

Baylor
College of
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Texas Children's
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Baylor College
of Medicine
Department of
Pediatrics

2014
Annual
Report

Baylor College of Medicine Department of Pediatrics **2014 Annual Report**

Baylor
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Welcome

Dear Colleagues,

You've probably seen some of those nostalgic pictures of kindly doctors tending to children. Painted by noted American artist Norman Rockwell between the 1920s and 1960s, the pictures of white male physicians represented the medical profession in the United States at the time. As late as 1965, women constituted less than 10 percent of U.S. physicians. In 1978, minorities accounted for just 13 percent of U.S. physicians.

Today, 31 percent of U.S. physicians are women. The proportion of minorities has doubled to 26 percent of American physicians. Our Department of Pediatrics at Baylor College of Medicine exceeds today's national picture, with women making up more than half of the faculty and about 70 percent of residents. Minorities also represent a growing percentage of our faculty and residents.

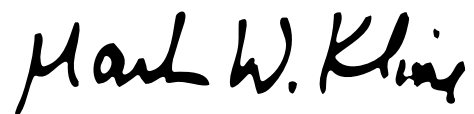
Pediatrics has a new face here at Baylor and Texas Children's Hospital.

The face of pediatrics is new not only in terms of greater gender and ethnic diversity, but also in the diversification of our clinical programs and expanded definition of community, the innovative approaches of our educational programs and the trailblazing work of our researchers. For example:

- The Baylor International Pediatric AIDS Initiative (BIPAI) at Texas Children's Hospital was founded in 1996 as a small health-professional training program in Romania. Now, BIPAI encompasses a network of state-of-the-art children's centers of excellence in Romania and across southern and East Africa, with more than 200,000 HIV-infected children in care. We are using the models of care we developed to treat and prevent pediatric HIV/AIDS as a blueprint to tackle a multitude of other medical conditions that continue to rob children worldwide of their health, including cancer, sickle cell disease, tuberculosis and neglected tropical diseases.
- Our principal investigators are conducting more than 1,000 clinical, basic science and translational research projects at any given moment. And our new Center for Human Immunobiology hosts amazing research that may lead directly to new treatments or cures for some of the most vexing medical conditions children and families can face.
- The pediatric residency program here continues to attract some of the country's most gifted candidates. Nearly 900 U.S. medical school graduates applied for the 40 positions in our general pediatric and pediatric global health residency programs last year. I am awed and inspired by the accomplished, dedicated and passionate residents who join us for training each year.

As evidenced throughout the pages of this report, there is an abundance of brilliance and breakthroughs within our academic and clinical spaces every single day. I hope you find the information within valuable and even inspiring.

Sincerely,



Mark W. Kline, M.D.

J.S. Abercrombie Professor and Chair, Department of Pediatrics, Baylor College of Medicine
Physician-in-Chief, Texas Children's Hospital



The new face of pediatrics embodies diversity in people and programs.





Patient
Care

Photo courtesy of Smiley N. Pool

Our Global Outreach



Baylor College of Medicine and Texas Children's Hospital combat serious or life-threatening diseases at these sites around the world.

- | | | | |
|------------|-----------|--------------------|------------|
| ● Angola | ● Lesotho | ● Papua New Guinea | ● Tanzania |
| ● Botswana | ● Liberia | ● Romania | ● Uganda |
| ● Colombia | ● Malawi | ● Swaziland | |

Our global impact: Well-being around the world

The 200,000 children and families treated for HIV since the Baylor International Pediatric AIDS Initiative (BIPAI) at Texas Children's Hospital began in 1996 is more than the number of HIV-infected children treated by any other institution in the world.

Now, in partnership with Texas Children's Global Health Initiative, BIPAI is diversifying.

"If it's a disease or a condition that is impacting the well-being of children, I want to tackle it," said BIPAI founder Mark W. Kline, M.D., who also is Texas Children's physician-in-chief and chair of the Department of Pediatrics at Baylor College of Medicine. "Now we're addressing tuberculosis, malnutrition, neglected tropical diseases, sickle cell disease and cancer.

"We're uniquely positioned to do this because we've built these platforms for delivering HIV/AIDS care and treatment, which is just about as complex a disease as you can name," Kline said. "The focus now is to take the human capacity that we've built, the infrastructure that we've built, and the models of care that we've developed and extrapolate to these other conditions that really have never been addressed in under-resourced areas in a meaningful way."

Tuberculosis

The Global Tuberculosis (TB) Program is integrated with BIPAI sites in most of the 11 countries where BIPAI is present.

"All of our pediatric HIV primary care physicians do a lot of TB work because the two diseases tend to track together," said Anna Mandalakas, M.D., M.S.Epi., director of the Global TB Program at Texas Children's and

associate professor of pediatrics at Baylor. "If you have HIV and TB infection at the same time, they affect the same parts of the immune system. So, each infection speeds the progression of the other.

"We're very excited that we've been able to work with our HIV and community colleagues to improve the care of TB-infected children in those settings," Mandalakas said.

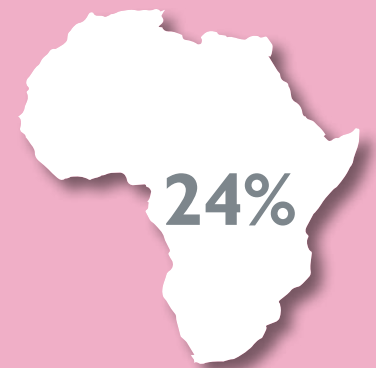
For children who do not have HIV but are affected by TB, several BIPAI sites in Tanzania, Swaziland and Lesotho have TB diagnostic and treatment programs.

Two large-scale projects in Swaziland and Lesotho, funded through the TB REACH program of the World Health Organization, work with community partners to identify TB cases early, identify children who have been exposed to TB cases, and start those exposed children on preventive treatment to keep them from progressing to disease, Mandalakas said.

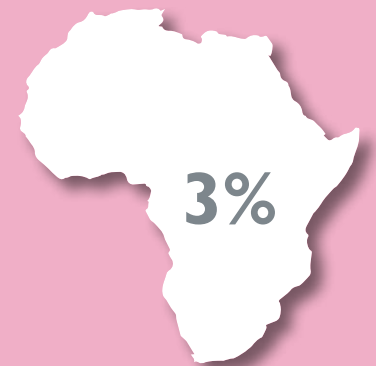
In Swaziland, government and nonprofit health agencies are partnering with BIPAI and Texas Children's to build a freestanding TB research and care center on the grounds of the existing HIV center.

"The newly developed pediatric TB center that we're launching has tremendous potential," Mandalakas said. "We feel that it is going to improve the health of children in Swaziland, and the lessons learned there will have significant relevance to children in other parts of the world and back in the United States."

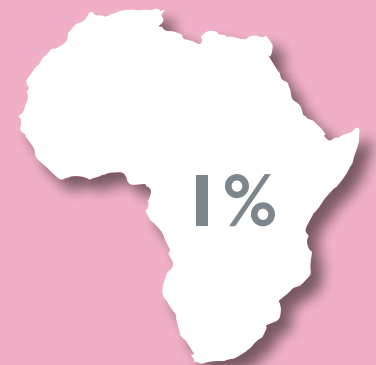
Since the beginning of BIPAI, education of local leaders, physicians and nurses has been important, helping to ensure long-term sustainability. For example,



Global burden of disease in sub-Saharan Africa



Global health workforce in sub-Saharan Africa



World's health expenditure in sub-Saharan Africa

Source: World Health Organization, 2006

Building a network

When Mark W. Kline, M.D., visited Romania in 1996, he recalls seeing hundreds of stunted and wasted children with AIDS dying for lack of the antiretroviral treatments that, by that point, had transformed pediatric AIDS in the United States.

“I just said, ‘I’ve got to do something,’” said Kline, who at the time was head of HIV Services at Texas Children’s Hospital. “We began training nurses and doctors, then we started a treatment program in Romania, and we saw the death rates and the rates of complications from the disease plummet.”

At the time, medical and public health authorities questioned whether the HIV treatment regimens used in the United States would be possible in poor countries because of the cost and complexity.

“But we were able to show in Romania that we could use the medications with exactly the same benefits and the same safety profile as we had observed in the United States,” Kline said.

He founded and became president of the Baylor International Pediatric AIDS Initiative (BIPAI) at Texas Children’s Hospital, which in 2003 established a clinical center of excellence in Botswana, the region of sub-Saharan Africa with the highest prevalence of HIV/AIDS – 39 percent. Based on dramatic benefits in Botswana, people from other countries approached BIPAI for help.

“Before we knew it, we had built a whole network of children’s centers across sub-Saharan Africa,” Kline said. In 2009, Kline became chair of the Baylor College of Medicine Department of Pediatrics and Texas Children’s Hospital physician-in-chief. And in 2011, Texas Children’s, Baylor and BIPAI together launched the Texas Children’s Global Health Initiative, expanding the focus beyond HIV/AIDS to other maternal and child health challenges in under-resourced areas of the world.

BIPAI is supported by funding sources such as the Centers for Disease Control and Prevention, USAID, philanthropies like the Abbott Fund and Bristol-Myers Squibb

Foundation, and the governments of the host countries for the clinical centers.

Since the beginning, education of local leaders, physicians and nurses has been an important part of the initiative.

“We knew that we would have to provide support at least on an interim basis, but ultimately the goal is to build capacity and local resources that can support the programs in perpetuity,” Kline said.

The Texas Children’s program has served as a model for others.



in September 2013, a week-long TB/HIV training in Johannesburg was attended by clinicians and public health practitioners from six sub-Saharan countries.

Mandalakas and TB Program Manager Katherine Ngo recently spent two weeks in Papua New Guinea.

“We met with our local Baylor team and young physician partners working in small clinics in remote areas, where you need to fly in a helicopter and trek through the jungle to get there,” Mandalakas said. “We’re talking with them about ways we can improve the care in those remote areas.”

A situation analysis and plans for developing new interventions were facilitated by meetings in Papua New

Guinea with local team members, academic colleagues, government officials and community partners, and in nearby Australia with representatives of the World Health Organization and partner organizations working in the region.

The program in Papua New Guinea was established in late 2013 through a \$3.1 million, two-year grant from ExxonMobil and other co-venturers of the Papua New Guinea liquefied natural gas project, plus a new partnership with Papua New Guinea’s National Department of Health and the University of Papua New Guinea School of Medicine and Health Sciences. As part of this effort, the Global TB Program is working with Henry Welch, M.D., Baylor assistant professor of pediatrics and Global Health

Corps physician in Papua New Guinea, the National Department of Health, the National TB Program and UNICEF to restructure malnutrition treatment and advance TB treatment and control among children in the national capital district, where TB disease rates are among the highest in the world.

“The Global Health programs, under the leadership of Dr. Kline and influenced by his vision, have a tremendous momentum,” Mandalakas said. “Global child health has truly been integrated into the fabric of Texas Children’s Hospital. The potential to improve the lives of the most vulnerable children in the world has attracted passionate, enterprising people in many sub-disciplines. Having so much expertise in so many complementary areas allows

the program to have greater and more sustainable impact.”

Malnutrition

Although Colombia is a country with universal health care, some pockets of the population have little or no contact with the health care system and suffer from high child and maternal sickness and mortality rates.

“Most of the people in the remote areas of the state of La Guajira are indigenous semi-nomads and are invisible to the system,” said James Thomas, M.D., professor of pediatrics at Baylor and lead pediatrician of the Texas Children’s Global Health Program in Colombia. “They live and die sometimes without ever coming into contact with mainstream Colombian society.”

A new initiative in Colombia – part of a public-private partnership among Chevron, Colombian government agencies, the state of La Guajira and BIPAI – aims to decrease the high sickness and mortality rates and to complement and strengthen the existing health care system in La Guajira.

Called SAIL (Salud y Autosuficiencia Indígenas en La Guajira), which translates to Health and Indigenous Self-Sufficiency in La Guajira, the program was established in early 2014 as a collaboration of Baylor’s departments of Pediatrics and Obstetrics/Gynecology in one of Colombia’s most impoverished states.

“From the very beginning, we’ve tried to involve local people,” Thomas said. “We’ve hired indigenous health care workers and trained them in integrated management of childhood illness. We will be training them in identifying maternal risk, as well. They are viewed as members of their own community, so the program belongs to them.

“The whole point is that we’re trying to help them develop self-sufficiency. We want them to incorporate what we know to be good health practice into their traditional ways of thinking. They’re very receptive when you explain why you do certain things.”

The health care workers have been trained to survey the communities and collect health data. The major health problems they have discovered include malnutrition, diarrheal disease and respiratory illness. The supply of antibiotics is chaotic, and half of the children have not been immunized.

The under-5 mortality rate in La Guajira is three times the national average in Colombia, and the maternal mortality rate is five times the national average.

“We’re uncovering statistics that are just staggering,” Thomas said. “Their mortality rate of children under age 5 is three times the national average, and their maternal mortality is five times the national average of Colombia. Almost half of the children we see have some nutritional issue.”

The program has identified sources of help. For instance, the Exito Foundation, which is supported by the largest retailer in Colombia, agreed to provide in-kind nutritional support for 500 families a year and to help in the nutritional rehabilitation of children with acute malnutrition once they leave the hospital. The local army garrison provided a truck and three soldiers to pick up the food and bring it back for storage in and distribution from a boarding school that Chevron had built for the indigenous people.

“Our successes, however humble, are due to exceptional teamwork at

multiple levels,” Thomas said. “We’re fortunate to have an amazing team. When you choose a team carefully and they work well together, the end result is more than the sum of the parts.”

Neglected tropical diseases

Texas Children’s is leading an international initiative to combat the world’s neglected tropical diseases (NTDs).

“Although not as well-known as HIV/AIDS and tuberculosis, these neglected tropical diseases are the most common afflictions of the world’s poor,” said Peter Hotez, M.D., Ph.D., the Texas Children’s Endowed Chair of Tropical Pediatrics and head of the section of Pediatric Tropical Medicine at Baylor. “Almost every single person living in poverty has at least one NTD.”

NTDs are predominantly chronic parasitic and insect-borne diseases, such as hookworm, schistosomiasis, leishmaniasis and Chagas disease, most of which cause long-term and debilitating effects.

“These tropical diseases are first and foremost diseases of poverty, and they reinforce poverty,” Hotez said. “About 1.2 billion people in the world live on no money on a given day. We call



them the bottom billion. We're finding that the bottom billion are infected simultaneously with multiple diseases.

"They make people too sick to go to work every day. They impair intellectual and physical development in children, and they cause adverse pregnancy outcomes," Hotez said.

The diseases can cause anemia, malnutrition and serious illnesses including heart failure, seizures and even death.

Researchers are leading product development and testing of vaccines for NTDs through a partnership between Texas Children's Center for Vaccine Development and Sabin Vaccine Institute, both led by Hotez with Maria Elena Bottazzi, Ph.D., associate director and a Baylor professor.

For example, a human hookworm vaccine developed here is in clinical trials in Africa and Brazil. Hookworm disease affects an estimated 440 million people around the world.

Clinical testing is about to start on a new vaccine for schistosomiasis, which is caused by parasitic worms and affects more than 250 million people worldwide.

A vaccine for Chagas disease is undergoing preclinical testing. Roughly 7 to 8 million people worldwide and 300,000 in the U.S. are believed to be infected with Chagas disease, which is usually spread by an infected "kissing bug."

"It's a great privilege but also a challenge to develop vaccines for these NTDs that exclusively affect people living in poverty," Bottazzi said. "We make the vaccines that the major drug companies cannot or will not make because of their low profit margin."

Hotez is founding dean of Baylor's National School of Tropical Medicine, where Bottazzi is associate dean. Together, the National School and Texas Children's are conducting research into the epidemiology of NTDs in developing countries and here in Texas.

Hookworm disease affects an estimated 440 million people in the world and complicates the pregnancies of 7 million women in Africa.

"We estimate that more than 10 million Americans have one or more neglected tropical diseases," Hotez said. "Texas, Mexico and Central America together make up one of the global hotspots for NTDs.

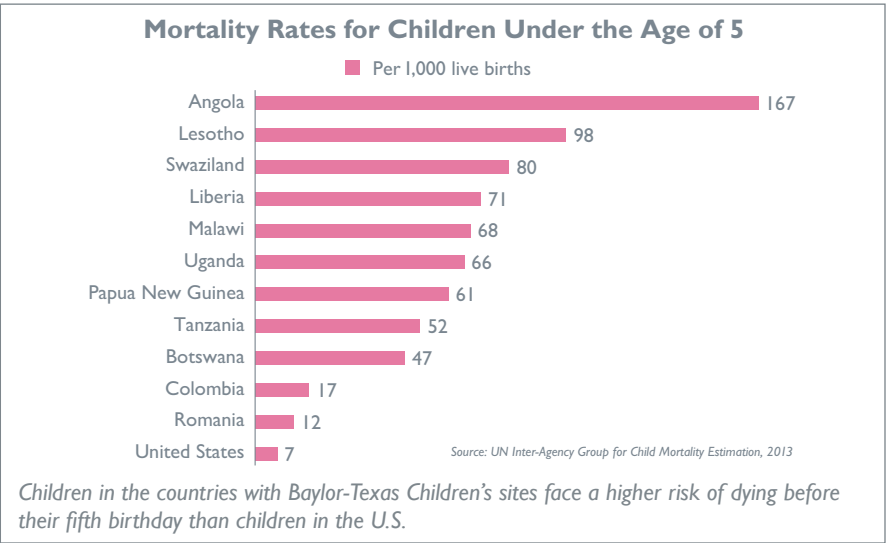
"The Texas Gulf Coast has the combination of poverty, a warm tropical climate, and the fact that we're a gateway region with a lot of air travel and shipping, which creates the perfect storm for tropical diseases," Hotez said.

Kristy Murray, D.V.M., Ph.D., associate professor of pediatrics at Baylor, leads epidemiology research on NTDs. She was the first to detect dengue

fever's emergence in Houston. Her group was first to identify a chronic kidney disease resulting from West Nile virus, which today is a significant cause of kidney disease and failure in Texas. Now she is leading a team to investigate the emergence of a mysterious chronic kidney disease that is killing thousands on the Pacific coast of Central America.

The National School also treats patients at two tropical disease clinics in Houston and provides education for medical students, residents, physicians and other health care providers through its Diploma in Tropical Medicine and Summer Tropical Disease Institute.

"None of this would have happened without the vision of Mark Wallace (president and CEO of Texas Children's Hospital) and Mark Kline," Hotez said. "It's not intuitive that a children's hospital would take on global health in such a big way. It's to their credit that they want to make Texas Children's Hospital not only the best children's hospital in Houston or Texas or the United States, but make it a truly global institution."



Cancer and sickle cell disease
As director of the largest pediatric cancer center in the U.S., ranked no. 1 in Texas and no. 4 nationally, David Poplack, M.D., considers it an obligation for Texas Children's Cancer and Hematology Centers to have an international impact.

With 80 percent of Texas Children's cancer patients on a research protocol or enrolled in a clinical trial, clinical researchers have hundreds of international collaborations and publish research results in international journals. The center has trained physicians and researchers from 20 to 30 countries in clinical care and research.

Becoming involved in the Texas Children's Global Health Initiative seemed like a natural progression, but the costs for chemotherapy appeared to be prohibitive. When Kline explained that many of the BIPAI and Global Health agreements with the African governments stipulated that in exchange for medical expertise, the governments often would cover the cost of cancer medications, the possibility of helping children with cancer became a reality.

"Once we knew that the cost would not be totally prohibitive, I felt that this was not just an opportunity but an obligation for us to be involved," said Poplack, who is a professor of pediatrics and head of the section of Hematology-Oncology at Baylor. "As one of the finest programs in the country, I believe we have an obligation to share our knowledge to help the 75 percent of children with cancer who live in the developing world."

In fact, East Africa has the highest rate of childhood cancer in the world.

Ninety percent of children with cancer in sub-Saharan Africa die, while 80 percent of children with cancer in industrialized countries are cured.

Poplack's approach has been to take advantage of BIPAI's medical and educational infrastructure in sub-Saharan Africa.

Texas Children's Cancer Center provided the first pediatric hematologist-oncologist who ever practiced in Botswana.

Seventy-five percent of childhood cancers occur in developing countries, where they are often diagnosed too late for effective treatment.

"In his first year, he tripled the number of children diagnosed with cancer and increased survival two-and-a-half-fold, an enormous impact for any one person," Poplack said.

Now two physicians and an advanced nursing staff member are living full time in Botswana. They are caring for patients and teaching physicians and nurses from throughout the country that having a childhood diagnosis of cancer is not necessarily equated to death.

"We have cured many patients and have brought hope to hundreds of affected children and their families," Poplack said.

Negotiations are underway with the government of Botswana to build the first pediatric cancer center of excellence in sub-Saharan Africa. In Malawi, discussions are in progress for development of a new hematology-oncology ward at the central hospital in the capital city of Lilongwe.



An emergency preparedness drill at Texas Children's demonstrates the proper donning and doffing of personal protective equipment.

Ebola response

Texas Children's Hospital plans to build an isolation unit specifically for children with highly contagious diseases such as Ebola.

State officials named Texas Children's a pediatric Ebola center, following recommendations by a task force in the wake of an Ebola outbreak in Dallas in September.

The eight-bed unit at Texas Children's Hospital West Campus will house children with Ebola, pandemic influenza, enterovirus D68 and other infectious diseases. The hospital expects to have the unit operating by October 2015 at a cost of \$16 million.

"We believe this will be an indispensable resource to our local community, Texas and the nation," said Mark W. Kline, M.D., Texas Children's physician-in-chief and chair of The Department of Pediatrics at Baylor. "Ebola is not the first pandemic threat, and it won't be the last. Every year, there is something posing a threat."

The 2014 Ebola epidemic is the largest in history, causing more than 6,000 deaths, as of Dec. 3, according to the World Health Organization. The vast majority of deaths have occurred in Guinea, Liberia and Sierra Leone.

In Liberia, the Baylor departments of Pediatrics and Obstetrics/Gynecology withdrew Texas Children's Global Health Corps physicians from JFK Hospital, the primary public hospital in Monrovia. JFK Hospital remains in operation, directed and staffed by Liberian medical staff members, many of whom received training in pediatrics and obstetrics/gynecology from Global Health Corps physicians.

In Angola, the focus is sickle cell disease. The rate of sickle cell disease is more than 40 times higher in Angola than in the U.S. Without newborn screening and simple, early interventions, most of the Angolan babies with sickle cell disease die before they reach 5 years of age. In the U.S., all babies are tested at birth, and more than 95 percent of those with sickle cell disease survive to adulthood.

Texas Children's and Baylor have partnered with Chevron and the Angolan Ministry of Health to improve the diagnosis, care and survival of Angolan children with sickle cell

disease. More than 40,000 babies have been screened for sickle cell disease, and health care workers are being trained to treat the complications of the disease.

Poplack believes that the greatest impact will be through training. One Ugandan physician has completed a Texas Children's fellowship in Houston and has received an international research scholar award to study Burkitt's lymphoma, a common form of cancer in Uganda. He will lead a new hematology-oncology fellowship training program in collaboration with Makerere Medical School, part of Uganda's oldest and largest public university.

"We're not pretending that we can provide all the medical resources that are needed, but what we can provide is the most powerful and important deliverable – expertise and training," Poplack said. "We can help train bright young African physicians in all of these countries and equip them with the knowledge they need to care for children with cancer and blood diseases. Our intention is to help build their capacity to carry on these programs themselves."

Bringing hope

For a child in southern Africa in 2005, there was little hope.

According to the United Nations, the region was home to 2 million children under 15 years of age living with HIV. Fewer than one in 10 of those children were receiving basic support services. HIV/AIDS accounted for more deaths of children under 5 years old than all other causes combined.

Against this backdrop, the Baylor International Pediatric AIDS Initiative (BIPAI) at Texas Children's Hospital created the Pediatric AIDS Corps (PAC) to address the critical shortage of physicians trained in the care of infants and children with HIV/AIDS in Africa and other parts of the world. The program expanded the capacity for providing care and treatment and established training programs for local health care providers.

A recent article in the journal *Pediatrics* described the first five years of PAC and its impact.

"The major accomplishment was the fact that we were able to get the clinical and educational programs on the ground, scale up and make an impact to enroll children in antiretroviral therapy for AIDS," said first author Gordon Schutze, M.D., BIPAI's vice president for International Medical Services and vice chair for Educational Affairs in the Baylor College of Medicine Department of Pediatrics.

BIPAI's enrollment of HIV-infected children and adolescents in treatment increased from about 6,000 to nearly 104,000 with the addition of PAC physicians. Education and in-depth HIV mentoring of local health care professionals led to 37 percent of the clinical sites becoming self-sufficient.

In a survey, 100 percent of the PAC physicians said they were happy to have participated. Although hired for a minimum of one year, the



The Pediatric AIDS Corps has improved the care of children in resource-limited areas of the world.

physicians remained for an average of 23 months. Eighty-seven percent said the experience affected their future career choice, and half continued to work with children and families living in resource-limited areas.

An outgrowth has been a four-year pediatric global health residency program, established in 2009 to prepare trainees for leadership positions in global pediatric health care, pediatric education, clinical research and child advocacy.

PAC was re-launched in 2011 as the Texas Children's Global Health Corps and has now successfully placed more

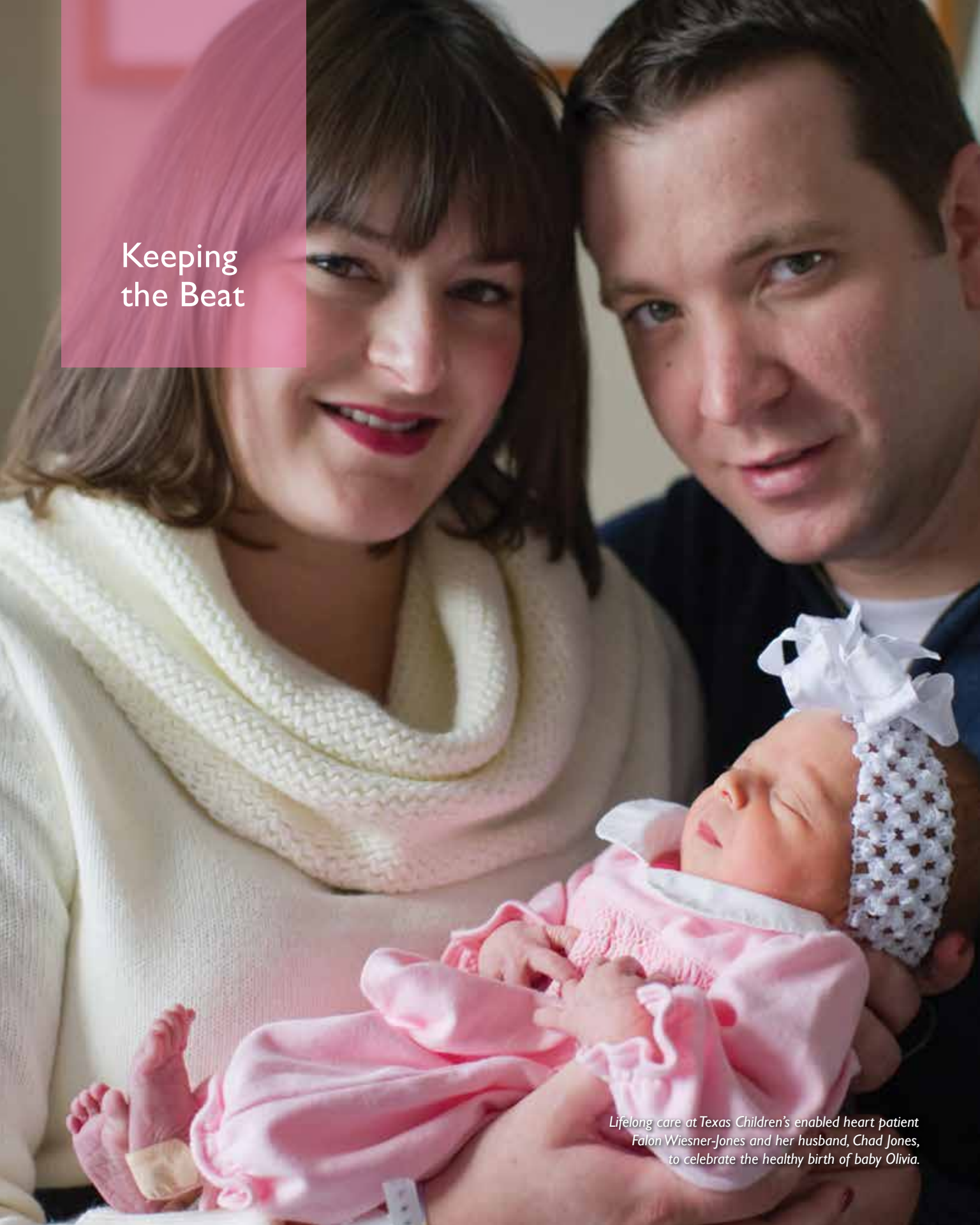
than 200 highly trained physicians in partner countries with a focus on pediatrics, family medicine, obstetrics/gynecology and pediatric surgery.

"The Peace Corps now has a program in global health patterned after our Global Health Corps," Schutze said.

The first Peace Corps Global Health Service Partnership Volunteers were sworn in at the White House in 2013 – eight years after establishment of the Baylor-Texas Children's corps.

[Schutze GE, Ferris MG, Jones DC, Wanless RS, Calles NR, Mizwa MB, Schwarzwald HL, Kline MW. The Pediatric AIDS Corps: A 5-year evaluation. *Pediatrics* 2014; 133; e1548.]





Keeping the Beat

Leading heart center: Care from birth to adulthood

The physicians and staff at Texas Children's Heart Center are like a second family to Falon Wiesner-Jones. Now 31, she had the first of more than 15 procedures there when she was 6 weeks old.

Diagnosed with transposition of the great arteries, in which the locations of the pulmonary artery and the aorta are reversed, Wiesner-Jones required surgery to provide adequate oxygen in her blood to sustain life. A palliative procedure at 6 weeks preceded a major corrective surgery at age 4, performed by world-renowned heart surgeon Denton A. Cooley, M.D. A couple of years later, a pacemaker was implanted.

Today Wiesner-Jones is still followed as a patient in the Texas Children's Adult Congenital Heart Disease Program. Her care exemplifies the excellence contributing to the Heart Center's no. 2 ranking in the Best Children's Hospitals 2014-15 survey by *U.S. News & World Report*.

"Our ranking has increased progressively over the last couple of years," said Daniel J. Penny, M.D., Ph.D., M.H.A., chief of Cardiology at Texas Children's and professor of pediatrics at Baylor College of Medicine. "Two years ago, it was number four in the country, last year it was number three, and this year it's number two. I think that emphasizes that the heart program at Texas Children's Hospital is certainly one of the premier cardiac programs in the country, if not the world."

For more than 50 years, the integrated, multidisciplinary team has combined cutting-edge technology with compassion and a family-centered approach in treating more than

17,000 children with congenital heart defects and performing more than 800 surgeries annually. The team is led by Penny; Charles D. Fraser Jr., M.D., chief of Congenital Heart Surgery and surgeon-in-chief at Texas Children's Hospital; Emad Mossad, M.D., director of Cardiovascular Anesthesiology; and Lara Shekerdemian, M.D., M.H.A., chief of Critical Care.

Investments in cardiology have allowed the addition of more faculty, more locations and new or expanded services for children with heart disease.

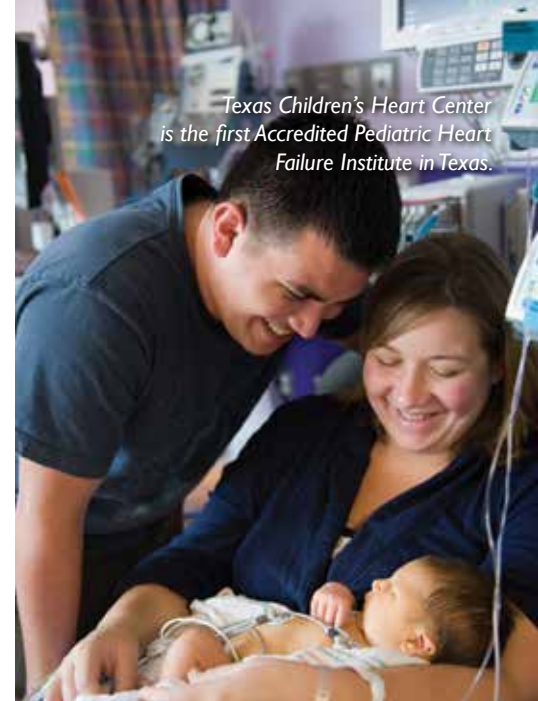
Preventive cardiology

Texas Children's Center for Preventive Cardiology, which opened in 2013, is the only one of its kind in Texas offering multidisciplinary, specialized care for children at risk for acquired heart disease.

"Our preventive cardiology program is based on the idea that the seeds for coronary artery disease – which is the most common reason for death in adults in the United States – are set down in early childhood," Penny said. "It's much better for the patient and a much more efficient use of resources if we can introduce interventions early in childhood before there is significant organ damage, rather than trying to reverse the organ damage that's a feature of the adult illness."

Significant numbers of children in Houston have high blood pressure and lipid disorders, including elevated cholesterol, putting them at higher risk of coronary artery disease.

"Unfortunately, there's not a great deal of awareness in the community of those problems," Penny said. "So we are doing a lot of work in collaboration with Texas Children's physicians to screen for these disorders and



Texas Children's Heart Center is the first Accredited Pediatric Heart Failure Institute in Texas.

Advances against heart failure

In 2013, Texas Children's Heart Center became the first program in Texas and one of five in the nation to be named an Accredited Pediatric Heart Failure Institute by the Healthcare Accreditation Colloquium. Through a rigorous assessment, the colloquium identifies the premier programs to work together and to mentor other programs to improve care for children with heart failure or cardiomyopathy, a disease of the heart muscle.

The Heart Center team cares for more than 650 children with chronic heart failure each year and offers a variety of circulatory support devices. Since its inception in 1984, the Heart Center has performed more than 280 heart transplants, making it one of the largest and most successful programs in the nation.

"There is a well-established relationship between volumes and outcomes in a pediatric heart program," said Daniel J. Penny, M.D., Ph.D., M.H.A., chief of Cardiology at Texas Children's and professor of pediatrics at Baylor College of Medicine. "This particularly relates to some of the more complex forms of surgery and interventions that we do. For that reason, a significant number of the patients that we get here are referred from all over Texas and, indeed, nationally and internationally."

Lifelong care at Texas Children's enabled heart patient Falon Wiesner-Jones and her husband, Chad Jones, to celebrate the healthy birth of baby Olivia.

intervene aggressively if a child appears to be at high risk of future events.”

The Heart Center also manages the care of children with liver disease, obesity, diabetes or metabolic syndromes that cause patients to have lipid or blood pressure abnormalities.

Neurodevelopmental follow-up

Another preventive program provides detailed surveillance and examination of neurodevelopment in children who have undergone complex procedures in infancy.

“We now recognize that children who have congenital heart disease are at significant risk of neurodevelopmental problems, in other words, problems with motor function, problems with reading and writing, and problems with relating to their siblings and their peers,” Penny said.

During its first year of operation, the Cardiac Developmental Outcomes Clinic team assessed more than 100 babies and children and provided referrals to a variety of specialists, including speech and language, hearing, neurology and behavioral experts.

Despite the risk, not all children suffer from neurodevelopmental problems. Wiesner-Jones participated in ballet, gymnastics, twirling, band and skiing.

Clinical research

The Department of Pediatrics has also increased investment in cardiology clinical research, which allows the section to compete successfully for inclusion in the Pediatric Heart Network. Funded by the National Heart, Lung and Blood Institute of the National Institutes of Health, the network is a consortium of nine leading programs in pediatric cardiac care.

“Membership in the Pediatric Heart Network allows us to both partake in and lead some truly substantial national collaborative research programs related to heart disease in children and have a seat at the table as this research program is developing,” Penny said.

Among the network’s research projects are ones related to cardiac anesthesiology and long-term follow-up of patients with complex congenital heart disease.

Adults with congenital heart disease

Because of improved surgical techniques and other treatments during childhood, more patients with congenital heart disease are surviving to adulthood, and they need lifelong follow-up care.

“These adults have very specific problems that are not closely related to the typical cardiac problems of adults, and they need caregivers who are specifically trained in their unique problems,” Penny said.

Some patients experience heart valve problems or, like Wiesner-Jones, complications from a pacemaker or defibrillator, which require additional surgery. Women who are survivors of congenital heart disease can develop problems during pregnancy and childbirth because of demands placed on the cardiovascular system.

“We’re uniquely placed to care for these adults because of Texas Children’s Pavilion for Women,” Penny said. “Having this close relationship between cardiologists and obstetricians is an important part of their adult care.”

In spite of living in Dallas at the time, Wiesner-Jones said she was religious about her prenatal appointments at Texas Children’s with the cardiology team and the maternal-fetal medicine team.

“I managed to carry and deliver a healthy baby girl with absolutely no complications,” she said. “She’s my miracle.”

2013 Heart Center Outcomes	
Texas Children’s Heart Center outcomes are consistently among the best in the nation, from diagnosis through treatment and follow-up, as reflected in these numbers from 2013.	
Cardiovascular and thoracic surgical procedures	889
Overall risk-adjusted mortality rate for surgery was 1.6 percent, compared to a 3.1 percent national rate.	
Cardiac catheterizations	959
The only program in the region offering interventional and therapeutic cardiac catheterization for infants, children and adolescents performed 98.3 percent without complications.	
Diagnostic testing and cardiac imaging	63,392
The non-invasive imaging lab performs more than 21,000 echocardiograms each year for fetuses, infants, children and adults.	
Cardiovascular anesthesia	2,436
Cardiovascular anesthesia is provided for surgery, MRI, interventional radiology, catheterization and electrophysiology. The division participates in caring for patients in the Cardiovascular Intensive Care Unit.	
Cardiovascular intensive care	910
The mortality rate was 1.85 percent, compared to a predicted mortality rate of 3.51 percent.	
Outpatient encounters	20,000



Dr. Daniel J. Penny leads Cardiology in the no. 2 pediatric heart program in the country.



Leading Change

Women in pediatrics: A growing national trend

Lara Shekerdemian, M.D., M.H.A., exudes an air of confidence.

She's an extraordinary physician who is managing a full load in a unit where children are often in grave condition. She's working with families whose worlds have often just fallen apart due to their child's ailment.

Chief of Critical Care at Texas Children's Hospital, Shekerdemian is known among her colleagues as a powerhouse physician and an internationally recognized leader in the field.

On any given day at Texas Children's Pediatric Intensive Care Unit, she cares for children who are dying, ones who are recuperating from a critical illness and many who are on the road to recovery. Her confidence goes a long way when she is speaking to a parent experiencing one of the most frightening moments of his or her life.

"People often ask me how I can care for these sick children," Shekerdemian said. "It takes compassionate and strong men and women to work in a pediatric setting because it's hard to see a child get sick."

Shekerdemian, a native of London, trained at the Royal Brompton Hospital and Great Ormond Street Hospital in London and completed a fellowship at The Hospital for Sick Children in Toronto. She served as director of Intensive Care at The Royal Children's Hospital in Melbourne, Australia, and an associate professor of pediatrics at the University of Melbourne.

In 2010, she joined Texas Children's and Baylor College of Medicine, becoming the youngest tenured full professor

at Baylor. She leads a team of nearly 40 pediatric critical care physicians at Texas Children's Hospital.

Shekerdemian is part of a growing trend of women entering the field of pediatric medicine. The latest report by the Association of American Medical Colleges (AAMC) from 2012 shows that nearly half of all medical students are women, a distinct change compared to less than 7 percent in 1966. The AAMC reports that women make up more than 70 percent of residents in pediatrics.

"Women are not attracted to pediatric medicine because it is an easy option," Shekerdemian said. "It's a tough job with demanding hours and one that's emotionally draining. My decision to join the field of pediatrics came from enjoying looking after kids."

The hours are something Shekerdemian has to consider in her latest role. The world-renowned leader in critical care is now juggling the responsibilities of her newest title, mom.

"The juggling act is something I think about," she said. "We all want to advance our careers, and I want to lead a successful team, but we're not superheroes, and sometimes in life we do have to take a step back."

Shekerdemian is quick to add that stepping back doesn't mean she wants expectations to be lowered because she is now a parent. She hopes to continue her thriving career with the confidence that she has recruited and trained a great team who can step in if the need should arise for her to be at home with her child.

"That's how I define my success," she said. "It's knowing that we will continue the same quality of care

whether I'm able to be in the office or at the bedside or not, because we have a fantastic mix of men and women caring for our critically ill children."

A role in research

Shekerdemian is one of many female leaders in the Department of Pediatrics. The academic partner of Texas Children's, Baylor has a pediatric faculty of 419 women and 326 men, a number that continues to shift toward the female side of the scale with an increase in female physicians and researchers entering pediatrics.

Kristy Murray, D.V.M., Ph.D., did not take a straight path to the children's world. She attended veterinary school and had planned to work with animals in the critical care setting when she got the opportunity to research vector-borne diseases at the Centers for Disease Control and Prevention (CDC). While at the CDC, she worked as a disease detective on outbreak investigations.

After starting a family, she began to realize the hardships of balancing her demanding career and motherhood, and she decided to move back home to Houston to be close to family. She worked first on researching West Nile virus in Houston before taking a position at Texas Children's and Baylor to work with Peter Hotez, M.D., Ph.D., in the National School of Tropical Medicine, where she continues to take on major research initiatives. Murray investigates infectious diseases from West Nile to chikungunya and everything in between.

Vector-borne and zoonotic diseases were a good fit for Murray's veterinary background, while working with children was actually her first interest before studying to become a veterinarian.

Critical Care Chief Dr. Lara Shekerdemian is part of a growing trend of women entering and leading pediatric medicine.

Early years

A forest surrounded Baylor College of Medicine in 1947 when it moved into new quarters in what is now the Texas Medical Center. That same year, Russell J. Blattner, M.D. (1908-2002), joined the Baylor faculty as the first full-time chair of the Department of Pediatrics, a position he held until 1977. He helped plan Texas Children's Hospital, which opened in 1954, and served as the first physician-in-chief there. Blattner was a pioneer in hiring women to top faculty positions, including those below.

Murdina Desmond, M.D. (1916-2003),

was one of the first four faculty members in the Baylor Department of Pediatrics. In 1957, she established the section of Neonatology and fostered the growth of world-class neonatal care. At Jefferson Davis Hospital, then the county hospital, she conducted research on newborn behavior and illness. In 1972, she moved to Texas Children's to head the new Developmental Pediatrics Center.



Martha Dukes Yow, M.D. (1922-2005),

established the section of Infectious Diseases in the Department of Pediatrics in 1957 and was its head until 1982. A nationally known researcher of emerging infections, she was chair of the Board of Scientific Counselors of the National Institute of Allergy and Infectious Diseases from 1971-75, and member and then chair of the Committee on Infectious Diseases of the American Academy of Pediatrics from 1970-78.



Reba Michels Hill, M.D. (1930-94),

was a Baylor faculty member for 34 years. As professor of pediatrics and obstetrics/gynecology, she was a leader in perinatal health. She served as chief of Newborn Research at St. Luke's Episcopal Hospital and president of both the Houston Pediatric Society and the Texas Pediatric Society. She was author of the first statement and instructions on breastfeeding published by the American Academy of Pediatrics.



She enjoys the interaction with patients involved in her research studies.

"Being a parent does give me a sense of empathy for patients and also with my other colleagues who are trying to maintain work-life balance," Murray

said. "I have always felt that I could manage both and feel fulfilled at my job and in my home life."

Murray is surrounded by family who can help out with her children when needed. She also reduced her

work-related travel to be near her family more often, allowing younger researchers to experience the field work to which she devoted her time in her early career. She explained that working in an organization that supports women and their career ambitions while nurturing their home life is the key to her success.

"A children's hospital is a very nurturing environment," Murray said. "Texas Children's is incredibly supportive of all the employees who have obligations outside of the organization, and it's nice to hear your leaders ask about your kids and family before they delve into the topic of work."

Murray said while she's often asked how she manages three children, an exchange student who's spending the year with her family in Houston, research papers, grants and clinical research, she never wonders that herself. She views one of her favorite parts of the job as teaching the



Veterinarian and infectious disease specialist Dr. Kristy Murray enjoys a quiet moment with daughter Paige and one of the family pets.

younger generation of researchers and mentoring younger women who are just beginning their careers in medical research and pediatrics.

A young trend

According to the American Academy of Pediatrics, 57 percent of pediatricians and 70 percent of residents are women. The Baylor-Texas Children's pediatric residency program includes 50 men and 125 women.

Natalie Villafranco, M.D., is in her third year in the general pediatric residency program. Pediatrics was a direction she chose in medical school.

"It is a special population of patients who don't have their own voice, so you have to be an advocate," Villafranco said.

Villafranco said men and women who join the Department of Pediatrics quickly learn their role has an amazing responsibility.

"You're treating an entire family unit – you're never just caring for the patient," she said. "There is a passion and joy that I didn't find in any other specialty."

Villafranco, who grew up in San Antonio, received her bachelor's degree from Ohio State University before going to medical school at Washington University.

She has already started to shine in her early career. She was chosen by Physician-in-Chief Mark W. Kline, M.D., as chief resident for the 2015-16 academic year, to lead the incoming class of interns.

She also is a leader in the Academy of Resident Educators, a program that helps prepare residents who have an interest in teaching. Texas Children's is

one of the first organizations with this opportunity.

She said a career in pediatrics and a Baylor-Texas Children's residency was an easy choice. Her choice to join the largest Department of Pediatrics in the country meant an opportunity to see women in top leadership positions and imagine her own path.

Villafranco said she looks to role models like Shekerdemian and Murray as prime examples of women in pediatrics succeeding at work and at home.

"There is an abundance of female mentors," Villafranco said. "These are women I look to as I begin to shape the future of my career."

A seat at the table

Kline is eager to recruit these ambitious women and to cultivate their successes through opportunities at every level.

"We have to do a better job of nurturing and accommodating these talented women," Kline said. "It's our goal to find creative strategies to allow women to flourish in their careers."

According to a recent American Academy of Pediatrics *Report of the Task Force on Women in Pediatrics*, the number of women in medicine has grown significantly and the percentage of women in pediatrics has surpassed that of men, but the scales haven't yet tipped in favor of women on the leadership level. In the latest report from 2006, women represented only 14 percent of tenured faculty and 12 percent of full professors throughout the field of medicine, with those in the pediatrics specialties faring slightly better with 19 percent in the full professor rank.

Baylor's female pediatrics faculty includes nine senior faculty members, compared to 20 men, while there are 306 females in the assistant professor role, compared to 173 male colleagues at the same level.

For Kline, it's a challenge he is willing to accept as chair of the Department of Pediatrics. Seven of 10 vice chairs and associate vice chairs, appointed by Kline to department-wide leadership positions, are women.

Shekerdemian said, "Here at the hospital, our leaders are very fair in treating all employees with respect no matter their gender or job title. It is part of our culture for everyone to have a voice, and that includes women in every role."

Kline hopes the culture will continue at the organization long after his tenure.

"I would like to leave this department as the most diverse pediatrics department in the United States," Kline said. "We need to take a fresh approach to who has a seat at the table and a voice in every decision."



Dr. Natalie Villafranco has been selected as chief resident for the 2015-16 academic year.



Education

Learning, Caring Around the Clock

24 hours in pediatric residency

Early mornings

It's still dark outside, and almost all the patients and their families are asleep when Kim Hoang, M.D., walks in for her shift in the Pediatric Intensive Care Unit (PICU) at 6 a.m. She has a friendly face and seems enthusiastic about caring for these patients, some of the most critically ill in Texas Children's Hospital.

"The diversity of the cases we see at Texas Children's is not comparable to any other organization I considered for my training," Hoang said. "You learn so much from the complex diagnoses we

encounter every day in a place like the Pediatric Intensive Care Unit."

In the PICU, Hoang and other residents care for trauma patients, patients with severe infections, those coming out of extensive surgeries and countless other unique cases.

For Hoang, the biggest part of her learning experience is collaborating with attending physicians and other residents or fellows who are able to share their knowledge and experience with the young doctor. Today, as she begins her morning pre-rounding, the overnight team debriefs her on what occurred at night, information that will help

her as she navigates the patients' care throughout the rest of her workday.

Pediatric Intensive Care Fellow Richard Lion, M.D., knows the drill all too well. He is in his second year as an intensive care fellow, and as a former resident, he has been in Hoang's shoes. Lion knows that for residents like Hoang, he plays the role of mentor as they begin their training, especially in the PICU, considered one of the most daunting rotations of residency.

"I have a responsibility to teach her as much as I can about the care of critically ill children," Lion said. "I also pride myself in teaching the art of

Dr. Kim Hoang begins her morning collaboration with residents and fellows from the overnight shift who prepare her for the day ahead.



Dr. Kim Hoang assists a nurse as she pricks a toddler's foot.

medicine, something I learned from my mentors, which is to practice in a way that makes you the doctor people want taking care of their children.”

Hoang seems to fit the mold. She visits with a mother who is just getting up as Hoang checks on her little boy. Hoang’s concern for the worried mother’s questions is clear as she answers quietly so that she won’t wake the child.

These residents don’t take their roles lightly. They have been accepted to one of the most competitive training programs in the country, and they have to step up to the challenge as they prepare to take the knowledge they gain with them to practice medicine all over the world.

Gordon Schutze, M.D., vice chair of Educational Affairs in the Department of Pediatrics at Baylor College of Medicine, said the unique cases and the variety of patients bring so many of the country’s top residents to this program at Texas Children’s and Baylor.

“Being the largest freestanding pediatric hospital obviously means we see a large number of patients on any given day,” said Schutze, who is referring to the nearly 8,700 patient encounters each day across the system. “Being in the city of Houston gives us an advantage as well because our medical center is a referral center, not just in this region, but internationally.”

Schutze has a personal connection with the residents, as he, too, began his career in medicine at Baylor and Texas Children’s. He knows very well that the faculty make all the difference when it comes to teaching young physicians. These residents learn from top faculty in every major specialty and many unique subspecialties during their years in this teaching institution. Residents are teamed up with mentors who meet with them twice a month to hear their concerns and fears or just talk about their growth.

“A lot of us can get lost in such a big environment, but our mentors make the program more personal for each of us,” Hoang said. “Despite the

program being so large, I know all of my co-residents very well. It feels like a family.”

Morning report

Following morning rounds, where residents and attendings on each unit review each of the patients’ conditions and plan a course of care for the day, about 30 residents can get away from their posts to spend an hour learning from one of those sought-after members of the Baylor faculty. Jeffrey Starke, M.D., infection control officer at Texas Children’s, leads the morning report once a week. Today he comes to the room with kolaches in hand, a breakfast treat for the group.

The meeting is boisterous but informative. Each meeting begins with news and announcements before a resident presents a case for investigation. It’s a chance to talk through real patient diagnoses with peers, with the help of Starke or Mark Ward, M.D., director of Baylor’s Pediatric Residency Program, leading the discussions three times a week.

Jolie Britt, M.D., is a second-year resident who tries not to miss any of



Dr. Jolie Britt and her peers use the morning report as a chance to share ideas.

these morning reports, taking every opportunity to learn from mentors like Starke. For Britt, the child of two physicians, joining these sessions and hearing a fellow resident present a case is an opportunity to learn through differential diagnoses. As one resident presents symptoms and vital signs from a recent patient visit, others jump in with questions, practicing their skills at diagnosing a rare condition.

“The culture of the organization as a whole is one that is extremely

supportive of resident education,” Britt said. “It’s not just the attending physicians, but as residents, we are learning to help each other with these cases.”

Britt, who moved here from Oklahoma City, chose this program because of its reputation and the opportunity to experience the innovative care provided daily.

“The best thing about training here is that we will have the option to go anywhere we want after this program,” Britt said. “No matter what your interests or how specific they are, there is someone here who can be a mentor because of the size and scope of this program. There is a wealth of knowledge.”

Mentorship is a large part of the program and is something specifically important to Texas Children’s Physician-in-Chief Mark W. Kline, M.D., who practices an open-door policy with his residents and has been known to step out of meetings when called upon by one of them. As chair of the Department of Pediatrics at Baylor, he advocates for all of his physicians to take on this practice of teaching.

A mentor like no other

In organizations as large as Texas Children’s Hospital and Baylor College of Medicine, there are plenty of mentors in every area of interest, but none has been around quite as long as Edward Singleton, M.D., chief emeritus of the Edward B. Singleton Department of Pediatric Radiology.

At 94 years old, Singleton still comes to work every day and is very involved in teaching what he has learned in his more than 60 years with the two organizations. Singleton was the first physician named to the medical staff of Texas Children’s in 1953 and in the six decades since, has seen almost all of the major cases that have been brought to the hospital. Every day at 11 a.m., he spends an hour sharing his experience on different cases with a group of eager residents.

“I remember this because I had never seen anything like it before or ever since,” said Singleton, talking about an x-ray from one of his former patients.

This particular case is from Singleton’s time as a young radiologist. Residents in the dark room look toward their mentor, illuminated by the x-ray view box at the front of the class. He looks inquisitively at the x-ray and asks the young doctors to explain what they see. With each x-ray, residents are asked to make educated guesses based on their knowledge, and Singleton shares the final diagnoses and often a story about the patient.

“Oh I remember this one,” Singleton said. “The rare ones are hard to forget.”

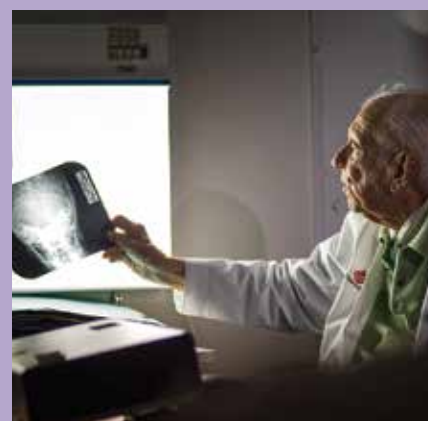
He is referring to an x-ray of a patient with an unusual lesion in his skull. The residents cling to every word, and right when they least expect it, he cracks a joke. The room fills with laughter. It is like this for the entire hour as Singleton shares his wealth of knowledge and the memories of milestone cases.

“Teaching is the most enjoyable part of my life,” said Singleton, who has been holding similar sessions since 1955.

For Singleton this is a special hour.

“I love the memories it brings back of the enjoyment I had with previous associates,” Singleton said. “It’s gratifying and gives me a raison d’etre.”

That “raison d’etre,” or reason for living, is what keeps Singleton coming back each day to work alongside colleagues in the department named after him.



Dr. Edward B. Singleton passed away on Jan. 10, 2015, at the age of 94 just before the publication of this annual report. Singleton leaves behind an incredible legacy as a lifelong teacher. His relentless dedication to the field he pioneered was apparent until the very end of his more than 60 years at Texas Children’s Hospital, where he was the very first physician.



Dr. Jeffrey Starke leads the morning report.

“I support educators,” Kline said. “Fantastic students are attracted by great teachers, and there is nothing more important that we do here than to prepare our students and residents for their future in the medical profession, no matter where in the world that takes them. This is the legacy of Texas Children’s and Baylor.”

Kline’s goal is to cultivate outstanding educators through acknowledging and rewarding those who take extra steps to help expand these young minds. With his support, the program has seen more teaching awards in the past five years than ever before and has created a Pilot Educational Grants Program to reward those who take the extra initiative to educate others.

“An important question to ask is, ‘Do you value the educators as much as you value researchers?’” Kline said. “Our educational mission is extremely important to us as a teaching institution. By encouraging educators, we are making an investment in the future health of our children.”

A global education

Bobby Ricketts, M.D., walks out of the physician work area of the Emergency Center toward a patient room to tell a mom her daughter can go home. It’s quite a different scene than what he grew accustomed to just a few months ago as a pediatric global health resident working for the Baylor International Pediatric AIDS Initiative (BIPAI) at Texas Children’s Hospital in the African country of Lesotho. There, he was seeing up to 30 patients a day, most of whom were coming in with complications from HIV/AIDS, malnourishment, tuberculosis and other so-called “diseases of poverty.”

“The best part of the program was how autonomous residents were,” said

Ricketts, who spent a year in Lesotho. “We learned how to do everything ourselves in a situation where there was very little help or resources. We really had to learn to do it all.”

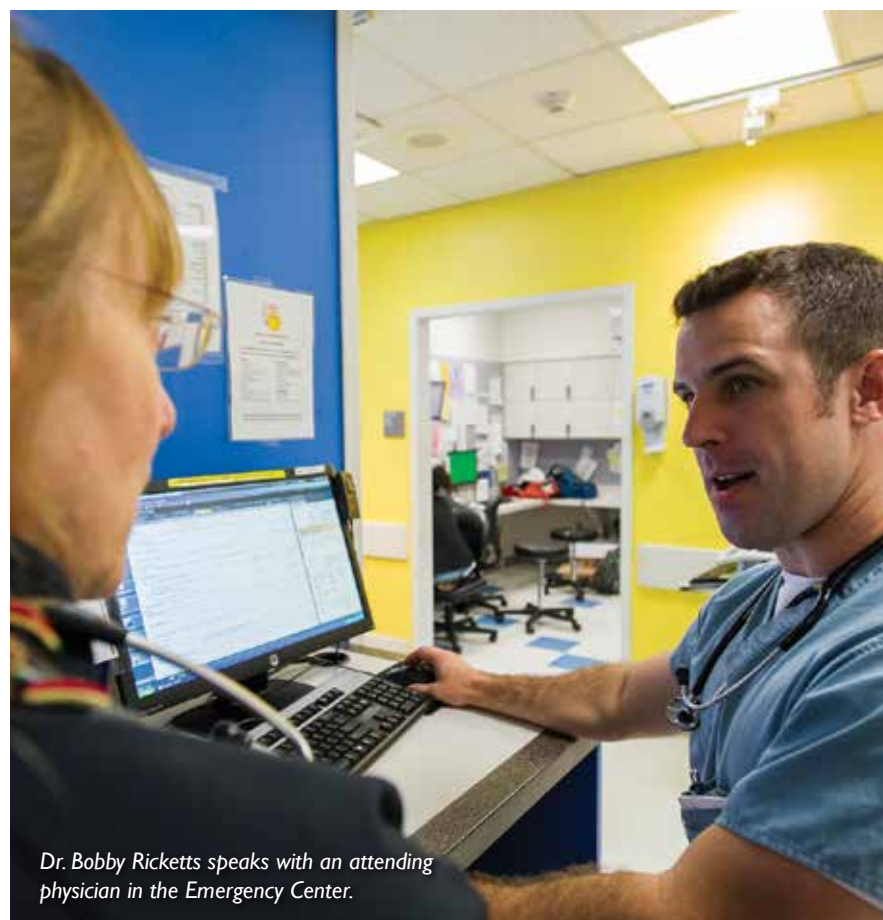
Ricketts, who is Caucasian, stood out in the predominantly black nation but said the community showed a great sense of gratitude for the work BIPAI is doing there. That gratitude could be felt at customs when he first arrived in Lesotho. An immigration agent asked why Ricketts was entering the country. Just one mention of BIPAI, and the agent immediately thanked him for coming to help and waved him through.

It’s a reputation that has been built in countries like Lesotho since BIPAI began its mission 18 years ago to take

care to pediatric patients in resource-limited settings across the globe. It all began because Kline was compelled to bring high-quality HIV/AIDS care to children who needed it most.

Nine years ago, Kline created the first-ever pediatric global health residency program to allow residents who are interested in pediatric global health to spend a year of their residency in one of BIPAI’s clinics across Africa or East Asia. Global health is not limited to working across the globe. One resident last year even advocated for his own program, working on Rosebud Indian Reservation in South Dakota.

Each year, five students match into the highly competitive global child health



Dr. Bobby Ricketts speaks with an attending physician in the Emergency Center.



Residents review patient records regularly to make sure they are up to date on the patients’ conditions.

residency program. They choose either two six-month periods abroad or devote an uninterrupted year to caring for these vulnerable patients. Through the program, residents like Ricketts get hands-on experience in caring for children with HIV/AIDS, as well as other illnesses.

The challenges are many. Not only do the patient families have a lower knowledge base about the diseases that affect their children, but many are dealing with financial strains that don’t allow them to provide their children access to care when needed.

Ricketts viewed this as an opportunity to create something that would allow these families to keep up with their medication after

they have left the BIPAI clinics. With the support of the Department of Pediatrics, Ricketts and an artist created a children’s book that explains the importance of medication compliance to children. It’s meant to bridge the gap between the care provided at BIPAI clinics and the education that is needed to keep these patients on the right path with their treatment.

“It’s one thing to see a problem and think of a solution,” Ricketts said. “It’s another thing to get the necessary support.”

That support came from program leaders who approved and encouraged Ricketts to run with the idea. He began crowdfunding to fund the project and spoke to clinical directors all over the

BIPAI network to share the book. After raising more than \$30,000, Ricketts plans to have the book translated into six languages with thousands of copies to be shared with patients at BIPAI clinics across the globe.

“The book serves a dual purpose,” said Ricketts, who observed the lack of possessions children in countries like Lesotho have. “Just to have something that belongs to them makes these kids so happy, and being able to share a story that teaches them how to best care for themselves is also going to improve their outcomes.”

In recognition of Ricketts’ efforts in producing the book, the American Academy of Pediatrics presented him with the Ann E. Dyson Child Advocacy



Award at the national convention in October 2014.

Kline is selective about the residents accepted into this one-of-a-kind program and often shares stories about the work being done around the globe. The first class of global health residents has graduated, and most are continuing with their passion for helping children across the globe by working in global health in some capacity. Kline's hope is that these young physicians continue to ensure the same care that is given to patients in the Houston area is being extended to those who would otherwise not have access to it.

Defining careers

Ward uses his role as director of the pediatric residency program as an

opportunity to encourage those like Hoang, Britt and Ricketts to define their own careers during their time at Texas Children's.

"Texas Children's is a very dynamic place with lots of potential for growth," said Ward, who also did his residency at Texas Children's. "Our organization is really open to junior members, such as our residents, making a real, tangible impact on the care we provide."

Ward recalls one resident many years ago taking it upon himself to convince McDonald's to offer more healthy options at their hospital location. The project has helped make a difference for children who visit the hospital long after that resident's training ended.

Ward encourages all residents to follow through with their ideas and make their own mark on improving the care, as well as the patient experience. In fact, residents are required to complete a scholarly activity rotation in which they must do something of a scholarly or advocacy nature. One group of residents took this as an opportunity to create a teaching module for hospital workers to identify the signs of human trafficking.

After hours

Laura Roberts, M.D., is on call today, which means she will spend her night in the hospital. She has been here since 6 a.m. and will work through 10 a.m. tomorrow.

On-call residents work alongside a fellow to take care of patients overnight. While they may not get much sleep, it's an important part of their learning experience to know how to care for patients and their families when most of the hospital staff has left for the day. The on-call room is not much like what you see in the media. A simple twin bed with white sheets and a few pillows, along with lockers, make the room just functional enough if a resident has time to sleep.

While Roberts begins her on-call shift, most of the other residents are logging out for the night. There is a certain fascination with the lives of these hospital employees. Shows like "Grey's Anatomy" idolize them.

Hoang will tell you it is tougher than it looks, but the camaraderie is real. Hoang and her fellow residents can often be seen in restaurants and coffee shops near the medical center on their days off or after a long day at work. While it's only natural to talk about the cases they've seen, the conversations go deeper into



their personal lives and even to life after the program. A few residents, including Hoang, have even been in each others' weddings since starting the program together.

"These friendships are important to us because we spend so much of

our time together that we become sort of a family, and we help each other through all of the tough days," said Hoang, who was the first in her family to graduate from college.

She sees this new family as a support system in her career ambitions. For Kline, Schutze and Ward, that family bond is an intentional aspect of a successful training program.

"It's like having adolescents," Ward said. "I want to help them do well, but I have to let them spread their wings on their own as well."

Kline's words of advice for these young doctors? "Keep learning," he said. "There are different ways of learning things, so be open to all possibilities."

Schutze agrees. "My job is to train people to take my job," Schutze said. "I am confident in the way we are teaching young minds to take over. The future is bright."



Committed to Education



Dr. Geeta Singhal, director of Baylor's Office of Faculty Development, speaks at the National Educators Conference, organized by the Center for Research, Innovation and Scholarship in Medical Education.

Helping teachers grow: Medical education center

Teri Turner is passionate about education. A physician with a Master of Education degree, as well as a Master of Public Health, Turner is director of the Texas Children's Hospital Center for Research, Innovation and Scholarship in Medical Education. The center was established in 2012 by Texas Children's and the Baylor College of Medicine Department of Pediatrics.

One of the first medical education centers in the nation in a free standing children's hospital, the center fosters diverse opportunities for residents, fellows and medical faculty members to conduct scholarly research about teaching, experiment with innovative approaches, and implement best practices.

"Our mission is to be the wind beneath these individuals' wings so that they can achieve their goals and dreams," said Turner, who is associate vice chair for Educational Affairs.

"We are committed to engaging faculty with the educational issues that matter to them and facilitating the growth of faculty and trainees."

The crowning achievement of the center has been a four-day National Educators Conference in February 2014. The conference featured nationally and internationally known speakers and attracted 160 attendees from as far away as Florida and Virginia. Workshops paired junior and senior faculty, bringing them together to network and collaborate. The workshops were so well-received that they were adapted for Baylor Faculty Development and the Department of Pediatrics Annual Educator Orientation.

"Activities like the speakers and workshops foster our commitment to creating a local community of educators and being a hub for scholarship at a regional, national and international level," Turner said.

"Most departments of pediatrics don't have an educational focus," said

Gordon Schutze, M.D., vice chair for Educational Affairs. "Approximately 30 of our faculty either have a master's degree in education or are working toward that degree. I'd like to see more people pick up the mantle and get more skills in teaching."

Resident educators

Fostering the growth of residents as clinician-educators is the purpose of the Academy of Resident Educators that the center established in collaboration with pediatric and combined medicine/pediatric residents.

Activities include direct instruction of learners in a variety of venues. In hands-on workshops, medical students who serve as simulated students tell the residents what worked well and what did not. Members of the academy established a review course for medical students preparing for examinations at the end of their pediatric clerkship. The residents also have participated in developing projects such as a national nutrition curriculum and a teaching tip



Dr. Teri Turner helps residents, fellows and faculty members become better clinician-educators and educational leaders.

sheet that the American Academy of Pediatrics published on its website.

“The residents who participate put together a teaching portfolio, and if they meet a bar of a certain amount of quantity, quality and breadth over three years, they can graduate as distinguished resident educators,” Turner said. Seven residents earned the recognition in 2013, and 11 earned it in 2014.

This program is being considered for the David C. Leach, M.D. Award from the Accreditation Council of Graduate Medical Education, honoring residents or teams of faculty and residents for innovation and improvement in residency education.

Pilot grants

For faculty members, the center has incorporated a pilot grant program that was established in 2009 by Schutze with funding from Pediatrics Chair Mark W. Kline, M.D.

“The original pilot grant program was great, and we’ve tried to build on it,” Turner said. “It offers a quarter of a million dollars a year to award to faculty within the department for educational research or innovative

proposals. Seven to 11 faculty members receive grants each year.”

One of the most successful pilot grant innovations has been Fellows College, developed to help subspecialty fellowship training programs teach a shared core curriculum. Other pilot grants supported such diverse activities as an intensive care “boot camp,” research on sleep habits of incoming residents, and purchasing simulation tools for medical student clerkships.

New this year, pilot grant recipients participate in Works in Progress sessions, where they discuss their projects, their progress and what more they need in order to write and submit publications to scholarly journals. The center also offers consultations with experts in statistics, medical writing, qualitative research, program evaluation and critical thinking.

“These Texas Children’s educational grant awardees do the research or innovation, and then they present, often in abstracts. Now we need to get them to take that abstract and turn it into a publication,” Turner said.

National recognition

The educational pilot grants are

stepping stones to other potential research and grants and to involvement in national educational projects.

For example, Texas Children’s was one of six sites participating in a national pilot test for the Pediatric Milestones Project, a joint initiative of the Association of Pediatric Program Directors and the National Board of Medical Examiners. The project is developing new methods of assessing the progress of medical students and pediatric residents during training. By participating in the development of the assessment milestones for subspecialties, the Baylor faculty influenced this important national education initiative.

Other funding from the center provides two faculty development scholarships each year for attending such programs as the Harvard Macy Institute and the Academic Pediatric Association Educational Scholars Program, which both offer professional development programs for academic leaders in health care.

“I can’t emphasize enough that the Center for Research, Innovation and Scholarship is where it is today because Dr. Kline and Dr. Schutze have such a commitment to education,” Turner said. “The commitment is not just a verbal one; it’s a financial commitment, too.”

Kline provided the pilot grant funding from the Department of Pediatrics. Schutze added funds from the Martin I. Lorin, M.D. Endowed Chair for Medical Education, which he holds, to support the National Educators Conference.

“I think both Dr. Schutze and Dr. Kline really push the center to get out of our comfort zone, to push us higher,” Turner said. “With their mentorship, we continue to develop new projects and expand on existing ones.”



Dr. Judith R. Campbell works with Dr. Jonathan McNeil during clinical rounds in infectious diseases.

Fellows College

Whether a Department of Pediatrics subspecialty has three fellows or 10, a training program is required by the Accreditation Council of Graduate Medical Education and the American Board of Pediatrics to teach patient safety, professionalism and grant writing, among other topics.

“The same number of hours and work effort goes into providing the required training, regardless of the number of fellows,” said Judith R. Campbell, M.D., director of the Fellowship Training Program in Pediatric Infectious Diseases at Baylor College of Medicine and Texas Children’s Hospital. “If you multiply the work effort by 20, because we have 20 subspecialty training programs, you recognize how much goes into these programs.”

Instead of each subspecialty duplicating efforts, Campbell used a Department of Pediatrics pilot grant to develop Fellows College, which she directs. Beginning in late 2010, Campbell worked with a steering committee of experienced educators in building bridges between subspecialty programs to serve about 150 fellows.

“We had a lot of individual programs functioning well in individual silos,” she said. “We wanted to leverage this so that all the programs could benefit from each other’s strengths.”

One particularly well-received module on academic career development in pulmonary and critical care medicine was brought under the umbrella of Fellows College and given the infrastructure and support that enabled it to be shared with all the subspecialties.

Fellows College offers modules on topics such as technology resources, work-life balance and principles of negotiation. These topics help to further prepare the fellows for academic careers. The program has expanded from about 11 sessions in the first year to more than 30 per year currently.

The steering committee also collaborates with Susan Blaney, M.D., vice chair for Research, in building on the annual Fellows Day that celebrates fellows’ research achievements. Added to the poster sessions and presentations were educational sessions on such themes as mentoring and leadership.

Campbell, who is also associate vice chair for Educational Affairs, sees a four-fold return on the investment in Fellows College:

- Fellows have expanded curricular opportunities to prepare them for their future careers, and they have a wider range of opportunities to network and interact with an extended community of learners and leaders.
- Program directors collaborate on enhanced offerings.
- Program coordinators have formed a community and mentor each other in administration.
- Faculty who present sessions gain leadership and educational experiences that build their curriculum vitae and lead to promotions.

“We look forward to the continued success of our fellows and faculty as a result of their participation in this innovative educational program,” Campbell said.



Pediatric emergency medicine specialist Dr. Stephen Whitney leads a discussion about time management for Fellows College.



Research

Pilot Awards
Kick-Start
Research



Dr. Alex George received a Research Pilot Award in 2013 to investigate improving the way a medication is used for sickle cell disease.

Probing for future cures:
Pilot awards give an edge

When Jean Raphael, M.D., M.P.H., received the score on his application for a National Institutes of Health (NIH) Career Development Award, he emailed his mentor, asking, “Does this mean I’m close to getting it?”

His mentor thought he was joking. Raphael didn’t realize that the application had earned a perfect score.

Raphael attributes a large part of his success to a Research Pilot Award that he received from Texas Children’s Hospital and the Baylor College of Medicine Department of Pediatrics.

Promising and talented

This is exactly the sort of outcome that the Research Pilot Awards Program was intended to foster.

“The goal is to give our young faculty investigators, who are very promising and talented, ready access to the resources required to generate pilot data,” said Susan Blaney, M.D., who directs the program as vice chair for Research in the Department of Pediatrics. “The preliminary data that they are able to generate as a result of their pilot award funding favorably positions them as they compete with other investigators from across the country for NIH-funded peer review grants that provide substantially more funding over a longer period of time.”

The program has been very successful, said Blaney, who also is deputy director of Texas Children’s Cancer and Hematology Centers. In total, over the first four years, the program awarded \$2.785 million and generated almost \$11 million in extramural research funding.

“And this may be an underestimate,” Blaney said. “This is because it generally

takes investigators a year or two to acquire their data and analyze the results so that they’re ready to submit a grant application that is highly competitive.”

One of the 2013 awardees, Alex George, M.D., Ph.D., assistant professor of pediatric hematology-oncology, said, “I had just initiated a clinical trial of a new way of using hydroxyurea in sickle cell disease when I received the award. The financial support was instrumental in enabling me to set up the infrastructure for the study, and the prestige of the award has also helped me interest other hematology clinicians, here and at other institutions, in participating in this trial. I am hopeful that the early results from this study will also strengthen my application for additional grant support.”

Blaney emphasized that the program is extraordinary in providing so much support for research. She credits the vision of Mark W. Kline, M.D., for

2014 Research Pilot Awards

The following junior faculty members received seed grants of up to \$50,000 each to support their research:

Ronald Bernardi, M.D., Ph.D.	Hematology/Oncology	Combinatorial tyrosine kinase inhibition as a novel therapeutic strategy in PTPN12-deficient pediatric cancers
Jennifer Foster, M.D.	Hematology/Oncology	Pre-clinical evaluation of MLN4924, a novel NEDD-8 activating enzyme inhibitor, in pediatric malignancies
Andras Heczey, M.D.	Hematology/Oncology	Glypican-3 specific T cells to cure pediatric liver cancer
Marisa Hilliard, Ph.D.	Psychology	Promoting resilience in youth with type 1 diabetes: Pilot of a strengths-based family intervention to improve diabetes outcomes
Jimmy Holder, M.D.	Neurology and Developmental Neuroscience	Identifying post-translational regulators of SHANK3 - toward developing targeted therapeutics for neuropsychiatric disorders in children
Dongfang Liu, Ph.D.	Immunology, Allergy and Rheumatology	Super-resolution imaging of HIV-specific CTL immunological synapse
Silke Paust, Ph.D.	Immunology, Allergy and Rheumatology	Pollen grains as Trojan horses for child friendly oral vaccination
Elaine Seto, M.D., Ph.D.	Neurology and Developmental Neuroscience	Understanding the regulation of dopamine and its effects on movement, cognition and behavior
Amy Sims, M.D.	Cardiology	Rheumatic heart disease in Malawi: Likely the highest prevalence in the world
Bernhard Suter, M.D.	Neurology and Developmental Neuroscience	In vivo analysis of motor cortex function in the MECP2 duplication mouse
Scott Wenderfer, M.D.	Renal	Novel auto-antibody markers of lupus nephritis
Janice Zawaski, Ph.D.	Hematology/Oncology	The role of bone marrow in glioma radiotherapy response



Dr. Jean Raphael, left, is a preceptor in the Residents' Primary Care Group Clinic.

About the researchers

Growing up in an underserved neighborhood in Boston, Jean Raphael, M.D., M.P.H., was inspired by the pediatricians in the neighborhood clinic. At an early age, he decided he wanted to work as a pediatrician with an underserved population. After earning his M.D. at Harvard Medical School, he obtained advanced training in health disparities through the Commonwealth Fund Harvard University Fellowship in Minority Health Policy, while earning a Master of Public Health degree. His research focuses on children with sickle cell disease, which predominantly affects minority and often underserved communities. He was attracted to Texas Children's Hospital and Baylor College of Medicine by the "can do" attitude, enthusiasm and collegial environment.

A summer program at St. Jude Children's Research Hospital in Memphis after college graduation showed Lisa Kahalley, Ph.D., the perfect way to combine her interests in biology and psychology. While completing her doctorate at the University of Memphis, Kahalley did clinical and research training at St. Jude. An internship in neuro-psychology followed at Duke University Medical Center and then a fellowship at St. Jude. When she joined Texas Children's and Baylor in 2009, Houston was one of the only places in the country with a large enough proton radiation therapy program treating pediatric brain tumor patients to compare outcomes with photon therapy. "Also, everyone was so gracious and interested in what I was hoping to do, it just felt like the right place," she said.

creating the program when he was appointed department chair and Texas Children's Hospital physician-in-chief, and the support of Mark A. Wallace, president and CEO of Texas Children's.

"The pilot program reviewers this year were astounded at the quality of the applications that came from junior faculty," Blaney said. "Our intent is to award 10 pilot grants a year, but the applications were so outstanding that Dr. Kline expanded the program to allow us to provide 12 awards this year."

Preliminary work

The pilot grant that Raphael received in 2009 made a huge difference to his research on improving adherence to care among children with sickle cell disease, he said.

Researchers are provided with a tremendous opportunity to work with highly experienced individuals who are available to provide advice and guidance.

"I needed to conduct preliminary work to figure out the factors that were associated with adherence for this population," Raphael said.

Surveying the parents of patients produced the needed data, and the pilot grant gave him experience leading a research team. He showed that he could manage funds, supervise a research assistant, and recruit patients for the study. Publications from the pilot project pushed the research forward and helped him make connections with other researchers and create a national reputation in the field.

Raphael, assistant professor of pediatrics-academic general pediatrics, is now in the fourth year of his five-year Career Development Award from the National Heart, Lung and Blood Institute.

Another junior faculty member, Lisa Kahalley, Ph.D., called her pilot award a critical component to receiving a five-year Career Development Award in 2011 and a coveted R01 five-year Research Project Grant for \$3.4 million in 2014, both from the National Cancer Institute.

Kahalley, assistant professor of pediatrics-psychology, is comparing neuro-cognitive effects of two types of radiation therapy – photon and proton – in children treated for brain tumors.

"I can't imagine that this would have come along as easily, or as soon in my career, without the pilot funds," Kahalley said.

In addition to the funding, Kahalley said she benefitted from the support of a statistician and an informatics group who built her database.

"That was a huge undertaking – I have so many measures in my battery," she said. "That's something that I'll be able to continue to use as I go forward with other studies. That was a gift to have those resources available."

The Research Resources Group for program participants also includes experts in regulatory affairs.

"Pilot program participants work with a team that sits down with them and walks them through every step of the process, so we can be sure that if there is a gap in their knowledge, they're educated and that they're implementing the research adhering to all the rules and regulations," Blaney said. "They are provided with a tremendous opportunity to work with highly experienced individuals who are available to provide advice and guidance."

The program also requires that each participant have a mentor. In fact, Texas Children's provided additional funding to enable Raphael to work with mentor Tom Giordano, M.D., M.P.H., in the Health Services Research Center at the Michael E. DeBakey Veterans Affairs Medical Center.

Incredibly generous

Kahalley works with mentor Doug Ris, Ph.D., chief of Psychology at Texas Children's, and she collaborates with neuro-oncologists at Texas Children's and radiation oncologists at MD Anderson Cancer Center.

"They've all been amazing from day one," Kahalley said. "They are incredibly generous with their time."

Encouraging collaboration is one of the goals of a new feature added to the program last year – meetings twice a year for participants to update departmental leadership and each other on their progress.

"They really embraced the opportunity to get together and hear about what other participants were doing," Blaney said.

The pilot funding is becoming even more important because of increasing



Psychologist Dr. Lisa Kahalley, right, tests neuro-cognitive effects of treatments for brain tumors in children and adolescents.

difficulty obtaining extramural research funding. At the NIH, the success rate for research project grant applications has been declining since the early 2000s, down to 16.8 percent in fiscal year 2013.

"Texas Children's places a lot of value on this program and not only understands the need for research but ensures that it has a high priority,"

Blaney said. "Research ensures that we're poised to have the next cutting-edge therapy for our patients.

"NIH reviewers have commented, in their review of our faculty applicants, that the Texas Children's pilot award program is wonderful," Blaney said. "It provides reassurance to reviewers that our investigators are in an environment where research is very prized."

Research Pilot Awards Program: 2009-2014	
	250 applications
	77 awards
	14 sections of the Department of Pediatrics represented
	\$2.785 million in research pilot awards
	\$11 million generated in extramural funding

At the Forefront



Dr. Jordan Orange uses the first G-STED microscope in North America to take super-resolution photographs of interactions within living cells.

Finding answers: When the immune system goes awry

The contributions that David Vetter's life and death made to science and medicine have been immeasurable, medical scientists have told his mother, Carol Ann Vetter Demaret.

Known as "the boy in the plastic bubble," David spent his life inside a sterile environment because he had Severe Combined Immune Deficiency (SCID) disease, a genetic disorder that meant that any infection could be fatal. He died in 1984 at the age of 12, but is still Texas Children's Hospital's most famous patient.

At the time, a team of physicians and scientists led by William Shearer, M.D., Ph.D., was working to perfect bone marrow transplant as a treatment for the disease.

Today, when Demaret meets with the families of children with SCID, she offers encouragement.

"Their children have a much better chance at life and survival now because of what science has learned since David," she said.

SCID is just one example of an immunological disease that threatens children's lives. Working at the forefront of medical science to find cures is Jordan Orange, M.D., Ph.D., who was recruited to Texas Children's and Baylor College of Medicine in 2012 to establish and direct the Texas Children's Hospital Center for Human Immunobiology and to lead the newly-merged Immunology, Allergy and Rheumatology Program.

Orange has a perfect mix of credentials, tools and personnel to succeed. An internationally recognized leader in studying and treating primary

immunodeficiency disorders in children, he came from Children's Hospital of Philadelphia and the University of Pennsylvania, both of which consistently rank at the top in the *U.S. News & World Report* pediatric ratings.

With plenty of room for world-class basic science immunologists to conduct research and to have access to cutting-edge technology, the Center for Human Immunobiology, which opened in 2013, encourages collaboration.

"I think it was a very wise thing for the institution to invest in immunology because of how wide-reaching it is," said Orange, who also is a professor of pediatrics, pathology and immunology at Baylor.

Researchers at the center are investigating a number of disease-related questions, from immune cell responses to primary immune deficiencies, HIV, severe allergies and cancer.



Carol Ann Vetter Demaret pauses at the sign for Texas Children's David Center, named in memory of her son, who died from Severe Combined Immune Deficiency disease.

If anyone can answer these questions, this team can. With state-of-the-art equipment, they can make cells march single file to be photographed and analyzed, and they can turn microscopic images into three-dimensional plastic models of cells.

One of the microscopes is the first of its kind in North America. The Gated Stimulation Emission Depletion Microscope (G-STED) allows researchers to take never-before-seen, super-resolution photographs of objects smaller than 40 nanometers. For comparison, a human hair is approximately 80,000-100,000 nanometers wide.

This microscope enables researchers to see interactions taking place within living cells to better understand rare

immune deficiencies, as well as the mechanisms and interactions of viruses with cells.

“This technology will ultimately benefit our patients as we push beyond the current treatment options and find novel insights into and therapies for a variety of illnesses,” Orange said.

Already, scientific advances have occurred, and a stream of articles has been published in such prestigious journals as *Science* and *Proceedings of the National Academy of Sciences*. In addition, both grant applications and funding continue to increase.

Orange has recruited researchers and technological experts from Harvard and the University of Pennsylvania.

“They each have an expertise that synergizes with our clinical efforts and with each other,” Orange said. “What this is going to allow us to do is to make advances in immunologic disease and in the care of children affected by immunologic disease in ways that otherwise would not be conceivable.”

The Center for Human Immunobiology is one of four units of the newly reorganized section of Immunology, Allergy and Rheumatology in the Department of Pediatrics.

At Texas Children’s, Rheumatology and Allergy-Immunology are two historically strong and distinct units, which are being expanded, strengthened and brought together under the common rubric of harnessing immunity in a number of ways, including:



During the Center for Human Immunobiology ribbon-cutting ceremony, postdoctoral associate Dr. Levi Watkins retrieves patient cells from the biorepository, where they are stored in liquid nitrogen.

Love, hope and compassion

David Vetter brought awareness to the plight of the child with Severe Combined Immune Deficiency (SCID) disease. David’s life in a germ-free environment and his death at the age of 12 attracted worldwide attention from the news media.

“Today, SCID is essentially 100 percent curable when diagnosed before three months of age,” said Jordan Orange, M.D., Ph.D., director of the Texas Children’s Hospital Center for Human Immunobiology. “If we find these babies right away, we can cure them here.”

Both bone marrow transplants and cord blood transplants are used successfully, and gene therapy is in the testing stage.

Texas Children’s has a clinic that can accommodate – on very short notice – babies who have had abnormal newborn screens for SCID. David’s mother, Carol Ann Vetter Demaret, was instrumental in legislative adoption of newborn screening for every baby born in Texas and at least 19 other states so far.

Demaret, who has served on the board of the Immune Deficiency Foundation, has always wanted to help in any way she can, meeting with families whose children suffer from SCID to let them know that she understands what they’re going through.

“I’m always honored to tell David’s story,” she said. “I speak to the children on David Day once a year at David Elementary School in The Woodlands, the day before the David Dream Run, and I share David’s life with the children. I am so taken aback by their respect, silence and interest.”

The David Dream Run raises funds for the David Center at Texas Children’s and for the David Clinic, being built at Texas Children’s Hospital The Woodlands.

“When the announcement was made that there would be a David Clinic in David’s community, that was a very proud day for his family,” Demaret said. “It has so much meaning that David is laid to rest not very far from where the David Clinic will be established and that so many children will

be helped and cured, and so many families will have hope.

“Seldom has a single person generated so much love, hope and compassion. When David passed away, we received so many cards and letters, and they simply said, ‘We loved him, too.’”



David Vetter spent his life in a sterile plastic bubble because of Severe Combined Immune Deficiency. Today, the disease is curable.

- Recruitment of additional faculty.
- The Jeffrey Modell Diagnostic and Research Center to support work in primary immune deficiency.
- Collaboration with the Mendelian Genomics Center.
- A newborn screening clinic for primary immune deficiency with the goal of preventing any more deaths from bubble-boy disease (SCID).
- Continued national leadership in HIV clinical research.
- Expansion of the Food Allergy Program along new frontiers in patient care, education, research and innovative therapy, including food desensitization.
- A joint clinic with Gastroenterology and additional research into eosinophilic allergic disorders, which largely affect the intestinal tract.

- A new organ transplant immunology service, integrated with Texas Children’s organ transplant service, the busiest in the country.
- Collaboration with the Lupus Foundation of America and generous community philanthropists to launch educational programs for primary care providers about pediatric lupus and rheumatology, as well as new clinical research initiatives.

The fourth unit in Immunology, Allergy and Rheumatology is the Clinical Immunology Laboratory, which has expanded its staff and volume of diagnostic tests in order to provide unparalleled service to patients with potential immunodeficiency disorders.

In addition to research and clinical care, Immunology, Allergy and Rheumatology provides scientific

and translational training of graduate students, postdoctoral fellows and clinical fellows.

Orange is particularly excited about two new programs, the Developing Immunology Scholars Program for undergraduates from Rice University and the International Scholars Program.

“The International Scholars Program has led to scientific collaborations that are likely to bring some extraordinary answers to immunological problems that we might not otherwise come across and that are likely to have wide-reaching implications,” Orange said. “Beyond scientific insights into diseases, these intellectual partnerships have already given rise to more than a dozen primary immunodeficiency diagnoses in previously underserved Latin American countries such as Ecuador.”

News of Note



Texas Children's ranks 4th among nation's best hospitals

Texas Children's Hospital ranks fourth among all 183 pediatric institutions surveyed nationally by *U.S. News & World Report*.

In the 2014-15 edition of Best Children's Hospitals, Texas Children's is one of only 10 hospitals to achieve the Honor Roll designation. It is the only hospital in Texas – and the entire southern region of the U.S. – awarded the Honor Roll distinction.

In addition to ranking children's hospitals overall, *U.S. News* ranks the top 50 pediatric hospitals across 10 major subspecialties. Receiving high rankings in a minimum of three specialties qualifies hospitals for the Honor Roll. This year, Texas Children's, working closely with academic partner Baylor College of Medicine, was ranked in the top 10 for nine categories.

Texas Children's Rankings:

- No. 2 Cardiology & Heart Surgery
- No. 2 Neonatology
- No. 4 Cancer
- No. 4 Nephrology
- No. 4 Pulmonology
- No. 5 Gastroenterology
- No. 6 Neurology & Neurosurgery
- No. 7 Urology
- No. 8 Diabetes & Endocrinology
- No. 34 Orthopedics

"Texas Children's Hospital is home to the largest number of pediatricians and pediatric subspecialists on the planet," said Mark W. Kline, M.D., physician-in-chief of Texas Children's and chair of the Department of Pediatrics at Baylor. "More importantly, we have many of the world's most talented and dedicated physicians, educators, scientists, nurses and other health professionals. I am so proud of the

outstanding commitment they show every single day to all of the children and families we serve. Working together, the team at Texas Children's truly is driving innovation and advancement in pediatric health care."

Developmental Pediatrics makes major clinical gains

Children with developmental or behavioral problems – from dyslexia to autism and intellectual disabilities – can be seen more quickly at the Meyer Center for Developmental Pediatrics at Texas Children's Hospital, thanks to remarkable progress in Developmental Pediatrics over the past four years.



Dr. Robert Voigt is expanding clinical services for Developmental Pediatrics.

Doubling the Baylor College of Medicine faculty to 10 developmental pediatricians, while implementing operational efficiencies, has made it possible to markedly increase clinical services, said Robert Voigt, M.D., professor, section head and director of the Meyer Center.

For example, the High-Risk Neonatal Follow-Up Clinic increased the number of children seen by about 400 percent. The clinic follows babies discharged from Texas Children's Neonatal Intensive Care Unit with any significant risk factors for developmental delay.

Collaboration with Cardiology produced a new clinic to follow developmental outcomes among children with congenital heart disease

who have undergone surgery as infants. A Developmental-Behavioral Collaborative was established among Developmental Pediatrics, Psychiatry and Psychology.

"So now children with any type of developmental or behavioral problem are referred to one site. From there, they are triaged and sent to the most appropriate section," Voigt said.

In addition, Developmental Pediatrics, Psychology, Psychiatry and Neurology collaborate in a multidisciplinary Autism Center. The center has reduced the wait for appointments from 38 months to three months for children under 3 years old.

Because developmental and behavioral problems are frequent – affecting about 20 percent of children – waiting lists will remain common until the number of developmental pediatricians increases beyond the 720 reported by the American Board of Pediatrics in 2013.

To educate more subspecialists, Baylor and Texas Children's established a new fellowship program in Developmental-Behavioral Pediatrics, one of only 37 in the nation.

"We take educating our general pediatrics residents seriously," Voigt said, since pediatricians often encounter children with developmental or behavioral problems.

Improvements in resident training include a required one-month rotation, a monthly longitudinal case conference and online educational modules.

Department of Pediatrics selected to edit high profile text

The Department of Pediatrics at Baylor College of Medicine has been selected

to edit the 23rd edition of the classic textbook *Rudolph's Pediatrics*.

First written in 1897 as *Diseases of Infancy and Childhood* by L. Emmett Holt, M.D., the book is today one of two principal textbooks of pediatrics used around the world.

"It's a huge honor to be selected for editorial responsibility for such a high profile textbook," said Mark W. Kline, M.D., department chair and physician-in-chief at Texas Children's Hospital. "It takes a big, diverse department like this one to pull this off."

The most recent, 22nd edition published in 2011 by McGraw-Hill Professional, includes 2,488 pages and a companion DVD featuring more than 1,700 figures, 1,100 tables and 30,000 references.

Abraham M. Rudolph, M.D., now professor of pediatrics emeritus at the University of California-San Francisco, assumed the editorial reins in 1977 with the 16th edition of the book, then known simply as *Pediatrics*. In 1991, with the 19th edition, it was renamed *Rudolph's Pediatrics* in his honor. Editor-in-chief for the 22nd edition was Abraham Rudolph's son, Colin Rudolph, M.D., Ph.D., vice chair for Clinical Affairs of the Department of Pediatrics at the Medical College of Wisconsin.

Agreement in San Antonio elevates pediatric care

Children's Hospital of San Antonio is on track to provide world-class care to the children of San Antonio and South Texas.

Under an agreement announced in February 2013, Baylor College of Medicine is recruiting, employing and overseeing physicians, and Texas Children's Hospital is providing consulting and clinical expertise. In the first 18 months of the

agreement with CHRISTUS Santa Rosa Health System, which owns Children's Hospital of San Antonio, 145 new Baylor faculty have been recruited from across the United States.

"We have hired a full spectrum of subspecialists, and we're still actively recruiting," said Mark Gilger, M.D., pediatrician-in-chief. Gilger also is professor and vice chair of the Department of Pediatrics at Baylor.

The faculty will care for patients, conduct research and train pediatric residents.

Approved by the Accreditation Council for Graduate Medical Education, the residency program will accept 10 residents in the first year, which will begin rotations in July 2015.

CHRISTUS Santa Rosa, the only faith-based, not-for-profit health system in South Texas, is turning its downtown San Antonio campus into the only freestanding children's hospital in the city. The hospital remains open while being completely remodeled. Features will include 200 private patient rooms designed for family needs, a new emergency room, and the

latest equipment and technology. Construction is expected to be completed in fall 2015.

"San Antonio is an ideal location for a brand new children's hospital," Gilger said. "It's the seventh largest city in the United States and has one of the fastest growing pediatric populations."

And Children's Hospital of San Antonio is believed to be the only children's hospital in the country with an official blessing from Pope Francis.

Arranged by Paul Klotman, M.D., Baylor's president and CEO, the blessing primarily recognizes the Sisters of Charity of the Incarnate Word, who in 1869 founded the city's first private hospital, which grew into CHRISTUS Santa Rosa.

Baylor, Texas Children's join network to solve rare cases

Baylor College of Medicine and Texas Children's Hospital became part of a new national network of clinicians and scientists joining forces to address prolonged undiagnosed medical conditions as part of a \$7.3 million, four-year National Institutes of Health grant.

The grant to Baylor and Texas Children's was one of six awarded in June 2014 as part of the NIH's Undiagnosed Diseases Network. The network was established to develop effective approaches to diagnose the most rare and difficult-to-solve medical cases from around the country.

Brendan Lee, M.D., Ph.D., professor and interim chair of Molecular and Human Genetics at Baylor, a Howard Hughes Medical Institute Investigator and founder and director of the Skeletal Dysplasia Clinic at Texas Children's, leads the Baylor-Texas Children's study site, which will contribute its advanced resources and expertise in clinical genetics and genomics research.

The program is a collaborative effort between the departments of Molecular and Human Genetics, Pediatrics, Medicine and Neurology. Co-leaders of the program include Carlos Bacino, M.D., professor of molecular and human genetics; Jordan Orange, M.D., Ph.D., professor of pediatrics; Gary Clark, M.D., professor of pediatrics and neurology; Ashok Balasubramanyam, M.D., professor of medicine; and Paolo Moretti, M.D., assistant professor of neurology.

Diabetes program helps patients transition to healthy adulthood

A new transition program is being developed at Texas Children's Hospital to help patients with Type 1 diabetes navigate a potentially dangerous time in their lives as they become adults.

"These kids go from being cared for by their parents and being cared for in a pediatric hospital with comprehensive resources, and then they transition in many aspects of their lives – their medical care, their personal space and their roles in society. It's extremely difficult for them to adapt," said Jake Kushner, M.D., chief of Diabetes and

Endocrinology at Texas Children's and Baylor College of Medicine.

The Diabetes-Endocrinology program at Texas Children's follows more than 2,000 children with Type 1 diabetes, the most common life-threatening chronic illness of childhood in the United States. The transition into young adulthood is especially challenging because the management of the disease is so intense and rigorous, and because of the lack of specialized services for young adults with Type 1 diabetes in the adult health care world.

"Too many of our patients graduate without a solid plan for the next steps in their care, and with insufficient knowledge to adequately care for their disease," Kushner said. "The ensuing decline in diabetes management puts these young adults at great risk for life-threatening complications."

The first new faculty member recruited to treat patients and conduct research in the transition program is Sarah Lyons, M.D., who is trained in both adult and pediatric endocrinology.

"I would like to personally thank Jan and Arnie Miller and Erla and Harry Zuber, whose generous contributions facilitated Dr. Lyons' recruitment," Kushner said.

The Diabetes-Endocrinology Transition Steering Committee has expanded to include Lyons, as well as John Mucha, a recently hired physician assistant and certified diabetes educator at the adult Baylor Clinic.

"My goal is to advocate for the adults that these children and adolescents will become," Kushner said. "I want to hold myself and our center responsible for building a future for them, so they can live long, healthy lives."

Hospital transplants first liver dialysis patient in Texas

Texas Children's Hospital is the first hospital in Texas to use an extracorporeal liver support therapy for children with acute liver failure. The hospital now offers the Molecular Adsorbent Recirculating System (MARS®), a liver dialysis therapy, which helped a 9-year-old patient with hepatic coma become healthy enough for liver transplant. The patient received that life-saving transplant in summer 2014.

"There was a tremendous multidisciplinary effort to make this happen, with nearly every service at the hospital playing a role," said Michael Braun, M.D., chief of Nephrology at Texas Children's and professor of pediatrics at Baylor College of Medicine.

Children facing liver failure are among the most challenging patients in the intensive care setting because liver failure can often lead to multi-organ failure.

As toxins build, these children are at risk for developing life-threatening hepatic coma, the end-stage of liver failure. The MARS system provides significant support to help prevent further deterioration of the liver and many times can improve the patients' overall health.

"In order to have a meaningful impact on patient outcomes, this therapy needs to be part of a vigorous liver transplant program," said Ayse Akcan-Arikan, M.D., medical director of the Extracorporeal Liver Support Program at Texas Children's and assistant professor of pediatrics at Baylor.

Since 2000, more than 400 patients have received new livers at Texas Children's. In 2013, the hospital transplanted more children in need of livers than any other pediatric hospital in the U.S.



Dr. Jake Kushner leads a program to care for diabetes patients as they become adults.



Spotlight on the Department

Distinctions

The Baylor College of Medicine Department of Pediatrics ranks as one of the nation's largest, most diverse and most successful pediatric programs.

Patient Care

Baylor has had a primary affiliation with Texas Children's Hospital since the hospital opened in 1954. The largest children's hospital in the United States, Texas Children's was ranked no. 4 and one of only 10 hospitals nationally designated by *U.S. News & World Report* in 2014 for Honor Roll status in pediatrics. Pediatric faculty and trainees also work at Children's Hospital of San Antonio and in numerous affiliated community-based ambulatory sites, as well as at Ben Taub Hospital of the Harris Health System.

Education

The pediatrics educational program was ranked no. 9 by *U.S. News & World Report* in 2014. At Baylor's annual Education Awards Ceremony, 16 Department of Pediatrics faculty members received Fulbright and Jaworski L.L.P. Faculty Excellence Awards, recognizing sustained exemplary educational contributions.

Research

According to the Blue Ridge Institute, Baylor's Department of Pediatrics is ranked no. 3 in the nation in funding from the National Institutes of Health.

Statistical highlights

Baylor College of Medicine*

Department of Pediatrics Staff	
Faculty	994
Residents	175
Clinical postdoctoral fellows	147
Research postdoctoral fellows	97

Funding Support	
Gifts and contributions from individuals, foundations and corporations	\$23,022,126
Federal awards	\$48,681,003

Publications	
Books written or edited	14
Chapters written or edited	413
Journal articles	1,069

* Baylor College of Medicine = July 1, 2013 – June 30, 2014
** Texas Children's = October 1, 2012 – September 30, 2013

Texas Children's**

Patient Statistics	
Admissions	31,223
Census days	180,023
Emergency Center visits	116,961
Total patient encounters	3,201,805

Origin of patients seen at Texas Children's facilities

The majority of 251,582 individual patients lived in Texas, but patients came from every state in the United States and from 56 other countries.

Of those from outside Texas, the top 10 states were:

State of origin	Number of individuals	Percent of those outside Texas
Louisiana	1,229	40.1
Oklahoma	135	4.4
Florida	118	3.8
California	117	3.8
New Mexico	83	2.7
Georgia	83	2.7
New York	63	2.1
Arkansas	58	1.9
Colorado	51	1.7
Mississippi	50	1.6
Total of top 10 states	1,987	64.8
Other 39 states	1,078	35.2
Grand Total	3,065	100

Of those from outside the United States, the top 10 countries were:

Country of origin	Number of individuals	Percent of those outside the U.S.
Mexico	268	50.5
Guatemala	24	4.5
Saudi Arabia	23	4.3
Canada	21	4.0
Venezuela	15	2.8
Qatar	13	2.4
Ecuador	12	2.3
Honduras	11	2.1
Nigeria	11	2.1
Brazil	9	1.7
Total of top 10 countries	407	76.7
Other 46 countries	124	23.3
Grand Total	531	100

Department of Pediatrics Leadership

Chair and Physician-in-Chief

Mark W. Kline, M.D., mcline@bcm.edu

Vice Chairs

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Hospital Medicine: Roger Nicome, M.D., roger.nicome@bcm.edu
House Staff Education: Mark Ward, M.D., maward@texaschildrens.org
Immunology/Allergy/Rheumatology: Jordan Orange, M.D., Ph.D., jsorange@texaschildrens.org
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Tropical Medicine: Peter Hotez, M.D., Ph.D., hotez@bcm.edu

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