**Cannabidiol begins to control childhood seizures**

Neurologists at Le Bonheur Children's Hospital are leading a new pediatric clinical trial of cannabidiol (CBD), a compound extract from a cannabis plant, which they hope will help minimize the frequency and length of seizures for children with epilepsy.

The new trial, which is currently in its third phase, studies the potential benefits of CBD for children with epilepsy. Le Bonheur started its CBD drug treatment study in 2015 and is the only children's hospital in Tennessee to provide such care.

Results are promising. Researchers have found some children who have been using CBD have had fewer seizures and that those seizures are shorter in duration, said James Wheless, MD, co-director of Le Bonheur's Neuroscience Institute and chief of Pediatric Neurology.

“In our CBD trials, some of the children have had a sustained reduction in seizure number, with one child doing well enough to lower the other seizure medication,” Wheless said.

To enroll in the trial, each child must be treatment-resistant to at least three epilepsy medications, parents must record their child's seizure frequency and quality of life and the patient can't have any other medical issues that would interfere with the monitoring and clinical drug trial.

During the first phase of the drug trial, children were hospitalized for 11 days and given the oral medication daily. The second phase began when the children were released from Le Bonheur and their parents began administering the medication. The children will be monitored by their doctors for one year.

The Neuroscience Institute’s lead Clinical Research Coordinator Tracee Ridley-Pryor, MSN, RN, CCRC, and her team have closely monitored the new drug's effects on children. The CBD compound contains less than 1 percent of tetrahydrocannabinol (THC), the chemical responsible for most of marijuana’s psychological effects and does not contain enough to cause psychoactivity, Ridley-Pryor said. Researchers have found CBD as a supplemental treatment for children suffering from epilepsy.

“We have seen a significant change in the number of seizures the patients report experiencing,” Ridley-Pryor said. “Not only have the seizures decreased in frequency, they have also been shorter in duration. Our families are quite happy about this and so are we.”

Stephanie and Danny Pearson's 15-year-old daughter, Sydnie, is one of Le Bonheur's first epilepsy patients to receive CBD.

Sydnie had her first seizure when she was 4 months old. Case study: Braxton Ganus

**Sagittal suture synostosis**

Brittany and Jordan Ganus weren't overly concerned when they noticed their son, Braxton, was born with a large bump on the back of his head.

It wasn’t anything to be worried about, the doctors assured Brittany and Jordan – maybe it was from the stress of labor and the birth canal that caused Braxton’s head to grow to an irregular shape. The doctors in Jonesboro, Ark., told the couple to closely monitor his skull growth in the next few months and to let Braxton lay on the back of his head. Eventually the skull would flatten and grow normally, they were told.

At Braxton’s 6-month check up, the pediatrician noticed the back of his skull had grown larger and was elongated and narrow. An X-ray showed that his skull sutures had prematurely fused. Braxton was diagnosed with sagittal suture synostosis.

“His head was long and pointy in the back and was cone-shaped,” Brittany said. “When I began researching sagittal suture synostosis online I was really scared because the first thing I thought was surgery.”

After his diagnosis, the Ganus family was referred to Le Bonheur Children’s Hospital where surgeons Paul Klimo, MD, chief of Division of Pediatric Neurosurgery and Robert Wallace, MD, medical director of Plastic Surgery, performed the corrective surgery on Braxton in August. Klimo made several cuts in the skull to remove the fused suture and widen Braxton’s calvarium, after which Wallace reshaped and secured the bone.

Continued on the next page.
old. Since then, Sydnie suffered from more than six convulsive seizures a day and required 24-hour care. When Le Bonheur doctors suggested the Pearsons try the hospital’s new CBD drug trial, the Fort Smith, Ark., residents immediately enrolled.

Prior to CBD treatment, epilepsy medications did little to slow down Sydnie’s seizures. At 16 months, a vagus nerve stimulator was implanted, which helped reduce the number of seizures but did not stop them completely.

After Sydnie’s first dose of CBD, 12 hours passed before she had her next seizure – the longest period that she had ever been seizure free. Stephanie said her daughter’s health continues to improve with the new medication and her seizure frequency and length have reduced dramatically.

Zachary Scruggs, 17, also saw improvement when he enrolled. Scruggs had his first seizure when he was 7 years old, and in the past decade, they grew in frequency and severity. The seizures caused him to fall behind in school and affected his memory. Multiple anti-seizure medications and a partial temporal lobectomy helped, but his seizures always returned.

When Zachary began taking CBD, Scruggs only had one seizure in 11 days. The Columbia, Tenn., resident didn’t progress to the second phase of the trial, however, after developing an allergic reaction.

Children enrolled in the drug trial are required to return to Le Bonheur for multiple follow-up visits where researchers will record seizure activity data, as well as any side effects or concerns from parents.

Ridley-Pryor said the children will most likely continue to take CBD in addition to other anti-seizure medications. While epilepsy medications have proven to help some children, the drug’s side effects often can make a child sluggish, Ridley-Pryor said. The side effects of CBD are less severe and are easier to tolerate compared to most epilepsy medications.

“Cannabidiol seems to have a milder side effect profile,” Ridley-Pryor said. “With other medications, if you want to calm the seizures, you have to calm the brain, and this may unintentionally lead to decreased energy, sleepiness or behavior changes. While taking CBD with other epilepsy medications, our kids seem to be more interactive, a positive outcome we like to see.”

With Le Bonheur leading the way to finding more effective treatments for epileptic children, the Pearsons remain hopeful that CBD will one day help their child to a better quality of life.

“The entire family feels overwhelmingly blessed because there’s finally hope that she’s going to make it to her 18th birthday and beyond,” Stephanie Pearson said.

Din, Rivas-Coppola join Neuroscience Institute

Two neurologists have joined Le Bonheur Children’s Hospital’s Neuroscience Institute.

Farid Din, MD, is leading the hospital’s expanding Headache Clinic. Din specializes in patients who suffer from refractory headaches and those who are on multiple medications but see little or no improvement.

Din graduated from Allama Iqbal Medical School in Lahore, Pakistan in 2002 and also completed his residency there. After his residency, he began practicing in Oman. The chance to work with some of the best neurologists in the country, including Le Bonheur Chief Neurologist James Whelless, MD, co-director of Le Bonheur’s Neuroscience Institute, is what drew him to Memphis.

“Dr. Whelless is a leader, not a boss,” Din said. “He knows how to lead, and he’s clear on what he wants to do.”

In addition to working in the Headache Clinic, Din serves as an assistant professor at the University of Tennessee Health Science Center.

Mari Rivas-Coppola, MD, specializes in treating children with epilepsy. She also will work as a general neurologist and see patients who suffer from various neurological disorders, including headaches, multiple sclerosis, developmental delays and tuberous sclerosis. She also will serve in the Epilepsy Monitoring Unit.

Rivas-Coppola graduated from the Universidad Centroccidental Lisandro Alvarado in Venezuela, and during medical school, Rivas-Coppola spent three summers at Le Bonheur and began her research in the Obesity Clinic. She began her pediatric residency at Le Bonheur in 2008.

After completing her residency, Rivas-Coppola wanted to work in pediatrics with a focus in neurology and epilepsy. She joined Le Bonheur’s Neuroscience Institute in September. Rivas-Coppola said she is excited about joining Le Bonheur’s nationally recognized neurology program.

“I’m looking forward to continuing to learn about epilepsy and get better with EEG readings,” Rivas-Coppola said. “I’m lucky with the group I’m working with because I’m joining a group that has some of the best neurologist in the country.” Rivas Coppola serves as an assistant professor at UTHSC.
Abusive head trauma rates on the rise, study finds

Le Bonheur Children’s Hospital Neurosurgeon Paul Klimo, MD, led a study on abusive head trauma (AHT), which was published in the Journal of Neurosurgery: Pediatrics in May.

The study was conducted from 2009-2014, and all patients were admitted to Le Bonheur. The study objective was to identify patient demographics and determine the incidence and extent of the injuries, seasonal trends, required neurosurgical procedures and costs of hospitalization.

The study identified AHT as a skull fracture or intracranial hemorrhage in a child younger than 5 years old with suspicious mechanisms or evidence of other intentional injuries, such as retinal hemorrhages, old or new fractures or soft-tissue bruising. The study introduced a three-tier injury severity scale: Grade I injuries were defined as skull fracture only (26 percent), Grade II were intracranial hemorrhage or edema not requiring surgical intervention (48 percent) and Grade III were intracranial hemorrhage requiring intervention (23 percent) or death due to brain injury (3 percent). A total of 213 AHT cases were identified. Approximately 55 percent of cases involved children 6 months or younger — 61 percent were males, 47 percent were African Americans, (39 percent were white and 14 percent were identified as other races) and 82 percent were publicly insured. Most AHT victims come from lower socioeconomic ranks.

The incidence appears to be increasing dramatically, from 19.6 cases per 100,000 children younger than the age of 5 in 2009 to 47.4 cases per 100,000 in 2014. Monthly peaks were in January, July and October.

“This is a sobering study,” said Klimo, who is also serves as chief of the division of Pediatric Neurosurgery. “This is a serious public health issue that deserves greater attention within local communities, state-wide and nationally.”

The most common neurosurgical procedures performed were burr hole washout or percutaneous transfontanelle aspiration of subdural fluid and decompressive hemicraniectomy. The new injury grading scale stratified length of hospital stay and cost.

Le Bonheur Director Wheless edits new pediatric epilepsy book

Pediatric Neurologist James Wheless, MD, co-director of Le Bonheur’s Neuroscience Institute and Tuberous Sclerosis Center of Excellence, helped edit the newly released book “Pediatric Epilepsy: Diagnosis and Therapy.” The book discusses diagnosis, treatment, classification and management of childhood epilepsies. It also covers updated science, practice and therapeutic strategies that continue to move the field forward.

McGregor publishes new neurology book

Le Bonheur Pediatric Neurologist Amy McGregor, MD, recently published “Neurology Board Review: Questions and Answers.” Her book helps prepare the readers for the American Board of Psychiatry and Neurology (ABPN) certification and recertification exams. It also provides an in-depth look at basic neuroscience, critical care and trauma, cerebrovascular diseases, movement disorders, metabolic disorders and more.

11th annual Pediatric Neurology Symposium set for April 7-8

Le Bonheur’s Neuroscience Institute will host its 11th annual Pediatric Neurology Symposium on April 7-8, 2017, at the Westin Memphis Beale Street hotel in Memphis, Tenn. The two-day seminar will cover state-of-the-art practices and trends in treating pediatric neurology patients.

Neurology clinic planned for new Jackson, Tenn., site

Construction has begun on Le Bonheur’s new Outpatient Center in Jackson, Tenn. The facility will be located at 1531 Vann Drive.

Once completed, the new facility will be 30,000 square feet and feature 20 exam rooms. A variety of diagnostic services will be offered, including EEG, lab, X-ray, ultrasound, EKG, ECHO and pulmonary function testing. Subspecialties clinics will include neurology, cardiology, endocrinology, gastroenterology, general surgery, genetics, nephrology, pulmonology and urology.

The new Outpatient Center is scheduled to open in Fall 2017.

Le Bonheur ranks as one of the best Neuroscience programs

Le Bonheur’s Neuroscience Institute was ranked among the nation’s best, according to U.S. News & World Report. Seven Le Bonheur specialties were included in the 2016-17 list. Le Bonheur’s Neuroscience Institute was ranked No. 17 in the nation.

The 2016-17 lists were released on June 21, and this is the sixth consecutive year Le Bonheur has been included in this prestigious list.

“The U.S. News designation is further proof that Le Bonheur provides world-class pediatric health care to children in Memphis, the region and the country. This badge means that parents can trust that our experts work every day to be one of the best children’s hospitals in the country,” said President and CEO Meri Armour. “We use the U.S. News survey standard as a tool to continually advance the level of our pediatric care. We are honored that Le Bonheur has been recognized seven of the nine categories in which we could apply.”
Newly installed software and state-of-the-art technology in Le Bonheur Children’s Hospital’s Epilepsy Monitoring Unit (EMU) will provide pediatric neurologists and nurses better data and information for epilepsy monitoring, brain mapping and other neurological procedures.

The new software, EMU40EX, will be used in the 10-bed EMU and will allow physicians to record and receive a patient’s brain activity. The software also provides a faster sampling rate and gives a more detailed EEG and enhances subtle abnormalities. More efficient software and hardware will help improve a child’s outcome, said Le Bonheur EEG/EMU Manager Penny Taylor.

“It’s a better way to diagnose and to treat patients with epilepsy. When you have the latest and the greatest equipment, the end result is beneficial to the patient,” Taylor said.

In addition to new software, the EMU received three quantum devices, amplifiers and a cortical stimulator, which will be used for patients with intracranial electrodes.

“When you have a child coming in with a long history of epilepsy with no successful treatment, they can be referred to Le Bonheur where we have state-of-the-art technology to help treat the patient for their seizures and hopefully become seizure free or decrease their seizure activity,” Taylor said.