



Baylor College
of Medicine
Department of
Pediatrics

2018 Annual Report

Baylor College of Medicine Department of Pediatrics **2018 Annual Report**



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Dear Colleagues,

I always say that Texas Children's Hospital is the best place in the world to be a pediatrician. We're truly blessed to have so many reasons to be proud of this fantastic hospital.

For example, through the education and training of medical students, pediatric residents and pediatric subspecialty fellows, Texas Children's plays a vital role in ensuring that children not yet born will have access to high-quality health care 10, 20 and 30 years from now.

Every Baylor College of Medicine medical student, approximately 200 each year, does core clinical training in pediatrics at Texas Children's, under the direct supervision of our outstanding clinical and teaching faculty.

In addition, at any given time, about 400 pediatric residents and pediatric subspecialty fellows are training with us, generally for three or more years each. Our residency and fellowship programs are among the best and most competitive nationwide, attracting best-and-brightest young physicians to Houston from across the U.S. Our residency program received more than 1,000 applications this year for just 46 first-year positions. We were the only large children's hospital in the U.S. to fill every available position in all of our subspecialty fellowships.

Learning how to care for patients and interact with families and staff members across a large institution like Texas Children's is indispensable to the career development of a young physician – as instrumental as turning book knowledge about human physiology, genetics, microbiology and pharmacology into real world, hands-on experience with a multitude of disease processes and their therapeutic management. In all areas, Texas Children's has its trainees more than covered. Today, Baylor College of Medicine faculty members based at Texas Children's edit the major textbooks used worldwide to train physicians in pediatrics, pediatric infectious diseases, pediatric oncology and pediatric cardiology.

Millions of children and families worldwide whom we will never meet are the beneficiaries of this work performed right here at Texas Children's. No children's hospital worldwide has a longer reach or bigger impact on the lives of children and families who need us most. Now, that's something to be really proud about!

With best wishes,

Mark W. Kline

Mark W. Kline, MD

Physician-in-Chief
Texas Children's Hospital

J.S. Abercrombie Professor and Chairman
Ralph D. Feigin Chair
Department of Pediatrics
Baylor College of Medicine

Editor-in-Chief, *Rudolph's Pediatrics*, 23rd Edition

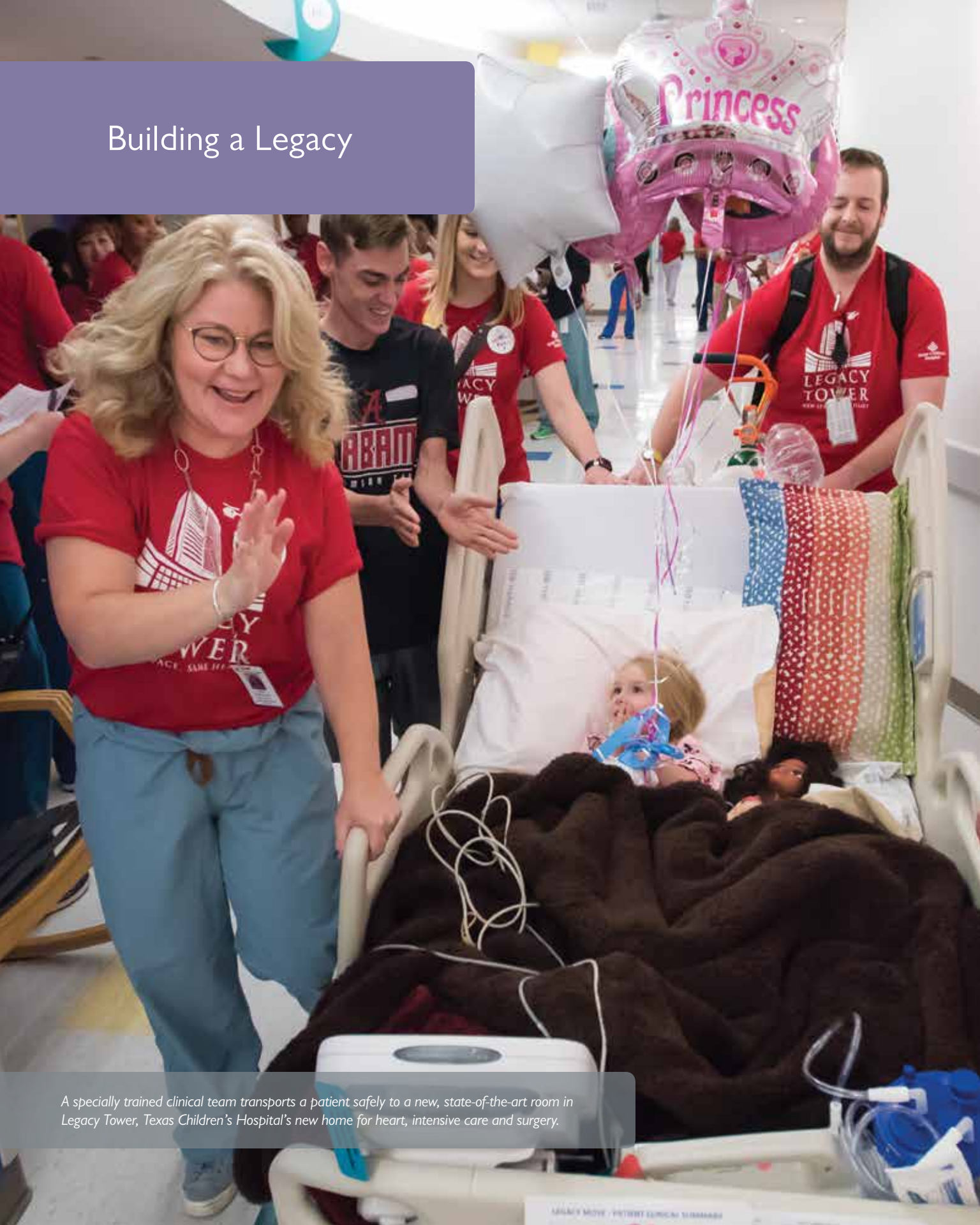


Physicians in all pediatric subspecialties care for patients at Texas Children's Hospital and participate in education and training of medical students, residents and fellows.

PATIENT CARE



Building a Legacy



A specially trained clinical team transports a patient safely to a new, state-of-the-art room in Legacy Tower, Texas Children’s Hospital’s new home for heart, intensive care and surgery.

Doors open to family-centered care for critically ill children

When a child is treated at Texas Children’s Hospital, the whole family is cared for. Improving the environment for families was one of the main reasons for building the Lester and Sue Smith Legacy Tower, Texas Children’s new 164,000-square-foot home for heart, intensive care and surgery.

“With the completion of this tower, families can spend as much time as they want with their hospitalized child during what is obviously one of the hardest times for any family,” said Lara Shekerdemian, MD, MHA, chief of Critical Care at Texas Children’s and professor and vice chair of pediatrics at Baylor College of Medicine. “Parents don’t feel that they have to leave the room because of lack of space when there are people caring for their child. They are very much a part of the care team: they are there when we do our ward rounds; they’re there when we perform procedures; they can even be there during emergencies if they choose to be.”

The first phase of the hospital expansion opened in May 2018, with 84 state-of-the-art Pediatric Intensive Care Unit beds opening on four floors of the tower, in addition to six technologically advanced operating rooms for neurosurgery, orthopedics, plastic surgery, transplant and pediatric surgery. During phase two, Texas Children’s Heart Center®, ranked #1 in the nation by *U.S. News & World Report* for cardiology and heart surgery, opened in September on eight floors, including a 48-bed Cardiac ICU, a 42-bed Acute Care Unit, an outpatient clinic, four cardiac catheterization

laboratories and four cardiovascular operating rooms.

Texas Children’s named the expansion the Lester and Sue Smith Legacy Tower after the Smiths generously pledged \$50 million to support the tower, as well as patient care and research at Texas Children’s Cancer Center. The gift was announced on Sept. 29 at The Legacy of Motown Gala, which raised more than \$83 million and is now the highest grossing fundraising gala in Texas. The event was underwritten by The Lester & Sue Smith Foundation, whose commitment to match funds raised inspired others to give generously.



Legendary Houston philanthropists Lester and Sue Smith generously supported Legacy Tower and inspired others to donate, as well. Lester Smith died on March 14, 2018, at age 76.

All ICU rooms are large, bright, single-family quarters, carefully designed to enable orienting the patients through more than 300 degrees, allowing the option of facing the window or their families, and full access to the patients from almost any angle. The wide, breakaway doors allow easy access to the rooms for beds and equipment.

Each patient room includes a family area with its own privacy curtain and bathroom, as well as storage and TV. A sleeper sofa in the family area can accommodate two family members overnight. In addition, on each floor, a spacious, comfortable and bright family lounge, supported by Ronald McDonald House Charities, is equipped with a kitchen, washer/dryer and computers.

Previously within the ICU, only 60 percent were single rooms, the rest were shared. Also, the rooms were very small – around a third to half the size of the new rooms, allowing parents only to sit on a chair by the bed. Not only was there a lack of space for the family, but also for the patients, the staff and storage.

“Several years ago, during a severe winter viral season, some extremely sick children had to be turned away from Texas Children’s because not enough ICU beds were available. This was ultimately the trigger to build a brand new facility, so that we will no longer be faced with a scenario where we have to deny a critically ill child our care,” Shekerdemian said.

More improvements

The new space is transformational, according to Daniel J. Penny, MD, PhD, MHA, professor and chief of pediatric cardiology at Baylor and Texas Children’s.

“We now have more operating rooms; we have more cardiac catheter labs; we have more intensive care beds; we have more acute care beds. This additional capacity allows us to increase the numbers of children to whom we can provide care at any given time,” Penny said.

Penny receives award

The American Heart Association presented the 2018 Helen B. Taussig Memorial Lecture award to Daniel J. Penny, MD, PhD, MHA, chief of pediatric cardiology at Texas Children's Hospital and professor at Baylor College of Medicine. Penny is co-director of Texas Children's Heart Center®, ranked #1 nationally in pediatric cardiology and heart surgery by *U.S. News & World Report*.

Penny received the award at the AHA's Scientific Sessions in Chicago on Nov. 10 following his presentation: "Working Together Towards New Levels of Excellence in the Care of Children with Heart Disease." Established in 1973, the Helen B. Taussig Memorial Lecture honors individuals for outstanding work with children born with serious heart defects.

Called the founder of pediatric cardiology, Taussig was best known for her innovative work on blue baby syndrome and for co-development of the first surgical procedure for children with pulmonary stenosis.

Previous recipients of the Helen B. Taussig Memorial Lecture include Dan G. McNamara, MD, who was Texas Children's first director of cardiology. McNamara, who completed a fellowship under Taussig at the Johns Hopkins Hospital, and his team designed and customized Texas Children's first cardiac catheterization lab, which significantly advanced the diagnosis of heart ailments in children.



Daniel J. Penny, MD, PhD, MHA, chief of pediatric cardiology, looks on as one of the children settles in a new room in Legacy Tower.

"Also transformational is the enhanced technology integrated into all aspects of the facility, allowing us to provide the most cutting-edge new models of care for children."

For example, new modalities include magnetic resonance (MRI) scanners integrated with a cardiac catheter lab and a neurosurgical operating room.

"It's one of very few neurosurgical ORs with integrated MRI scanners nationally or even internationally," Shekerdemian said. "If children who are having complex neurosurgery procedures require any imaging during surgery, for example, to see if the surgeon got all the tumor out, in the former environment, they would have to leave the operating room, go down in an elevator to Radiology and the MRI scanner. Everyone then would have to unscrub and scrub again, anesthesia time was significantly increased, and patient transport was not without risk. Now the patients can be wheeled from the operating room into the MRI scanner through a communicating door. It would save easily an hour of anesthesia and an hour of procedure time and all the risks of moving a patient in the middle of an operation."

The new MRI-OR combination also facilitates real-time MRI-guided surgeries, such as laser ablation epilepsy surgery. Texas Children's was the first hospital in the world to use real-time MRI-guided thermal imaging and laser technology to destroy brain lesions that cause epilepsy and uncontrollable seizures.



Spacious, well-equipped rooms provide comfort for patients and families and easy access for superb care.

Processes as well as spaces

This sort of innovation helps advance health care and provide a safer environment for patients.



Golden retriever Bailey is one of three therapy dogs that work with child life specialists in Texas Children’s Pawsitive Play Program. Animal-assisted therapy enhances the emotional well-being of pediatric patients by reducing their anxiety, perception of pain and fear of hospitalization.



Lara Shekerdeman, MD, MHA, chief of critical care, inspects the rooms and the patients as they are settled in their new rooms.

“It’s important for us to communicate that this is not just about getting a new building,” Penny said. “We’ve taken this as a new ground zero, for us to move

forward into the future. In the Heart Center, it means we can provide more care for more patients more quickly and with more agility than ever before. It’s not infrequent now for a child to come into the center at 3 o’clock in the morning and be in the operating room by noon that day.”

In September 2018, Christopher A. Caldarone, MD, joined Texas Children’s Heart Center and Baylor as professor and chief of congenital heart surgery.

“In addition to being a world-renowned pediatric heart surgeon, one of Dr. Caldarone’s greatest strengths is leadership. He has brought fresh views to our Heart Center about organizational structure, process development and team building. We are all benefiting from those insights,” Penny said.

In November 2018, the Heart Center held a retreat in which individuals from every part of the center had a chance to contribute to discussions about the overall direction, strategy and priorities for the coming years. Project groups were organized to look at ways to make even greater strides in areas such as access for children and families, care of adults with congenital heart disease, and quality initiatives across the center.

One of the new features in both the Heart Center’s Outpatient Cardiovascular Clinic and the PICU is organization into pods by subspecialty.

“Instead of an 84-bed generalized PICU, we have many smaller units with 11 or 12 beds in each, tailored to meet specific needs. For instance, we have a state-of-the-art Neuro ICU with built-in neurological monitoring and EEG in most rooms for patients with very

complex brain problems, brain injury and epilepsy and those recovering from neurosurgery,” Shekerdeman said.

Additional subspecialty ICU units include:

- Surgical ICU for post-operative patients and those with liver failure awaiting transplant
- Pulmonary ICU for children with complex lung disease
- Cancer and bone marrow transplant ICU
- Transitional ICU for medically complex patients who often are technology dependent
- Heart failure ICU
- Newborn cardiac ICU
- Mixed unit for older children and fast-track patients who usually have a short ICU and hospital stay

How we got here

Planning such a large, complex project took about four and a half years from inception of the idea to opening the doors. Represented in the planning team were hospital leaders, surgery, medicine, nursing, patient families and more.

“We had a big patient family advisory group who told us what they wanted – subtle things that are important to them that we wouldn’t have thought of, and some assumptions we had about what they would want that they really weren’t interested in. We went with what they advised us to do, and it was truly one of the best things we did,” Shekerdeman said.

Legacy Tower features

- Heart Center:
 - 8 floors
 - 48 patient rooms in Cardiovascular Intensive Care Unit
 - 42 patient rooms in Cardiac Acute Care Unit
 - 4 cardiovascular operating rooms
 - 4 cardiac catheterization labs
 - 30 exam rooms in Outpatient Cardiovascular Clinic
 - Inpatient gym
- Intensive Care Units:
 - 4 floors
 - 84 patient rooms
- 6 high-acuity Operating Rooms for neurosurgery, orthopedics, plastic surgery, transplant surgery, general pediatric surgery
- Satellite pharmacy
- Pathology lab and blood bank
- 100+ seat auditorium
- Helistop on the roof

Texas Children’s Hospital patient numbers

- 25,000+ pediatric cardiology and heart surgery annual patient encounters
- 1,000+ congenital heart surgeries annually
- 6,000 children admitted to Intensive Care Units annually
- 1,500 critically ill children transported by the Kangaroo Crew special transport team annually from around the nation



The Lester and Sue Smith Legacy Tower is next door to the Texas Children’s Pavilion for Women in the Texas Medical Center.



From left, Tenley, Katy, Ed and Jake Wolff relax in a new family lounge. The twin teens and their parents helped plan Legacy Tower as part of children's and family advisory teams.

Parents were involved early in the design phase and again throughout every important stage of construction, including full-scale simulations with physicians, nurses, pharmacists, respiratory therapists, social workers, child life specialists, technicians and technologists, allied health specialists, and patient care assistants, in addition to the families.

"We were excited to be asked to be a part of that planning process," said Ed Wolff, who was a member of the Family Advisory Team with his wife, Katy.

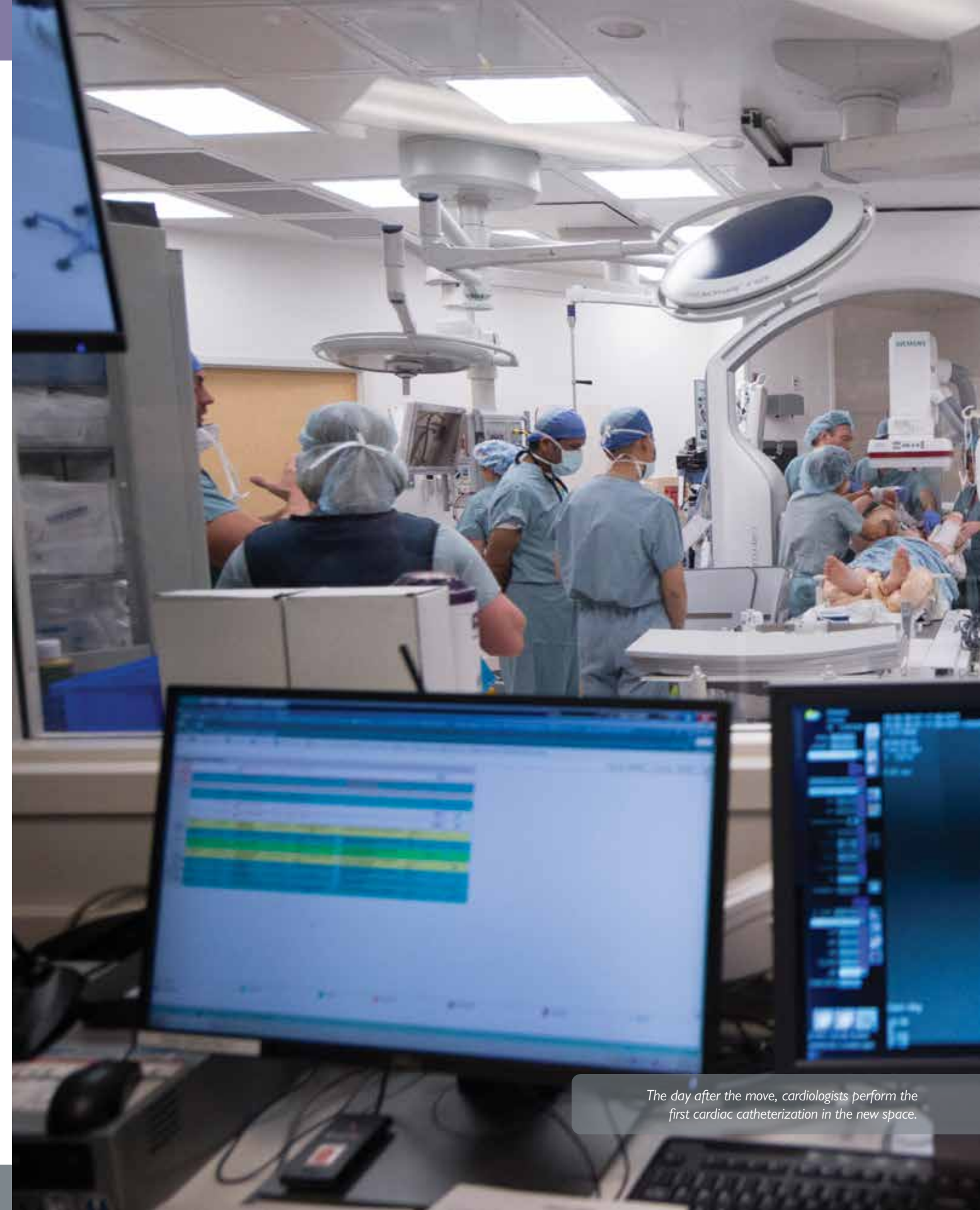
Their 14-year-old twins both have been patients at Texas Children's and are members of the Children's Advisory Team. Tenley, who was born with a congenital heart defect, spent about four months in intensive care and had multiple surgeries. Her brother, Jake, had surgery and spent a week in Texas Children's after breaking his leg when he was 5 years old.

"The space is phenomenal," Wolff said. "It's the most amazing facility that I've ever been into, and I've been into a number of children's hospitals around

the country. The fact that the care and thought that everyone put into the project was centered on the patient and family's needs is what makes the new ICUs so successful."

Working hand in hand with families is helping Texas Children's to continue to build on excellence.

"Smith Legacy Tower enables us to provide the best care in the best possible environment for all of our patients and their families and to make sure that every child who needs our care is able to get it," Shekerdemian said.



The day after the move, cardiologists perform the first cardiac catheterization in the new space.

Stronger Every Day



In Texas Children’s Inpatient Rehabilitation Unit, the Lokomat provides feedback to help retrain patients in walking with a normal gait.

Comprehensive rehab program restores function and mobility

When Reuben Pimentil couldn’t walk across a parking lot, his mother knew something was wrong. The 13-year-old had complained recently of being tired and had a slight cough, but this was more serious. A phone call to the doctor ended with the doctor’s urging Reuben’s mother to take him to the emergency room. They headed to Texas Children’s Hospital.

Testing in the hospital’s neurology unit revealed that Reuben had Guillain-Barré syndrome, which causes progressive muscle weakness due to the immune system attacking the peripheral nervous system. This is often triggered by a virus, which likely was responsible for Reuben’s cough and cold symptoms. By the time medical treatment could stop the progression, Reuben had lost the use of his arms and legs and was at risk of needing to go on a ventilator.

Therapies began while Reuben was still in the neurology unit. Once he recovered enough strength to participate in three hours of therapy a day, he was moved to Texas Children’s Inpatient Rehabilitation Unit, where he remained for a month, participating in physical, occupational, recreational and music therapy, plus a school support program operated by Houston Independent School District.

The unit offers an interdisciplinary program customized for each patient’s needs by a physician with pediatric rehabilitation subspecialty certification. Physical, occupational, speech, music and recreational therapists, child life specialists, and specially trained nurses work as a team to improve the

children’s functioning and independence and to prepare them and their family for returning home and reintegrating into the community. Texas Children’s Inpatient Rehabilitation Unit has the distinction of being the only pediatric inpatient rehabilitation unit in Texas accredited by the Commission on Accreditation of Rehabilitation Facilities.

Comprehensive care

“We provide holistic care,” said Aloysia Schwabe, MD, section chief of Physical Medicine and Rehabilitation at Texas Children’s and associate professor at Baylor College of Medicine. “We pull the team together, including other subspecialists, and we involve the family, so that we’re really managing the patient comprehensively.”

Reuben’s mother, Allyson Pimentil, is grateful for attention paid to the patient’s family.

“I really appreciate that they see the big picture of how that patient is the star of the show, but the family members are affected by the illness as well, and they reach out to the family,” Allyson said. “They trained us as a family and gave us the tools and skills that we needed to work with equipment, transfer boards, wheelchairs, bathing a patient and taking care of his personal needs. If we hadn’t learned the skills that they taught us, we would have been sunk. They take time to make sure everybody is in a healthy place mentally, physically and emotionally. The personal attention is second to none.”



A child with a brachial plexus palsy enjoys her session with Gabrielle Nguyen, MD, assistant professor in Physical Medicine and Rehabilitation. Damage to nerves controlling arm muscles cause weakness, pain, sensory loss or functional impairment.

Before Reuben's discharge from the hospital, rehabilitation staff took him home for a visit and walked through the whole house to identify challenges.

"He was gaining in mobility and could walk short distances before he came home. He had to practice on stairs at the hospital. The rehab staff said, 'How can we make him successful in the home? How can we make him successful traversing a sidewalk? Can he get in and out of the car? Can he navigate a grocery store? A schoolroom?' All those things were considered and taught so he would be prepared to come home," Allyson said.

Like Reuben, some children in the rehabilitation unit are profoundly weak while recovering from a critical illness. Others are admitted after a traumatic brain injury, spinal cord injury, amputation or after elective orthopedic and neurosurgical procedures related to cerebral palsy. Currently, more than 90 percent of the children admitted to the rehabilitation unit have, at some point during their journey, been in a critical care bed. These children have needed the full spectrum of care as they progressed in their recovery. Texas Children's is known for giving the most critically ill children not only the opportunity to survive, but also to heal and rehabilitate to their fullest potential.

Special expertise

"One area where we distinguish ourselves is taking care of a large number of patients who have cancer or who have had epilepsy surgery. Not all rehab units have the expertise required to take care of those children," Schwabe said.

Texas Children's rehabilitation doctors also are experts in care for children with brain injuries. Christian M. Niedzwecki, DO, medical director of the Inpatient Rehabilitation Unit and the Traumatic Brain Injury Clinic and assistant professor at Baylor, has been instrumental in developing guidelines for care of children with both traumatic brain injury – such as from a fall, a car accident or a gunshot wound – and acquired brain injury – such as from encephalitis or a brain tumor.

"There is no place else in this world like that rehab unit. They are top notch."

– Allyson Pimentil

Other rehabilitation faculty members direct or co-direct the hospital's:

- Electrodiagnostic Lab
- Limb Deficiency Clinic
- Motion Analysis Lab
- Brachial Plexus Clinic
- Cerebral Palsy Clinic
- Spasticity Clinics
- Intrathecal Baclofen Pump program (surgically implanted programmable pumps that deliver medication to relieve severe spasticity)

With the recent opening of Texas Children's Lester and Sue Smith Legacy Tower and the addition of a helipad, the admissions of trauma patients and very critically ill children are expected to increase, along with

the need for additional rehabilitative services. Plans for expansion of the Inpatient Rehabilitation Unit are in the works to accommodate the increased rehabilitation patient volume.

"We serve all; it doesn't matter the reason for the child's decline. Part of our role as Physical Medicine and Rehabilitation doctors is to help match up what rehabilitative services a child needs, taking into consideration the child's recovery trajectory and their family's ability to care for them safely," Schwabe said.

Children who have had significant injury or change in functional status with many deficits would likely be admitted to the Inpatient Rehab Unit. Children with less significant injuries who have some weakness or difficulty with balance may be referred to Texas Children's Acute Outpatient Rehabilitation Program or one of Texas Children's community locations to continue therapy services.

Reuben, who lives in the Houston suburb of Katy, continued outpatient physical therapy at Texas Children's Hospital West Campus for about six weeks. Within a few months, he was back to normal, running and playing basketball.

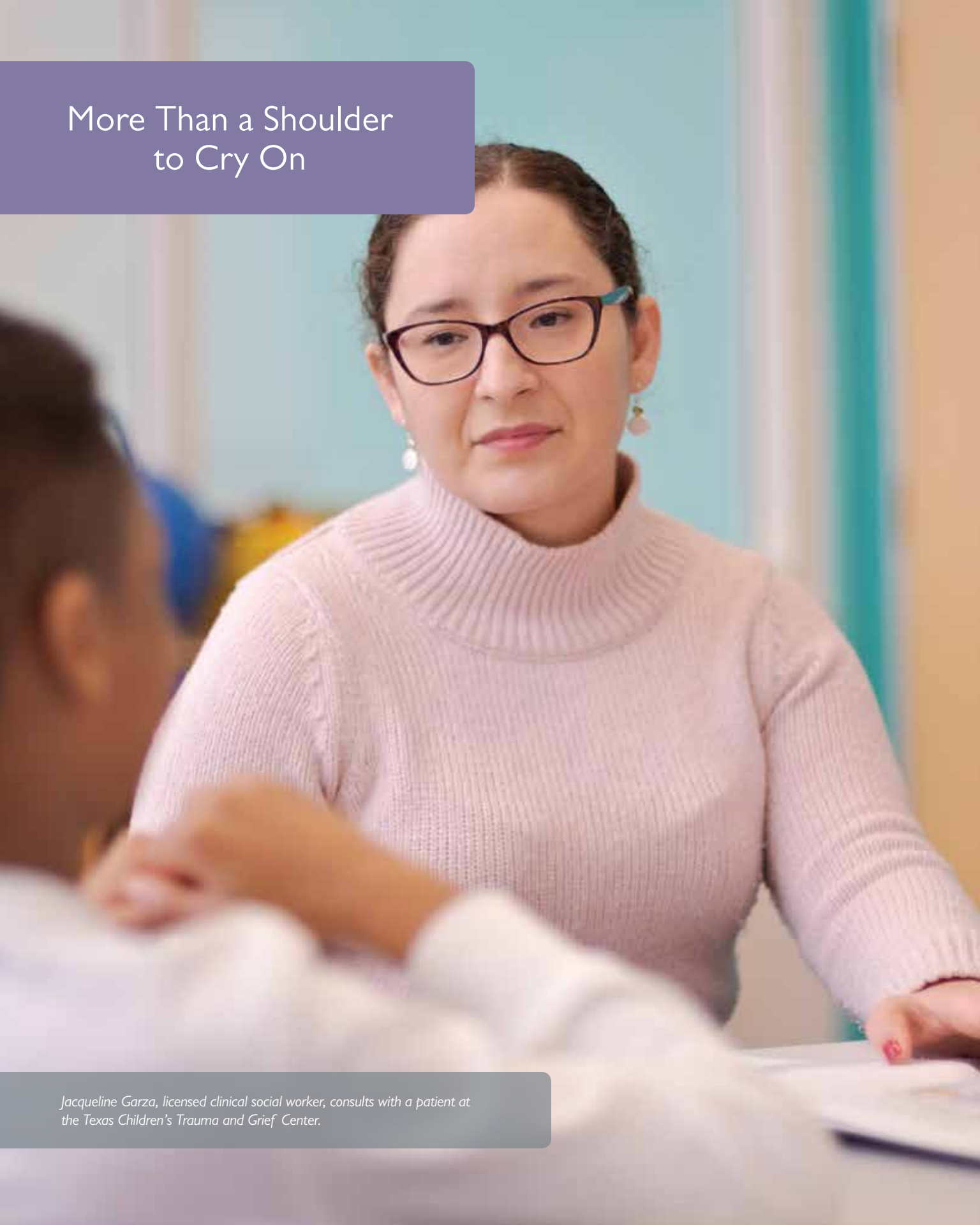
"He's 100 percent able to do all of the activities that you would expect a typical young person to be able to do. The illness had no lasting effects. There is no place else in this world like that rehab unit. They are top notch. They do a hard job and a fantastic job," Allyson said.

For children who need help regaining their physical independence, Physical Medicine and Rehabilitation offers the vital expertise and support that are required.



Christian Niedzwecki, DO, medical director of the Inpatient Rehabilitation Unit, helps a young patient regain the ability to walk.

More Than a Shoulder
to Cry On



Jacqueline Garza, licensed clinical social worker, consults with a patient at the Texas Children's Trauma and Grief Center.

Trauma and Grief Center helps children through hard times

Some of the most positive things in our society have resulted from people experiencing a tragic loss and then trying to make a difference because of that loss. For example, starting a fundraising event for fighting breast cancer after losing a sister to the disease. Establishing Amber Alert because a little girl named Amber was kidnapped and died. However grief, especially for a child, can also have powerful negative side effects, more even than one might expect.

“Our research shows that bereavement in and of itself is the strongest predictor of school problems in children,” said Julie Kaplow, PhD, director of the Trauma and Grief (TAG) Center and chief of psychology at Texas Children’s Hospital and associate professor and vice chair of the Department of Pediatrics at Baylor College of Medicine. “Even compared to trauma, like sexual abuse, physical abuse or witnessing domestic violence, one of our recent studies showed that it was actually the death of a loved one that was the strongest predictor of school dropout, poor school grades and not feeling connected to school.”

For this reason, helping children process grief in a healthy manner is one of the most important ways the TAG Center is helping to ensure that children’s emotional and mental health needs are met.

Recognition is growing that childhood bereavement is a major overlooked area. Recently the National Academy of Sciences invited Kaplow to speak about how to help children who have

lost a family member and how these children function both in the immediate aftermath and over time.

In Texas Children’s, the TAG Center is working closely with the Palliative Care team on developing an intervention for children faced with the impending death of a sibling.

“Sadly, that is a population that we need to address here in the hospital. Historically, not much has been done in terms of testing evidence-based interventions for siblings facing loss and building in the supports that they’re going to need even before the death so that they can function better over the longer term,” Kaplow said.



Double whammy

Sometimes trauma and grief occur together. In 2017, thousands of Houston-area children lost their homes during Hurricane Harvey or the flood that followed. Some of them were injured; some lost family members.

In the 2018 school shooting in Santa Fe, Texas, eight students and two teachers were fatally shot. Afterward, the students grieved for their friends and teachers while trying to cope with

their own terror and, in some cases, their own wounds.

Research indicates that untreated trauma and bereavement in children are associated with problematic long-term outcomes, including depression, anxiety, substance abuse, post-traumatic stress disorder, suicide risk, school dropout and violent behavior.

To help children and teens, the TAG Center uses a number of evidence-based interventions, including an assessment-driven treatment called Trauma and Grief Component Therapy. Kaplow was one of the developers of this therapy and a co-author of a book describing it. The therapy consists of four components, from which the clinician chooses the best fit for an individual or a group:

- Basic coping skills and emotion regulation skills, useful for any child who has experienced any kind of adversity
- Trauma processing for children who have higher levels of post-traumatic stress
- Grief processing for children who have experienced the death of a loved one and need help to reduce maladaptive grief reactions and to harness and grow more adaptive grief reactions
- Returning to a normal developmental trajectory, particularly for youth who feel hopeless about their future, and/or see themselves as victims, to help them with goal setting, planning ahead and envisioning a more hopeful future

This therapy is evidence-based, Kaplow emphasized, meaning that it has been scientifically shown to be effective in reducing post-traumatic stress, maladaptive grief and depression.

“It also significantly impacts a number of the outcomes that principals and superintendents are most concerned

about – enhancing school behaviors and grades, reducing violence in school and helping kids feel more connected,” she said.

The demonstrated effectiveness of the TAG Center’s approach has led to an influx of funding from philanthropic and government sources supporting new and expanded initiatives.

Evidence-based interventions
Initiatives dealing with the aftermath of Hurricane Harvey include:

- Providing in-hospital treatment to children who were adversely affected
- Deploying a bilingual TAG Center clinician onto a Texas Children’s mobile unit that serves low-income

and often undocumented youth. That project grew to two bilingual clinicians assigned full time to a new, dedicated TAG Center therapy mobile unit to provide mental health care at schools with the greatest need.

- Increasing the number of large-scale learning collaboratives that bring together 80 to 100 community- and school-based clinicians for training in evidence-based treatments for trauma and grief

Kaplow testified at the state legislature in Austin about the need for more evidence-based trauma-informed interventions for youth, particularly in Texas schools. Just one day later, the shootings took place at Santa Fe High School. One of the people who heard her speak was connected to the Santa Fe Independent School District and immediately reached out to ask for help.

“In the more immediate aftermath, we deployed several of our TAG Center clinicians out to the school to provide psychoeducation to parents about normal reactions to a shooting and how to identify whether their child is having a harder time and may need more support. We helped parents to prepare for what’s to come in terms of children experiencing trauma reminders or loss reminders as they return to school. To address the needs of the community as a whole, we spoke at a town hall meeting, explaining what to expect from students over the coming months. We also met with all of the teachers, recognizing that most of the teachers were traumatized by this event,” she said.

After a grant from the Victims of Crime Act helped to establish a Resiliency Center in Santa Fe, trained TAG Center

clinicians have provided trauma- and grief-related services to any families who were adversely affected by the shootings. They also provide intervention groups to students within the high school and learning collaboratives to equip community clinicians with trauma and grief expertise.

Recognizing Kaplow’s expertise, the FBI appointed her as one of 10 members of the FBI’s Mass Violence and Children Working Group, which consults on best practices to help children and families after a mass shooting.

Other TAG Center efforts include:

- Immediately addressing the psychological needs of children admitted to Texas Children’s, such as those who have experienced abuse, rather than just referring them for mental health services after discharge
- Deploying bilingual trauma and grief clinicians to Texas Children’s Pediatrics practices, to provide trauma and grief therapy where the children and families are receiving physical health care
- Developing the Helping Hands Program of Houston, through which the Houston Police Department partners with schools to ensure that children who have experienced trauma are readily identified and receive referrals for treatment in the most timely way
- Training the behavioral health staff of shelters for immigrant children to better recognize trauma and grief reactions among children who have experienced separations from their caregivers and to provide trauma and grief support

Funding grows

The Texas Children’s Hospital Trauma and Grief Center has received \$12 million in funding from philanthropic and government sources over the last 18 months. Among the supporters are:

- Center for Disaster Philanthropy
- Chevron
- Children’s Health Fund
- Greater Houston Community Foundation
- Houck Family Foundation
- John P. McGovern Foundation
- JPB Foundation
- Meadows Foundation
- New York Life Foundation
- Substance Abuse and Mental Health Services Administration
- Rebuild Texas
- Robert Wood Johnson Foundation
- Victims of Crime Act Crime Victims Fund

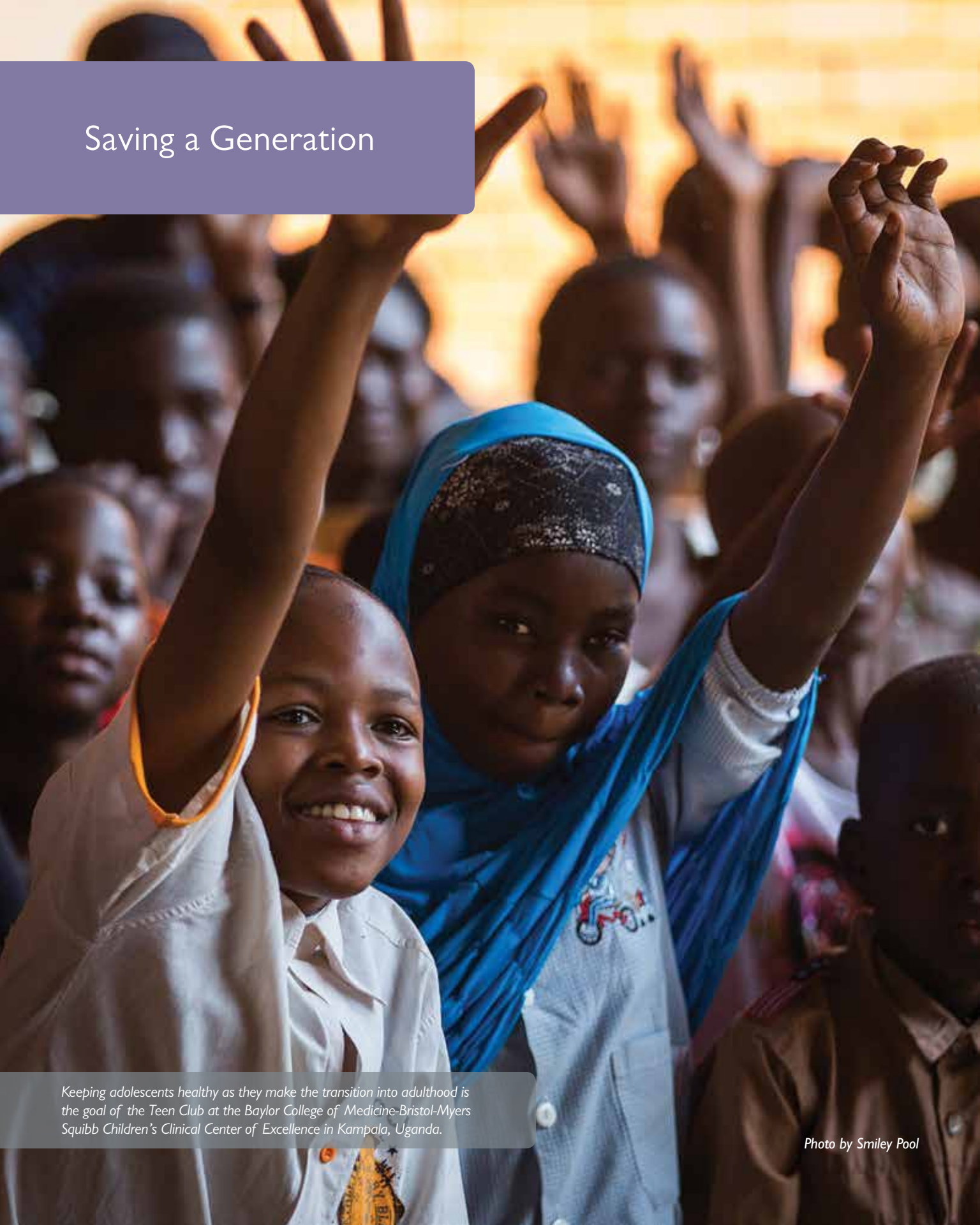
- Training organizations and clinicians in using trauma- and bereavement-informed risk screening/assessment and Trauma and Grief Component Therapy in other locations in Texas and across the country

The TAG Center focuses on sharing its research and approach so that they can help not just those within reach of Texas Children’s Hospital, but children across the country who are having a particularly difficult time.



Juan Sazo is a bilingual licensed master social worker who specializes in assessing and treating traumatized and bereaved youth.

Saving a Generation



Keeping adolescents healthy as they make the transition into adulthood is the goal of the Teen Club at the Baylor College of Medicine-Bristol-Myers Squibb Children's Clinical Center of Excellence in Kampala, Uganda.

Photo by Smiley Pool

20 years of increasing survival around the globe

A whole generation of children has been saved since the Baylor College of Medicine International Pediatric AIDS Initiative (BIPAI) at Texas Children's Hospital began 20 years ago.

Now the largest academic-based pediatric HIV/AIDS care and treatment program in the world, BIPAI has trained 52,000 health care providers and provides care for nearly 300,000 children with HIV and family members. It has lowered the mortality rate for these children to 1.2 percent.

The concept of BIPAI was born in the late 1990s, on a trip to Romania, when Mark W. Kline, MD, met some of the sickest children he had ever seen. Most of the children had been infected with HIV through outdated medical practices, including reuse of disposable needles and repeated transfusions of sick infants with whole human blood.

"The children were hanging on by a thread and in terrible shape," Kline said.

Now chair of the Department of Pediatrics at Baylor College of Medicine and physician-in-chief at Texas Children's, Kline was one of the pioneers of antiretroviral treatment for children living with HIV/AIDS. The remarkable impact in the United States inspired him to make highly active antiretroviral therapy available to children in resource-limited settings, as well. In 2001, with funding from the Sisters of Charity of the Incarnate Word and the Abbott Fund, BIPAI established a pediatric HIV outpatient clinic in Constanta, Romania.

"Before you knew it, these kids would be up and running around, happy and healthy," said Kline, who is president of BIPAI.

Program grows, children thrive
Using the Romanian clinic as a model, BIPAI collaborated with governments in sub-Saharan Africa, where AIDS was the leading cause of death in 2002.

At Kline's urging, Botswana's Ministry of Health donated a plot of land for what would be Africa's first-ever standalone pediatric AIDS clinic. Funding came from Bristol-Myers Squibb Foundation, the Fogarty International Center of the National Institutes of Health and the Centers for Disease Control and Prevention (CDC) Global AIDS Program. The Botswana-Baylor Children's Clinical Centre of Excellence opened in 2003, began training local health professionals and treated 1,200 children the first year.

With additional funding from President George W. Bush's Emergency Plan for AIDS Relief, or PEPFAR, and the Global Fund to Fight AIDS, tuberculosis and malaria, a network of centers of excellence arose in Eswatini (formerly named Swaziland), Lesotho, Malawi, Tanzania and Uganda.

"There was absolutely nothing for these kids in many of these countries," said Gordon E. Schutze, MD, executive vice chairman of the Department of Pediatrics at Baylor and Texas Children's and BIPAI's executive vice president. "What BIPAI was able to do, in conjunction with local governments, has been really tremendous. When we first built these centers, the kids would come and just sit there because they were all sick. Then after a couple of years, we built playgrounds, because the kids were healthy enough to play. Then we developed teen clubs, because the kids got older."



BIPAI's first Center of Excellence in Constanta, Romania, has grown from a pediatric clinic to a family center that now cares for almost 1,000 patients infected with HIV and hepatitis.

Photo by Smiley Pool

Two donors have been crucial to BIPAI's success, the Bristol-Myers Squibb Foundation and the Abbott Fund, which is now the AbbVie Foundation.

"These donors alone provided us with close to \$100 million in cash and in-kind donations each, and they were instrumental in enabling us to do the work we do," said Michael B. Mizwa, chief operating officer and senior vice president of BIPAI and director of global health at Texas Children's. "We've been able to expand our mission to address health disparities among children and women."

HIV and more

The physical infrastructure, health care capacity and relationships that were built to address HIV provided a strong foundation on which to layer new pediatric and maternal health services in Africa and beyond. For example:

- A global program to fight tuberculosis grew out of BIPAI in Eswatini, the country with the highest prevalence of TB in the world.
- Full-time Baylor-Texas Children's obstetrics and gynecology faculty members staff the Women's Global Health Initiative in Malawi to help mothers and babies survive and thrive.
- Maternal and child health programs in Colombia and Argentina are funded by Chevron as part of its corporate social responsibility initiative.
- Chevron also partnered with BIPAI to establish the Angola Sickle Cell Initiative in a nation that has one of the world's highest rates of the genetic blood disease.
- BIPAI partnered with UNICEF to conduct educational assessments and trainings in China, Honduras, India and

Africa, imparting the knowledge and skills to take care of their own people.

- Beginning in 2015, programs to address cancer, emergency medicine, malaria, malnutrition, maternal health, neglected tropical diseases, sickle cell disease and tuberculosis were brought under the umbrella of Texas Children's Global Health.
- In 2016, the U.S. Agency for International Development (USAID) awarded a \$69.8 million grant to BIPAI-Malawi to provide technical assistance to PEPFAR programs in Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe.
- A six-year project funded by ExxonMobil in Papua, New Guinea, is transitioning to local ownership after building capacity in public health and pediatrics.

Corps of physicians

An early, successful spinoff from BIPAI was the Pediatric AIDS Corps, launched in 2005 with funding from Bristol-Myers Squibb Foundation and Baylor, to improve care and treatment for children and families affected by HIV/AIDS. The program expanded in 2011 to cover a broad spectrum of health needs and a wide geographic span and became the Texas Children's Global Health Corps. It has placed 192 American-trained physicians in partner countries with a focus on pediatrics, family medicine, internal medicine, obstetrics/gynecology and pediatric surgery.

"Piggybacking on the Global Health Corps, about eight years ago we developed what is now called the Dr. Kelly DeScioli Global Child Health



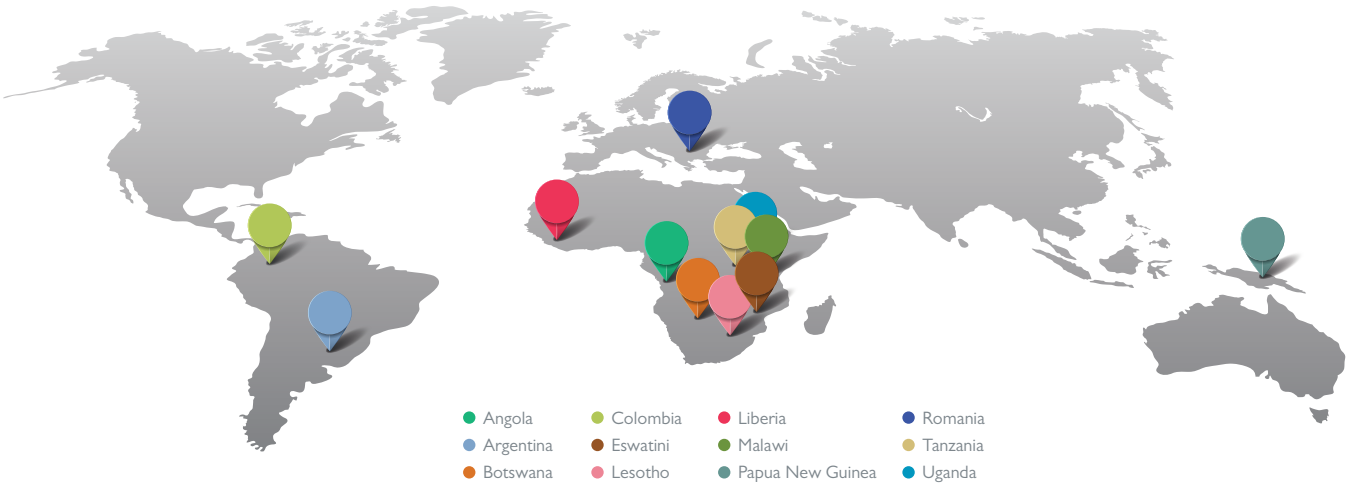
Left: The Health and Indigenous Self-Sufficiency in La Guajira program, known as SAIL, helps reduce childhood malnutrition and maternal mortality in the indigenous population of Colombia. Right: In a sign that prevention programs are working, fewer babies are being born with HIV in Mbabane, Eswatini. In addition, the Tuberculosis Center of Excellence there has improved child TB case detection.

Photos by Smiley Pool



During a tour of the Botswana-Baylor Children's Clinical Centre of Excellence in 2003, first lady Laura Bush and Mark W. Kline, MD, center, meet with patients and staff.

Photo by Smiley Pool



BIPAI's Global Reach.



John Damonti, left, president of Bristol-Myers Squibb Foundation, and His Excellency Mokgweetsi E.K. Masisi, president of Botswana greet each other during a September 2018 visit to Texas Children's Hospital.

Residency Program, because it was endowed by the DeScioli family. This is a phenomenal program, the only one like it in the United States,” Schutze said.

The program chooses five physicians a year for the residency. With approval from the residency accrediting body to add a fourth year to the pediatric residency, the participants spend one year in Africa with Texas Children's Global Health partners.

“This has given physicians the opportunity to work in a resource-limited area and to figure out how to incorporate working with kids in resource-limited areas into their careers,” Schutze said.

Once they return home, some physicians from the Global Health Corps and Global Child Health Residency work in resource-limited facilities, such as Medicaid clinics. Others work in global health with organizations such as UNICEF, USAID,

PEPFAR and CDC, where they help shape public policy and affect the lives of thousands of children.

Children's cancer

Another landmark program that evolved from BIPAI and Texas Children's Global Health is the pediatric hematology-oncology treatment network in southern and eastern Africa. Beginning with one hematologist-oncologist in Botswana in 2008, the program grew. In 2017, BIPAI, Texas Children's and Bristol-Myers Squibb Foundation entered into a partnership with the governments of six sub-Saharan countries to establish Global HOPE (Hematology-Oncology Pediatric Excellence) to improve the prognosis of children with blood disorders and cancer.

In the United States, where there are 15,000 new cases of pediatric cancer a year, 80 percent of children survive. In sub-Saharan Africa, of the more than 100,000 children who develop cancer each year, only 10 percent survive. Bristol-Myers Squibb Foundation

committed \$50 million over five years to fund training of health care providers and establishment of a clinical infrastructure and operations. BIPAI is raising an additional \$50 million for future operating costs.

“The success we've had in radically changing the course of pediatric HIV/AIDS in sub-Saharan Africa is due in large part to the tremendous support provided by the country governments, health care providers on the ground and donors who have made our work possible,” BIPAI founder Kline said. “We look forward to helping patients and their families by embarking on this uncharted area of cancer care in Africa. Working with our partners, we aim to build a self-sustaining infrastructure that changes the tide of these childhood diseases in sub-Saharan Africa.”

Longer lives through research

Besides improving medical care and education, BIPAI and Texas Children's Global Health have significant achievements in research, including the following:

- Participated in clinical trials that proved the efficacy of triple anti-HIV medications in reducing the viral load and viral replication of HIV in pediatric patients
- Showed in Romania that highly active antiretroviral therapy could be used in children in resource-limited settings with the same benefits and the same safety profile as in the United States
- Edited and co-authored the *HIV Curriculum for Health Professionals*, which was first used to train nurses in Romania

- Participated in the life-changing clinical trial that discovered that the antiretroviral medication AZT can prevent the transmission of HIV from a pregnant woman to her unborn baby

“Today it is rare for pregnant HIV-infected women in the United States to give birth to HIV-infected babies; soon this will be the norm in Africa, too,” said Nancy R. Calles, MSN, MPH, BIPAI co-founder and senior vice president for research. “The rate of deaths and morbidities in HIV-infected children has dramatically decreased around the world. Children that started in

our programs are now adults and are living long, healthy lives. They are living normal lives, doing everything that their non-HIV-infected peers are doing.”

Current research in the BIPAI network investigates the long-term effects of HIV and HIV medications on patients, the psychological effects of living with HIV, and operational management.

Living longer with HIV, cancer, TB and sickle cell disease is cause for celebration. Yet some of the countries hardest hit by conditions that threaten the lives of their children cannot afford the expense of making their programs

self-sufficient. Donations may be made at bipai.org/giving or by calling **832-822-1038**.

“Our return on investment is the health and well-being of these children, who are becoming adolescents and young adults,” Mizwa said. “We can't stop treating them. We still have a long way to go.”

With 20 years of inspiration, compassion and hard work around the globe, the outlook for children with life-threatening conditions is well on the way from despair to hope for future generations.



A member of the Global Health Corps, Nader Kim El-Mallawany, MD, plays with a young patient at Kamazu Central Hospital in Lilongwe, Malawi, in 2012. El-Mullawany now works as assistant professor of hematology/oncology at Baylor and Texas Children's.

Photo by Smiley Pool

Virus Hunter

Outbreak tracker seeks clues to reduce their deadly impact

*“The summer of 1999 was hot in NYC. Residents were sleeping outside, collecting water in containers for their plants and gardens, and permitting their swimming pools to lie dormant and become polluted. By mid-summer there were anecdotal reports of American crow (*Corvus brachyrhynchos*) deaths and ‘drunken crows’ around the city.”*

The crows, described in the December 2013 issue of the journal *Viruses*, were harbingers of the Western Hemisphere’s first outbreak of West Nile virus, a mosquito-borne disease that typically affects birds, horses and humans.

The human outbreak was first detected after a physician reported a cluster of human encephalitis cases to the New York City Department of Health, and the department asked the Centers for Disease Control and Prevention (CDC) to assist in an investigation. Kristy O. Murray, DVM, PhD, was the first one there.

At the time a CDC Epidemic Intelligence Service officer, Murray now is professor and vice chair for research in the Department of Pediatrics at Baylor College of Medicine and assistant dean for faculty and academic development in Baylor’s National School of Tropical Medicine. She also directs the Texas Children’s Hospital William T. Shearer Center for Human Immunobiology.

“At the CDC, I did a large number of investigations that had me in the field hunting for viruses,” Murray said.

Her first assignment was in the rabies branch.

“Rabies is a fascinating virus, mostly because it kills its host almost 100 percent of the time. It targets a part of the brain that causes aggression, which provokes the infected animal to bite the next host and pass the virus along,” she said. “My first true virus hunting excursion was in the Philippines, going from island to island, going into caves and catching bats.”

In one species of bat in the Philippines, the CDC team found Australian Bat Lyssavirus. This particular form of rabies had previously been overlooked in the Philippines because rabies from dogs had been so prevalent there.

While in the Philippines, the CDC team also studied bats believed to be responsible for spreading a type of Ebola virus that had infected monkeys in the Philippines and then was imported to a research facility in Reston, Virginia. This type of Ebola is not harmful to humans but was fatal to nonhuman primates.

The following year, the team again looked at bats as a reservoir for another deadly virus, Nipah virus, which emerged for the first time in Malaysia. Better understanding the natural history of the viruses, where they originate and the reservoir species that carry them, enables public health authorities to take steps to control them.

Far afield

While Murray worked at the CDC and later at the University of Texas School of Public Health in Houston and then at Baylor, her outbreak-tracking investigations took her to far-flung areas of the world, studying, for example:

- Unexplained illness and death in heroin users in Ireland
- Polio in Bangladesh
- H1N1 flu in Mexico
- SARS in China
- Hantavirus and unexplained kidney disease in Nicaragua
- Zika virus and Chagas disease along the Texas-Mexico border

Her move to Texas in 2002 coincided with an unprecedented number of human cases of West Nile virus and a spread across the United States and into Canada. She began a research program on West Nile virus, which continues today studying long-term renal and neurological effects in one of the largest and longest running cohorts of West Nile-infected patients in the world. Her group was first to identify a chronic kidney disease and progressive neurological disease resulting from West Nile virus.

West Nile is a significant public health problem in the United States, where it’s estimated that more than seven million people have been infected.

“Right now, West Nile has no treatment; there’s only supportive care. And there’s no commercially available vaccine for it,” Murray said.

“Besides epidemiological and field-based studies, I understand the critical importance of having a basic science component to the research, looking specifically at animal models of West Nile encephalitis to see if we can modulate the immune response so that

Complementing epidemiological investigations of viruses in the field are basic science virological studies led by Kristy O. Murray, DVM, PhD.



To protect against serious disease transmitted by inhalation, Murray and her research team do some of their work in a BSL-3 (biosafety level 3) lab.

we can reduce inflammation within the brain, which would, in turn, improve patient outcomes. We've been able to identify one particular pathway that is very promising."

Murray's team was the first to detect dengue fever's emergence in Houston. She also partnered with Julie Boom, MD, associate professor of pediatrics at Baylor and director of the Texas Children's Immunization Project, to enroll more than 1,000 febrile children in the Texas Children's Emergency Department and screen them for dengue, West Nile and chikungunya infection. Murray's projects on the epidemiology of neglected tropical diseases in Texas include investigations into pediatric cases of murine typhus, which is transmitted by fleas, and locally

acquired cases of Chagas disease, which is transmitted by "kissing" bugs.

In addition, Murray is principal investigator of a new, five-year project with the CDC focusing on emerging pathogens in Central America. Researchers will look at patients with acute febrile illness in Belize and El Salvador to better understand what diseases are present and perhaps discover new diseases using molecular tools.

Diverse perspectives

Tracking down the source of infections and understanding their impact on human health requires a team with diverse strengths – including molecular biologists, physician scientists, veterinarians and epidemiologists, Murray emphasized. While she was still

in veterinary school, an epidemiology elective led to an opportunity for Murray to work at the CDC as a student and a postdoctoral fellow.

"My background brings in a unique and holistic approach to studying these diseases and how they're spread. Almost all of the diseases that I work on have some sort of zoonotic component to them – some animal reservoir or some insect reservoir that is responsible for human disease risk," she said.

Her PhD on clinical implications of viral infections bridged the basic science of virology and clinical studies in human populations.

"When you pull in researchers from other disciplines and have

that collaborative aspect of team science, it makes a huge difference. I've learned so much from other people because they come at it from a different thought process. I have an incredibly strong team; they are amazing. None of this could be done without them," she said.

Continuous funding from the National Institutes of Health and other sources, and authorship of more than 100 important and original papers have marked Murray's successful research career thus far. Helping other Department of Pediatrics researchers to be successful and ensuring compliance with regulations are her principal roles as vice chair for research.

Mentoring others

"We have a lot of faculty who are physician scientists, so they are working incredibly hard to juggle clinical time and research time. I wanted to provide tools to help them be successful because the research they're doing is important. It literally translates to saving lives," she said.

A program she started in 2015, while associate vice chair for research, has helped faculty increase extramural funding and scientific publications. Murray initially called the project the Junior Faculty Research Development Program, but she has renamed it the Research Advancement Program to encourage department-wide participation.

Her role in the National School of Tropical Medicine focuses on developing educational programs that are needed and will be well received by the target audiences, such as the Diploma in Tropical Medicine Baylor now offers targeting clinical professionals including physicians, nurses, physician assistants and medical students. Undergraduates, primarily from Baylor University, participate in the Tropical Medicine Summer Institute.

From the field to the lab to the patients at Texas Children's, Murray brings an eclectic mix of skills to her own successful research program, and she inspires and empowers less experienced researchers to succeed in their own life-saving work.

Early virus hunter

A virus hunter was important in the early development of Baylor College of Medicine and Texas Children's Hospital. Recognized for identifying the cause of St. Louis encephalitis, Russell J. Blattner, MD, was the first chairman of the Department of Pediatrics at Baylor and the first physician-in-chief of Texas Children's.

Recruited to Baylor from Washington University School of Medicine in St. Louis in 1947, Blattner and his research assistant were the only two full-time faculty in the Baylor Department of Pediatrics. While hiring outstanding physicians as faculty and developing the pediatric residency program, Blattner also led research efforts responding to outbreaks of

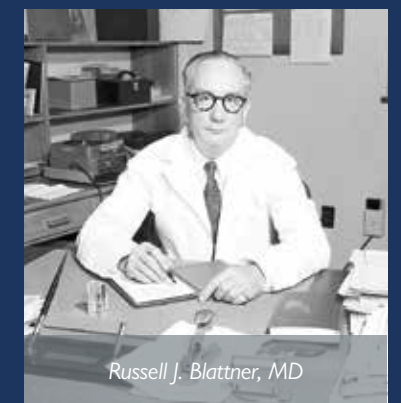
polio, staphylococcus and tuberculosis. He and his research assistant secured Baylor's first research grant from the National Institutes of Health.

From his arrival in Houston, he was involved in the planning and construction of a children's hospital. In 1952 Baylor and Texas Children's entered into an official affiliation, and Blattner was named physician-in-chief of Texas Children's, a post he held until his retirement in 1977.

Among his many honors was serving in 1955-56 as president of the Texas Pediatric Society. In 1968, Baylor named him a Distinguished Service Professor of the College of Medicine, the highest honor bestowed on a faculty member. The American Medical Association honored him in

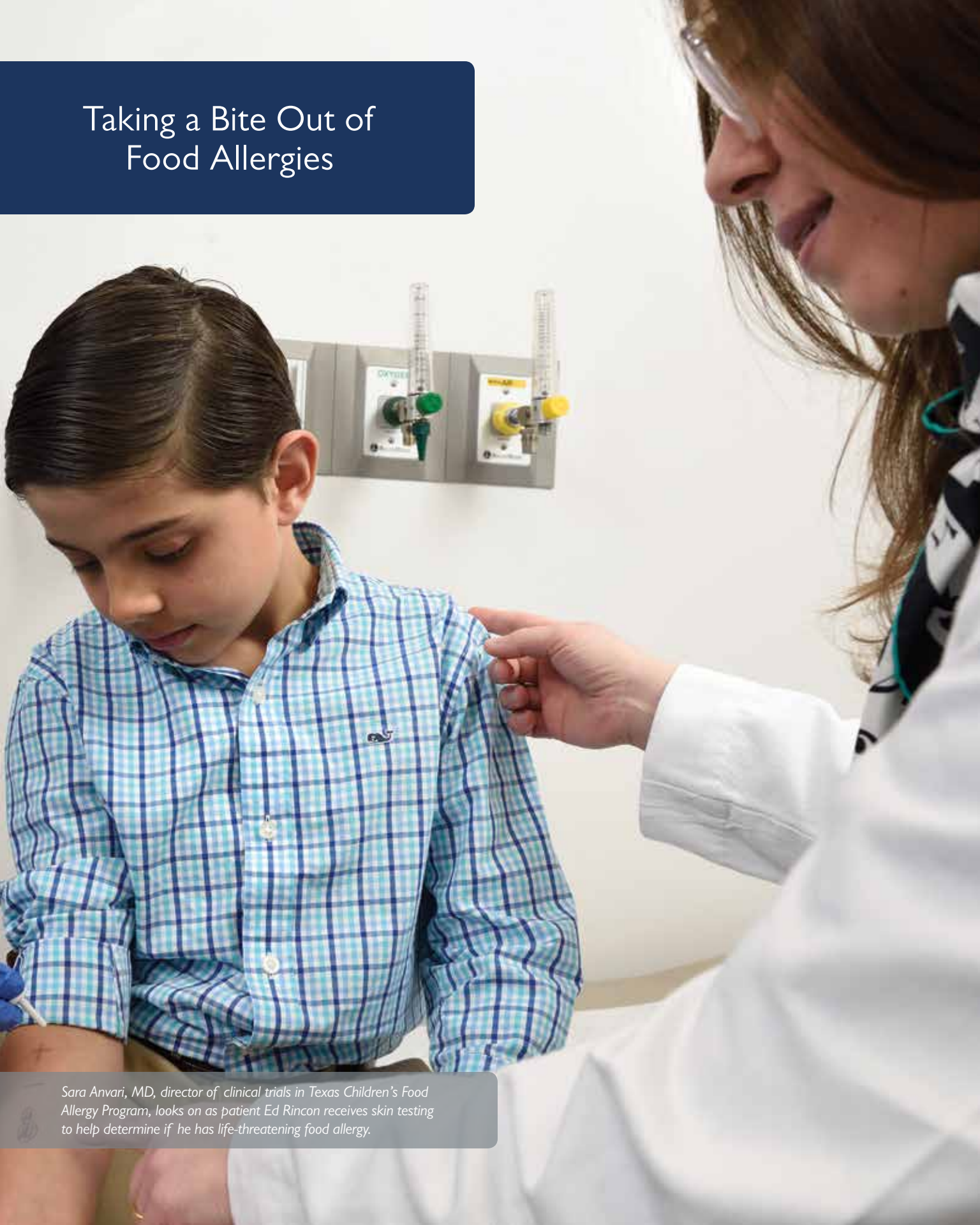
1974 with the Abraham Jacobi Award, the top award for physicians in pediatrics.

Blattner died in 2002, leaving a legacy of one of the largest departments of pediatrics in the country and a world-class children's hospital.



Russell J. Blattner, MD

Taking a Bite Out of Food Allergies



Sara Anvari, MD, director of clinical trials in Texas Children's Food Allergy Program, looks on as patient Ed Rincon receives skin testing to help determine if he has life-threatening food allergy.

Program aims to alleviate effects on children, families

When Josie Condrey was 2 years old, she ate one bite of a peanut butter sandwich and developed hives and vomiting. Her throat swelled up, constricting her airway. Quick treatment saved her from this potentially life-threatening anaphylactic reaction.

Now 13 years old, Josie eats the equivalent of 22 peanuts every day, with no adverse reaction. For the last two years, she has participated in a clinical research study at Texas Children's Hospital, funded by the Scurlock Foundation and Peter and Elizabeth Wareing.

"I'm in my last year of my three-year immunotherapy study," said Josie,

an eighth-grader in Missouri City, a Houston suburb. "It's gone very smoothly. I started out eating 1/100th of a peanut. It was so small you could barely see it. It was powder, so I just mixed it in a little tiny drink of apple juice or chocolate milk."

For the first year, Josie returned to the hospital every two weeks for a slightly increased dose of peanut flour. She would maintain that dosage at home until her next visit. For the final two years of the study, she continues with the maintenance dose, usually in the form of peanut flour mixed into a chocolate smoothie or five miniature Reese's Peanut Butter Cups.

"We now see that children who have peanut allergy can, over a year, be desensitized, or become less allergic

to the peanut, so they're protected against accidental exposure," said Carla Davis, MD, chief of the Section of Immunology, Allergy, Rheumatology and Retrovirology at Texas Children's and associate professor of pediatrics at Baylor College of Medicine.

Changing the immune system

"We have shown that the immune system can be changed by this oral immunotherapy in these patients. It was extremely significant that our patients were able to tolerate a much, much larger amount of peanut after being on the trial than when they started. Additionally, their reactions during a food challenge after a year were much less severe than in the beginning of the trial," Davis said.



Josie Condrey enjoys playing volleyball and hanging out with friends without fear of a life-threatening reaction to accidentally ingesting peanuts. A clinical trial of oral immunotherapy enabled her to tolerate a much larger amount of peanuts.

After a year of oral immunotherapy, two patients in the trial were able to eat 105 peanuts without a reaction.

“We were really intrigued by these patients, and we’re looking at their cells and what factors they produce compared to patients who don’t respond as well. We want to avoid starting the treatment on patients who would have a hard time with it or not be able to complete it,” she said.

Serious need for research

One of the team’s research goals – to find a biomarker in a blood test to identify which patients would tolerate treatment – is made more urgent because several new treatments for peanut allergy are expected to be available by prescription soon. The Texas Children’s Food Allergy Program, which Davis directs, participated in two recently completed phase III trials, one for an oral immunotherapy drug and the other for a patch. Both had positive results.

Research is important because of the widespread prevalence of and danger from allergies to peanuts and other foods. Researchers estimate that up to 15 million Americans have food allergies, including 5.9 million children under the age of 18. That’s 1 in 13 children, or roughly two in every classroom. While more than 170 foods have been reported to cause allergic reactions, eight major food allergens – milk, egg, peanut, tree nuts, wheat, soy, fish and crustacean shellfish – are responsible for most of the serious food allergy reactions in the United States. Currently, food allergies have no cure.

Each year in the U.S., 200,000 people require emergency medical care for allergic reactions to food. About 40 percent of children with food allergies have experienced a severe allergic reaction such as anaphylaxis. An injection of epinephrine is the only effective treatment for anaphylaxis.

Published results

Research by the Food Allergy Program resulted in numerous scientific publications in the past five years. Some research includes the following:

- A study found that peanut allergic reaction was the largest trigger of death in anaphylaxis patients admitted to the Texas Children’s Pediatric ICU. The second largest trigger was tree nuts and seeds.
- A project in the Houston Independent School District (HISD) showed that of children with food allergies, only 20 percent had an assigned epinephrine injector in their school to treat them for anaphylaxis. In response, the Food Allergy Program educated all HISD nurses about the need for an emergency supply of epinephrine. A year later, 80 percent of the food-allergic children in HISD had an assigned epinephrine injector in their school.



Carla Davis, MD, third from left, enjoys Peanut Allergy Friendly Day at an Astros game along with staff of the Food Allergy Program, patients and families.

Noted immunologist dies

William T. Shearer, MD, PhD, founder and chief of Allergy and Immunology Services at Texas Children’s Hospital for 34 years and professor of pediatrics and immunology at Baylor College of Medicine for 40 years, died Oct. 9, 2018. He was 81.

He gained international recognition in the 1970s when he and the late Ralph Feigin, MD, then chairman of the Department of Pediatrics, provided innovative care for David Vetter, who spent most of his life in a sterile “bubble” due to Severe Combined Immunodeficiency (SCID). After David’s death in 1984, Shearer and Feigin created the David Vetter Memorial Fund, dedicated to research, diagnosis and treatment of immune deficiencies.



William T. Shearer, MD, PhD, with patient David Vetter

“It was truly an honor to be able to witness the incredible passion and productivity of this international leader, eminent immunologist, superlative teacher and incredibly compassionate mentor. We will all miss him dearly,” said Carla Davis, MD, chief of the Section of Immunology, Allergy, Rheumatology and Retrovirology at Texas Children’s and associate professor of pediatrics at Baylor.

Shearer earned a PhD in biochemistry at Wayne State University and his medical degree at Washington University School of Medicine in St. Louis. He received his clinical training in pediatrics, allergy and immunology at Washington University’s affiliated

hospitals, St. Louis Children’s Hospital and Barnes Hospital. He joined the faculty of Washington University in 1974 and then Baylor and Texas Children’s in 1978.

Shearer’s basic and clinical research in primary and secondary immunodeficiency received constant funding from the National Institutes of Health. He was a pioneer in studies of prevention and treatment of HIV in children. He mentored 117 trainees as program director of the Allergy and Immunology Fellowship Training Program.

He served in leadership positions in every major professional organization

concerned with patient care, training and research in pediatric immunology and HIV/AIDS. He was honored by numerous organizations with prestigious awards for his work as a clinician, researcher and mentor. He authored more than 500 journal articles and textbook chapters and was editor-in-chief of the world’s premier textbook of clinical immunology, *Clinical Immunology: Principles and Practice*, for more than 20 years.

Donations may be made in Shearer’s memory to the David Vetter Memorial Fund at Texas Children’s by calling 832-824-6806 or visiting waystogive.texaschildrens.org/shearer.

- A study showed that combining steroids and food avoidance provides better control of eosinophilic esophagitis than either approach alone. Eosinophilic esophagitis is a food-induced disorder that can result in weight loss, abdominal pain and severe vomiting.
- A four-food elimination treatment trial showed that two-thirds of patients with eosinophilic esophagitis improved when they avoided just dairy, egg, soy and wheat, decreasing the burden of more extensive food elimination.

Additional research is underway as part of the Consortium for Eosinophilic Gastrointestinal Research, in which 14 clinical study centers collaborate through the National Institutes of Health Rare Diseases Network to assess the natural history of eosinophilic gastrointestinal diseases.

Another project uses surveys, which have shown that consultation with an allergist can improve the quality of life for food allergy patients. This result is significant because food allergies can cause social and psychological disruptions to patients and families.

Quality of life

“I found that patients who had food allergies had a disorder that was ubiquitous in terms of the effect on their lives. There really was nowhere they could go to escape the fact that they had food allergies. It was an invisible danger that at unexpected times caused symptoms,” Davis said.

“I saw parents who had to quit their jobs. Children who had to leave day care and school. Children who never

went to social events. I was struck at the impact food allergy had on daily living. Although it was an invisible risk, it had very real consequences.”

Even worse, the Centers for Disease Control and Prevention reports that the prevalence of food allergy in children increased by 50 percent between 1997 and 2011. Between 1997 and 2008, the prevalence of peanut or tree nut allergy appears to have more than tripled in U.S. children.

Several factors are believed to contribute to the increase in food allergy:

- The so-called “hygiene hypothesis” suggests that when the immune system is not exposed to pathogenic microbes in the environment, it becomes redirected toward food protein as an invading agent.
- The modern Western diet has changed the microbiome, reducing healthy bacteria that help protect the gut against reactions. Research at Texas Children’s showed that different microbiota are present in patients who are allergic to food compared to their non-allergic siblings.
- The timing of food introduction seems to play a role. Recent research has indicated that avoiding food allergens early in life, while the infant’s immune system is developing, fosters an increase in food allergies. Because of this, medical guidelines have changed to include introduction of peanuts at 4-6 months of age.

The Food Allergy Program sees about 2,000 patients a year for clinical and research appointments. In addition to

high-quality patient care and increased access to cutting-edge research and innovative treatment advances, the program provides community education and support groups for children and adolescents with food allergies and their families.

Since 2014, the program:

- Founded a Food Allergy Family Network to give families the opportunity to network
- Educated thousands of nurses, teachers, parents and food allergic adults and children through lectures and workshops
- Launched an Annual Food Allergy Symposium
- Hosted a Family Day for Eosinophilic Gastrointestinal Disorders
- Collaborated with H-E-B, The Health Museum, Blue Cross and Blue Shield of Texas and Texas Southern University to develop the Mobile Food Allergy Awareness Cart, now on exhibit at The Health Museum and other locations around the city
- Sponsored Peanut Allergy Friendly Day at an Astros game, with a generous donation from the Harris County-Houston Sports Authority

Davis hopes that incorporating research, treatment, education and support will reduce disruptions to daily life caused by food allergies. She hopes that many more patients can agree with Josie Condrey, who said, “I thought I’d be living with this forever and having it just as a constant fear. But now I learned that I don’t have to be scared anymore.”



On exhibit at the Health Museum and other Houston locations, the Mobile Food Allergy Awareness Cart includes educational tools, activities and videos developed by the Texas Children’s Food Allergy Program team.

EDUCATION



A Heart for Learners

Geeta Singhal, MD, MEd, has been recognized for excellence in education across the entire continuum of learners at Baylor.

Pediatric hospitalist becomes renowned medical educator

“An excellent educator is one whose passion actively engages learners and impacts their thinking, practice and, most importantly, their commitment to excellence throughout their career.”

These words – written by Judith Campbell, MD, associate vice chair of education for the Baylor College of Medicine Department of Pediatrics, and Mark Kline, MD, chairman of the Baylor Department of Pediatrics and physician-in-chief at Texas Children’s Hospital – describe why Geeta Singhal, MD, MEd, is a recipient of Baylor’s 2018 Barbara and Corbin J. Robertson, Jr. Presidential Award for Excellence in Education.

An accomplished pediatric hospitalist and educator for students, residents, fellows and faculty, Singhal “has a heart for learners and employs a thoughtful, methodical approach to every aspect of educational programs. Through her many contributions, she reaches the entire continuum of learners at Baylor. Her excellence as an educator extends to serving as a presenter, consultant and leader for numerous local, national and international medical education events and programs,” wrote Campbell and Kline in their recommendation of Singhal for the Robertson Award.

Bestowed annually upon two faculty members, the Robertson Award is Baylor’s most prestigious honor for college-wide faculty educational service, and recognizes outstanding and enduring contributions to the educational mission of the college.

For Singhal, her teaching philosophy – and the driving force behind her success – is simple.

“It’s important for me to teach and role model well, because everything I teach to others hopefully translates into better care for someone’s child. Whether I’m engaging with medical students directly or with faculty across diverse medical disciplines who will then go on to educate their own students, the knowledge and experience I share have the potential to promote better health outcomes for our patients,” Singhal explained.

“My teaching is centered on how health care practitioners can improve communication and interpersonal dynamics with patients’ families. I also focus on how we can mitigate our biases and our own experiences, and overcome our human fallibility, to reduce diagnostic errors.”

Mentorship forged career

Singhal understands deeply the impact that a dedicated and talented educator can have on learners. As an aspiring physician at just 14 years old, she experienced it firsthand.

Through a high school career class, Singhal received the opportunity to work in the clinic of Robert Block, MD, a pediatrician in Tulsa, Oklahoma, founder of the first child-abuse clinic in Oklahoma and a former president of the American Academy of Pediatrics (AAP). Despite Singhal’s youth, Block was willing to mentor her. In the process, he nurtured her interest in pediatrics, sparked a passion for medical education, and influenced her teaching philosophy through his example.

After Singhal graduated with her medical degree from the University of Oklahoma and completed her pediatric residency at Children’s Hospital of Los Angeles, Block went a step further in boosting her career – he invited her to return to his clinic as a staff pediatrician. Part of her first job out of school involved working at St. Francis Hospital in Tulsa. Here, she discovered her chosen area of interest, pediatric hospital medicine, and experienced her first teaching position.

At the hospital, Singhal’s responsibilities included training residents as they performed clinical rounds on the floor.

“I learned that I had a knack for connecting with and teaching others,” Singhal said.

This remains true today.

“Singhal is a natural mentor and role model for students and residents as she emulates the personal qualities of an excellent clinician: empathy, effective communication and team building. As an educator in the clinical setting, she integrates curricular objectives, milestones such as medical knowledge, professionalism and critical communication skills with the importance of reflective self-assessment, patient safety and family/patient-centered rounding,” said Campbell and Kline.

After she joined Baylor’s Department of Pediatrics in 2002, Singhal’s enthusiasm for medical education didn’t go unnoticed by her colleagues and mentors, who urged her to obtain a master’s degree in education from the University of Houston.



Singhal enjoys spending time with medical students and other learners in the inpatient units at Texas Children's.

"I sought the degree because I enjoy learning and finding opportunities to advance my training. It wasn't my intention to keep getting offered leadership positions in the realm of education, but earning this degree ended up charting my course at Baylor and Texas Children's," Singhal said.

Institution-wide impact

Significant roles she has undertaken include serving as the first chief of Baylor's Pediatric Hospital Medicine Section, where she helped to establish the section and more than double the faculty headcount during her tenure. She also has served as director of Baylor's Office of Faculty Development.

Currently, Singhal serves Baylor and Texas Children's in diverse capacities:

- Practicing pediatric hospitalist at Texas Children's
- Professor of pediatrics at Baylor

- Associate vice chair of education for Baylor's Department of Pediatrics
- Director of education at Texas Children's Section of Pediatric Hospital Medicine
- Co-director of Baylor's Master Teacher Fellowship Program
- Director of Baylor's Patient Care Awards
- Senior adviser for Baylor's Office of Faculty Development

"While Singhal excels as an educator for learners at all levels, her accomplishments with faculty development are particularly exceptional. These programs are critical to the ongoing professional development of medical educators at our institution," said Campbell and Kline.

Her shift toward faculty development happened naturally.

"As I've advanced in my career, I've gathered valuable experiences, which I can offer to faculty members, and also have made mistakes along the way. My goal is simply to teach faculty well and help them to be good role models, so they can positively impact other learners and, ultimately, the children in our care," Singhal said.

Outside of Baylor and Texas Children's, she serves on the AAP Section of Hospital Medicine Executive Council, a nationally elected position within which she oversees educational initiatives. She also is co-chair and a primary planner of the Pediatric Hospital Medicine National Conference, which will take place in July 2019 with an anticipated attendance of 1,500 pediatric hospitalists.

Multiple accolades

Singhal's skills have resulted in her winning teaching awards on a near-annual basis. According to Campbell and Kline, she has received so many resident teaching awards that she was placed into a Pediatric Hospital Medicine Teaching Hall of Fame in 2015. In this metric, she is considered to be within the top five percent of Baylor's pediatric faculty – an impressive feat considering that Baylor has the largest pediatric faculty in the U.S. at more than 1,200.

Her notable teaching awards include:

- Three Norton Rose Fulbright Awards (formerly Fulbright and Jaworski, LLP Educational Awards) for Excellence in Teaching and Evaluation, and Excellence in Educational Leadership
- Baylor's Department of Pediatrics Teacher of the Year Award

- Academic Pediatric Association Mid-Level Faculty Award
- ACGME David C. Leach Award for Faculty Mentor

A rewarding endeavor

Singhal wants to do for learners what Block did for her at the outset of her career: give them the tools and advice to succeed on their own and spread a positive impact to others.

"My favorite thing about teaching is seeing the professional growth of those I engage with. For example,

I love spending time with learners in the inpatient units. I am so proud when I see them listen to family perspectives, talk well with patients and their families, make accurate and confident diagnoses, and deliver good care. It's satisfying to see students become accomplished clinicians in their own right and know that I helped to empower them," Singhal said.

It was at a graduation party for faculty in Baylor's Master Teacher Fellowship Program where she really felt that her students understood this, too – and it has become one of her proudest teaching moments. As a surprise, the

faculty presented her with flowers and told her that they know she cares and only wants what is best for them. To Singhal, this type of gesture is most meaningful.

"My teaching work isn't about me. And although I am extremely appreciative of the many honors I've received, it's not about winning awards or gaining renown within an institution either. Learners just want to know that you're on their side, there to empower them to take the best care of patients. All I want to do is bring my heart to work and do the best I can for both learners and patients."



A practicing pediatric hospitalist, Singhal believes that her teaching can promote better health outcomes for patients.

NEWS OF NOTE



Global HOPE (Hematology-Oncology Pediatric Excellence) is increasing survival for children with cancer in sub-Saharan Africa.

Photo by Smiley Pool

Blaney succeeds Poplack at helm of cancer center

Susan M. Blaney, MD, professor and executive vice chair of the Department of Pediatrics at Baylor College of Medicine, has been promoted from deputy director to director of Texas Children's Hospital Cancer and Hematology Centers. She succeeds David G. Poplack, MD, who has transitioned after 25 years in the position to focus on outreach in Africa.

Poplack was named director of Global HOPE (Hematology-Oncology Pediatric Excellence), the hospital's initiative in sub-Saharan Africa, and associate director of the Cancer and Hematology Centers. Global HOPE is developing Centers of Excellence in Botswana, Malawi and Uganda and seeding programs in Eswatini (formerly known as Swaziland), Lesotho, Tanzania and Rwanda. In its first year, the program hit its first milestone — treating more than 1,000 African pediatric cancer patients.



David G. Poplack, MD, and Susan M. Blaney, MD

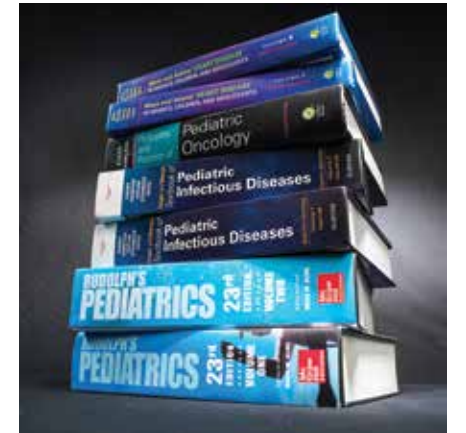
Global HOPE oversees a two-year pediatric hematology-oncology fellowship training program at Makerere University, Uganda's largest institution of higher learning. In 2018 at a special graduation ceremony for four pediatricians who became certified in pediatric hematology-oncology, Makerere conferred an honorary Doctor of Science degree on Poplack.

Blaney, who joined Texas Children's and Baylor in 1995, is section chief of Hematology/Oncology. She is vice chair of the Children's Oncology Group, an international clinical trial cooperative group of more than 200 National Cancer Institute-supported children's cancer programs primarily located in North America. At Baylor, she served previously as vice president for Clinical and Translational Research, founding director of the Dan L. Duncan Institute for Clinical and Translational Research, and the initial associate clinical director for the Dan L. Duncan Cancer Center.

Blaney's career has focused on the development of new agents and therapeutic strategies for children with recurrent or refractory cancer, particularly those with malignancies of the central nervous system.

Under Poplack's leadership, Texas Children's Cancer and Hematology Centers have grown from seven faculty members, 42 employees, 1,000 square feet of lab space and less than \$1 million in annual grant funding in 1993 to nearly 200 faculty members, 1,100 employees, over 100,000 square feet of lab space and \$50 million in annual peer-reviewed external grant funding today.

Baylor's Elise C. Young Professor of Pediatric Oncology, Poplack is founding co-editor of *Principles and Practice of Pediatric Oncology*, the field's leading textbook. He also is developer of Passport for Care, an interactive website that provides long-term survivors of childhood cancer and their caregivers with screening guidelines and follow-up resources individualized to the survivor's treatment history.



Faculty edit major textbooks to teach physicians worldwide

Department of Pediatrics faculty led publication of the newest edition of a landmark pediatric reference in 2018. The two-volume 23rd edition of *Rudolph's Pediatrics* represents the first complete transition of editorial responsibilities in more than 40 years.

Department chair Mark W. Kline, MD, was editor-in-chief. Editors were Susan M. Blaney, MD, Angelo P. Giardino, MD, PhD, MPH, Jordan S. Orange, MD, PhD, Daniel J. Penny, MD, PhD, MHA, Gordon E. Schutze, MD, and Lara S. Shekerdemian, MD, MHA, all from Baylor College of Medicine and Texas Children's Hospital. The editors worked with 39 section editors and 847 authors, many from Baylor and Texas Children's.

Rudolph's Pediatrics is an iconic textbook that originated as *Diseases of Infancy and Childhood* by Luther Emmett Holt, MD, in 1896. It was published through 11 editions into the 1940s by Holt and subsequently by his son, Luther Emmett Holt Jr., MD, and through another seven editions by Abraham Rudolph, MD. Today, it is one of the world's most widely recognized and read medical textbooks.

“Our fondest hope is that in the pages of this textbook the reader will find not only relevant facts and information but also the inspiration to do more for the children and families we serve,” said Kline and the editors in the preface.

Additional Baylor and Texas Children’s pediatrics faculty members are editors of several textbooks used in educating physicians around the world:

- Two-volume *Feigin and Cherry’s Textbook of Pediatric Infectious Diseases*, started by the former department chair, the late Ralph D. Feigin, MD, and James Cherry, MD, from UCLA, and now edited by Gail J. Demmler-Harrison, MD, Sheldon L. Kaplan, MD, and Peter J. Hotez, MD, PhD, along with Cherry and William J. Steinbach, MD, from Duke
- *Principles and Practices of Pediatric Oncology*, edited by David G. Poplack, MD, and Philip A. Pizzo, MD, from Stanford
- Two-volume Moss and Adams’ *Heart Disease in Infants, Children, and Adolescents*, edited by Hugh D. Allen, MD, and Daniel J. Penny, MD, PhD, MHA, and others

Texas Children’s again ranks among best children’s hospitals
Texas Children’s Hospital has again been recognized as a leader in pediatric care, ranking fourth among the nearly 200 pediatric centers surveyed by *U.S. News & World Report* in the 2018-19 edition of Best Children’s Hospitals. Over the last decade, no other pediatric hospital in Texas has achieved an overall ranking as high as Texas Children’s.

For the second straight year, Texas Children’s Heart Center® ranked No. 1 in the nation for pediatric cardiology and heart surgery. This year, Texas Children’s Pulmonology ranked as the best program in the country for children with lung diseases.



Texas Children’s is one of only 10 children’s hospitals across the country to achieve the Honor Roll designation, and the only hospital in Texas – and the southern U.S. – awarded this distinction. In addition, the hospital has eight subspecialties ranked in the top 10.

With the partnership of academic affiliate Baylor College of Medicine, Texas Children’s ranks as one of America’s best in, among other subspecialties:

- #1 Cardiology and heart surgery
- #1 Pulmonology
- #3 Nephrology (kidney disorders)
- #3 Neurology and neurosurgery
- #4 Gastroenterology and GI surgery
- #4 Urology
- #6 Cancer
- #6 Diabetes and endocrinology

The rankings result from a methodology that weighs a combination of outcome and care-related measures such as nursing care, advanced technology, credentialing, outcomes, best practices, infection prevention and reputation, among other factors.

Sonabend named to lead Diabetes/Endocrinology
Rona Sonabend, MD, associate professor at Baylor College of Medicine, has been appointed head of the Section of Diabetes and Endocrinology in the Department of Pediatrics. Previously, Sonabend was medical director of quality for the section. She will continue as associate quality officer for the Department of Pediatrics at Texas Children’s Hospital.

Over the past 10 years, in collaboration with colleagues in Texas Children’s Cancer Center, she has developed an Endocrine Late Effects of Cancer Therapy program, research and clinical collaborative relationships with premier cancer centers across the U.S. Her research on negative effects of hyperglycemia on survival rates in children with acute lymphoblastic leukemia and endocrine complications following proton therapy in survivors of brain tumors received national attention and influenced prospective therapy protocols.

In 2013, Sonabend took a formal leadership role for the Diabetes Care Process Team, a multidisciplinary clinical program that sought to improve the quality of care for children with diabetes at Texas Children’s. The team developed a six-bed acute care inpatient Diabetes Care Unit, the first of its kind, with specialized diabetes nurses trained to manage and educate from diagnosis to severe complications of disease. The team has grown to approximately 155 individuals. With her leadership, Texas Children’s was chosen as one of 10 sites in a national Type 1 diabetes quality improvement collaborative, funded by the Leona M. & Harry B. Helmsley Charitable Trust.

Hsu heads Emergency Medicine; Sirbaugh leads at The Woodlands
Deborah (Deb) Hsu, MD, MEd, was appointed head of the Section of Pediatric Emergency Medicine in the Department of Pediatrics at Baylor College of Medicine and chief of the Pediatric Emergency Medicine Service at Texas Children’s Hospital, succeeding Paul Sirbaugh, DO, MBA, who became chief medical officer for Texas Children’s newest campus in The Woodlands.

Hsu, associate professor, has received many awards for her work in medical education and is a recognized leader in pediatric emergency medicine. She was a participant in the Harvard Macy Institute’s Program for Leading Innovations in Healthcare and Education. She is a member of the Pediatric Emergency Medicine Subboard for the American Board of Pediatrics and an executive committee member of the American Academy of Pediatrics (AAP) Section on Emergency Medicine. She is a steering committee member of the Subspecialty Pediatrics Investigator Network (SPIN) and a member of the Association of Pediatric Program Directors LEARN educational development committee. Previously, she chaired the AAP Section on Emergency Medicine’s subcommittees on fellowship and education and served on the editorial board of PREP E-Med (Pediatrics Review and Education Program Emergency Medicine).

A broad-based clinician, medical educator and clinical investigator, Sirbaugh, associate professor, served as pediatric medical director for the City of Houston Fire Department Emergency Medical Services (EMS) from 1995-2018 and was in part responsible for the pediatric-specific education,

medical direction and oversight of 5,000 EMS providers. He was one of the first medical personnel on site and instrumental in establishing the pediatric mobile care unit at the Astrodome/ Reliant Center Complex during the evacuation from New Orleans after Hurricane Katrina devastated the city in 2005. Nationally, he is a past member of the AAP’s Committee on Pediatric Emergency Medicine and Section of Emergency Medicine Executive Committee.

At Texas Children’s Hospital – The Woodlands, Sirbaugh succeeds Charles Hankins, MD, who joined CHRISTUS as system senior vice president of pediatrics and president and chief medical officer of Children’s Hospital of San Antonio.

CHofSA research seeks answers to Kawasaki
Many childhood diseases begin with fever and a rash, but Kawasaki disease is one that can have serious, long-term consequences. It is the #1 cause of acquired heart disease in children in the United States, according to the American Heart Association.

Research at Children’s Hospital of San Antonio (CHofSA) is investigating approaches that may lead to faster diagnoses and more effective treatment of Kawasaki.

Mark Gorelik, MD, assistant professor of pediatrics-rheumatology at Baylor College of Medicine and medical director of rheumatology at CHofSA, focuses three research projects on proteins related to Kawasaki’s arterial inflammation, which causes heart damage. In collaboration with Moshe Ardit, MD, at Cedars-Sinai Medical Center in Los Angeles and Jean

Patterson, PhD, at the Texas Biomedical Research Institute in San Antonio, Gorelik uses a mouse model to study:

- Follistatin-like protein 1, which dampens the inflammatory response to Kawasaki disease
- Interleukin-1 antagonist, which helps to maintain cardiac function. This is used already in treating some rheumatologic diseases.
- All the proteins expressed in Kawasaki disease to search for new pathways of inflammation and new biomarkers of disease



Mark Gorelik, MD, uses a mouse model to study proteins related to Kawasaki disease’s inflammation of the arteries.

Ivy Parker, a 3-month-old with severe Kawasaki disease, has benefited from the CHofSA research. She had a coronary aneurysm and was not responding to conventional therapy.

“We used the interleukin-1 therapy for her, and she had a complete recovery. On the echocardiogram, her vessels are completely normal now,” Gorelik said.

SPOTLIGHT ON THE DEPARTMENT OF PEDIATRICS

By the Numbers 2018

Baylor College of Medicine* Department of Pediatrics

One of the largest, most diverse departments of pediatrics in the United States

- #1** provider of pediatric HIV/AIDS care and treatment in the world
- #7** rank of pediatrics in National Institutes of Health funding by Blue Ridge Institute for Medical Research
- #8** rank on *U.S. News & World Report* Best Pediatrics Programs list
- 1,434** full-time, part-time, secondary and voluntary faculty
- 371** residents
- 349** clinical and research postdoctoral fellows
- 1,012** U.S. applications for 45 slots in pediatric categorical residency program
- 11** books written or edited
- 394** chapters written or edited
- 1,502** journal articles
- \$117.7** million in total research funding
- \$90.6 million** in gifts and contributions from individuals and foundations



Texas Children's Hospital**

- #1** rank overall on Harris County Medical Society Hospital Survey
- #4** rank on *U.S. News & World Report* Best Children's Hospitals list
- 34,455** total patient admissions
- 237,384** census days
- 152,316** Emergency Center visits
- 4,278,278** total patient encounters



For the second year in a row, Texas Children's Heart Center ranked first in the nation for pediatric cardiology and heart surgery.

*Baylor College of Medicine = July 1, 2017 – June 30, 2018

**Texas Children's Hospital = October 1, 2017 – September 30, 2018, including Main Campus, West Campus and Pavilion for Women

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For a patient referral form, see texaschildrens.org/refer.