WINTER 2025

DELIVERING ON A PROMISE

Big Strides for Little Lungs

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

Le Bonheur Children's Hospital

GENETIC DECODERS

Le Bonheur's Neurogenetics Clinic provides answers, resources to children with genetic epilepsies

For children with a suspected or known genetic epilepsy, effective management and treatment requires the expertise of providers who are particularly specialized in the intersection of neurology and genetics.

As a result, Le Bonheur's Neuroscience Institute developed the Neurogenetics Clinic — a place where patients and families can find the most up-to-date care, resources, research and treatment for these rare disorders. Part of the Comprehensive Epilepsy Program, the clinic provides expertise in genetics with the resources of a National Association of Epilepsy Centers Level 4 accredited epilepsy program.

"Our Neurogenetics Clinic was created because many childhood neurologic conditions have a genetic base," said Heather Mefford, MD, PhD, a pediatric geneticist in the clinic. "Getting the best, most comprehensive care and understanding the disorder in a family requires a combination of providers with genetic expertise who can interpret genetic causes and neurologists who treat the disorder."

At the clinic, providers first determine which genetic tests may help diagnose and treat a condition, or they review and interpret existing genetic test results and what they mean for a child and their family. By seeking to understand the underlying cause for seizures, the goal is to combine neurological and developmental information, seizures and brain imaging or testing, with genetic testing to improve a child's seizures and symptoms, says Genetic Counselor Emily Bonkowski, CGC.

"Many children have already had genetic testing, some have a diagnosis, and our approach is to be the experts and discuss what this means for the child and family and any additional testing that needs to be done," says Bonkowski. "For patients whose genetic testing doesn't provide an answer, we can conduct more testing and connect them to research opportunities and resources."

The multidisciplinary team brings together genetics and neurology to create a plan for each patient. A genetic counselor reviews family history, the child's condition and any genetic testing. A geneticist specializing in epilepsy and neurodevelopmental conditions examines the child to identify any potential diagnoses and genetic conditions, and a neurologist with expertise in genetic conditions examines them to better understand the specific neurological issues at play and recommend treatment options. The team also includes a neuropsychologist dedicated to the clinic. At the end of the appointment, all of the providers discuss the plan with the family and collaborate with the child's referring neurologist.

"Our collaborative team helps gather the answers for families, but we can also provide information about research opportunities for solved and unsolved conditions," says Pediatric Neurologist Nitish Chourasia, MD. "It's a very exciting time in neurogenetics."

One of the goals of the Neurogenetics Clinic is to connect families to research opportunities for rare genetic disorders. The Pediatric Translational Neuroscience Initiative (PTNI), a collaboration with St. Jude Children's Research Hospital, provides basic research, clinicals trials and multispecialty care to more rapidly deliver new therapies to children living with genetic neurologic diseases. This partnership provides connections to research opportunities for children with genetic neurologic diseases seen in the Neurogenetics Clinic.

While children seen in the clinic continue follow up with their referring neurologist, the Neurogenetics Clinic sees these children for follow up every one to five years and continues to provide updates on their genetic condition, new treatments or new research opportunities. Currently, the clinic primarily evaluates children with epilepsy, but plans to broaden the scope of genetic neurologic conditions seen in the clinic are underway.

A multidisciplinary team brings together geneticists and neurologists who have expertise in genetic neurological conditions. Pediatric specialists like Pediatric Neurologist Nitish Chourasia, MD (above), work together to identify the causes behind these conditions.

Conditions Seen in the Neurogenetics Clinic

- Developmental and epileptic encephalopathies (DEE)
- Rare genetic epilepsies due to CHD2, SYNGAP1, SLC6A1, STXBP1, PCDH19, GNAI1, SCN2A, SCN8A, RHOBTB2, KCNQ2 and other genes
- Epilepsy without a known cause but suspected to be genetic

The Neurogenetics Clinic at Le Bonheur seeks to understand the genetic causes of neurological conditions. Above, Genetic Counselor Emily Bonkowski, CGC (center), and Geneticist Heather Mefford, MD, PhD (right), examine a patient in clinic.

Le Bonheur Children's Hospital

Le Bonheur Children's Hospital in Memphis, Tenn., treats more than 250,000 children each year in regional clinics and a 311-bed hospital that features state-of-the-art technology and family-friendly resources. Our medical staff of more than 240 physicians provide care in 45 subspecialties.

LE BONHEUR LEADERSHIP

James "Trey" Eubanks, MD – *President and Surgeon-in-Chief*
Terri Finkel, MD, PhD – *Interim Pediatrician-in-Chief*
B. Rush Waller, MD – *Chief Medical Officer*
Harris Cohen, MD – *Radiologist-in-Chief*

BEST CHILDREN'S HOSPITALS U.S. News RANKED IN 8 SPECIALTIES 2024–2025 · ACS CSV Children's Surgery Verification · ACS Trauma Verified Trauma Center · MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

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In this issue:

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Le Bonheur Connect at 866-870-5570.

Big Strides for Little Lungs

Le Bonheur leads the way in developing care models for bronchopulmonary dysplasia

Le Bonheur Children's Neonatal Intensive Care Unit (NICU), the region's only Level IV NICU, was looking for an innovative way to care for one of its growing patient populations — babies with severe bronchopulmonary dysplasia (BPD). When plans began for an expansion to the hospital, Neonatologist Mark Weems, MD, medical director of the NICU, saw an opportunity. With the new space, Le Bonheur could cohort this population of patients with unique needs with the potential to improve their care and advance BPD treatment strategies by leaps and bounds.

BPD is a chronic lung disease found in premature babies that affects up to 43% of this population, according to the BPD Collaborative — a group of physicians and centers dedicated to fostering research of and treatment options for infants with BPD. Le Bonheur joined this collaborative

in 2023 partnering with more than 45 other health centers. The need for interdisciplinary BPD programs like Le Bonheur's are vital to improve survival and outcomes and decrease hospital stays.

Recently, Weems joined other members of the BPD Collaborative to publish recommendations in *The Journal of Perinatology* on how to develop a multidisciplinary BPD program. The article covered the basics of forming a program, growth strategies and the role of dedicated BPD centers in research.

Le Bonheur is one of a few centers to have a multidisciplinary team of providers and a dedicated space for this patient population. Thanks to this NICU expansion, known as the Center for Lung Development, Weems and the BPD team have seen improved survival and reduced tracheostomies among patients with severe BPD.

– THE NEED –

Premature infants are born with lungs that are not fully formed, which can lead to impaired development of the growing lungs. Some premature babies can require oxygen and respiratory support, which can further injure the lungs. BPD can occur due to either of these factors or a combination of both.

The article from Weems and the BPD Collaborative highlighted some of the challenges in this patient population that an interdisciplinary BPD center like Le Bonheur's could help mitigate. These include continuity of care among providers, variations in patient management, lack of staff knowledge in developmental care for older infants and lack of evidence for specific therapies for BPD.

"There is an increasing need for strategies to improve chronic management of this complex patient population within an acute care setting," the authors say. "To meet this need, interdisciplinary BPD programs have been developed … to improve survival, decrease hospital length of stay and costs, improve neurodevelopmental outcomes and facilitate the transition from the hospital to the outpatient setting."

At Le Bonheur, the BPD program began in 2019 when Weems and other providers in the NICU recognized that babies were surviving earlier gestation, but more patients were diagnosed with BPD and had poor outcomes.

Through the years, the program has grown, says Weems, adding elements over time, including weekly patient reviews, nutritionists, rehabilitation specialists,

The Center for Lung Development in Le Bonheur's NICU provides a range of support for patients and caregivers. At left, NICU patient Syder Allen leaves his room for the first time to practice the support he will need when he is able to go home from the hospital.

Thanks to the new Center for Lung Development, patients like Semaj Dennis, pictured above with Neonatologist Mark Weems, MD, have a dedicated unit for multidisciplinary bronchopulmonary dysplasia (BPD) care.

physical and occupational therapists, as well as specialists in neonatology, cardiology, pulmonology and more.

"With the expansion, we had the idea to take another step in the management of these patients and cohort them into a single team area," said Weems. "This is unique among NICUs but has allowed us to decrease variability in care practice and establish dedicated nursing care."

— THE ROADMAP —

The keys to a BPD program start with a multidisciplinary staff and providers, consensus guidelines for medical management and a defined scope of care, says the article from Weems and the BPD Collaborative.

"The established BPD program can and should evolve into a program that develops innovative approaches to BPD that are then adopted by early- and middle-stage programs," say the authors. "The team's ongoing goal should be to continue to standardize BPD care by applying any new evidence that becomes available."

The authors place special emphasis on clear messaging and frequent communication with parents and caregivers. Support services, such as social workers or case managers, can also encourage parent engagement and bridge any communication gaps with providers.

The final piece of a multidisciplinary BPD program is an emphasis on research collaboration with the goal of standardizing BPD care, say the authors. Some of the keys that the BPD Collaborative identified are a data repository to track patient outcomes, quality initiatives to advance and refine practices and participation in national BPD organizations to compare outcomes.

"To prevent BPD, we need to learn how to wean babies off ventilators sooner and prevent damage from occurring," said Weems. "But for babies who already have lung injury, the next steps are better understanding how we get the lungs to grow optimally going forward. This is where the BPD Collaborative's work is essential."

— THE PROGRAM —

Le Bonheur's BPD Program, including the Center for Lung Development, is one of the leaders among NICUs around the country in implementing these best practices. At Le Bonheur, this patient population now has a primary care team dedicated solely to them — not just a consult service. This currently

consists of six dedicated neonatologists plus pulmonologists, cardiologists, rehab specialists and therapists, as well as support from a clinical nurse leader coordinator and a data support specialist.

Weems and the team also strive to not only provide the best care to patients but support parents and caregivers of these infants through a parent support group, child life specialists, social workers, a psychologist and a discharge planner.

Patients are discharged into Le Bonheur's Complex Care Clinic for management and have follow up at multiple specialty clinics, including the dedicated BPD Clinic.

"We have improved survival and reduced tracheostomies by about 40% since the launch of our BPD program due to optimal nutrition, non-invasive ventilator support and consistency of care," said Weems.

The Center for Lung Development in the NICU contains features designed for the unique needs of these infants and their caregivers. For older infants who have lived in a hospital room their entire lives, the Infant Development Room provides a new space for new experiences. In this room, they can interact with family members, meet a therapy dog or have interactions with other children who have had long-term stays in the NICU.

Tre Howell

Bronchopulmonary dysplasia

Cala Taylor was diagnosed with preeclampsia, which caused her to go into labor extremely preterm. At 26 weeks gestation in February 2023, Cala and Terry Howell, Jr., welcomed their son, Terry "Tre" Howell, III, who weighed 1 pound, 10 ounces at birth.

Tre was intubated to help him breathe and spent the first four months of his life at his birth hospital, but he needed the expert care only Le Bonheur's Level IV Neonatal Intensive Care Unit (NICU) could provide.

Once 4-month-old Tre arrived at Le Bonheur, he was given noninvasive oxygen and steroids to treat laryngomalacia, a condition where weak, floppy tissue falls into the airway.

"When we first got to Le Bonheur, Dr. Weems made me feel comfortable and did a great job explaining Tre's care and what to expect," Cala said.

Tre was diagnosed with bronchopulmonary dysplasia (BPD), a chronic lung disease often seen in premature babies without fully developed lungs, which is one of the most common conditions for babies in Le Bonheur's NICU.

To best meet the needs of BPD patients like Tre, a dedicated Center for Lung Development is part of the NICU expansion. Patients receive care from a multidisciplinary team to optimize their growth and development.

Tre Howell was born at 26 weeks gestation and weighed less than 2 pounds.

During Tre's time at Le Bonheur, Cala worked with a case management team to help her understand and process what was happening with her baby, including when he needed surgery to have a G-tube placed so he could eat.

Cala was also able to attend a G-tube class at Le Bonheur and receive specialized training from nurses, so she was better prepared to care for Tre at home upon discharge.

After spending the first 13 months of his life in the hospital — nine of those at Le Bonheur — Tre reached an important milestone that his family had been looking forward to for months. Tre was able to go home for the first time.

Terry Howell, Jr., and Cala Taylor are grateful for the care their son, Tre, received in Le Bonheur's NICU for bronchopulmonary dysplasia (BPD).

"We are so grateful for the care Tre received," Cala said. "Le Bonheur has helped him reach so many milestones that I never thought would be possible. I'm looking forward to seeing him meet many more developmental milestones in the future."

Tre's Le Bonheur journey does not end with his discharge. He will receive follow-up care from a pulmonologist and a G-tube specialist to ensure he continues to thrive.

Le Bonheur's NICU expansion created the Center for Lung Development — a dedicated space for babies with BPD to receive specialized, multidisciplinary care. Above, NICU patients celebrate move in day to the new unit.

Also on the unit is the Caring Transitions Room — a place for parents and caregivers to practice overnight care for their child in the comfort of the hospital. The room is set up with a bed and amenities for families to practice the overnight medical care they need to master before discharge.

> ***"We have improved survival and reduced tracheostomies by about 40% since the launch of our BPD program due to optimal nutrition, non-invasive ventilator support and consistency of care."***
>
> Mark Weems, MD,
> *Neonatologist & Medical Director of the NICU*

– THE FUTURE –

Opportunities to advance the care of children with BPD are plentiful, says Weems. His article with the BPD Collaborative states that participating in national organizations with shared knowledge is already moving the needle on successful care of this population. These multicenter collaboratives are vital, the authors state, because "comprehensive standardization, data collection and rigorous evaluation of approaches are needed to evaluate therapeutic effectiveness."

Research initiatives around this population continue in Le Bonheur's NICU. Two upcoming research efforts are to evaluate neurodevelopment support practices as well as the efficacy of zinc supplementation. Weems also plans to continue to develop the BPD program as a whole with two immediate goals of increasing family education and adding a case manager to their team.

"One of our future goals is to participate in developing consensus with other centers on the optimal trach recommendation and additional care practices for BPD patients," said Weems. "Our dedicated unit is unique among NICUs, and we will continue the process of improving survival and reducing length of stay and tracheostomies for these infants." ■

INTERVENTIONAL INNOVATION

Le Bonheur cardiology, radiology develop hybrid cath lab, MRI for interventional procedures

"Cath labs of the future will be run out of MRI suites," says Jason Johnson, MD, MHS, chief of Pediatric Cardiology and director of Cardiac MRI at Le Bonheur Children's Hospital.

It's this foresight and ambition that brought together Le Bonheur's radiology and cardiology teams to develop and pioneer something that only few in the country had done before — a hybrid catheterization (cath) lab and MRI suite to provide better, safer care for kids.

The first of its kind in Tennessee and only the eighth in the United States, this hybrid MRI and cath lab suite, located inside of Le Bonheur's new Heart Institute expansion, will allow for smoother hybrid cases where transportation is needed between the cath lab and MRI. It will ultimately be a space for

Le Bonheur's hybrid cath lab is the first in Tennessee and one of only a few in the country. The MRI suite and cath lab are directly adjoined so that patients can be moved seamlessly between the two.

Le Bonheur experts to develop methods, devices and procedures for cardiac interventions inside of the MRI suite itself.

"Our ultimate goal is to show reproducibility and safety, identify cases where an intervention in the magnet can occur and develop MRI cath protocols," says Johnson.

Prior to the hospital expansion and development of the hybrid cath lab and MRI suite, patients who needed an MRI during a cath procedure were transported from the second floor cath labs to the ground floor MRI suite. The cardiology and radiology teams knew that they needed a safer way to conduct these cases, says Crystal Thomas, Le Bonheur director of Cardiovascular Services.

"With the Heart Institute expansion, we had an opportunity to get an MRI beside the cath lab. As we grew in knowledge, we realized we need to have them connected for safety," says Thomas. "Now we can float the patient to the MRI side and the patient never loses position. We can then overlay images really easily to do the intervention in the cath lab."

The MRI suite has the very latest in MRI technology, the SIGNA Artists GE 1.5 Tesla, that can fit a vast size of patients, produce higher quality scans and reduce scan times by 30-50%.

"This new technology will be a gamechanger for our patients, enhancing the quality of care we're providing and creating a more positive patient experience," says Stevie Lee, Le Bonheur director of Radiology. "Doctors will have the capability to achieve more high-efficient, quality imaging to better make diagnoses."

This MRI will be used almost exclusively for cardiac patients, making care safer and quicker for patients in the Cardiovascular Intensive Care Unit (CVICU) located on the same floor. In addition to heart imaging, providers can use the MRI for diagnostics such as neurological exams or functional exams when cardiac issues impact other parts of the body.

The teams will use the cath lab and MRI separately around 70% of the time, says Johnson. But the true novelty of the suite is the other 30% — the potential for cath interventions using MRI instead of fluoroscopy.

Traditional fluoroscopy, which is continuous X-ray, can show blood flow and tissue level images, providing interventionalists with what is essentially an outline of the heart. Due to the nature of fluoroscopy, patients are exposed to radiation and contrast in order to perform the procedures. Cath procedures in the MRI suite would effectively erase both of these safety concerns and vastly improve visualization of the heart and its structures at a granular, cellular level, according to Johnson.

"MRI allows you to know exactly where your catheter tip is and doesn't require contrast or radiation," says Johnson. "It's completely changing the way that we visualize the structures that we want to see."

This could particularly benefit the sickest children the Heart Institute sees, such as those with single ventricle conditions or failure of another organ other than the heart. It would also allow for the most effective biopsies for heart transplant patients — MRI could help identify the weakest tissue for sampling that would best detect heart transplant rejection.

In order to reach these goals, Le Bonheur cardiologists and radiologists are working hand in hand with device manufacturers to develop safe devices for use in the MRI. A unique aspect of Le Bonheur's hybrid cath lab is that it is vendor agnostic: one company

The new cath lab also has additional cameras and communications systems, as well as extra cameras to perform live cases and train other physicians.

Brycen Armstrong

Hypoplastic Left Heart Syndrome

When Kasey Armstrong gave birth to her son Brycen, she knew something wasn't right. Brycen wouldn't eat, and he was starting to turn blue.

Kasey and Brycen were discharged home after just 24 hours, and a visit to the pediatrician's office the next day showed Brycen had a heart murmur.

By the time Kasey returned to the pediatrician's office the next day, Brycen was in cardiac arrest and needed to be airlifted to Le Bonheur Children's. Just a few hours later, Kasey learned that her son had hypoplastic left heart syndrome — a condition that causes the left ventricle of the heart to be underdeveloped. Brycen had a long road of heart surgeries ahead of him. He was just 3 days old.

Brycen Armstrong was born with hypoplastic left heart syndrome and has undergone multiple heart surgeries and catheterization procedures at Le Bonheur's Heart Institute.

"I just asked, 'What can I do now to keep my baby alive?'" said Kasey.

Brycen spent the first two months of his life at Le Bonheur and had two open heart surgeries for hypoplastic left heart syndrome — the hybrid procedure and the Norwood procedure. Kasey and Brycen returned six months later for his next surgery, the Glenn procedure. These surgeries are a slow reconstruction of the heart in order to provide optimal blood flow to the body.

But Brycen's left lung was still not getting enough blood flow and the pressures in his heart were too high, which meant he wasn't a candidate for the final surgery he needed — the Fontan procedure.

That's how Kasey and Brycen found themselves at Le Bonheur's hybrid catheterization (cath) lab and MRI suite. It was time for Brycen to be evaluated for the heart transplant list. Without a Fontan procedure, he would need a new heart.

Thanks to the new setup for the cath lab and MRI, physicians were easily able to complete multiple steps in Brycen's heart transplant evaluation without the need for additional time under sedation. After prepping for his cath procedure, Brycen was moved into the MRI suite for brain imaging — a part of his heart transplant evaluation. He was subsequently rolled back into the cath lab to complete the cath portion of the evaluation. All of this was accomplished with just one time under anesthesia and minimal transport.

And Kasey got even better news about her son as a result of the cath procedure — his medication had worked, and he was now a candidate for the Fontan procedure, instead of needing a heart transplant.

"The doctors at Le Bonheur are amazing and have saved Brycen's life more than once," said Kasey. "His doctors say that when they look at Brycen it's like a blessing because he should not be here."

Brycen Armstrong recently underwent evaluation for heart transplant in Le Bonheur's new hybrid catheterization lab and MRI suite. With just one time under sedation, Brycen was able to have a brain MRI and then moved immediately into the cath lab for the next portion of his evaluation.

Thanks to the new hybrid MRI/cath lab, patients can undergo cath procedures and MRI and only be sedated one time.

supplies the cath lab equipment and another company provides MRI, which has led to a unique collaboration between competitors — all for the benefit of kids.

"There's no standard for this yet, all interventional procedures will be under research protocol as we test proof of concept," says Johnson. "Right now, we are limited in what we can put in the magnet. We're working with vendors to develop techniques and test this equipment."

The benefits of Le Bonheur's hybrid cath lab and MRI suite are myriad. From a patient safety standpoint, anesthesia times will decrease because of the ease of movement between cath lab and MRI, and radiation exposure will decrease, and possibly be eliminated, when procedures can be performed with MRI instead of fluoroscopy.

Plus, with the hybrid cath lab on the same floor as the Heart Institute's CVICU, patients have better access to critical care if required. The time savings benefits are huge, even if using just for diagnostics in the MRI and then the intervention in the cath lab.

"We're continuing to try to improve our ability to get high-class diagnostic and interventional services for a child in the safest way possible," says Johnson.

"We want to be the role model," adds Thomas. "This suite provides optimal care and a whole new world of opportunities in the future."

As part of that desire to be leaders in the field, the hybrid suite was designed with training in mind. Additional cameras and communications systems were added to better communicate between the MRI and cath lab during a case, and the suite also includes extra cameras making it easier to perform live cases and train other physicians.

"Our cardiologists and radiologists are in constant conversation on how to maximize this technology," says Lee. "We're working together to create shared procedures and collaborating to coordinate the best care for kids." ■

Scan to watch a video of the hybrid cath lab in action and learn more about the expansion to Le Bonheur's Heart Institute.

A PURSUIT OF PERFECTION

Pediatric cardiac surgeon joins Le Bonheur Heart Institute as new chief, executive co-director

During his intern year at the University of Texas Health Sciences Center, Bret Mettler, MD, spent five months in the pediatric Cardiovascular Intensive Care Unit (CVICU). After participating in a surgery to repair a stab wound to a heart, he was hooked. Pediatric cardiac surgery was the career for him.

Mettler has now brought his expertise to Le Bonheur Children's as the new chief of Pediatric Cardiac Surgery and executive co-director of the Heart Institute. Mettler's future vision for the division is to build on the Heart Institute's current successes and expertise to advance patient care at Le Bonheur and across the entire field of pediatric cardiac surgery.

"I have an internal desire to always be tested, to always do the best at everything, even at what seems like it's the hardest," said Mettler. It's this mindset that led him directly into medicine and drove him to push the boundaries of his field.

The first in his family to go to college, Mettler wanted to emulate a family friend who was a family practice physician.

"Medicine and pediatric hearts were a natural fit for me," said Mettler. "In pediatrics, every patient is different, and you can make a difference in a whole family's life and a child's entire lifespan."

Mettler's internal motivation pushes him to always keep innovating. And he saw Le Bonheur Children's Hospital and its Heart Institute as a place to do exactly that.

Bret Mettler, MD

Mettler comes to Le Bonheur from Johns Hopkins Children's Center, where he served as director of Pediatric Cardiac Surgery and co-director of the Blalock-Taussig-Thomas

Pediatric and Congenital Heart Center. Before his time at Johns Hopkins, Mettler was director of Pediatric Cardiac Transplantation and Mechanical Circulatory Support at Vanderbilt University Medical Center in Nashville, Tenn.

Joining Le Bonheur's Heart Institute in November 2024, Mettler says he was drawn to work at a freestanding children's hospital that had proven successes, expertise and resources that could take the field of pediatric cardiac surgery to the next level.

"Le Bonheur has a great regional reputation with excellent patient care, strong culture and a sense of collaboration," said Mettler. "The resources that have already been put into the Heart Institute with the recent state-of-the-art expansion means that the structural pieces are in place to allow us to grow the inpatient programs."

Mettler's vision for pediatric cardiac surgery at Le Bonheur centers around two goals — advancing patient care to prolong and improve the lives of people with congenital heart disease and creating a center for biomedical innovation.

In order to build on Le Bonheur's excellence and take patient care to the next level, Mettler aims to develop various destination centers for specific congenital heart diseases and conditions where he sees opportunity to fill needs in the region surrounding Le Bonheur. Some of Mettler's objectives include centers for connective tissue abnormalities, aerodigestive cardiac and tracheal surgery, chromosomal abnormalities causing congenital heart disease and complex valve repair.

"We want to build centers that are a differentiator for us in our region, and we're a big enough program that we can find subspecialization opportunities," said Mettler.

But Mettler also wants to move his field forward so that children are better cared for even when they aren't in the hospital or at a clinic appointment. Alongside Pediatric Cardiac Surgeon Danielle Gottlieb Sen, MD, MPH, MS, who will join the Heart Institute in 2025, his vision for a center for biomedical innovation would develop cardiac monitoring devices to improve the life and care of kids when they are at home. Memphis is one of the best places in the country for device innovation for medicine, he says.

> ***"I want to do the best for every child. The goal is that they go back to their parents as perfect as they can be. There's no tolerance for being just ok."***
>
> Bret Mettler, MD,
> *Chief of Pediatric Cardiac Surgery and Executive Co-Director of the Heart Institute*

"These monitoring devices for children would be able to take accurate level vital signs and have an early warning system while at home," said Mettler. "It's another way to improve the life and care of kids — preventing missed cardiac events, morbidity or mortality."

Mettler's vision will build on the trajectory of Le Bonheur's Heart Institute toward expansion and innovation in the fields of cardiology and cardiac surgery. And his attitude toward the operating room reflects his attitude toward building a program.

"Everything in the operating room is a challenge, even simple things can be really hard," said Mettler. "I want to do the best for every child. The goal is that they go back to their parents as perfect as they can be. There's no tolerance for being just ok."

Bret Mettler, MD

Education and Training
University of South Dakota – Medical School
University of Texas Health Sciences Center – Internship
University of Michigan Medical Center – General Surgery Residency
University of Virginia Medical Center – Cardiothoracic Surgery Residency
Boston Children's Hospital – Congenital Cardiac Surgery Residency
Boston Children's Hospital – Cardiac Tissue Engineering Laboratory Research Fellowship

Board Certifications
National Board of Medical Examiners
American Board of Surgery
American Board of Thoracic Surgery
American Board of Thoracic Surgery – Congenital

Society Memberships
American Heart Association
Tissue Engineering Society International
International Society of Applied Cardiovascular Biologists
European Association of Cardiothoracic Surgeons
Coller Society, University of Michigan Surgical Alumni
American College of Cardiology
Society of Thoracic Surgeons
Southern Thoracic Surgical Association
American College of Surgeons
International Pediatric Transplant Association
International Society of Heart and Lung Transplantation
American Association of Thoracic Surgeons
Congenital Heart Surgeons Society

Awards and Honors
Alpha Omega Alpha Award for Distinguished Alumnus
Thoracic Surgery Residents Association Service Award
Thoracic Surgery Directors Association Award, Society of Thoracic Surgeons
Alexander J. Walt Award, Michigan Chapter of the American College of Surgeons
Best Paper, Michigan Chapter of Thoracic and Cardiovascular Surgeons
Frederick A. Coller Award, Michigan Chapter of the American College of Surgeons

Research Update

LE BONHEUR PHYSICIANS, RESEARCHERS RECEIVE MULTIPLE NATIONAL INSTITUTES OF HEALTH GRANTS

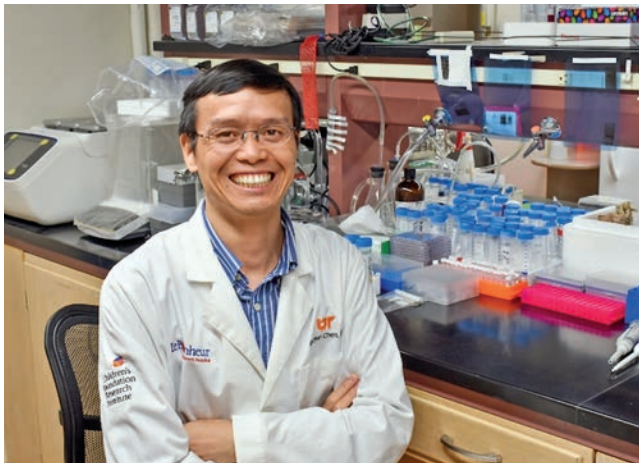
STRATEGIES FOR SEPSIS

Guoyun Chen, MD, PhD, Le Bonheur Researcher
Research project (R01) grant, National Institute of Allergy and Infectious Diseases

$2.26 million

Project: *The molecular mechanism of Siglec-E in bacterial clearance*

Guoyun Chen, MD, PhD, a basic scientist at the Children's Foundation Research Institute at Le Bonheur Children's Hospital and an associate professor of Pediatric Research at the University of Tennessee Health Science Center, has been awarded a $2.26 million R01 grant from the National Institute of Allergy and Infectious Diseases to continue researching new ways to treat sepsis, a potentially deadly immune response to infection.



Guoyun Chen, MD, PhD

In his project titled "The molecular mechanism of Siglec-E in bacterial clearance," Chen is building on prior work investigating key interactions at the molecular level that may help inhibit bacterial sepsis progression.

"Sepsis is still one of the leading causes of death worldwide," said Chen. "Effective therapies for sepsis could help to reduce its associated mortality and improve outcomes of patients with severe sepsis."

In this newly funded study, the Chen lab will now work to discover how Siglec-E helps in clearing bacterial infections. His team will investigate how Siglec-E differently regulates the immune response during infections by Gram-positive and Gram-negative bacteria.

By achieving these goals, the team hopes to uncover new ways to treat sepsis and improve outcomes for patients affected by this life-threatening condition.

CRACKING THE CODE FOR INTERSTITIAL LUNG DISEASE

Jonathan Finder, MD, Pediatric Pulmonologist
Terri Finkel, MD, PhD, Interim Chair of Pediatrics
Research Project (R01) grant, National Heart, Lung and Blood Institute

$3 million

Project: *Integrative genomics of childhood interstitial lung disease*

Jonathan Finder, MD

Le Bonheur physicians Jonathan Finder, MD, pediatric pulmonologist, and Terri Finkel, MD, PhD, interim chair of Pediatrics, were recently named co-principal investigators of a five-year multicenter National Institutes of Health R01 grant, "Integrative Genomics of Childhood Interstitial Lung Disease." The grant uses genetic data from Le Bonheur and the University of Tennessee Health Science Center's (UTHSC) Biorepository and Integrative Genomics (BIG) Initiative to better diagnose patients with childhood interstitial and diffuse lung diseases and determine genetic causes of the disease.

Childhood interstitial lung disease (chILD) is a group of conditions that impact the lung tissues of infants and children. This project, led by investigators at Boston Children's Hospital and Harvard University, will use several methods to define the genetic landscape of chILD. Investigators will analyze lung biopsy samples to define molecular profiles of chILD and their clinical significance, and DNA sequencing will seek to identify new causative genes for the condition.

Terri Finkel, MD, PhD

Le Bonheur and UTHSC will be involved as part of the Genomics Information Commons (GIC) — a genetic database from

eight pediatric centers around the country that includes genetic data from the Le Bonheur and UTHSC BIG Initiative. Patients in the DNA repository database who are identified as having suspected genetic markers for chILD will be sent to Finder's clinic for a standardized, in-depth analysis of this illness. This data will allow researchers to better understand how the same disease may present in different children and potentially inform specific therapies and care for children with this disease.

"Through this study, we are trying to assess the patterns of disease so that once we know the genetics and the cure or treatment has been developed, we can determine if we are helping or hurting with that treatment," says Finkel.

"The utility of large whole genome sequencing like this means earlier identification of significant lung disease," says Finder. "It completely upends the way we approach disease and patient care."

CLINICAL TRIAL: INHALED NITRIC OXIDE AND CONGENITAL DIAPHRAGMATIC HERNIA

Tim Jancelewicz, MD, MA, MS, Le Bonheur Pediatric Surgeon
U24 grant, National Heart, Lung and Blood Institute

$11.4 million

Project: *Inhaled nitric oxide for congenital diaphragmatic hernia*

Tim Jancelewicz, MD, MA, MS, interim division chief of Pediatric Surgery at Le Bonheur Children's Hospital and professor at the University of Tennessee Health Science Center (UTHSC), is a co-principal investigator on the "NoNO" trial, an $11.4 million, multi-institutional clinical trial grant to study the efficacy of the longstanding practice of using inhaled nitric oxide (iNO) to treat newborns with congenital diaphragmatic hernia (CDH), a life-threatening condition that occurs when the diaphragm fails to fully develop.

Jancelewicz is partnering with Matthew Harting, MD, MS, associate professor in the Department of Pediatric Surgery at McGovern Medical School at the University of Texas Health Science Center at Houston, along with a team of investigators in 19 partnering institutions, on the innovative, seven-year NoNO Trial, funded by the National Heart, Lung and Blood Institute of the National Institutes of Health. The two surgeons have studied CDH for more than a decade.


Tim Jancelewicz, MD, MA, MS

Under Jancelewicz's direction, UTHSC and Le Bonheur will serve as the clinical coordinating center for the 19 institutions involved in the trial.

"CDH is a relatively rare congenital condition where there's a hole in the diaphragm. This means the child's organs are up in the chest, and they have underdeveloped lungs and pulmonary hypertension," Jancelewicz said.

Some believe that iNO temporarily improves oxygenation in newborns with CDH, decreasing the need for heart-lung bypass, says Jancelewicz. But he says that most evidence shows iNO might actually worsen outcomes, and many centers nevertheless still use it. In this trial, centers will be randomized to de-implement iNO from the CDH care pathway. Researchers will then be able to compare outcomes before and after de-implementation at each center. This innovative trial design represents a paradigmatic change in CDH research.

NOVEL NEONATAL ASPHYXIA THERAPIES

Massroor Pourcyrous, MD, Le Bonheur Neonatologist
Research project (R01) grant, National Institute of Neurological Disorders and Stroke

$2.5 million

Project: *Neonatal cerebral vascular injury by prolonged asphyxia*

The National Institute of Neurological Disorders and Stroke awarded $2.5 million to a research duo at Le Bonheur Children's Hospital and the University of Tennessee Health Science Center (UTHSC) for a project to find new ways to treat brain damage caused by lack of oxygen at birth. Le Bonheur Neonatologist Massroor Pourcyrous, MD, is co-investigator alongside principal investigator Helena Parfenova, PhD, professor in the Department of Physiology at UTHSC.


Massroor Pourcyrous, MD

Previous collaboration between Parfenova, a basic scientist, and Pourcyrous, a clinical scientist, centered on prevention and treatment of cerebrovascular disease due to devastating neonatal brain disorders, including epilepsy and asphyxia. With this new award, the team will focus on novel mechanisms that could keep the brain and its blood vessels working properly in newborns when they experience prolonged asphyxiation.

Early research suggests an enzyme called Nox4 is the main producer of harmful oxygen particles in the brain's blood vessels when a newborn does not get enough oxygen. On the other hand, H2S, a gas enzymatically produced by astrocytes, acts as an antioxidant, protecting cells from damage. Parfenova and Pourcyrous are proposing a new form of neurovascular cell-directed therapy that combines selectively blocking the Nox4 enzyme while increasing the body's H2S-based antioxidant defenses.

"Nox4 selective inhibitor is available on the market and is recognized as a clinically safe drug," said Pourcyrous. "The combination therapy may represent promising candidates for the development of a new drug for neonatal hypoxic ischemic encephalopathy." ■

This research is sponsored by the Children's Foundation Research Institute at Le Bonheur Children's Hospital.

Seeking Seizure Freedom

California family finds answers, treatment for years of intractable seizures

Beck Blalock

Diagnosis: ***Intractable Epilepsy***
Treatments: ***Vagus Nerve Stimulation, Responsive Neurostimulation***

After four years of searching, Beck Blalock (pictured above) finally received a diagnosis and successful treatment for intractable seizures after comprehensive imaging at Le Bonheur's Neuroscience Institute.

Four years, five hospitals and 1,500 miles. That's what it took for Tim and Melinda Blalock to get answers and relief for their son Beck's seizures. Visiting hospitals close to their hometown in southern California, they continued to get the same answer: Beck's EEGs and MRIs were normal. Yet he continued to have seizures, especially at night, that didn't respond to medication. Tim and Melinda knew their son needed advanced brain imaging and epilepsy experts to get the correct diagnosis and treatment.

Searching for a center with a magnetoencephalography (MEG) scan to get a better understanding of his seizures, Tim and Melinda reached out to Le Bonheur's Neuroscience Institute. They continuously saw the name of Le Bonheur's Comprehensive Epilepsy Program Director James Wheless, MD, in publications about intractable epilepsy and knew that the neuroscience program was strong and robust.

It was clear to Tim and Melinda where they needed to go when Le Bonheur said they could have Beck scheduled for a MEG scan, plus the rest of Le Bonheur's suite of advanced brain imaging, and admitted to the epilepsy monitoring unit (EMU) within the month. So, in 2021, four years after his seizures began, Melinda and Tim brought 8-year-old Beck to Le Bonheur's Neuroscience Institute.

Le Bonheur's advanced diagnostic testing was the key to unlocking information about his seizures. A MEG scan showed that the seizure activity was deep in his brain, so previous EEGs were not sensitive enough to detect it. But now that Beck's neurologists and neurosurgeons had an accurate picture of his seizures and their location, they could make a plan. And Beck finally received an accurate diagnosis — focal motor seizures.

Nir Shimony, MD, (pictured above) is a neurosurgeon at Le Bonheur who implanted Beck Blalock's responsive neurostimulation (RNS) device. Working in tandem with the previously implanted vagus nerve stimulation (VNS) device, RNS has helped Beck be seizure free since April 3, 2024.

"We learned more in our first three days at Le Bonheur than in the prior four years at other hospitals combined," says Melinda. "Le Bonheur was able to take all the information I had and find the missing piece."

While Beck was not a candidate for resection because his seizure focus was in the motor pathway, Melinda and Tim asked about a different surgical option — vagus nerve stimulation (VNS). VNS acts like a pacemaker for the brain, delivering mild electrical pulses via the vagus nerve to prevent seizures. After VNS surgery, conducted by Le Bonheur Neurosurgeon Stephanie Einhaus, MD, Beck had immediate improvement in his seizure control.

"We monitored Beck twice to

Le Bonheur Chief of Pediatric Neurology James Wheless, MD, and Beck Blalock are pictured above during Beck's hospital stay to receive the RNS device that would help him to be seizure free.

verify his exact seizure type so that we could get the best results from medication and devices," said Wheless. "We, and the family, were persistent with our approach to a difficult diagnosis. Much of the credit goes to Beck's family who kept pursuing other options for their son."

VNS didn't completely erase his seizures, but Beck saw dramatic improvement. He continued to be a part of clinical trials for medications that might help him be seizure free.

Melinda and Tim kept pushing for more, and, alongside Le Bonheur neurologists and neurosurgeons, they investigated whether Beck, now 10 years old, could be eligible for responsive neurostimulation (RNS) — a device implanted in the skull that detects and disrupts abnormal electrical activity to prevent seizures.

> ***"We learned more in our first three days at Le Bonheur than in the prior four years at other hospitals combined. Le Bonheur was able to take all the information I had and find the missing piece."***
>
> Melinda Blalock, Beck's mother

"Some patients benefit from having more than one device. RNS and VNS can work well together and work behind the scenes to control seizures without the family having to worry about giving the correct medication dose at the correct time in the correct manner," said Wheless.

Early 2024, Beck's team determined that he was a candidate for RNS, a device typically used only in adults, and Beck had the RNS implanted in March 2024 by Le Bonheur Neurosurgeon Nir Shimony, MD. Beck has now been seizure free since April 3. Every night, Tim wands Beck's device through his skull, which uploads data to the cloud so that Le Bonheur physicians can monitor the RNS 1,500 miles away in Memphis.

Thanks to Le Bonheur's Neuroscience Institute, Beck Blalock has been seizure free since April 3, 2024.

Beck has experienced tremendous growth in his development since the placement of his RNS device, learning math, writing and even reading — something his mom and dad never thought they would see.

He returns to Memphis monthly for follow up in addition to some telehealth appointments. Most recently, Beck had genetic testing through Le Bonheur's Neurogenetics Clinic in order to obtain more insight into the cause of his seizures and any additional ways to best treat them. In about 40% of children with difficult-to-treat seizures in childhood, a genetic change can be identified. Although Beck had already had extensive genetic testing, no one had been able to identify a clear genetic cause for his seizures.

The Neurogenetics team at Le Bonheur, which includes clinical geneticist Heather Mefford, MD, PhD, and Genetic Counselor Emily Bonkowski, ScM, CGC, was able to review and reinterpret all of his test results — including whole genome sequencing — and find a genetic change that explains Beck's seizures and developmental challenges. Beck is one of the first few individuals to be described with his condition caused by the gene, and he will continue to be seen yearly for updates in the Neurogenetics Clinic.

"Our ultimate goal is for him to remain seizure free and eliminate his medications. Le Bonheur will be with us every step of the way," said Melinda. "Le Bonheur is not only treating Beck but taking care of our entire family. I can't recommend Le Bonheur enough." ■

Scan to meet Beck and his family and learn more about his journey to seizure freedom at Le Bonheur.

A PHYSICIAN WITH A PASSION

Le Bonheur rheumatologist successfully advocates for legislation to help diagnose critically ill infants and children

Thanks to the advocacy of Terri Finkel, MD, PhD, Le Bonheur interim pediatrician-in-chief, legislation was passed in Tennessee expanding access to whole genome sequencing in critically ill children with TennCare coverage.

Years ago, Terri Finkel, MD, PhD, lobbied before a local government board to block development of a Denver wetlands area, after she researched and found a particular species of wildlife there needed protecting. While she describes herself as "not particularly political," she also admits, "when I get passionate about something, I research it to death."

The wetlands eventually were developed, but the species was protected. That was her only brush with a government body, until 2024 when she stood before the Tennessee legislature armed with her customary copious research and a passion to help seriously ill children.

Finkel advocated before the state House and Senate for legislation to require TennCare coverage for rapid whole genome sequencing of newborns when certain criteria are met. This, she explained to the lawmakers, would give physicians the power to diagnose babies sooner and eliminate the pain and suffering of months and possibly years of testing to get a diagnosis.

The legislation passed unanimously and was signed into law May 28, 2024, making Tennessee one of 11 states to have this health care benefit. In nine of those states, rapid whole genome sequencing is an approved benefit only for infants. Tennessee joined Minnesota in extending the benefit from birth to age 21.

"This is a life-changing event in Tennessee," Finkel says. "It is a benefit that the citizens of Tennessee now have that will save the lives of many children over the years. And it affirms the importance of access to genetic sequencing as part of our diagnostic armamentarium."

Finkel is the interim pediatrician-in-chief at Le Bonheur

Children's Hospital and a professor and the interim chair of the Department of Pediatrics at the University of Tennessee Health Science Center (UTHSC). A pediatric rheumatologist, she is passionate about diagnosing, treating and easing the suffering of infants and children with rheumatological diseases.

Whole genome sequencing organizes the entire DNA sample that makes up an individual human genome into a file of letters that then can be examined for mutations that characterize certain diseases. Rapid testing generates results within 15 days from the date of receipt of the sample, with preliminary results as early as seven days.

"The rapid whole genome sequence allows us to know whether there are variants in known genes and whether there are specific proteins that are working in a child who has a critical illness," Finkel explains. Early and rapid testing can translate to earlier and faster diagnosis and treatment.

"This is a life-changing event in Tennessee. It is a benefit that the citizens of Tennessee now have that will save the lives of many children over the years. And it affirms the importance of access to genetic sequencing as part of our diagnostic armamentarium."

Terri Finkel, MD, PhD,
Interim Pediatrician-in-Chief

Specific criteria make a child eligible for the testing, such as presenting with an acute or complex illness of unknown cause, abnormal laboratory tests or chemistry profiles suggesting a genetic disease or congenital anomalies involving at least two organ systems. However, physicians can also apply evidence-based medical necessity criteria.

"The law just has to do with if the child is not responding to treatment as we anticipate, which makes it very user friendly in the sense that we can use our judgment as physicians as to which children are most likely to benefit from this test," Finkel says.

Her extensive history working with critically ill children and their families propelled her to advocate for better interventions for children who might otherwise languish in the process of diagnosis.

After becoming aware of the effort in Michigan to pass similar legislation, "I began researching how I could make that happen in Tennessee," she says. Similar efforts by others in Tennessee had stalled, primarily because of the cost associated with rapid whole genome sequencing.

Earlier this year, Finkel connected with David Mills, director of Government Relations for UTHSC and together they investigated the opportunity to renew the effort.

State Rep. Brock Martin and state Sen. Richard Briggs were the sponsors of the legislation, House Bill 1826 and Senate Bill 1762.

"They asked me to write a justification based on what we knew from three other big studies, one in California, the one in Michigan and one in Florida, which had all passed this bill," Finkel says. "Based on those studies, it showed that not only was it cost effective, but it saved and generated money."

"In other words, the cost of the test is offset by the fact that you have children in the hospital fewer days, and they need fewer expensive, painful, prolonged tests," she explains. "And so, aside from the actual cost saving, there's the saving of worry and lost work time and suffering of both families and the children."

Finkel wrote letters with the message the legislation would save lives without excessive costs to the state. She addressed both the house and the senate in her capacity as a physician who cares for infants and children who could benefit from the testing.

In addition to invaluable support from Mills, Maureen O'Connor, vice president of Institutional Advancement at Le Bonheur, and Cary Whitworth, vice president of Government Relations and Advocacy for the UT System, as well as the Children's Hospital Association of Tennessee, St. Jude Children's Research Hospital and Vanderbilt University Medical Center got behind the legislation. "This would not have been possible without the support of leadership at the university, the hospitals and the other health care entities," Finkel says.

The law went into effect July 1, 2024. Estimates are at least 55 children a year could be candidates for the test.

"This is going to take a while to get adopted," she says. "TennCare has to make policy, and we're going to work with them on that. And that can take a little while, and it's going to take a while for the hospitals to adopt it."

Still, Finkel says, "It was one of the most remarkable things I've been involved in." ■

Johnson named chief of Pediatric Cardiology

Jason Johnson, MD, MHS

Jason Johnson, MD, MHS, was recently named chief of Pediatric Cardiology for the Heart Institute at Le Bonheur Children's Hospital. He previously served as associate chief of Pediatric Cardiology since 2020 and as director of cardiac MRI at Le Bonheur and St. Jude Children's Research Hospital. During that time, Johnson has helped to facilitate programmatic growth, including the development of the region's only hybrid cardiac MRI and catheterization lab, and faculty recruitment. Johnson will be responsible for leading the staff and directing the programs of the pediatric cardiology department.

King named chief of Pediatric Anesthesiology

Joseph D. King, MD

Le Bonheur recently welcomed Joseph D. King, MD, as the new chief of Pediatric Anesthesiology at Le Bonheur and UT Health Science Center. King comes to Le Bonheur from Children's Hospital of Mississippi and The University of Mississippi Medical Center where he served as assistant professor and vice chair of Pediatric Anesthesia. King will lead, grow and develop pediatric anesthesiology division at Le Bonheur and UT Health Science Center.

Le Bonheur named a Tourette Association Center of Excellence

Le Bonheur's Movement Disorders and Tourette Syndrome Center was recently named a Center of Excellence by the Tourette Association of America. This designation recognizes medical institutions that offer the highest level of care, are undertaking groundbreaking research, are leaders in training and education and provide exceptional community outreach and advocacy for Tourette syndrome and other tic disorders.

PICU receives AACN Beacon Award for Excellence

Le Bonheur's Pediatric Intensive Care Unit (PICU) team received the Gold American Association of Critical-Care Nurses (AACN) Beacon Award for Excellence. In health care organizations, excellence is the sum of many complex parts. This accomplishment represents one of many significant milestones on the journey to optimal outcomes and exceptional patient care.

Brown elected to the Board of Directors of the American Society of Human Genetics

Chester Brown, MD, PhD, was recently elected to the Board of Directors of the American Society of Human Genetics, the world's largest professional genetics organization, for a three-year term starting in January 2025. Brown is the Genetics division chief at Le Bonheur Children's Hospital and a professor at The University of Tennessee Health Science Center.

Chester Brown, MD, PhD

Le Bonheur Neuroscience Institute joins the Pediatric Epilepsy Research Consortium

Le Bonheur's Neuroscience Institute recently became a member of the Pediatric Epilepsy Research Consortium (PERC), a national collaboration of more than 75 pediatric epilepsy programs and more than 350 pediatric epileptologists, pediatric neurosurgeons, pediatric neuropsychologists and other pediatric epilepsy researchers. As a part of PERC, Le Bonheur Pediatric Neurologists Sarah Weatherspoon, MD, and James Wheless, MD, will serve as a member of the Epilepsy Surgery and Epilepsy Surgery Neuromodulation special interest groups. PERC provides a network and infrastructure to facilitate collaborative research in pediatric epilepsy working to improve the care of every child with epilepsy.

Sarah Weatherspoon, MD

James Wheless, MD

PEDIATRIC EPILEPSY RESEARCH CONSORTIUM

Le Bonheur physicians receive 2024 Faculty Awards from UT Health Science Center

Le Bonheur Children's Hospital and The University of Tennessee Health Science Center announced the 2024 Faculty Award winners, highlighting outstanding faculty members and their dedication and commitment to making a difference in their areas of health care. The awards program was initiated in 2013 to honor excellence in faculty endeavors in four areas critical to the mission: education, clinical care, mentoring and research.

Sandeep Chilakala, MD

Shyam Sathanandam, MD

Jason Yaun, MD

M. Tammam Elabiad, MD

Nominees were selected by the faculty and reviewed and selected by the Education Committee, made up of a team of eight faculty members and pediatric chief residents. The committee received a total of 18 nominations this year and narrowed the selection down to one winner in each category. Awardees can only win each award every three years.

Congratulations to all of the 2024 Faculty Award nominees and winners from Le Bonheur:

2024 Excellence in Clinical Care Award:

Sandeep Chilakala, MD, Neonatology

2024 Excellence in Research:

Shyam Sathanandam, MD, Pediatric Cardiology

2024 Excellence in Education Award:

Jason Yaun, MD, General Pediatrics

2024 Excellence in Mentoring Award:

M. Tammam Elabiad, MD, Neonatology

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BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 8 SPECIALTIES 2024-2025

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