling and repurposing old ones," researchers from The University of California, Hastings College of the Law wrote in a paper last year that found 78 percent of drugs associated with new patents from 2005-2015 were actually existing drugs.

Other critics have pointed to another challenge facing generic drugmakers. If pharmaceutical companies have enough control of their distribution, they can

keep generic manufacturers from obtaining enough pills to manufacture a competing product. This was one of the tactics used by Turing Pharmaceuticals to achieve a 5,000 percent increase in the price of the decades-old Daraprim, used to treat serious parasite infections. Today, there is wide, bipartisan support for legislation that would prevent the practice.

## What's next?

If any reforms are to become reality, Kantarjian said, consumers need to become better advocates. But he acknowledges that's not easy, especially for patients with serious conditions like cancer, who don't have the time and resources to fight with Washington while simultaneously fighting for their lives.

That's where he thinks doctors should step in. He points to the Hippocratic oath, which states doctors will keep patients from harm and injustice.

"High prices are harm and injustice," Kantarjian said. "[The oath] forces us to advocate for the patients, but you don't see too many doctors advocating."

Dorn, of Families USA, said he's actually hopeful that reforms could be coming. He knows plenty of other advocates are skeptical, but he has seen other major reforms to the health care system enacted, such as the Children's Health Insurance Program and the Affordable Care Act, which were previously seen as unlikely.

"I think people tend to underestimate the fluidity of the policy environment in Washington," Dorn said. "You can't be Pollyannaish. But I've seen all kinds of things happen here that nobody thought was possible." ■

“I think we should attack the drug companies' continued refrain that whatever you do to them is going to stop innovation.”

— ARTHUR "TIM" GARSON JR., M.D.  
Director of the Health Policy Institute at the Texas Medical Center

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# Hypnosis in the Operating Room

Doctors and researchers at MD Anderson are exploring hypnosedation to manage pain and anxiety during certain breast cancer surgeries

BY SHANLEY PIERCE



Rosalinda Engle, a mind-body specialist at MD Anderson Cancer Center, prepares a patient for surgery. As part of the clinical hypnosedation trial, an electroencephalography (EEG) cap is placed on a patient's head to record neurological activity before, during and after the surgery.

When Beverly Levinson's doctor noticed two unusual spots on her dense breasts, she was sent to The University of Texas MD Anderson Cancer Center for a lumpectomy—a surgical procedure to remove abnormal or cancerous tissue along with a small portion of the surrounding healthy tissue.

Levinson, 64, wasn't as concerned about the surgery as she was about undergoing general anesthesia. She had received general anesthesia for previous surgeries, but because of her temporomandibular joint (TMJ) disorder, she suffered severe jaw pain from opening her mouth wide enough for the breathing tube to be inserted down her throat.

Luckily, an unconventional

solution presented itself to Levinson. Her surgeon approached her about an ongoing clinical trial that would allow her to avoid general anesthesia by using hypnosis. Levinson, who had been hypnotized for jaw pain years ago, immediately jumped at the opportunity.

"In my eyes, I had nothing to lose," Levinson said. "I could try something new or I could go the old-fashioned way. I'm the middle child. I always try new things. That's my personality."

Led by Lorenzo Cohen, Ph.D., director of the Integrative Medicine Program at MD Anderson, the ongoing clinical trial aims to determine whether or not a method of deep relaxation, called hypnosedation, is safe and effective for patients with

stage 0/1 breast cancer who are undergoing lumpectomies with or without sentinel lymph node dissections. The study, still in its pilot phase, will examine 50 patients who are randomly selected to receive either general anesthesia or a combination of local anesthesia and hypnosedation before and during surgery.

In both cases, a patient has an intravenous line placed in her arm and an anesthesiologist is present to administer a cocktail of drugs used to put her under. For patients receiving hypnosis, the anesthesiologist monitors their vitals, calculates the appropriate dose of local anesthetic medication, administers medication for pain and nausea and stands by to convert to general anesthesia if the

“My sole job is to sit at the head of the bed and focus on the patient. Any changes to breathing patterns [or] facial muscles is an alert to me that I need to check in. Periodically, I'll ask the patient, 'How's your comfort level?'”

— ROSALINDA ENGLE

Mind-body specialist at  
MD Anderson Cancer Center

patient experiences any discomfort.

“Over the past couple of decades there is a very solid evidence base that incorporating hypnosis during invasive conscious sedation medical procedures reduces anxiety, helps to control pain, decreases recovery time, and helps lower medical costs,” Cohen said.

General anesthesia is still the standard approach at MD Anderson, even for smaller surgeries, such as lumpectomies. But the drugs used for general anesthesia can potentially weaken the body's immune system and slow the recovery process, Cohen said. Cancer patients, in particular, cannot afford to have their immune systems compromised. Cohen and his team want to find out if hypnosedation would be a viable replacement for general anesthesia during smaller, less invasive surgeries.

\* \* \*

The practice of hypnosis, in one form or another, has been around for centuries.

(continued)

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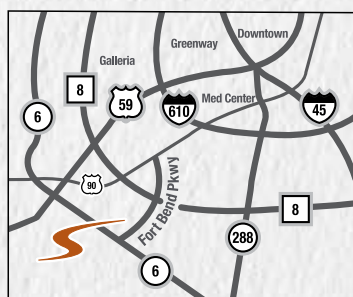


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But it wasn't until the mid-19th century that it came to be defined as a kind of "nervous sleep" that could alleviate anxiety or pain during medical procedures.

In the 1840s, Scottish neurosurgeon James Braid developed a technique of deep relaxation and visual fixation to guide patients into a trance and help alleviate their pain. He coined the term "hypnosis" and defined it as "the induction of a habit of abstraction or mental concentration, in which ... the powers of the mind are so much engrossed with a single idea or train of thought, as ... to render the individual unconscious of, or indifferently conscious to, all other ideas, impressions, or trains of thought."

Although hypnosis is often associated with parlor tricks and stage magicians, the practice itself has been used clinically to address several conditions, including smoking, anxiety and overeating.

For Levinson, it was a great option.

A week before surgery, Levinson met with Rosalinda Engle, a mind-body specialist at MD Anderson Cancer Center who would perform the hypnosedation, in a small conference room in the hospital.

"Do you have a place where you feel really comfortable and at ease?" Engle asked Levinson in her soothing, mellifluous voice. "It could be your grandmother's house. It could be a vacation you've enjoyed, a vacation spot. It could be anywhere, any place in nature. Close your eyes and call that up."

As Levinson focused on the task, Engle continued to offer instruction.

"Breathe in deeply. Experience your breath from the tip of your nose. Feel as your breath moves through your body. Imagine breathing into the palm of your hands. Now exhale. Breathe out through your fingers, the soles of your feet, your toes. Relax."

Slowly but surely, Engle lulled Levinson into a state of deep relaxation.

"I felt very, very safe," Levinson said, when it was over. "It was like [going] into someone's house where they're baking a cake. It smells good, and they welcome you in. You just have a warm feeling."

Engle guided Levinson through what to expect on the day of the surgery. The room would be sterile, with five or six people at hand. The lights would be bright. Engle would sit beside her throughout the procedure to keep her calm and relaxed.

"My sole job is to sit at the head of the bed and focus on the patient," Engle said. "Any changes to breathing patterns [or] facial muscles will alert me that I need to check in. Periodically, I'll ask the patient, 'How's your comfort level?'"

On the day of the surgery, doctors injected local anesthetics—lidocaine and bupivacaine—to numb Levinson's right breast and made a 1-inch incision to remove some of the tissue.

As promised, Engle sat next to Levinson for the duration of the surgery, helping her maintain a state of deep relaxation.

"I didn't feel anything," Levinson said. "You're in a calm state. You're in a safe state of mind. You're being reassured. It was great."

Throughout the surgery, Levinson recalled feeling pressure on her breast as the surgeon operated, but said it didn't hurt any worse than getting a filling at the dentist. Less than an hour after her surgery was complete, Levinson was out of bed, dressed and walking around.

She skirted the unpleasant side effects of general anesthesia, recovered faster and didn't require any post-operative painkillers.

For hypnosedation to work, Engle said, the patient must be receptive to it.

"All hypnosis is self-hypnosis," Engle said. "You'll go as deep into this trance state as you are willing to allow yourself to go."

Engle points to shifts in attention and consciousness that people commonly experience throughout the day. Ordinary moments—such as zoning out while driving or becoming so engrossed in a conversation that you're able to block out surrounding noise—are examples of how the mind can tune out distractions.

"Pointing out these everyday shifts and our capacity for absorption is important to let the patients know they are in control and driving



this experience,” Engle said. “They can train themselves to be as relaxed and calm as possible. They can guide themselves. They can walk through this experience with surgery and take it throughout the treatment process, the whole continuum of cancer care.”

While general anesthesia is very safe for most people, it can have unpleasant side effects. The most common are temporary nausea and vomiting, dry mouth, a sore throat and grogginess. Older patients who receive general anesthesia are more likely to experience longer-term cognitive and memory impairments, a condition called post-operative cognitive dysfunction (POCD) that can last anywhere from a few days to a few months. Those with a history of POCD have a higher risk of experiencing the condition again with repeated anesthetic.

“[Hypnosedation] is a nice alternative,” said Elizabeth Rebello, M.D., associate professor in the department of anesthesiology and perioperative medicine at

“I felt very, very safe. It was like [going] into someone’s house where they’re baking a cake. It smells good, and they welcome you in.”

— BEVERLY LEVINSON  
*Hypnosedation patient*

MD Anderson. “The patient doesn’t require an extended period of time in the recovery room. They’re able to go on with the rest of their life.”

\* \* \*

According to Cohen, more than 34 clinical trials and numerous papers published in scientific journals have shown that hypnosedation works. But he says there is still some doubt among his colleagues.

“Although a physician may think, ‘I don’t believe in hypnosis,’ that is a scientifically unsound statement. Science is not about personal belief. It’s about evidence,” Cohen said. “Your religious practices are part of a belief system. Science is evidence-based. Unfortunately,

there are some people who approach science from a belief perspective, as well, and they’re wrong.”

Most surgeons were initially reluctant to participate in the clinical trial, said Dallah M. Black, M.D., a breast surgical oncologist at MD Anderson. Because the standard approach at MD Anderson is to use general anesthesia for surgeries large and small, most surgeons are accustomed to having their patient sleep throughout every procedure.

“Surgeon interest was very slow up front, but I would offer them to come in to watch my cases,” Black said. “Many colleagues have been so surprised.”

Using hypnosedation, patients like Levinson can gain some semblance of control during an

otherwise stressful experience.

“It’s amazing how complex we are as humans and how complex the mind is. A lot of times, it’s mind over matter,” Black said. “Hypnosedation is a way we’ve applied mind over matter to a situation in the operating room for a specific population of the patients here. That mental fortitude and the strength that we have, that has to be carried through and has better outcomes if we use that path throughout our cancer care.”

No matter how effective the clinical trial shows hypnosedation to be for surgeries, Rebello stressed that hypnosedation will not become a new standard approach for pain management.

“I think there’s a concern that this is going to replace general anesthesia. It is not going to replace general anesthesia,” Rebello said. “But for a certain niche of patients, there are certainly some benefits that could exist and we need to find out if that is, indeed, the case.” ■

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# Lydia Lopez Gets a Bionic Eye

*Patient will learn a new way of seeing with the Argus II retinal prosthetic*

BY MAGGIE GALEHOUSE



*Lydia Lopez is prepared for surgery at Memorial Hermann Hospital in January.*

Lydia Lopez could not sleep the night before doctors activated her bionic eye.

The 61-year-old had been losing her vision for decades. Retinitis pigmentosa, a genetic disorder that causes a breakdown of cells in the retina, had shuttered her eyesight and independence.

But Lopez, the first patient in Houston to receive a bionic eye, hoped that would change on Feb. 12.

One month after doctors implanted a tiny Argus II retinal prosthetic in her left eye, Lopez

arrived at the Robert Cizik Eye Clinic to have her vision activated. In a conference room crowded with doctors, family, friends, media and a few employees from Second Sight—the company that makes the Argus II—Lopez donned a pair of special glasses outfitted with a miniature video camera.

“Está bien!” said the El Salvadoran-born Lopez, who spoke and answered questions in English and Spanish.

The camera in Lopez’s glasses sends images through transducers to the implant in her eye and simulates vision, essentially bypassing her degenerated retina and using the functioning parts of her eye to connect to her brain. Going forward, Lopez will carry a small video processing unit with her—small enough to attach to a belt—that connects to the camera.

Lopez is well aware that her bionic eye will not offer 20/20 vision. She will not be able to read or drive, but she will be able to distinguish light from dark and make out the shapes and outlines of people and objects. She will learn to see in a new way.

The Texas Medical Center doctors who implanted the chip in Lopez’s eye on Jan. 10,

Garvin Davis, M.D., MPH, and Amir Mohsenin, M.D., Ph.D., are the only physicians in the region authorized to implant the Argus II prosthetic. On the day Lopez’s eye was activated, they explained that the chip in her eye is outfitted with 60 electrodes. The camera signals stimulate this tiny array, which, in turn, helps Lopez see.

“She has to move her head from side to side in order to scan images,” said Mohsenin, a University of Texas Health Science Center at Houston (UTHealth) ophthalmologist affiliated with Memorial Hermann and the Cizik Eye Clinic. “The image of what she sees is actually quite small.”

Imagine watching black and white images on a cell phone placed directly in front of your field of vision. That’s essentially the size of the array that Lopez sees.

Lopez sat straight up in her chair and smiled as the doctors and Second Sight employees turned on her vision. Davis, who was wearing a dark suit, and Mohsenin, wearing a white coat, encouraged her to try and see the difference in their jackets. She struggled a little, but could make out the contrast between light and dark.

“She will slowly get better at this and learn what she is seeing,” said Davis, also a McGovern Medical School at UTHealth ophthalmologist affiliated with Memorial Hermann and the Cizik Eye Clinic. “Some of the best patients can sort laundry—light and dark. Some patients can do archery.”

In Spanish, Lopez told the crowd what she hoped to gain with this new system of sight.

“I want independence,” she said. “To work. To walk in the park.”

The Argus II is the only retinal prosthesis ever approved by the U.S. Food & Drug Administration. It costs about \$150,000, but Davis and Mohsenin said Lopez’s insurance would cover it.

More than 280 patients worldwide have been outfitted with the Argus II, including more than 120 patients in the U.S. and Canada.

Mohsenin and Davis hope to implant four or five bionic eyes a year. The waiting list to receive the Argus II, they said, is significant. Patients have been calling Second Sight to find out where they can get the surgery.

For Lopez, the real effort begins now that her eye has healed from the implant and her



*Amir Mohsenin, M.D., Ph.D., holds up the glasses outfitted with a video camera that will help Lopez see in a new way.*





Garvin Davis, M.D., MPH, and Mohsenin help Lopez learn to use the Argus II in the Robert Cizik Eye Clinic on Feb. 12.

vision has been turned on. She will work directly with computer programmers and occupational therapists to learn to interpret the visual stimuli that she is receiving. With software upgrades, her vision will improve, as well.

"We expect her to be able to tell high-contrast shapes in the future," Davis said. "Her feedback is

essential to the development of the device."

"With time, we'd like her to be able to navigate, to potentially make out a door," Mohsenin added. "Some patients say they can make out people in their family. The range of results is large. Many gain more benefit than what is promised in the surgery."

“Some of the best patients can sort laundry—light and dark. Some patients can do archery.”

— GARVIN DAVIS, M.D., MPH  
McGovern Medical School at UTHealth  
ophthalmologist affiliated with Memorial  
Hermann and the Robert Cizik Eye Clinic

Carlos Lopez, 30, said his mother started to lose her vision before he was born.

"I remember her from being able to distinguish shapes and stuff and know who was there, to basically not knowing who was in the room," he said. "She had it and then she lost it. So she knows what she's been missing out on. Now that she's regained some sort of vision, it's nothing short of a miracle."

He said his mother wants to be able to move around on her own, to spend time in nature. For years, she has been confined to her home unless a family member is with her.

In the conference room, Lidia Lopez looked determined to make the most of this new way of seeing.

"I feel good," she said. "I'm sure later on, I will see more." ■

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# A Pen that Detects Cancer in Real Time

*Handheld device identifies cancer in seconds during surgery*

BY CHRISTINE HALL

One telephone call triggered a new device that aims to give surgeons more precise diagnostic information about what to cut and what to preserve during cancer surgery.

Livia Schiavinato Eberlin, Ph.D., assistant professor of chemistry at The University of Texas (UT) at Austin, made that phone call, and James Suliburk, M.D., associate professor and head of endocrine surgery at Baylor College of Medicine answered it.

"She wanted to test a mass spectrometer to see if it would rule in or rule out cancer," Suliburk said.

"I responded with 'Yes!'"

Mass spectrometry is a fairly new application within clinical settings, Suliburk said. A mass spectrometer measures characteristics of individual molecules. Eberlin wanted to test the MasSpec Pen, a handheld device that can detect cancer by touch—in real time.

A surgeon holds the MasSpec



*The MasSpec Pen can detect cancer in human tissue.*

Pen against the patient's tissue and uses a foot pedal to trigger the automated analysis, waiting a few seconds for a result. The pen releases a drop of water onto the tissue, and small molecules from the tissue migrate into the water. Then the device drives the water sample into the mass spectrometer, which reads thousands of molecules as a molecular fingerprint. When the MasSpec Pen completes the tissue analysis, the words "Normal" or "Cancer" appear automatically on a computer screen. Surgeons then know which tissue to remove and which tissue to leave in the body.

Significantly, the pen allows surgeons to analyze tissue while it's still in the body, unlike frozen section analysis, the current method for diagnosing cancer during surgery and determining the boundary between cancerous tissue and healthy tissue.

The frozen section process, which has been around for 100 years, involves the removal of tissue or an organ so it can be studied under a microscope. Frozen section is often slow and sometimes inaccurate, and each sample can take a pathologist as much as 45 minutes to prepare and interpret, increasing the patient's risk for infection.

In addition, frozen section analysis is difficult to interpret for some types of cancers. And once the tissue or organ is removed, it can't be put back, said Suliburk, who often operates on the thyroid.

"We operate to remove a part of or all of the thyroid," he said. "What we find is that a majority of the patients will not have cancer, but until now, our diagnostics were not to the point, yet, where we could improve that procedure."

But with the MasSpec Pen, cancerous tissue is accurately identified in about 10 seconds, he said.

The MasSpec Pen was developed by a team of scientists, surgeons and



*James Suliburk, M.D., associate professor and head of endocrine surgery at Baylor College of Medicine.*

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*Livia Schiavinato Eberlin, Ph.D., chemistry professor at The University of Texas at Austin, led a team of scientists and engineers in developing a tool for identifying cancer during surgery.*

engineers from UT Austin, Baylor and The University of Texas MD Anderson Cancer Center. Led by Eberlin, the team has demonstrated that the pen diagnoses cancer in live, tumor-bearing mice during surgery without causing any observable harm to the tissue or stress to the animals.

“We anticipate certain lesions will be 90 to 95 percent probable of a tissue diagnosis, but we want to give a more precise diagnosis,” Suliburk said. “Our goal is to be more than 95 percent accurate.”

The team is now refining the MasSpec Pen so it can read samples

placed on microscope slides.

Suliburk expects to start testing the MasSpec Pen during oncologic surgeries this spring. The team hopes the U.S. Food and Drug Administration will approve the pen as a medical diagnostic.

“Dr. Eberlin and I both feel strongly that it will improve the care of the patient and revolutionize how we perform surgery,” Suliburk said. “Any time you can perform a more precise, safer surgery, it’s a win for the patients and results in better outcomes.” ■



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[1] Houston Methodist Hospital's **ERIK SUAREZ, M.D.**, a thoracic surgery specialist, and **THOMAS MacGILLIVRAY, M.D.**, chief of cardiac surgery and thoracic transplant, posed with Methodist's 1,000th heart transplant recipient, **TYLER WERTZ**.

[2] **AIMEE LIOU, M.D.**, a pediatric cardiologist at **TEXAS CHILDREN'S HOSPITAL**, oversees a team of health professionals who knitted red hats for every baby with congenital heart disease at Texas Children's Hospital. The team distributed the hats in February, in observance of Heart Month.

[3] **MICHAEL C. LINN** has been appointed chairman of the board at Texas Children's Hospital.

[4] **DIANA GRAIR, M.D.**, assistant professor in the department of family and community medicine at Baylor College of Medicine, was named medical director of San José Clinic.

[5] Houston-area certified registered nurse anesthetists (CRNAs) celebrated **NATIONAL CRNA WEEK** in January at Cadillac Bar.

[6] **MARGO MELCHOR, R.D.H., M.ED., ED.D.**, community outreach director for the School of Dentistry at UTHealth, has been appointed to the Texas State Board that regulates dentistry and dental hygiene.

[7] **CARRIE L. BYINGTON, M.D.**, dean of the Texas A&M College of Medicine, senior vice president of the Texas A&M University Health Science Center and vice chancellor for health services at the Texas A&M University System, has been named a Fellow of the National Academy of Inventors.

[8] **DORIT DONOVIEL, PH.D.**, associate professor in the Center for Space Medicine at Baylor College of Medicine, has been named director of the Translational Research Institute for Space Health at Baylor.

[9] **PEGGY SMITH, PH.D.**, professor of obstetrics and gynecology at Baylor College of Medicine, was honored with a Congressional Proclamation for her positive impact on Houston teens and young adults as director of the Baylor Teen Health Clinic.



Credit: Nos. 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 14 courtesy photos; No. 4, Allen S. Kramer, Texas Children's Hospital; No. 13, Gary Fountain; No. 15, alexandersportraits.com





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[10] **DANIEL MARTINEZ**, who oversees the monthly distribution of *TMC Pulse*, stands beside the magazine's new delivery van. Look for Martinez and the van in and around the medical center.

[11] **PETER HOTEZ, M.D., PH.D.**, dean of the National School of Tropical Medicine at Baylor College of Medicine and Texas Children's Hospital Endowed Chair in Tropical Pediatrics, has been appointed as a representative of the U.S.-Israel Binational Science Foundation Board of Governors.



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[12] **DIMITRIOS P. KONTOYIANNIS, M.D.**, Texas 4000 Distinguished Endowed Professor in Infectious Diseases and deputy head research in the division of internal medicine at The University of Texas MD Anderson Cancer Center, is the 2018 recipient of the Award for Excellence in Clinical Microbiology and Infectious Diseases of the European Society of Clinical Microbiology and Infectious Diseases.

[13] Texas Medical Center President and CEO **WILLIAM F. McKEON** leads a keynote panel at the Healthcare Innovation Forum, featuring **PETER PISTERS, M.D.**, president of The University of Texas MD Anderson Cancer Center; **CHUCK STOKES**, president and CEO of Memorial Hermann Health System; and **GIUSEPPE COLASURDO, M.D.**, president of The University of Texas Health Science Center at Houston.

[14] **TOBY HAMILTON, M.D.**, executive director of Healthcare Innovators Professional Society, will hold the nonprofit's first event for members in the fall at the **TMC INNOVATION INSTITUTE**.

[15] **ELIZABETH TRAVIS, PH.D.**, associate vice president of women and minority faculty inclusion at MD Anderson Cancer Center, presents **GUILLERMINA "GIGI" LOZANO, PH.D.**, professor and chair in the department of genetics, division of basic science research at MD Anderson Cancer Center, with the Charles A. LeMaistre, M.D., Outstanding Achievement Award in Cancer.



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# March 2018



"Head Space" is part of the BioRhythm: Music and the Body exhibit at The Health Museum, 1515 Hermann Dr., on display through July 31.

## 3/9 - 10

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Friday, 12:30 - 7 p.m.

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714-925-0257

## 3/15

**James T. Willerson, M.D., Cardiovascular Science Seminar:**

**"Dissecting Genomic and Epigenetic Complexity in Heart Failure"**

Lecture by Yibin Wang, Ph.D.

Thursday, 4 p.m.

Texas Heart Institute

6770 Bertner Ave.

[vsweed@texasheart.org](mailto:vsweed@texasheart.org)

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## 3/22

**Third Annual O.H. "Bud" Frazier Transplant Roundup Conference**

Thursday, 7 a.m. - 5 p.m.

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[nforward@stlukeshealth.org](mailto:nforward@stlukeshealth.org)

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## 3/27

**Friends of Nursing Luncheon and Fashion Show**

Tuesday, 11:30 a.m.

River Oaks Country Club

1600 River Oaks Blvd.

Register and purchase tickets at

[SupportStLukes.org/Luncheon](http://SupportStLukes.org/Luncheon)

Tickets start at \$500

[chays@stlukeshealth.org](mailto:chays@stlukeshealth.org)

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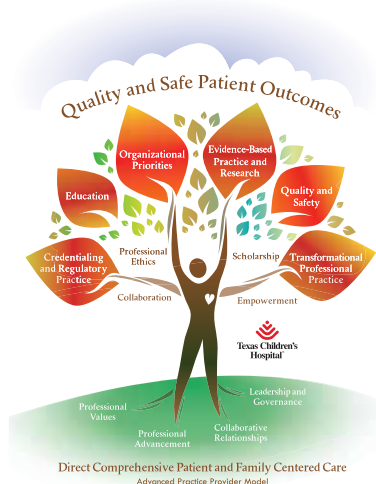
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### Kuhlman

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Cathy Blum, 713.320.9050



### Williamsburg

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Lynn Russell/Courtney Robertson  
713.819.4563/713.557.5943



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Caroline Schlemmer, 713.446.2716



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