THE HEART of the Matter
Bioengineering healthy heart tissue

STRENGTH, SKILL AND RESOLVE
Inpatient rehabilitation unit

BENCH-TO-BEDSIDE
Breakthrough in epilepsy treatment
It's magical watching children discover how their little bodies work — seeing the look of accomplishment that crosses a child's face when he or she first learns to stand, walk, eat with a fork or drink from a cup.

Children in the Texas Children’s Pediatric Inpatient Rehabilitation Unit know the joy of achieving these little triumphs, but they are not babies stumbling preciously onto new skills. Like Reem Hasan, pictured, they are courageous children and teens who have come to the unit following a traumatic brain or spinal cord injury, musculoskeletal or neurological disorder, stroke, or other disabling disease. Reem, 5, came to Texas Children’s for cancer treatment after her brain surgery in Kuwait and then spent eight weeks here in the Inpatient Rehabilitation Unit regaining the strength and skills to walk, talk and play.

Whether weakened by illness or disabled from an accident, the children have a determined resolve to relearn some of the most basic life skills — like how to feed themselves, brush their teeth, shower and use the restroom. It’s here, in the Inpatient Rehabilitation Unit, that many children learn to stand again, firmly and proudly, before taking those first challenging steps — for a second time. This unit is where children become whole again.
Cerebral palsy patient Victoria Fields relearned critical life skills in post-surgery rehabilitation.
The Center for Children and Women serves the greater Greenspoint area.

Dr. Charles D. Fraser, Jr., prepares a donor heart and lungs for a patient’s double transplant surgery.

The Center for Children and Women is a primary care physician practice and medical home for Texas Children’s Health Plan members. For Organ Sharing and conducts a site visit as well.

“An important facet of any transplant program, and a must for those who earn CMS certification, is having a multidisciplinary team including physicians, surgeons, nurses, dietitians, transplant pharmacists, financial counselors, social workers and child life specialists who provide full-service care for the needs of our patients throughout the entire transplant process,” said Jennifer Hiser, director of Transplant Services.

Texas Children’s Health Plan creates premier health care facility for its members

In August, Texas Children’s Health Plan opened The Center for Children and Women — an entirely new kind of health care facility for its members. The approximately 50,000-square-foot facility includes pediatricians, advanced nurse practitioners, OB/GYNs, certified nurse midwives, optometry, imaging, a laboratory and an onsite pharmacy. Dentistry also will be added in the coming months.

Designed to address the shortage of primary medical care for the Medicaid and CHIP (Children’s Health Insurance Program) populations, The Center is revolutionizing the way CHIP and Medicaid patients receive health care.

Traditionally, families who do not have a permanent medical home and who live in medically underserved neighborhoods have a high number of visits to the emergency room for non-emergent medical needs.

As a result, the cost of health care is higher for all patients, and wait times in already overtaxed emergency rooms can be extremely long.

“At Texas Children’s Hospital, we like to say that we ‘run toward a problem,’” said Texas Children’s President and CEO Mark A. Wallace. “When we see that women and children have a need, but they don’t have the resources, to the greatest degree that we can, we like to come up with a solution.”

Hospital receives certification from Centers for Medicare & Medicaid Services for all solid-organ transplants

Texas Children’s Hospital has earned a national certification from the Centers for Medicare & Medicaid Services (CMS) for heart, liver and lung transplants. The hospital also has been recertified by the agency for kidney transplants.

“These children will no longer have to worry about whether their state-funded health care programs will cover the cost.”

“This new certification will allow the sickest children to come from anywhere in the U.S. to seek treatment at Texas Children’s — where we have outcomes among the best in the nation — for lifesaving organ transplantation,” said John Goss, M.D., medical director of Texas Children’s Hospital Transplant Services. “These children will no longer have to worry about whether their state-funded health care programs will cover the cost.”

CMS, a U.S. Department of Health and Human Services agency, oversees and administers health care programs such as Medicaid and the Children’s Health Insurance Program (CHIP). As part of the CMS certification process, hospitals must meet stringent standards of care. The agency obtains outcome data from the United Network for Organ Sharing and conducts a site visit as well.

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New PET/MRI scanner offers improved imaging and diagnostics with less radiation exposure

Texas Children’s is the first children’s hospital in the United States to use a PET/MRI (positron emission tomography/magnetic resonance imaging) scanner, state-of-the-art technology that will help in early and accurate diagnosis of various cancers, heart diseases and degenerative neurological disorders.

PET/MRI is a hybrid imaging technology that incorporates MRI soft-tissue morphological imaging and PET functional imaging. This new imaging device sequentially performs PET and MRI scans, producing more detailed images than either technique alone. Hybrid PET/MRI scans eliminate the need to move patients from one imaging unit to another, making it easier to combine data from both scans and produce enhanced details.

“Being able to study the structural and functional changes in the body may allow us to detect abnormalities, even before the clinical symptoms of a disease begin to show,” said George S. Bisset, M.D., chief of Texas Children’s Pediatric Radiology and immediate past president of the Radiological Society of North America. “This technology holds so much promise, and we’re anxious to see where it takes us.”

PET/MRI will help provide new insights in the field of neuroscience and neurological disorders such as neurodegeneration, brain ischemia and seizures. It also will be used to diagnose other illnesses, including head and neck tumors, many types of cancer, liver tumors, pelvic tumors, musculoskeletal tumors, and heart diseases. PET/MRI may be able to replace the PET/CT scans now used to investigate cancers and other problems in pediatric patients. If so, PET/MRI scans will expose patients to significantly less radiation than is required for PET/CT scans.

“Radiation exposure is a source of concern for any patient, but it has to be watched with particular care in pediatric patients who are still growing and developing,” Bisset said. “An opportunity to get information essential for medical care at half the radiation exposure would be particularly welcome both in pediatric patients and in adults who need multiple scans during treatment.”

Baylor pediatric HIV/AIDS program in Botswana celebrates 10th anniversary

Zero versus 6,000.

Those figures represent the number of children in Botswana who received lifesaving HIV/AIDS treatment before and after the Baylor College of Medicine International Pediatric AIDS Initiative (BIPAI) at Texas Children’s Hospital opened its first clinic 10 years ago in the region of Africa hardest hit by the disease.

“We began working in Botswana 15 years ago, when many medical and public health experts were saying that the situation with HIV/AIDS in Africa was hopeless,” said Mark W. Kline, M.D., Texas Children’s physician-in-chief, chair of Pediatrics at Baylor College of Medicine and founder of BIPAI. “We were able to establish a family-centered model of HIV/AIDS care delivery that now has been replicated across the African continent, saving the lives of tens of thousands of children. Today, BIPAI has more than 168,000 HIV-infected children and family members in care and treatment — more than any other organization worldwide.”

“We are passionate about extending the approach to solid tumors in hematologic malignancies, but our work has produced encouraging results in lymphoma and testicular cancer,” said Mark V. Rooney, Ph.D., professor of pediatric hematology-oncology, molecular virology, and microbiology and immunology at BCM, and director of the Adult Stem Cell Transplant Program at Houston Methodist Hospital. “Our work led to an orphan drug designation, granting special status with the U.S. Food and Drug Administration for treatment of rare diseases, for the treatment of post-transplant lymphomas and the development of advanced-stage studies of lymphoma and nasopharyngeal cancers.

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“T cells can have potent and long-lasting anti-tumor activity without the toxicities associated with standard therapies.”

“Obstacles include lack of target antigens, as well as negative regulation of the immune system within tumors and their microenvironments.”

With the new funding, Heslop, Rooney, and their team at the Center for Cell and Gene Therapy are building on advances made possible through the initial funding grant established nine years ago to further address these problems and to reach a wider spectrum of cancers. The team has already made significant advances using T cell approaches that are tumor-specific and has obtained complete remissions in patients with advanced/relapsed lymphoma, nasopharyngeal cancer and neuroblastoma.

With the new funding, Heslop, Rooney, and their team at the Center for Cell and Gene Therapy at Baylor College of Medicine (BCM), Texas Children’s Hospital and Houston Methodist Hospital received an $11.3 million renewal grant from the National Institutes of Health to advance the development of more effective and less toxic targeted T cell therapies for children and adults with cancer.

Center for Cell and Gene Therapy receives $11.3 million NIH grant

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Center for Cell and Gene Therapy members Helen Heslop, M.D., professor of medicine and pediatric hematology-oncology at BCM and director of the Adult Stem Cell Transplant Program at Houston Methodist Hospital, and Cliona Rooney, Ph.D., professor of pediatric hematology-oncology, molecular virology, and microbiology and immunology at BCM, serve as co-principal investigators of the project.

“Harnessing T cells (white blood cells in the immune system) to treat cancer more effectively remains a leading biomedical research goal and has produced encouraging results in hematologic malignancies, but extending the approach to solid tumors is a more challenging task,” Heslop said.

“We have developed and validated new strategies to harness the power of T cells to treat a variety of cancers,” Rooney said. “If we can harness these benefits in standard treatments for cancer, this will dramatically improve outcomes and quality of life for cancer patients.”
**IN BRIEF**

**First-of-its-kind clinic in Texas will treat children who are most susceptible to kidney stones**

Texas Children’s new pediatric Stone Clinic opened this summer to provide comprehensive care for children and adolescents with kidney stones. The clinic includes a multidisciplinary team of specialists who evaluate, diagnose and treat children who previously had kidney stones, as well as patients at risk for developing them.

“In children with kidney stones, there can be underlying metabolic, genetic or anatomic causes,” said Nicolette Janzen, M.D., pediatric urologist at Texas Children’s and assistant professor of urology at Baylor College of Medicine. “That is why we recognized the need and importance of opening a specialized clinic for children affected by this condition.”

The Stone Clinic at Texas Children’s Hospital combines the expertise of pediatric urologists, pediatric nephrologists (kidney specialists) and registered renal dietitians who evaluate patients with kidney stones in a single visit.

**New center focuses on women dealing with menopause**

The new Menopause Center at Texas Children’s Pavilion for Women is dedicated solely to the care and treatment of women with menopause symptoms, conditions and related health issues.

The practice is staffed by board-certified Baylor College of Medicine (BCM) physicians with specialized proficiency in the latest menopause therapies, trends and research. It offers treatments for a wide variety of menopause symptoms, from night sweats, sleeplessness and bladder incontinence to depression, sexual dysfunction and pelvic floor disorders. Patients have access to a wide array of specialists in reproductive psychiatry, urogynecology, vulvovaginal health, hormone replacement therapy and gynecologic oncology.

“Robotic surgery is increasingly becoming the standard of care for many pediatric patients since the numerous benefits include smaller incisions, shorter hospital stays, decreased postoperative pain medication requirements and smaller scar,” said Koh, who has been instrumental in developing cutting-edge techniques with both the laparoscope and the da Vinci robot.

Through the use of robotic surgery, surgeons can perform minimally invasive reconstructive procedures in patients of all ages using the robot’s 3-D visualization, intuitive computer-enhanced motion control, smaller instruments and increased range of motion for delicate surgical procedures, including:

- Ureteropelvic junction (UPJ) obstruction / hydronephrosis (pyeloplasty)
- Vesicoureteral reflux (VUR) (ureteral re-implantation)
- Kidney removal
- Kidney reconstructive surgery
- Urinary reconstructive surgery
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“The da Vinci Si Surgical System provides our surgeons with significant advancements in the way we treat our patients, including unparalleled precision, agility and control for a minimally invasive approach,” said David Roth, M.D., chief of Pediatric Urology at Texas Children’s.

**Dedicated pediatric robotic surgery program debuts**

Texas Children’s recently acquired the da Vinci Si Surgical System to establish the hospital’s first dedicated pediatric robotic surgery program. Chester Koh, M.D., an internationally recognized expert in minimally invasive surgery, leads the pediatric robotic surgery program.

“Dr. Chester Koh helps position the da Vinci Surgical System prior to the hospital’s first robotic surgery.”

“The average woman spends about one third of her lifetime in menopause.”

The practice is co-directed by Lucy Puryear, M.D., and Ronald Young, M.D., associate professors of obstetrics and gynecology at BCM. Their combined expertise addresses both mental and physical aspects of this stage of women’s health.

“The average woman spends about one third of her lifetime in menopause, facing the distinctive health care challenges that accompany the stages of reproductive aging,” Puryear said. “It is important that we provide this group of patients with the care, treatment and guidance necessary to make this time of their lives enjoyable and to allow them to feel their best for years to come.”

“While the Stone Clinic is a comprehensive treatment program for children with kidney stones, patients need a team of specialists to provide proper care that includes surgery,” said Dr. David Roth.

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Why Medicaid should matter to all of us

A little more than a year ago, Ashley Cardenas came to Texas Children’s Fetal Center after a routine 16-week ultrasound that was anything but. It revealed that part of her baby’s heart was forming outside of the chest.

A

shley’s baby was diagnosed with ectopia cordis, an extremely rare congenital malformation that only about eight per one million babies are born with, and of those eight, 90 percent are either stillborn or die within the first three days of life. Her baby’s only chance for survival was a risky surgery immediately after birth.

When her baby girl, Audrina, was born, Ashley didn’t know how long she’d live. She didn’t know if the surgery would be a success. And she couldn’t possibly imagine the financial burden of treatment and care. But she did know two things for sure: She would do anything for her baby, and she had to give her a chance at life.

With the help of Medicaid, Ashley was able to make the right choice for little Audrina. And isn’t that the point of it all? At the end of the day, Medicaid is about making the right choices for children so they get the care they need — whether it’s basic preventive health care at the local pediatrician’s office or advanced treatment within a comprehensive children’s health system for an unthinkable diagnosis.

Children need to have access to the right care at the right place at the right time. That’s been Texas Children’s philosophy for nearly 60 years now. Our hospital was founded on a principal desire to provide access to every child, treating all children regardless of their families’ ability to pay. I’m proud of that. Programs like Medicaid help ensure that we can provide the care all children deserve.

Unfortunately, when we hear about Medicaid in the local and national media, we’re not hearing about children. We’re not hearing about real families with good parents who work hard to provide for their children’s needs. We hear a lot more about a free program for people disinterested in working and paying their fair share. That’s a misconception. As the largest and most comprehensive children’s health system in the nation, Texas Children’s Hospital serves more Medicaid patients than any other pediatric hospital in the state. I know the real faces of Medicaid because the families walk our halls, many of them having endured catastrophic events that most people can’t imagine and would not be prepared for emotionally or financially.

Audrina had a six-and-a-half-hour surgery to place her heart back inside her body. She then spent nearly four months in Texas Children’s cardiovascular intensive care unit and another nearly four months in outpatient care, all while living seven hours away from home so she could be near the hospital. Audrina currently is on 1 liter of oxygen, an NG tube for feeding, and she receives speech and physical therapies two times a week between her weekly cardiology check-ups.

How do you prepare for that? Children need health care coverage.

Today, one out of every 11 children in the U.S. lives in Texas, and we expect that number to grow significantly in the next several years. Of those, a vast number are uninsured yet eligible for coverage. These are the real constituents who will be lost and will fall through the cracks if Medicaid dollars are not protected and future investments are not made. The simple truth is that our federal and state governments save money by investing in health care. Children who grow up with regular health exams, immunizations and care for childhood illnesses are more likely to become adults who are healthy and productive taxpayers.

It’s becoming increasingly difficult for many families, including those in the middle class, to make ends meet. It’s harder for these families to provide the same level of health care coverage for their children now than in previous years. Medicaid is a safety net for everyone, because we are all one medical crisis or catastrophic event away from financial ruin. It is a stepping stone for people when the unexpected occurs. It is for the middle class, for the financially stable, and even for those who once considered themselves upper class. If you have worked during your life, Medicaid is a program you helped fund, and it’s available to you and your children when you need it most.

That’s a good thing. Having the ability to access the right care gave Ashley peace of mind just as it does millions of us every day, and it ensured a very happy first birthday for Audrina.

We must remain focused on what’s really at the heart of this matter and make sure that every child has access to quality health care. As adults, that’s our responsibility.
A FEW YEARS AGO, no one said “screen time,” because there was only one screen — the slightly bulging one on the television. There was television-watching time, and the most sage advice for limiting it was keeping the TV in a central location where all could watch family-sanctioned programming together.

That wasn’t the ’50s. It was less than 20 years ago. That was before mainstream use of the Internet and Google (yes, there was a time); before there were more televisions in the average American home than people living there; and before there were more people in the world with access to mobile phones than have access to toilets. Fancy that.

Technology is changing the game and the rules, and paired with social media, it’s challenging the heck out of parents.

“We had one television in our house growing up with my parents,” said Dan Courtney, 40. “Now, you turn off the television, they turn on the iPod. You turn off the iPod, they turn on the iPad. You turn off the iPad, and they go to their friend’s house and get online. It’s so much more complicated than it was when I was growing up.”

Courtney and his wife, Thai, have two children — 5-year-old Dylan and 11-year-old Larissa. He’s also an administrator at a private school where students use technology on a daily basis. As an educator, he’s seen the positive effects that have come with the shift toward greater technology in the classroom in the last 10 years.

“It’s about allowing students to use technology to enhance their learning,” he said. “We have a lot of educational programs that help enrich instruction. We even train teachers with technology-based resources.”

Texas Children’s psychologist Amy Acosta, Ph.D., suggests that parents think of technology as just one part of a well-rounded upbringing.

“Technology provides opportunities for connectivity and creativity,” she said. “There are innovative opportunities for learning with the tools technology provides, but this should not be in lieu of all traditional learning and interacting.”

Thai and Dan Courtney monitor their children’s screen time and talk to them about making the right choices. Dan advocates that parents “get online and get involved.”

Photo by Allen Kramer
The AAP suggests a one-to-two-hour break away from limitless amounts of technology can pose a challenge and behaviors. also through influencing their beliefs doing homework or sleeping, but not only by replacing time they spend with media than they do in any other and adolescents spend more time pursuits as soon as they leave school means additional screen time for kids The use of technology in the classroom to “unplug” from electronics and reconnect with each other every day. Chana and William Traylor, with daughters Kari, Kira and Willow, take time to “unplug” from electronics and reconnect with each other every day.

UNPLUG AND RECONNECT

The use of technology in the classroom means additional screen time for kids who often resume their high-tech pursuits as soon as they leave school for the day. According to the American Academy of Pediatrics (AAP), children and adolescents spend more time with media than they do in any other activity, except school television, game systems, computers and mobile phones fill their rooms — and their time. The AAP suggests media consumption can affect young people not only by replacing time they spend doing homework or sleeping, but also through influencing their beliefs and behaviors. “Technology can pose a challenge to time management,” Acosta said. “Some children may find it hard to break away from limitless amounts of screen time.” The AAP suggests a one-to-two-hour daily limit for entertainment media and also suggests having a screen-free zone for children, such as their bedrooms. Courtney follows this advice, telling his children not to bring electronic devices into the bedroom at night. Chana and William Traylor make “unplugging” and reconnecting with their three girls — 7-year-old Willow and 11-year-old twins Kira and Kari — a daily practice. “Being so engaged with technology, their attention span and ability to communicate can be impacted,” Chana said. “So we create those moments (to reconnect) with hands-on activities. We do a lot of family cooking. Other times we’re making up songs, writing poetry. We just hang out.” Traylor called it “getting back to basics,” and when her kids are unplugged, she and William are too. Acosta thinks they’re on to something. She said that in addition to rules, parents should remember that children learn by example and that behavior modeling is a powerful influence. “Parents should ask themselves ‘Do I have mindful, fully engaged moments as a parent? When do I unplug as a parent? Do I show my kids that I can unplug?’” Acosta said. “Modeling the behavior you desire in your children can help your children follow your lead. This can sometimes serve as a conversation starter with your children about your own management of technology and digital decision-making.”

WORLD WIDE-OPEN WEB

Even if families have managed to limit their household screens to what they consider nominal, monitoring what children do online in the age of social media presents its own constantly evolving challenges. Easy access to technology — and social media — demands diligent parental involvement. All too frequently, children and parents alike are caught off guard by unwanted online interactions. “They’re living in the moment,” Acosta said. “That means there’s a lack of thinking about the consequences.”

5 TIPS FOR ONLINE SAFETY

1. Assist your child in self-monitoring his or her online posts and publications
2. Help children choose appropriate content
3. Clarify the risks of ever-sharing private or vulnerable information
4. Be alert to the risks and signs of cyberbullying
5. Keep an open, ongoing dialogue about digital decision-making

“I’m a big advocate for parents getting online and getting involved,” Courtney said. A year ago, Courtney’s daughter asked to download Instagram, and her mother gave permission, not knowing it was a social networking site. Within a couple of months, Larissa had hundreds of followers on the platform.

“IM A BIG ADVOCATE FOR PARENTS GETTING ONLINE AND GETTING INVOLVED.”

“She had innocent pictures posted, and people were commenting,” Courtney said. “Some of the comments were inappropriate, and that was a real eye-opener for us as parents. We said, ‘Let’s talk about this. Do you know all these people? We used it as a teachable moment.’”

Courtney and his wife reviewed the site’s rules and regulations and decided they would give Instagram another try when their daughter is older. They got involved, and they pulled the plug, but how does a parent balance vigilant monitoring with a child’s right to privacy? Traylor said it’s a matter of private versus public spaces. “Their private spaces — like their bedrooms or their personal diaries — that’s their space, and I respect that,” she said. “But when they’re engaging with other people in a public domain and having conversations, they’re then exposing themselves to the world — so that’s where privacy stops.”

DIGITAL IDENTITY

Like the Courtnes, the Traylors also have decided to limit access to some social media sites until the girls are older. And children do, of course, get older, which is why managing their digital identity now is so important. Acosta said young people should consciously manage their online reputations and “clean up” their online presence if necessary.

“Rather than fearing technology, we have the opportunity as parents to show our children critical thinking skills,” Acosta said. “We can teach our kids how to unplug, to choose words with care and behave in ways they can feel good about.”

“I completely understand that kids need technology, and this is a form of socializing,” Courtney said. “I’m just going to be very much in tune with what they’re doing and hopefully coach and counsel them along the way to make the right choices.”

That’s #smartparenting.

When sharing information online, practicing discretion is key. Social networks are meant to feel comfortable, and it’s easy for young people to feel as if they’re having private conversations, forgetting that social networks are fundamentally a public forum.

“No online conversation is a private conversation,” Acosta said. “It can be easy to forget all the people who have access to your information. This network will likely grow as you get older and include an even more diverse group. It’s important to remember that early on — and act accordingly.”

Parents’ best strategy? Stay engaged and ask questions, model positive behavior like unplugging regularly, and talk to children about what they’re doing online. “I completely understand that kids need technology, and this is a form of socializing,” Courtney said. “I’m just going to be very much in tune with what they’re doing and hopefully coach and counsel them along the way to make the right choices.”

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What would it mean to thousands of children if scientists could grow a human heart in a laboratory?

Unlocking the answer to that question — creating that reality — drives the research and work of scientists and surgeons alike who are developing novel treatment options for children with heart defects.

With a new and promising method under investigation, researchers are experimenting with growing healthy replacement heart tissues in the lab and implanting them in the patient's heart. Texas Children's is a major site for this collaborative, multi-institutional research that's helping develop powerful new ways to heal hearts.
Those challenges are significant — before he’s even come up for tenure, with several major breakthroughs and he is perpetually self-effacing when filled with pictures of his 7-year-old son, an unassuming scientist. Rather than Bioengineering Laboratory. Jacot is Jeffrey Jacot, Ph.D., is the head of aren’t the patient’s own cells, they are difficult to come by, and as they are made of, and it worked really well.”

The lab’s most promising effort so far is a patch of living heart tissue that could be used in heart repair surgeries. The patches currently used to repair congenital heart defects are made of synthetic fabrics or are taken from cows or from the patient’s own body.

“One of the major areas of research in our lab is figuring out how to use stem cells to repair heart tissue. We’ve been working on this for several years and we’ve made some exciting progress. In particular, we’ve been able to create a type of tissue that looks and acts almost exactly like heart tissue.”

A 2008 discovery holds some promise. A researcher in Japan found a way to turn other types of cells into ones that look and act almost exactly like embryonic stem cells. These cells, called induced pluripotent stem cells, act as sort of a “blank slate” and then turn that into something else. But some blank cell lines are easier to turn into cardiac cells than others.

“Because Texas Children’s now has the Pavilion for Women and is doing a lot of cutting-edge work in the Fetal Center, we have a fairly high level of access to amniotic fluid stem cells,” Jacot said. “Fetuses slough off cells into the amniotic fluid as they develop, and by taking a small amount of the mother’s amniotic fluid, we can turn them into induced pluripotent stem cells and see what kind of cardiac cells we can turn them into. We’ve found that they make vascular cells really well, but they’re not as good at making heart tissue yet.”

JOINING FORCES

This intramural collaboration between Jacot’s lab and Texas Children’s Pavilion for Women echoes a larger research collaboration between Texas Children’s, Rice University and several other local institutions. It’s a relationship that resulted from a fortuitous meeting between the head of pediatric heart surgery at Texas Children’s Hospital and a young researcher at Rice University.

Charles D. Fraser, M.D., surgeon-in-chief at Texas Children’s Hospital, is a leader in the fields of pediatric, neonatal and in-utero heart surgery and a pioneer in the use of ventricular assist devices (VADs) as well as the Berlin Heart.

Like other heart surgeons, Fraser had read with interest about efforts in laboratories across the country to turn stem cells into heart muscle tissue or heart valve tissue. But he had been frustrated with what he saw as a lack of alignment between clinical practice and basic science research.

Even though he was leading the largest clinical center for congenital heart repair in the country, he had virtually no link to any of the basic science labs that were attempting to recreate human heart tissue.

When Fraser met Jane Grande-Allen, Ph.D., things began to change. It was the beginning of a new chapter in research at Texas Children’s. Grande-Allen is a researcher at Rice University whose concentration is bioengineering approaches to heart valve repair — literally seeking ways to grow new heart valves in the laboratory.

“When we started talking,” Fraser said, “I mentioned how many operations we did per year and how much human valvular tissue we had access to, and her jaw dropped to the floor. And she mentioned some of the things that they were working on in the lab, and my jaw dropped.

“Obviously, it would be very helpful to her team to have access to our samples and to be present at some of our surgeries to understand what the real issues are,” Fraser said. “And it would be equally beneficial for us clinicians to understand what is going on and what is possible on the research side. It was very clear that we were not working as closely together as logic would suggest was profitable.”

Fraser and Grande-Allen began a collaboration that included shared grant funding and the involvement of a number of graduate students. Ultimately, it also led to the founding of the Pediatric Cardiac Bioengineering Laboratory and the recruiting effort that would bring Jacot to Texas Children’s.

FROM CELLS TO TISSUE SPECIFICITY

The work in Jacot’s lab is pushing beyond the identification and isolation of stem cells into examination of ways to get those cells to grow into specific shapes. The team is currently researching biomaterials that they can use to shape and control the way the tissue grows.

“We need to use other types of materials as a kind of mold or scaffold that the cells will grow on but will eventually go away and degrade, being replaced by materials that the cells make themselves,” Jacot said. “It’s kind of like Goldilocks. You need material that’s not too stiff, not too soft, that allows the cells to contract but also gives a little bit of resistance.”

“We’re working with a lab at Rice on using liquid crystal elastomers — like you might find in your LCD clock display — which align in a certain way when you put a current across them. We recently published on a gelatin-chitosan blend. Chitosan is what the shells of shrimp and crawfish are made of, and it worked really well.”

The lab’s most promising effort so far is a patch of living heart tissue that could be used in heart repair surgeries. The patches currently used to repair congenital heart defects are made of synthetic fabrics or are taken from cows or from the patient’s own body.

“These types of procedures have good short-term outcomes, but long term there’s an increase in complications,” Jacot said.

In the approach Jacot and team are investigating, a scaffold is designed to support the growth of healthy new tissue and is studded with living heart cells. These cells are allowed to reproduce in the lab, and then the scaffold and the new heart tissue can be implanted in the damaged heart. Over time, the scaffold is designed to degrade, leaving behind a heart repaired with real human heart tissue.

Seokwon Pok, Ph.D., a post-doctoral student who works in Jacot’s lab, >>

1. CAST-OFF FETAL CELL

Extracted from amniotic fluid

2. EXTRACTED EMBRYONIC CELL

Ready for pluripotent induction

3. INDUCED PLURIPOTENT “BLANK SLATE” STEM CELL

Ready for reprogramming

THE SEARCH FOR THE PERFECT CELL

Jeffrey Jacot, Ph.D., is the head of Texas Children’s Pediatric Cardiac Bioengineering Laboratory. Jacot is an unassuming scientist. Rather than diplomas and journal covers, his office is filled with pictures of his 7-year-old son, and he is perpetually self-effacing when talking about his work. But with a CV that includes an undergraduate degree in chemical engineering from University of Colorado, a Ph.D. in biomedical engineering from Boston University, and a distinguished academic career with several major breakthroughs before he’s even come up for tenure, Jacot brings considerable expertise and vision to the challenges at hand.

Those challenges are significant — especially when his work revolves around getting enough of the “right” cells. All laboratory-grown tissue begins with a source of human cells — typically stem cells, the precursor cells that form all of the tissues of the body.

“A major focus of our lab is figuring out what stem cell sources are easiest to turn into heart tissue and how easy it is for us to access enough of them,” Jacot said.

Embryonic stem cells are the gold standard for stem cells, but they are difficult to come by, and as they aren’t the patient’s own cells, they are genetically different from the patient. This genetic difference may provoke a destructive response from the patient’s immune system.

“There’s some controversy over whether embryonic stem cells are immune-protected or immune ‘neutral,’” Jacot said. “Some studies have shown that they don’t produce an immune response. But the surgeons I’ve talked to have said they would feel better using tissue that came directly from a patient’s own genetic material.”

A 2008 discovery holds some promise. A researcher in Japan found a way to turn other types of cells into ones that look and act almost exactly like embryonic stem cells. These cells, called induced pluripotent stem cells, act as sort of a blank slate, allowing a scientist to, for instance, take a skin cell from an adult, turn it into a “blank slate” and then turn that into something else. But some blank cell lines are easier to turn into cardiac cells than others.

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The research of Ds. Jeffrey Jacot and Seokwon Pok revolves around production of a 3D scaffolded material seeded with living heart cells designed ultimately to promote the growth of healthy new heart tissue.

“The issue is we’re running out of living organs,” Jacot said. “That’s why people who donate, it will never even plateau, and even if we found a way to do many kinds of reconstructions and repairs that simply aren’t possible right now.

“In order to repair a major area of a ventricle, you can’t just put a sheet of plastic in,” Jacot explains. “You need something that can contract and be functional right from the start.”

For Fraser and Grande-Allen, the recent publication of Jacot’s and Pok’s research is a sign that they are moving in the right direction.

“We think this will help us build a platform on which major advances can occur in replacement of structurally deficient elements of the heart,” Fraser said. “Figuring out how to build these heart patches, and how they can electrically communicate, gives us much more insight into other opportunities for development, up to and including the ‘holy grail’ of growing an entire heart in the lab.”

“I think that using living tissue will dramatically improve long-term outcomes,” Jacot said. “You won’t have a scar response, you’ll have something that is actively conducting and contracting, rather than disrupting the electrical signal and contraction of the heart.”

Beyond that, with living tissue, Jacot believes surgeons would be able to do many kinds of reconstructions and repairs that simply aren’t possible right now.

“Open heart surgery does work very well, and it is a very good option if it’s your only option,” Justino said. “If you can get the very same result without having the chest opened, without a long scar, without using an artificial machine to circulate blood through your brain, and if you can go home the very same day instead of staying in the hospital for several days — even go to school the next day — why would you not want that?”

After three years of development, Jacot, Harrington and Chun have a working prototype and are very close to completing their first milestone, which is to prove that it works in the lab setting and meets the criteria the FDA requires of valves. The next phase is animal testing: How does this device perform when it’s placed in a living organism, in contact with organs, tissue and blood? The final step, human testing, may be several years away depending on funding and how well the first two stages go.

“Our long-range goal, after all of this is complete, is to see if we can coat the valve with living tissues and various kinds of cells to make the device more biocompatible with the patient, similar to what Dr. Jacob and his team are doing,” Justino said. “But that’s a long way away. For now, our main goal is to get the best performance we can from this valve and then get it on the market — helping children as quickly as possible.”

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Henri Justino, M.D., C.M., director of the C.E. Mullins Cardiac Catheterization Laboratory, is something of a magician when it comes to repairing a child’s heart; in the least invasive way possible. He and his colleagues in the cath lab can remove a blockage, close a hole in the heart, and replace a defective heart valve using thin, flexible catheters and some deft flicks of the wrist, leaving no trace of their efforts other than a tiny incision near the patient’s hip.

One thing that has consistently bothered him, however, is the lack of available options for children with defective heart valves.

“Compared to the adult market, the pediatric market is simply too small for companies to invest in,” Justino said. “Seventy-five percent of children who need a valve replacement need a pulmonary valve, but there’s only one kind available today that can be delivered by a catheter approach and is approved for use in the pulmonary position. It’s expensive and hard to come by. We need another option.”

Critical Mass

Recently, Fraser, Grande-Allen, Jacot and several other researchers in the Houston area have come together to form a collaborative called the Texas Center for Regenerative Medicine.

“We’re putting together a real critical mass of people with a lot of knowledge about the huge range of tissues that actually go into a heart, as well as other organs in the body,” Grande-Allen said. “Our group includes teams of researchers from Texas Children’s Hospital, Texas Heart Institute, Rice University, Baylor College of Medicine, The University of Texas Health Science Center, UTMB and Texas A&M, and our goal is to get together regularly to find out what everyone is doing and to apply for large collaborative research grants to help us advance our field of study.”

Scientists associated with the collaborative are looking at everything from stripping a human cadaver heart down to the cartilage and then rebuilding it cell by cell using tissue grown in a lab; to creating heart patches; to injecting viruses into hearts to help them perform better.

“Somewhere along the road here, we are going to figure out that one approach works better and has more promise, and we’re all going to shift accordingly,” Jacot said. “That’s what’s so exciting about this type of research. You never really know where you’re going until you get there, and even then, you’re never fully arrived at a destination — you’ve just veered down a new path.”

“Creating a better solution for pediatric heart valve replacement”

By Eden McCleskey

Henri Justino, Daniel Harrington and Kwonsoo Chun examine the prototype valve in a high-cycle tester.

Drs. Henri Justino, Daniel Harrington and Kwonsoo Chun

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Henri Justino, Daniel Harrington and Kwonsoo Chun examine the prototype valve in a high-cycle tester.
Children work and play to help regain and refine their abilities at Texas Children’s Hospital’s eight-bed Pediatric Inpatient Rehabilitation Unit. Follow four of these determined patients through a day of rehabilitation.

Reem Hasan, an international patient who came to Texas Children’s for treatment of her cancer, completed inpatient rehabilitation to slowly regain most of her normal function.

STRENGTH, SKILL AND RESOLVE
Texas Children’s Pediatric Inpatient Rehabilitation Unit opened in May 2012 in response to a critical community need. Before the unit opened, local children in need of rehab went to various therapists in an outpatient setting or had to travel to other cities — and sometimes out of state — to receive inpatient rehabilitation. Texas Children’s eight-bed, acute-level Inpatient Rehabilitation Unit provides the uniquely coordinated care of occupational, physical, speech, art, recreation and music therapists, child life specialists, and nurses in a hospital setting. Care teams are dedicated to the unit and are experienced in rehabilitative care.

Clockwise from left:
Inside the gym and around the unit, the patients and families become a part of a bigger family as they sometimes spend months together on the floor watching and rooting for each other’s progress.

Dr. Christian Niedzwecki checks on Stephanie Gonzalez’s progress. Niedzwecki treats patients on the unit and helps the therapists set daily, weekly and discharge goals unique to each child.

Playing a tambourine takes concentration, mobility and interest. Music therapist Amy Smith’s visits with Victoria Fields include individual music time and group lessons.

Xeth Cervantes’ occupational therapy includes working on grip strength and in-hand manipulation. These translate into everyday tasks like holding coins, picking items up and even eating.
Clockwise from inside left:
Xeth Cervantes works on upper body strength.
Patients on the unit receive three hours of therapy a day, broken into segments depending on what they are physically able to handle.

Determined, Stephanie Gonzalez tries standing on her own with her mother’s and therapist’s encouragement. Family involvement is a critical part of preparing for discharge and continuing the progress at home.

Nurses on the inpatient rehabilitation unit are an extension of the therapy team, assisting patients in caring for themselves as they relearn things like brushing their teeth, showering and getting dressed.

Child life specialists visit the unit to prepare patients for surgery or help them find a distraction from pain or anxiety caused by their injuries. Patients on the unit have a wide range of diagnoses and unique rehabilitation goals set each day based on their progress and abilities.

Art provides therapeutic recreation for Victoria Fields to encourage use of her hands and help strengthen her ability to follow steps and make choices.
Imagine wheeling your 2-year-old son around Disneyland in his stroller, listening while his cousins squeal with delight at every passing sight and sound. Suddenly, one of the Disney characters appears before your group, all buck teeth, silly grin and floppy ears.

“The responses were just crazy-different,” said Lisa Maxwell, whose son sat in his stroller that day. “Goofy came up to us and the other kids were so excited to see him — he’s a 6-foot dog, after all — but Aidan didn’t even look up.”

Aidan was on anti-seizure medicine that left him, in his mother’s words, “catatonic.” Diagnosed at birth with a rare multi-systemic disease called tuberous sclerosis complex (TSC), Aidan began suffering epileptic seizures when he was 2 years old.

The seizures required medicine that turned him from a happy, playful child into one who couldn’t even communicate.

“I had little hope for him,” Maxwell said. “Verbally, cognitively … he was haywire. I had the feeling he >>
A NEW SOURCE OF HOPE

The fall of 2010 marked a turning point for Aidan and his family, however. Behind the scenes in the Cain Foundation Laboratories at the Jan and Dan Duncan Neurological Research Institute (NRI) at Texas Children’s Hospital, epilepsy researchers had been studying the brain pathways of animals with Aidan’s type of illness.

NRI Co-Director John Swann, Ph.D., had been studying tissue taken from children with intractable epilepsy for whom surgery was the only option. Then, he and his team replicated in mice the overactive pathways they found in the children’s tissue samples. The mice had seizures, but Swann and his team found that certain medicines affecting the overactive pathways stopped the seizures.

Over the course of this research, Swann had been sharing his information and findings with staff physicians at Texas Children’s. This coordination was made possible through a unique collaboration between researchers at the NRI and clinicians at Texas Children’s that allows researchers to share their findings with doctors who are actively engaged in treating patients with diseases like epilepsy.

“Our is a unique relationship in the field of pediatric neuroscience, and it creates a dynamic that doesn’t exist in many places,” Swann said. “It allows us to study neurological diseases collaboratively between lab and clinic and move intervention therapies forward faster.”

Meanwhile, researchers at Cincinnati Children’s Hospital were engaged in studies of a medicine called everolimus. Originally developed to help prevent the rejection of transplanted organs, everolimus also seemed in studies to reduce the growth of brain and kidney tumors such as those associated with TSC. In the course of this research, physicians at Cincinnati Children’s noted that everolimus also seemed to have a positive effect on seizure activity in patients with TSC — bringing the study to the attention of physicians at Texas Children’s.

“It was work that had been going on independently, until it all coalesced,” said Angus Wilfong, M.D., director of the comprehensive epilepsy program at Texas Children’s. In August 2012, the two hospitals linked up to conduct a drug trial to study the effect of everolimus on epileptic seizure activity in patients with TSC. Ten patients were enrolled in the study at each hospital, and Aidan was among them.

“Of the 20 patients, 17 had dramatic improvements in their epilepsy,” Wilfong said. “Most of the time, when you’re talking about a new drug for epilepsy, if two or three people out of 10 have a good response, that’s considered really, really good. It was dramatically more effective than any other medicine that had been used.”

What also encourages researchers is that this medicine may potentially repair damage already done by the disease.

“We have more than 30 drugs that are referred to as ‘anti-epilepsy drugs,’ but they’re not really anti-epilepsy drugs; they’re anti-seizure drugs,” Wilfong said. “They don’t make the epilepsy better. Because this medicine changes the brain’s pathways and helps the brain re-regulate cell growth and cell connections, we strongly believe that it can help the brain fix itself.”

REMARKABLE TRANSFORMATION

Maxwell said that once Aidan began taking the drug, the change in her son was nothing short of miraculous.

“We saw profound differences in him in just six months,” said Maxwell. “Not only his seizures, but also his cognitive abilities, his communication abilities, his social abilities … all of those things started changing.”

And Maxwell wasn’t the only one to notice a difference.

“His teacher said she’s never seen a medicine do so much for a child,” Maxwell said.

Seeing Aidan’s progress was just as much of a reward for Swann.

“I’ve been studying childhood epilepsy as a researcher for 30 years, so to finally meet a child my work has helped was incredible,” Swann said. “It really was a moment when all of that work — when all of that effort — really paid off.”

Because of the study’s success, the medicine’s manufacturer has launched an international drug trial that will enroll 500 patients in some 70 countries. That study launched in June, and Texas Children’s already has enrolled 20 patients in it.

For the Maxwells, everolimus has meant the difference between Aidan falling further and further behind his peers — maybe never to catch up — and his being able to concentrate and learn again. Perhaps best of all, his family said that his social skills have drastically improved.

“When I said I was worried that Aidan would never have friends? Maxwell said. “This past year, two little boys actually began to play with him and ask to sit next to him in school. They didn’t feel sorry for him because he had this disorder, and they weren’t just trying to be nice. They really wanted to be his friends.”
It’s too hot. It’s too hick. It’s Houston — or is it? The nation’s fourth-largest city is getting a second look that’s leaving many pleasantly surprised.

Houston is hot — so much so that it landed at the top of Forbes’ list of coolest cities to live in 2012 and at no. 7 on The New York Times’ list of 46 must-visit destinations — in the world. And both BBC News and Business Insider recently published their respective lists of reasons why Houston is one of America’s best cities in which to live.

Aside from its oil and gas industry, affordable real estate, and guaranteed good food, one of Houston’s most attractive assets is its medical community. At the heart of that community is Texas Children’s Hospital, to which some of the most renowned physicians in the world flock. Attracted by the opportunities that abound in the Texas Medical Center and by the cultural richness of the city, many of the world’s physicians start their careers here as residents in hot, hot Houston.

Adedapo Adebanjo admires a sculpture in the Museum of Fine Arts Houston. With some 65,000 works, the museum is one of the 10 largest museums in the U.S.

Photo by C.J. Martin

Adebanjo dreams of some day working at the Centers for Disease Control.

Photo by Paul Vincent Kuntz

**Why Residents Love to Live and Learn in the Bayou City**

by HASTI TAGHI

### Texas Children’s Hospital Facts & Figures

- **4th** among the nation’s children’s hospitals
- **8,000+** healthcare professionals creating a healthier future for children and women through patient care, education and research
- **Magnet Recognized** 2003
- **AMERICAN NURSES CREDENTIALING CENTER**
- **Largest** primary care network in the U.S.
- **48 practices**
- **170 physicians**
- **$100,000,000+** annual extramural grant funding

**Baylor College of Medicine**

6th Annual Research Studies

**800**
In a corner office at Texas Children’s Hospital, Krishnan Subrahmanian sat across from Physician-in-Chief Mark Kline, M.D., on one of his final residency recruitment visits. Subrahmanian, who received his undergraduate degree from Harvard and was attending medical school at Stanford, was nearing the end of his program at the prestigious university, graduating at the top of his class. He was invited to many top pediatric hospitals for interviews, but this one felt different.

“Dr. Kline had a level of attention on everyone’s story and showed special interest to everyone who applied,” Subrahmanian said. “He had gotten to know us before we even came to his office, and he actually cared. It’s important to me to see leaders who genuinely care about their people.”

Subrahmanian would ultimately be awarded a residency at Texas Children’s and Baylor College of Medicine and is currently in the second year of his training in Global Child Health.

ACCESSIBLE BRILLIANCE

Tolulope Adebanjo, who graduated from the University of North Carolina at Chapel Hill School of Medicine, also is a second-year resident. With a bright smile and friendly demeanor, she is quick to tell you her dreams of working at the U.S. Centers for Disease Control and Prevention. Her honesty and passion for making a difference are evident.

“Being at Texas Children’s, you’re at one of the best children’s hospitals in the country,” Adebanjo said. “We see diseases and conditions that most pediatricians in the world have never seen.”

What won Subrahmanian and Adebanjo their spots at Texas Children’s wasn’t just their smarts; it was what Kline calls “accessible brilliance.” It’s his abiding requirement whether he’s interviewing residents or heads of service.

“You can find all kinds of brilliant people, but pick someone you want to be around,” Kline said. “Recruiting what we value culturally is how we actively shape our culture.”

AN OPEN MIND

In the same office where he interviewed Subrahmanian — and where he interviews about 350 pediatric residency applicants each year — Kline now sits alone. This time, he’s the one with the nerves. It’s the day before the latest batch of medical school graduates learns their fate for residency programs. Today, the hospitals find out which graduates are heading their way. Kline knows a match isn’t only important for the futures of these bright new recruits; it also plays a major role in Texas Children’s reputation and future.

“It’s one of my favorite things to do,” Kline said. “It’s an investment in what we will look like 10, 20, 30 years down the line. Nationwide, numbers show about 80 to 85 percent of doctors will practice where they did their residency training.”

Kline’s one of those residents who stuck around. His selling point to potential residents? He tells them with confidence that Texas Children’s is an institution that will broaden their horizons and open doors they never imagined. He asks residents to come in with an open mind and allow their careers to take shape here.

“I’m the embodiment of what I’m talking about,” Kline said. “My path took an entirely different direction into HIV/AIDS work, then global health and now hospital leadership.”
THE CHOSEN AND CHOOSING

When pediatric global health resident Nathan Serazin talks about his experiences at Texas Children’s, his enthusiasm makes it pretty clear why he was on Kline’s list of top candidates. But the process of selecting a residency is a two-way street — students choose to apply to programs that they feel suit their interests and abilities.

“You can’t help but be impressed by what goes on in the Texas Medical Center,” Serazin said. “You know in each of these beautiful buildings there’s cutting-edge work from researchers working to make a breakthrough in neurosurgery or oncology. You can’t help but be excited because you know that’s the caliber of people you’re working with.”

Serazin, who graduated from Northwestern Medical School, never thought he would wind up in Houston, but his decision was greatly impacted by the Texas Medical Center. It’s the largest single hospital in the world. Twenty-one hospitals, eight academic and research institutions, and 50 total not-for-profit institutions make up the complex, which is larger than downtown Dallas.

The quality of life in Houston has gained the city a spot in Serazin’s heart. He notes the diversity of activities available and easy accessibility. The Houston Museum District, located just next to the Texas Medical Center, has 19 museums in a 1.5-mile radius. Houston has more parks than any other top 10 metropolitan area. And there are plenty of professional sports, including the Houston Texans football team, the Houston Astros baseball team, the Houston Dynamo soccer team and two-time NBA champions, the Houston Rockets.

Whatever brought them here, the residents are among an elite group of professionals who call Houston and Texas Children’s Hospital home. Whether they continue their careers here or find another match moving forward, they forever will be shaped by the experiences of their first years in health care. For Kline, that’s a realization that’s not to be missed.

“I know with each choice I make, I’m impacting the future of medicine,” he said. “Through these young doctors, I’m touching the lives of kids around the globe whom I will never meet.”

“The Texas Medical Center is Houston’s gift to the world.”

— Former First Lady Barbara Bush

Subrahmanian is always game for good food shared among friends. Houston’s popular Chinatown is home to some of his favorite restaurants.

HOUSTON

Hailed by The New York Times as “one of the country’s most exciting places to eat,” Houston offers an incredible variety of food — from the exotic to the down-home — and Houstonians take advantage, eating out more than residents of any other city in the country.

Adedbanjo appreciates the diversity. For her, it’s about fitting in and the open-mindedness of the community that allows so many different cultures to blend seamlessly. She has found a warm welcome in the local Nigerian community — one of many ethnic populations in Houston, which has become the most racially and ethnically diverse metropolitan area in the nation.

“HOUSTON’S DIVERSE APPEAL

With a year of their residency complete, Subrahmanian, Adedbanjo and Serazin all agree they made the best decision for their careers. What might surprise them most is their newfound appreciation of the city they call home. As the fourth-largest city in the United States, Houston offers each of them something to satisfy their diverse interests.

For Subrahmanian, it’s the food. The Texas Medical Center is a breeding ground of brilliance, with the largest concentration of medical professionals and experts anywhere on the planet. Last year, more than 7.2 million patients visited one of the 290 buildings that sit on the 1,345 acres that make up the complex. Research from the medical center averages a new discovery every other day.

These fresh new physicians appreciate the exposure to the spectrum of diseases, and the patients, scientists and doctors who will shape their careers.

“You get excited thinking one day you want to be one of those people who’s making the breakthrough discoveries,” Serazin said.

When he was considering places to apply, Subrahmanian was similarly inspired by the opportunity to make a difference. “I believe in the responsibility and opportunity that we have in this country to really change lives through health care,” he said. “When I was trying to make the decision for residency, I tried to think about which institution really practices that and is trying to make that a reality.”
The moment pediatric nurse Christie Husband learned her unborn baby had a birth defect, her mind started flailing. Husband was 32 weeks pregnant when her obstetrician discovered her baby had only one kidney.

This was Husband’s second pregnancy, and up until that moment, it had been enjoyable and relatively uneventful. “By 32 weeks, I’d totally bonded with my baby,” Husband said. “I could feel her moving and flipping around in there, and I had been so excited thinking she was a happy, healthy baby.”

Jolted by the unexpected, Husband thought of some of the patients for whom she’d cared. She knew about the increased risks of urinary tract and kidney infections, and she was terribly anxious about her baby’s health and future. “I knew just enough to be dangerous,” Husband said. “But in that moment I wasn’t a nurse — I was a mom. I was just trying to get my footing and figure out what to do next.”

What gave Husband peace and reassurance was the network of care and expertise that sprang up around her. Todd Ivey, M.D., her obstetrician at Texas Children’s Pavilion for Women, immediately engaged specialists at Texas Children’s Maternal-Fetal Medicine Clinic in The Woodlands to carefully monitor Husband’s pregnancy.

CARING FOR COMPLEX PREGNANCIES

Maternal-fetal medicine (MFM) is an obstetric specialty focused on the management of high-risk pregnancies. MFM specialists have three years of additional specialized training aimed at improving outcomes in pregnancies in which the mother has underlying health conditions that place her in danger, or in which conditions exist that could threaten fetal survival.

According to the March of Dimes, one in about 700 babies (less than 1 percent) is born with unilateral renal agenesis — having one kidney instead of two. Husband was concerned that other urinary tract defects may cause problems for the one kidney, but her doctors assured her most babies with this condition grow and develop normally.

“Maternal-fetal medicine doctors receive additional training and exposure to managing pregnancies complicated by complex chronic medical illness, acute intensive care conditions and congenital abnormalities,” said Texas Children’s Obstetrician-in-Chief Michael A. Belfort, M.D. “They become experienced in the use of sophisticated ultrasound, learn fetal intervention techniques, and perform prenatal diagnoses and genetic screening during fellowships. This training and certification allows us to better manage very high-risk pregnancies and to improve outcomes for mothers and babies.”

MFM is a growing specialty. According to the Society for Maternal-Fetal Medicine, the need for high-risk maternal-fetal care has never been greater. More than 500,000 babies are born too early in this country every year, which means one in eight births involves a premature delivery.

Physicians at Texas Children’s six maternal-fetal clinics treat everything from gestational diabetes to hypertension, heart disease and other illnesses. The clinics also offer screening services — such as ultrasound and 3-D imaging — as well as genetics and nutritional counseling.

“Our MFM clinics give community-based obstetricians access to our experts, which can lead to earlier diagnoses and clinical interventions for mothers and babies,” said Cris Daskevich, senior vice president at Texas Children’s Pavilion for Women. “Texas Children’s and Baylor College of Medicine MFM specialists had more than 43,000 patient visits this past year at our community hospital partner sites across greater Houston and in the Pavilion for Women.”

A WELL-SPUN COCOON

Texas Children’s maternal-fetal medicine program offers comprehensive, coordinated care in the community

by SANDRA BRETTING and ANGELA J. HUDSON

Mom Christie Husband nuzzles 9-month-old Brooke, who was born with a single kidney.
Christie and Robert Husband, with daughters Brooke and Brennley, were grateful to have seamless, comprehensive care close by when the unexpected happened during Christie’s pregnancy.
The number of children reported allergy and allergic diseases in general has increased from 2.3 million in 1997 to approximately 3 million in 2008, while the Centers for Disease Control and Prevention (CDC) reports that the prevalence of food or digestive allergies among children has increased 18 percent in the past decade.

Emerging evidence suggests that the delayed introduction of solid foods may actually increase the risk of food allergy or eczema, and the early introduction of allergenic foods may prevent food allergy in infants and children. One study reported increased risk of sensitization to egg at age 5 if egg was introduced after 10 months. And another study showed that the early exposure to cow’s milk protein via formula as a supplement to breastfeeding may actually protect against cow’s milk allergy later.

With this in mind, the American Academy of Allergy, Asthma and Immunology issued new recommendations for helping prevent allergic disease through nutritional intervention. These new guidelines, released this spring, are based on numerous recent studies that support the potential benefits of early introduction of foods — and the possible detrimental effects of delaying foods.

The new recommendations are designed to help guide primary care providers, allergists, other specialists and parents through the complicated topic of food allergies. The information at right is intended to provide a starting point, but it’s important to note that parents always should talk to their children’s physician before making any dietary changes.

Frequently Asked Questions

**About Food Allergy**

When should I introduce foods to my baby?

Complementary foods (foods given in addition to breast milk), including rice or oat cereal, vegetables, fruits, and then age-appropriate foods with meats may be introduced between 4 to 6 months of age. Highly allergenic foods, such as cow’s milk, eggs, peanuts, tree nuts, soy, wheat, fish and shellfish, may be introduced after a few complementary foods are tolerated. Although dairy products also may be introduced at this time, whole cow’s milk as the infant’s main drink should be avoided until age 1 for reasons, including low iron content and the risk of dehydration due to the high electrolyte content of cow’s milk. Whole peanuts and tree nuts carry aspiration risks and should be avoided until the child’s physician feels they are safe.

How should I introduce the highly allergenic foods?

First of all, these foods should be initially given at home, rather than at a daycare or restaurant. As long as there is no apparent reaction, then the food can be given in gradually increasing amounts. Lastly, one new food should be introduced and given for three to five days in order to monitor for allergic reactions. Parents should note that local skin reactions, including a red rash or hives around the mouth due to irritation from the acid of some fruits (i.e., berries, tomatoes, citrus fruits and vegetables) are not considered a food allergy, so delayed introduction of these foods is not recommended.

Maternal avoidance diets during pregnancy and lactation are not recommended at this time. Excessive breastfeeding is recommended for at least 4 months and up to 6 months of age. This has been shown to possibly reduce the incidence of atopic dermatitis in children under age 2, reduce early onset wheezing before age 4, and reduce the incidence of cow’s milk allergy in the first two years. Although no specific formula is recommended over another, hydrolyzed formula appears to offer advantages in preventing allergic disease when given to infants who have increased risk of allergic disease and who cannot be exclusively breastfed for the first four to six months of life.

When should I bring my child in to see the allergist?

When an infant has poorly controlled, moderate-to-severe atopic dermatitis or has a reliable history of an immediate allergic reaction to a certain food, then referral to an allergist is warranted. If a food which has not been introduced yet tests positive in a serologic food-specific serum IgE test, an allergist may help decipher the results and perform a food challenge before prematurely avoiding certain foods. Conversely, if a food tests negative despite a convincing history of an allergic reaction, then an allergist may recommend skin-prick testing and an oral food challenge, instead of having the family try the suspect food at home again. Lastly, a child who has a sibling with a peanut allergy has a 7 percent risk of peanut allergy. Even though the risk of introducing peanuts to these children is low, the physician or parent may request a referral to an allergist before introducing peanuts.
For the Future of Transplant Patients:
JLH Foundation broadens impact with a $2 million gift to establish its first endowed chair

ERIKA E. HAYES

The 252 days that John L. Hern spent waiting on a heart transplant continue to change the lives of transplant patients across the country — now like never before.

The JLH Foundation, named in honor of Hern, recently made a $2 million gift to establish The JLH Foundation Chair in Transplant Surgery at Texas Children’s Hospital. It is the first endowed chair for the foundation, which has until now largely focused on direct and immediate support for patients and their families.

The recent gift takes the foundation’s vision a step further by funding transplant programs and research that will improve the care and treatment of patients for generations to come.

“My father would definitely be proud of the growth that this foundation has had and of our expanded focus,” said John L. Hern’s daughter, Paula Hern, who established the foundation to carry on her father’s legacy. “Yes, the original vision for the foundation was direct patient support — medication, parking, housing and meals. But above all else, my father was a man who wanted to help transplant patients in the best way possible. We believe that supporting programs that improve future care is an absolutely wonderful way to accomplish this goal.”

The JLH Foundation was established as a result of the experience that Hern had while awaiting a heart transplant in 1996. He received the transplant in December of that year but died the following October after anti-rejection medications failed. During his hospital stay, he met and made friends with other patients who could not afford many of the costs that came with having a transplant — not only the medical costs, but also the everyday ones, such as parking, meals away from home, utility bills and more.

It was a challenging time for him and his family, but it also was a time during which he realized how fortunate he was and how much he wanted to help others.

In July 2013, it was announced that John Goss, M.D., medical director of transplantation and surgical director of liver transplantation at Texas Children’s Hospital, would be the first recipient of the chair.

“I’m so grateful for this wonderful gift and am honored to be the first to hold the JLH Foundation Chair in Transplant Surgery,” Goss said. “I look forward to the incredible strides we can make in our groundbreaking work in this area.”

An Investment in Women:
$2 million gift inspired by desire to decrease stigma of mental illness

ERIKA E. HAYES

Even as a child, Maureen Hackett understood the pressures that could come with being a woman.

As the middle child of nine, she watched her mother go to work each day and return home to children who needed her attention and a husband who suffered from depression. Her mother was the breadwinner — and so much more — for the family.

It was hard on her, to say the least. Looking at Hackett’s early view of womanhood, it’s almost as if advocacy for women’s mental health was destined to be her life’s work — and it absolutely has been.

The most recent example for Hackett, her husband James and their four children is the establishment of the Maureen Hackett Endowed Chair for Reproductive Psychiatry at Texas Children’s Hospital.

Their gift of $2 million will support treatment and research initiatives at The Women’s Place – Center for Reproductive Psychiatry at Texas Children’s Hospital.

Lucy Puryear, M.D., a board-certified psychiatrist who specializes in women’s reproductive mental health, is the first appointee to the endowed chair and serves as medical director of The Women’s Place. She also is an associate professor of obstetrics and gynecology and of psychiatry and behavioral science in Baylor College of Medicine’s Menninger Department of Psychiatry and Behavioral Sciences.

Hackett calls herself a “long-time friend and fan” of Puryear and believes she is by far the best person to receive such support. She adds that Texas Children’s Hospital is the ideal place for this endowment to reside because of its leadership in innovative care for women and its partnership with Baylor College of Medicine.

Much of Hackett’s philanthropic passion comes from a desire to decrease the stigma associated with mental illness.

“In the past 30 years, we have certainly made some progress, but we have many more miles to travel,” she said. “Our hope is that this endowment will benefit women directly by providing greater access to treatment for more women and then even more broadly through advances in research and education. We want this endowment to benefit women everywhere.”
Our family has always loved Texas Children’s Hospital,” said Isla Reckling, a trustee of the Sterling-Turner Foundation.

Reckling’s personal connection to Texas Children’s began when she served as a Junior League volunteer, but her family’s commitment to philanthropy in general — and to the hospital in particular — began long before. Her grandmother, Isla Carroll Sterling Turner, established the Isla Carroll Turner Friendship Trust in 1956 and, in 1960, the Sterling Charitable Foundation (which later changed its name to the Sterling-Turner Foundation). Texas Children’s has been a grateful beneficiary of the foundation’s generous support for more than four decades.

Most recently, that generosity resulted in a $1 million gift to support Texas Children’s Fetal Center, housed in Texas Children’s Pavilion for Women, and two of its priority initiatives: the Hope House Fund and outcomes research.

The Hope House Fund, a direct impact program for patient families, offers support for families who have limited incomes and need help. For high-risk mothers and babies especially, hospital stays can be prolonged, treatments expensive, and other costs — from parking at the medical center to relocating to Houston for treatment — quickly add up. The Hope House Fund is dedicated to ensuring that the families who need medical care are able to get to the hospital in time — and that once they are here, they can focus on what’s truly important: the health and well-being of mother and child.

In addition, the Sterling-Turner Foundation’s gift will support outcomes research to help determine the long-term effects of fetal surgeries and procedures. Over time, this research will allow physicians and surgeons to refine, enhance and improve diagnosis and treatment methods so that the children who are helped even before they are born can continue to thrive and prosper.

Just as the care provided at Texas Children’s can affect children and families now and long into the future, so, too, can the impact of philanthropy.

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