

Le Bonheur to open dedicated Neuro ICU

Le Bonheur's Neuroscience Institute will open a six-bed Neurosurgical Intensive Care Unit (Neuro ICU) in January. Located on the hospital's 6th Floor, the unit will care for patients after an elective neurosurgery. This primarily includes brain tumor, epilepsy and spine surgery patients.

Frederick Boop, MD, Le Bonheur's medical director of Neurosurgery, and Stephanie Storgion, MD, pediatric critical care specialist, will serve as the unit's medical directors.

"Le Bonheur is one of the few children's hospitals in the country to have the volume to support a dedicated pediatric Neuro ICU," said Boop.

The Neuroscience Institute performs approximately 750-800 neurosurgeries each year.

"We hope that by having a dedicated Neuro ICU with dedicated nurses and staff we can provide a higher level of care for these patients," added Boop.

"As our Neuroscience Institute continues to grow, so does the complexity of the patients referred here from around the country and around the world. We are now at a point where a dedicated critical care unit for neurosurgery patients will take us to the next level of capability."

A new neurosurgical intensive care unit will provide dedicated care for children post-brain surgery.



Ebstein's research helps establish best practice



Christopher Knott-Craig, MD

After following neonates with Ebstein's Anomaly for nearly 20 years, the surgical team in Le Bonheur's Heart Institute has published a review of best treatments for the defect.

The results were published this past year in the *World Journal for Pediatric and Congenital Heart Surgery* in "Surgical Decision Making in Neonatal Ebstein's Anomaly." The study presented an algorithm for choosing the best management option for neonates based on analysis of the Heart Institute's experience.

"Our extensive work with Ebstein's Anomaly helped us establish what we consider best practice in treating neonates," said Christopher Knott-Craig, MD, medical director of Cardiothoracic Surgery and co-director of Le Bonheur's Heart Institute.

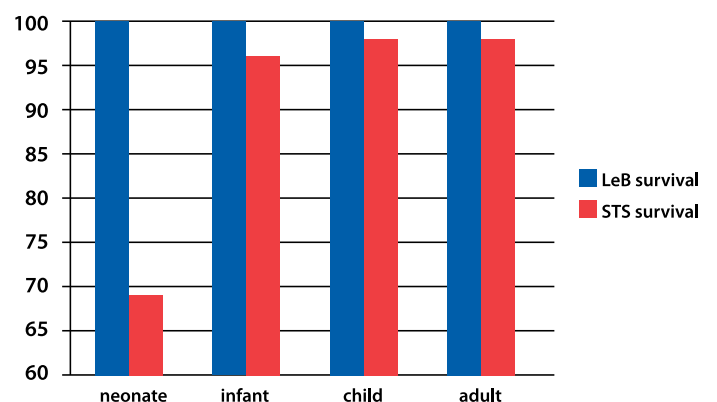
The authors looked at 48 neonates diagnosed with Ebstein's Anomaly, all treated between 1994 and 2011. Of these, two died before intervention and 46 were either initially managed medically or underwent surgical intervention during the neonatal period.

Based on the neonates' outcomes, researchers found that most symptomatic neonates with Ebstein's will require early

operation. Those with anatomic pulmonary atresia and mild tricuspid regurgitation may be best served initially with a modified Blalock-Taussig shunt and reduction atrioplasty.

Those with functional pulmonary atresia and severe tricuspid regurgitation may be best served with ligation of the main pulmonary artery and placement of a Blalock-Taussig shunt to provide the best initial palliation. The review showed others should receive either biventricular repair or a single-ventricle palliation.

Ebstein's repair survival by age group, 4 years



Information from The Society of Thoracic Surgeons.

Referrals:

888-890-0818

www.lebonheur.org



The pediatric affiliate of The University of Tennessee Health Science Center/College of Medicine



Health Science Center

Hospital joins pediatric quality improvement network

National group aims to reduce hospital-acquired conditions by 20 percent

Le Bonheur Children's Hospital has joined a collaborative designed to share best practices and improve patient safety in children's hospitals across the country.

The Ohio Children's Hospitals' Solutions for Patient Safety (OCHSPS) Foundation started as eight pediatric hospitals working together to decrease hospital-acquired conditions. OCHSPS received a Center for Medicare and Medicaid Services' Hospital Engagement Network grant to expand the effort across the country.

Working with peers in the National Children's Network, Le Bonheur will focus on preventable readmissions and nine hospital-acquired conditions, including:

- Adverse drug events
- Catheter-associated urinary tract infections
- Central line-associated blood stream infections
- Injuries from falls and immobility
- Pressure ulcers
- Venous thromboembolism
- Ventilator-associated pneumonia
- Surgical site infections
- Serious safety events

The collaborative hospitals agree to be transparent in their data sharing and to have the "all teach, all learn" mentality. The goal is reducing hospital-acquired conditions by 20 percent and preventable readmissions by 10 percent in 2013.

"To be able to work side by side with these children's hospitals to identify best practices can only make us better," said Donna Vickery, director of Quality Performance at Le Bonheur.

To reach these goals, Le Bonheur is identifying physician and nurse leaders for each of the 10 metrics. The groups will be assigned a Quality Improvement project manager who will help the group create or improve bundles or tasks to standardize care around each condition.

In addition to joining the National Children's Network, Le Bonheur will work alongside the other Tennessee children's hospitals to address quality issues. "We are not going to compete on safety. Our goal is to reduce harm to children across the state and the country," Vickery said.

Growth leads to new cross-discipline mentoring program

Le Bonheur Children's Hospital and the Department of Pediatrics at The University of Tennessee Health Science Center (UTHSC) have experienced rapid growth in the number of faculty members in the last two years. A new program has been designed to help these young physicians and researchers thrive in their careers.

"The first few years are a critical time to get the right start and understand what's expected of you. We have recruited the best, and we have to make sure we've given them the tools and opportunities to excel," said Keith English, MD, associate chair of the Department of Pediatrics.

Since the summer of 2011, more than 25 physicians have joined the Department of Pediatrics, most of them junior faculty members. Another 25-30 are expected to be hired in the next three to five years, according to Jon McCullers, MD, chair of the Department of Pediatrics.

English is leading the effort to develop an Office of Faculty Development, which will focus on mentoring, recruitment, new faculty orientation and promotion and tenure.

One aspect of this initiative is facilitated peer mentoring groups that meet monthly. They will be led by an experienced faculty mentor and include up to eight young physicians at a similar career stage from a variety of specialties. The groups discuss general career advice, networking within the hospital and across the country, promotion and tenure, and balancing personal and professional lives.



A new program at Le Bonheur and UTHSC aims to increase mentoring opportunities for young faculty members. Keith English, MD, and Bindiya Bagga, MD, are among the first participants in the program.

"We have high expectations for all of our faculty members. We want to help them find their place within the missions of an academic medical center – patient care, education, research and outreach," English said.

These new mentoring initiatives complement the program-specific mentoring that already happens. English says by crossing over specialties, this allows new faculty members to learn from others across the hospital. Along with English and McCullers, the initial groups will be led by Fred Palmer, MD, of Developmental Pediatrics, and Stephanie Storgion, MD, of Critical Care.

"Our ultimate goal is a faculty that is dynamic and successful and improving the lives of children," English said.

Surgeons aid in disaster preparedness

Pediatric Orthopaedic Surgeons Derek Kelly, MD, and William Warner, MD, have served as part of a national effort to increase disaster preparedness in the field of pediatric orthopaedics. Kelly and Warner sit on the Pediatric Orthopaedic Society of North America (POSNA) committee on Trauma and Prevention. The group focuses on improving the



treatment and prevention of orthopaedic injuries in children through education and leadership.

In response to numerous natural and terrorist disasters in the past decade, Warner and Kelly helped lead the committee through two major educational endeavors:

- a short review at the POSNA annual meeting on the current state of disaster response in pediatric orthopaedics
- a review paper with other committee members that focused on improving awareness of issues surrounding pediatric orthopaedic disaster response and encouraged increased participation in disasters.

"We know that children are particularly exposed in times of crisis and sometimes lack basic survival skills," Kelly said. "We want to make sure we equip the pediatric orthopaedic community to care for these children in times of disaster."

Kelly was part of a nine-person team from Le Bonheur that provided disaster relief in Haiti following the 2010 earthquake. The team, stationed near Port Au Prince, treated several cases of crush injuries, open fractures and amputations.

Collaborative environment, technology made Memphis attractive

Kate Van Poppel, MD, came to Memphis for her pediatric neurology residency, stayed for fellowship training and eventually joined the faculty. It was the collaborative research environment and access to state-of-the-art technology that kept her at The University of Tennessee Health Science Center (UTHSC) and Le Bonheur Children's Hospital.

"We have all the technology you could look for to do a good, thorough work up without having to refer patients out. As a trainee, I was exposed to technology like magnetoencephalography (MEG) that you don't see everywhere," Van Poppel said.

Le Bonheur's comprehensive Neuroscience Institute, which is ranked among the top 25 programs in the *U.S. News & World Report Best Children's*

Hospital list, offers a wide range of neuroimaging tools in the diagnosis and treatment of children. Patients have access to MEG, intraoperative MRI, functional MRI and high density EEG.

"We see a lot of patients with very different pathologies from very basic to the most complex. This gives students the opportunity to learn about a lot of rare diseases," Van Poppel said.

Now an assistant professor in UTHSC's Department of Pediatric Neurology, Van Poppel is part of the team training the next generation of pediatricians and pediatric neurologists.

As a junior faculty member, Van Poppel says she feels like the environment is conducive to collaboration in both clinical care and research. She

has participated in and led several research studies since she joined the faculty. Her most recent article, "Mesial Temporal Sclerosis in a Cohort of Children with SCN1A Gene Mutation," was published in the July 2012 issue of the *Journal of Child Neurology*.

Her studies on resective epilepsy surgery in pediatric patients with Chairman of the Department of Neurosurgery Frederick Boop, MD, appeared in *Contemporary Neurosurgery*. Van Poppel has another reason Memphis was a good fit – her husband, Mark, began his pediatric neurosurgery residency at Le Bonheur in July.



Neurologist Kate Van Poppel, MD, says training at The University of Tennessee Health Science Center prepared her for practice. The collaborative environment and access to technology kept her here after residency.

Hospital adds new service for dental trauma patients



Barry Gilmore, MD

Le Bonheur now offers services for children who have experienced a dental trauma in the Emergency Department (ED). The collaborative 24-hour service is a partnership with The University of Tennessee Health Science Center

(UTHSC), College of Dentistry. The program treats trauma patients who present to the ED as well as those who are admitted and have resulting dental trauma.

By adding this service to the range of multi-disciplinary subspecialty care, Le Bonheur offers children comprehensive care following a traumatic injury. In the case of dental trauma, the longer it remains untreated, the greater likelihood the teeth will be lost. Dentists are on call 24 hours a day to provide emergency care.

The hospital has two dental trauma rooms with the diagnostic tools and equipment necessary for emergent treatment. Services include teeth extractions, suturing, treatment for avulsions and removing orthodontic bands.

"Our new space, coupled with our excellent dental support, allows us to provide the absolute highest level of care for children experiencing dental emergencies," said Barry Gilmore, M.D., chief of Emergency Services.

Martha Wells, DDS, MS, assistant professor of Pediatric Dentistry at UTHSC, added, "Le Bonheur has made a significant investment in providing state-of-the-art equipment and facilities for dental services in the Emergency Department, and UT dentists remain committed to working with Le Bonheur in rendering excellent dental care for the children throughout the region."

"This collaborative effort allows children to receive more comprehensive emergency dental services and to receive them more quickly, which will result in more savable teeth and better oral health for our children."

Le Bonheur will continue to treat children who need intravenous sedation for dental services in the operating room, so they can be monitored by anesthesiologists.



Martha Wells, DDS, MS

Nurse writes story to help parents explain brain tumor diagnosis

How do you tell your child he has a brain tumor? How do you explain why she's going to need surgery?

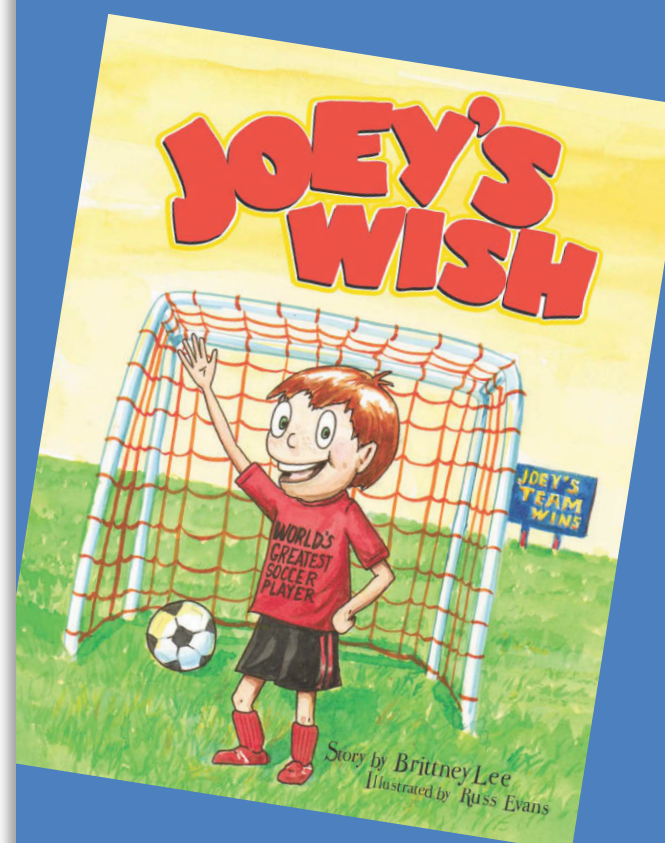
Le Bonheur Brain Tumor Nursing Coordinator Brittney Lee, RN, BSN, has watched parents struggle through explaining this diagnosis to their children.

"Most families are still in shock during these discussions and haven't begun to process the weight of a brain tumor diagnosis. Parents often feel unequipped to explain what is going on to their child, especially if the child is very young," Lee said.

Lee put herself in parents' shoes. "How would I explain this to my child? How would my child process what was happening?" she asked. The result was *Joey's Wish*, an illustrated book designed for children 3 to 10 years old. The story follows Joey through an MRI to surgery and recovery. Parents can also read about age-appropriate ways to discuss the diagnosis and what it entails.

The book is now given to all newly diagnosed brain tumor patients at Le Bonheur.

Joey's Wish was reviewed by the Le Bonheur Family Partners Council before it was published. The printing was provided by the Go Lucy Go fund, which honors Lucy Krull, a Le Bonheur brain tumor patient.



Studies focus on simulation-based training in critical care

Two studies conducted by researchers at Le Bonheur Children's aim to better prepare caregivers for high-risk emergencies in the Cardiovascular Intensive Care Unit (CVICU). Published in the latest edition of *Pediatric Cardiology*, both studies focus on the use of simulation-based training modules.

The first study's findings suggest that simulation-based training is an effective method for improving the knowledge, ability and confidence levels of novice ECMO specialists and physician trainees. Currently, training for ECMO – a form of temporary cardiopulmonary support – primarily uses didactic education and occasionally includes various hands-on training modules.

Simulation courses with mannequins are available at a few centers as supplemental training, but simulation-based training is not required for certification. Results from the Le Bonheur study showed the simulation-based training was helpful and improved knowledge, ability and confidence for ECMO providers.

"ECMO is a complex life-saving medical therapy requiring rapid clinical decision-making skills in the event of a technical emergency. We have developed a novel ECMO simulation training module and bedside safety checklists of common ECMO emergencies to train novice learners and to assist expert caregivers in this intricate management," said Samir Shah, MD, a Le Bonheur intensivist and one of the researchers.

A second study proves that simulation-based team training is effective in increasing teamwork and collaboration among multidisciplinary teams in the CVICU during an emergency. The study's training course simulated a post-pediatric surgery cardiac arrest, a high-risk clinical situation with high morbidity and mortality. Findings

showed that participation in the simulation-based training improved teamwork, confidence and communication during these high-risk events.

"We want to design innovative training for our staff that can, ultimately, improve patient safety and outcomes in the critical care environment," said Mayte Figueroa, MD, medical director of Le Bonheur's CVICU and a primary researcher for both studies.



Research from Le Bonheur suggests that simulation-based training is an effective method for improving the knowledge, ability and confidence levels of novice extracorporeal membrane oxygenation (ECMO) specialists and physician trainees.

Researcher publishes three RNA therapy studies

Infectious Disease Specialist John DeVincenzo, MD, recently published three papers focusing on advancing our understanding of how viruses, including RSV, mutate in humans and on developing antiviral treatment strategies against this virus. DeVincenzo's research focuses on respiratory syncytial virus (RSV), the most common cause of infant hospitalization.



John DeVincenzo, MD

Complete viral RNA genome sequencing of ultra-low copy samples by sequence-independent amplification.

Nucleic Acids Research, 2012

Viruses change and mutate at rapid rates in virtually random fashion. These high mutation rates of viruses always occur while they replicate within their human hosts. Detecting these changes has been difficult, because mutations that do not help the virus survive and replicate, are overwhelmed by mutations that do help. Therefore, it is necessary to be able to detect minute populations of viruses that have mutated and to differentiate these small subpopulations from the majority populations of these viruses. This study outlines new advanced methods and techniques to detect minute sub-populations of viruses within clinical samples obtained from humans. These new techniques can open up areas of research in these viruses and how they mutate to avoid detection and control by our immune systems. Researchers capture 96 to 100 percent of the viral protein coding region of HIV, respiratory syncytial and West Nile viral samples from as few as 100 copies of viral RNA. Methods are scalable to large numbers of samples and capable of generating full or near full length viral genomes from clone and clinical samples with low amounts of viral RNA, without prior sequence information and in the presence of substantial host contamination.

Assessing modeled CO₂ retention and rebreathing of a facemask designed for efficient delivery of aerosols to infants.

International Scholarly Research Network, 2012

New medicines for infant diseases might require nebulization to deposit them directly into the lung. However, efficient masks that allow the safe delivery of these aerosols without causing the infants to re-breathe their own exhaled CO₂ have not previously been developed. The researchers developed a new

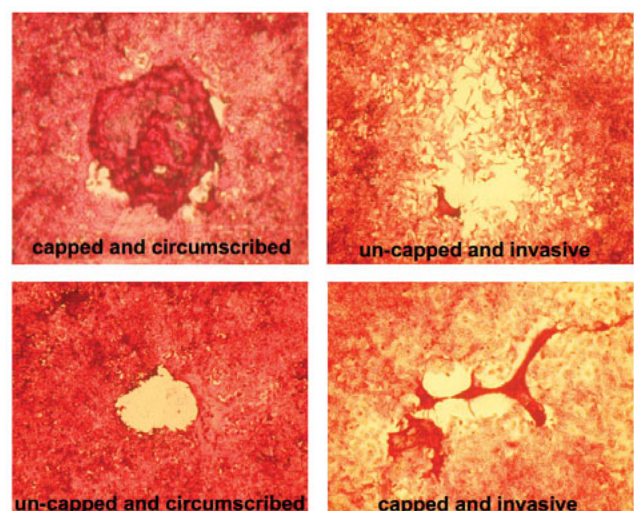
infant aerosol delivery mask. They then evaluated the mask to see if it would both efficiently deliver aerosols and whether there was retention of exhaled CO₂. Because RSV (respiratory syncytial virus) primarily is an infant disease, this device could be used for delivery of aerosol treatments of RSV in infants and children.

The promise and progress of RNA interference-based antiviral therapy for respiratory viruses.

Antiviral Therapy, 2012

In this invited review, DeVincenzo discusses the science behind RNA interference (RNAi) and the potential practical issues in applying this novel technology to various respiratory viral diseases.

DeVincenzo is the medical director of Molecular Diagnostics and Virology Laboratories at Le Bonheur Children's Hospital. He also serves as a professor of Pediatrics, Division of Infectious Diseases, and professor of Microbiology, Immunology and Biochemistry at The University of Tennessee Health Science Center.



When mutations occur, they cause the virus to grow differently and produce a different type of destructive pattern within the human cells they are infecting. This distinctive pattern of destruction is called cytopathic effect. These images show several different patterns of cytopathic effect (caused by different mutations of RSV) growing in human cells.

Short Scripts

Neurologists edit comprehensive pediatric epilepsy text

Neurologists at Le Bonheur Children's Hospital recently published *Epilepsy in Children and Adolescents*, an illustrated guide to the assessment, diagnosis and treatment of epilepsy in children and adolescents. The text offers the latest recommendations for best practice.

James W. Wheless, MD, served as the primary editor. He was joined by four colleagues in editing the book,



James W. Wheless, MD

including **Amy L. McGregor, MD**, also of Le Bonheur's Neuroscience Institute. Other Le Bonheur contributors include Neuroradiologist Asim Choudhri, MD, and Neurologists Stephen Fulton, MD, and Kate Van Poppel, MD.



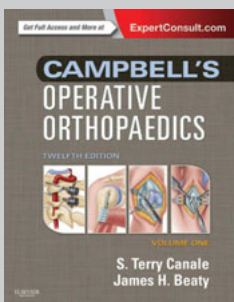
Amy L. McGregor, MD

Epilepsy in Children and Adolescents is available at wiley.com. A 20 percent discount can be applied with the code ECA12.

New edition: Campbell's Operative Orthopaedics

The 12th edition of *Campbell's Operative Orthopaedics*, the definitive orthopaedic surgery reference, is now available. Pediatric orthopaedic surgeons Jim Beaty and Terry Canale serve as the book's co-editors.

The book has been updated every five to seven years by Campbell Clinic surgeons since it was first published in 1939 by Dr. Willis C. Campbell. *Campbell's Operative* is now a four-volume textbook that has been translated into seven languages. The book contains more than 4,000 pages with 1,630 descriptions of orthopaedic procedures and nearly 7,000 illustrations.



Jim Beaty, MD



Terry Canale, MD

Trauma program joins Mississippi system

Le Bonheur has been designated by the state of Mississippi as a Tertiary Pediatric Trauma Center in the Mississippi Trauma Care System. The hospital's trauma program has also received recognition at a national level by the American College of Surgeons (ACS) as a Level I Pediatric Trauma Center and at the state level from Tennessee and Arkansas. The Trauma program is led by Medical Director **Trey Eubanks, MD**.



Trey Eubanks, MD

Beck named to American College of Surgeons Advisory Committee

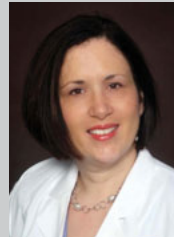
Robert Beck, clinical data specialist with Le Bonheur's Decision Support Services, has been selected as one of 10 individuals to participate in the Pediatric Surgical Case Reviewer Advisory Committee. The committee is part of the American College of Surgeons' National Surgical Quality Improvement Program.

Cardiovascular ICU receives Beacon Award

Le Bonheur's Cardiovascular Intensive Care Unit has earned a gold-level Beacon Award for Excellence from the American Association of Critical Care Nurses (AACN). Le Bonheur is just one of a few pediatric CVICUs to receive this award.

The award recognizes unit caregivers who successfully improve patient outcomes, provide exceptional patient care and align practices with AACN's standards for a healthy work environment.

"Our team is dedicated to providing the highest quality care and committed to achieving the best outcomes in a family-centered environment. The Beacon Award for Excellence validates our successful patient outcomes and established practices," said **Mayte Figueroa, MD, FACC**, medical director of Cardiovascular Critical Care Services. Figueroa is also an assistant professor of Pediatrics at The University of Tennessee Health Science Center.



Mayte Figueroa, MD



Samson named co-director, Fetal Center

Maternal Fetal Medicine Specialist **Jacques E. Samson, MD, FACOG**, has joined the Le Bonheur Fetal Center as the new co-director, along with Giancarlo Mari, MD, FACOG.



Jacques E. Samson, MD

Samson is an assistant professor in the Division of Maternal Fetal Medicine in the Department of Obstetrics and Gynecology at The University of Tennessee Health Science Center. He is also the assistant program director of the OB/GYN residency program. Samson has served as the associate medical director of Labor and Delivery at The Regional Medical Center. He completed a fellowship in maternal fetal medicine at The University of Tennessee Health Science Center. He completed his residency in Obstetrics and Gynecology at Wayne State University and attended Meharry Medical College.

Huang leads biomedical support

Eunice Huang, MD, is the new clinical director of The Children's Foundation Research Institute's Biomedical Informatics Core (BMIC). The BMIC offers investigators training and support to ensure successful implementation and execution of small-, medium-, and large-scale studies by providing state-of-the-art informatics expertise, solutions and technologies to meet individual study needs.



Eunice Huang, MD

Critical Care team publishes articles

Le Bonheur's Critical Care Division has published several articles in peer reviewed journals in the last few months.

- **Kimura D**, Raszynski A, Totapally BR. Admission and Treatment Factors Associated with the Duration of Acidosis in Children with Diabetic Ketoacidosis. *Pediatr Emerg Care*. 2012, (in press).
- Chan SY, Figueroa M, Spentzas T, Powell A, Holloway R, **Shah S**. Prospective Assessment of Novice Learners in a Simulation-Based Extracorporeal Membrane Oxygenation (ECMO) Education Program. *Pediatr Cardiol*. 2012 Aug 26. [Epub ahead of print]
- Dong C, Rovnaghi CR, **Anand KJS**. Ketamine alters the neurogenesis of rat cortical neural stem progenitor cells. *Critical Care Medicine*, 40(8):2407-16, 2012. PMID: 22635046
- **Schwingshackl A**, Teng, B, Ghosh, M, West, N, Makena, M, Gorantla, V, Sinclair, CE, and Waters, CM. Regulation and function of the two-pore-domain (K2P) potassium channel Trek-1 in alveolar epithelial cells. *Am J Physiol Lung Cell Mol Physiol*. 302:L93-L102 (2012).
- Bhutta AT, Schmitz ML, James LP, Wardbegnoche WL, Lindquist DM, Glasier CM, Tuzcu V, Prodhan P, Dyamenahalli U, Imamura M, Jaquiss RDB, **Anand KJS**. Ketamine as a neuro-protective and anti-inflammatory agent in children undergoing surgery on cardiopulmonary bypass: A randomized, double-blind, placebo-controlled pilot trial. *Pediatric Critical Care Medicine* 13(3):328-37, 2012. PMID: 21926656
- Carcillo J, Dean JM, Holubkov R, Berger J, Meert KL, **Anand KJS**, Zimmerman J, Newth CJL, Harrison R, Burr J, Willson DF, Nicholson CE. The Pediatric Critical Illness Stress-Induced Immune Suppression (CRISIS) Prevention Trial. *Pediatric Critical Care Medicine* 13(2): 165-173, 2012. PMID: 22079954
- **Anand KJS**, Clark AE, Willson DF, Berger J, Meert KL, Zimmerman JJ, Harrison R, Carcillo JA, Newth CJL, Bisping S, Holubkov R, Dean JM, Nicholson CE. Opioid Analgesia in Mechanically Ventilated Children: Results from the multicenter MOTIF study. *Pediatric Critical Care Medicine*, (in press) 2012.
- Roofthoof DWE, Simons S, **Anand KJS**, Tibboel D, van Dijk M. Ten years later: Are we still hurting newborn babies? *Pain* (in press), 2012.
- **Schwingshackl A**, Teng, B, Ghosh, M, Lim, KG, Tigyi, G, Narayanan, D, Jaggar, JH, and Waters, CM. Regulation of Interleukin-6 Secretion by the Two-Pore-Domain Potassium (K2P) Channel Trek-1 in Alveolar Epithelial Cells. *Am J Physiol Lung Cell Mol Physiol*. 2012 (submitted).

Save the date for 2013 conferences

Several continuing education conferences hosted by Le Bonheur Children's Hospital are scheduled for 2013.

- The 9th Annual Mid South Seminar of the Care of the Complex Newborn, Jan. 25-26
- Fetal & Neonatal Imaging: Analyses Across a Life Border, March 15-16
- The 7th Annual Greater Mid-South Pediatric Neurology Update, May 3-4
- Etteldorf Symposium, May 10-12
- As the Twig is Bent, the Child with Early Lung Disease Grows Up, June 14-15
- The Pediatric Orthopaedic Conference, Nov. 2

For more information, visit methodistmd.org or call 901-516-8933.

Orthopaedic case study: Jacob McMullen

Surgeon uses expandable Fassier-Duval nail to treat effects of McCune-Albright syndrome

At the age of 2, Jacob McMullen of Senatobia, Miss., was diagnosed with the rare genetic disorder McCune-Albright syndrome. The McMullens had been to several doctors throughout the first two years of Jacob's life to find answers for why their son had a few baffling symptoms: café-au-lait spots, frontal bossing and poor growth. A liver biopsy at Le Bonheur Children's confirmed the disease.

Though it didn't show initially in any of his skeletal X-rays, Jacob also had fibrous dysplasia, a classic symptom of McCune-Albright. With weakened bones, especially on his right side, Jacob is susceptible to fractures. He first fractured his right femur at age 2 and was treated with a spica cast by Pediatric Orthopaedic Surgeon James Beaty, MD, of Le Bonheur and Campbell Clinic.

Another femur fracture two years later left Beaty determined to find the best solution for Jacob. He wanted to find a way to stabilize his femur so it would not continue to fracture.

Jacob underwent surgery at age 5 to receive an expandable Fassier-Duval nail implanted in his right femur. The Fassier-Duval nail is a rod that stabilizes the bone and is able to grow and expand as the patient grows.

"Intramedullary nails that are not expandable have to be replaced every two to two and a half years," said Ruth McMullen, Jacob's mother. "A child should not have to undergo a surgery like that so often."

Added Beaty, "The Fassier nail has been a great advance in the treatment of long bone problems in children, specifically multiple fractures as in osteogenesis imperfecta, extensive benign growths in bone as in Jacob's case and in metabolic bone disorders. The Fassier nail allows for continued growth with an intramedullary nail that lengthens as the child grows, hopefully giving better results with fewer surgeries for our kids."

Now 9, Jacob is doing well and has not had to undergo a second implant. Though he cannot play sports and has to be in a wheelchair during the school day to protect his bones, Jacob loves sports, especially football, said Ruth.

"He knows all the plays. At 18 months old, Jacob would say 'ball game.' He's loved sports since he could first talk," she said.

The McMullens are grateful for Beaty, who researches until he's sure he is giving

you the right answer, says Ruth. In homemade blue scrubs, Jacob even dressed up as Beaty for Halloween one year.

Jacob continues to see Beaty once every three months. It is likely that he will receive a new Fassier nail in the near future until he reaches his full growth potential. Jacob also sees Le Bonheur Neurosurgeon Frederick Boop, MD, regularly for fibrous dysplasia of the skull.

"Jacob has a rare disease, and we want to do everything possible to help him reach his young adult years with bones and joints that will last for many years," Beaty said.



Jacob underwent surgery at age 5 to receive an expandable Fassier-Duval nail implanted in his right femur. The Fassier-Duval nail is a rod that stabilizes the bone and is able to grow and expand as the patient grows.



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