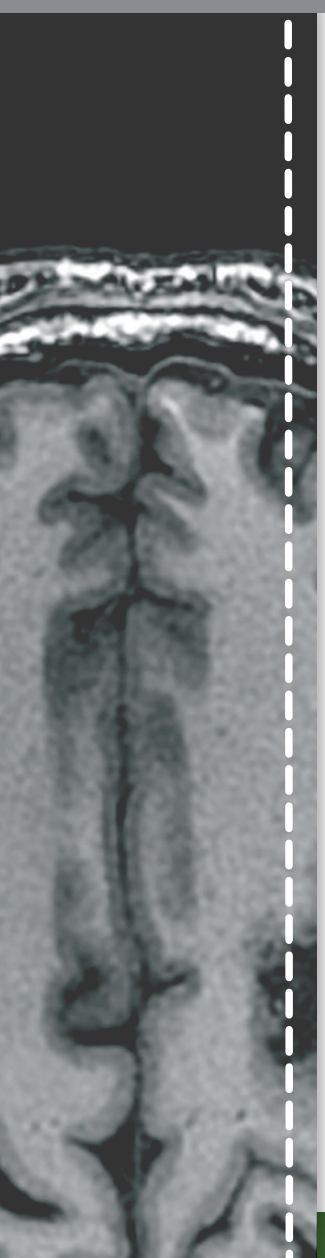
Le Bonheur Children's Hospital
Memphis, Tennessee

Brain Waves

Neuroscience Institute

Winter 2020



Pressure Release: *Study examines conversion from shunt to endoscopic third ventriculostomy in children, young adults*

The Glozier family had become used to the routine: Their daughter, Allie, would become lethargic and develop a headache. The headache would turn to nausea, and they would pack their bags and head to Le Bonheur Children's Hospital, a 90-minute drive from their hometown of Dyersburg, Tenn. Her symptoms were signs that her ventriculoperitoneal shunt (VP shunt) was malfunctioning, and fluid was building up in her brain.

Born prematurely at 23 weeks and 1 day, Allie, now 20, suffers from hydrocephalus, which causes fluid to build up and put pressure on her brain. She received a VP shunt when she was only 3 months old to help fluid drain properly from her brain. A man-made device, shunts can fail for a variety of reasons and often need to be replaced or revised. Allie has undergone 25 shunt revisions in her lifetime.

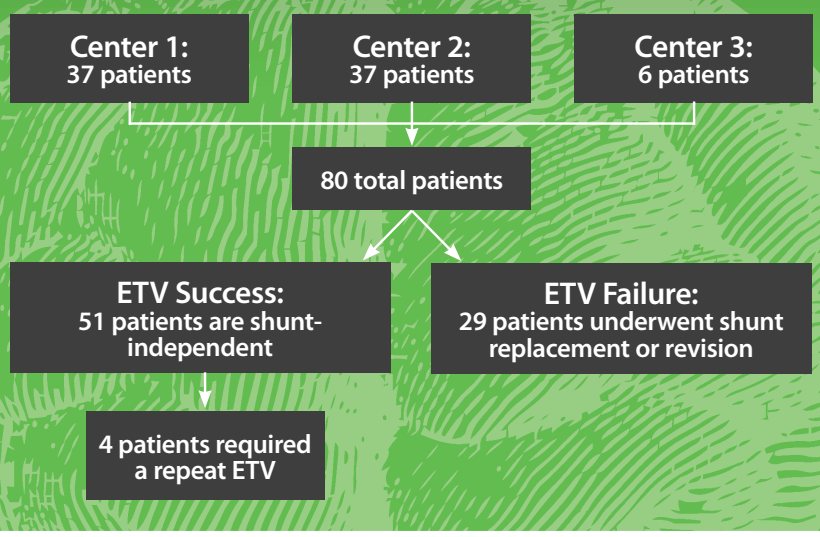
On Jan. 13, 2000, Allie (right) and her twin sister, Abbie, were born at 23 weeks and 1 day gestation. Their triplet brother, Caleb, protected in his own amniotic sac, was born five days later.

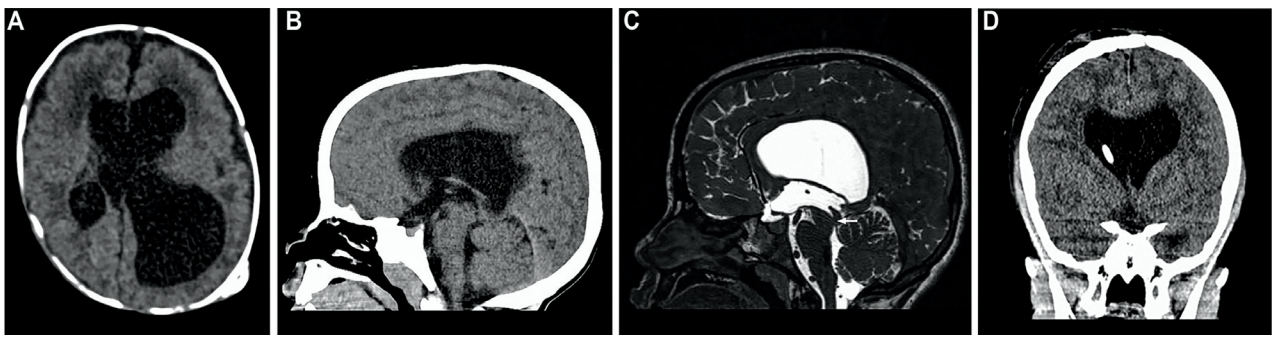
In March 2019, Allie's shunt failed again, but this time Allie and her family received the news that she was a candidate for conversion from her VP shunt to a third ventriculostomy. Endoscopic third ventriculostomies (ETVs) work by creating a bypass (using an endoscope) in the brain for cerebrospinal fluid to flow and eliminate the need for shunts.

ETVs are known to be an effective primary treatment for certain forms of hydrocephalus, but their use in children and young adults with an existing shunt is less known. Le Bonheur

STUDY PATIENTS AND OUTCOMES:

Effectiveness of Converting Pediatric and Young Adult Patients from a Shunt to a Third Ventriculostomy





A representative example of a patient with posthemorrhagic hydrocephalus who successfully underwent an endoscopic third ventriculostomy after presenting with a shunt malfunction. **A**, An axial CT scan without contrast demonstrated posthemorrhagic hydrocephalus of prematurity in a male infant who was born at 24 weeks gestation and had a Grade III germinal matrix hemorrhage. A ventricular access device was placed and later converted to a ventriculoperitoneal shunt. **B**, A sagittal reconstruction of a CT scan without contrast performed for symptoms of a shunt malfunction demonstrated enlarged lateral and third ventricles without enlargement of the fourth ventricle, suggesting obstructive hydrocephalus. **C**, A sagittal FIESTA MRI sequence demonstrates narrowing of the inferior third of the cerebral aqueduct inferior bowing of the third ventricle floor and anterior displacement of the lamina terminalis. An endoscopic third ventriculostomy was therefore performed. **D**, A coronal CT scan without contrast obtained almost 6 years later, when the patient presented to the emergency room bradycardic and obtunded with several days of headaches, emesis and sunsetting eyes. His Ommaya reservoir was immediately accessed for 30cc of CSF with rapid neurologic improvement. He was then taken emergently to the operating room, and his ETV was successfully repeated.

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Referrals: 866-870-5570
www.lebonheur.org/neuroscience

A pediatric partner with The University of Tennessee Health Science Center/College of Medicine and St. Jude Children's Research Hospital

Pressure Release, continued from page 1

Allie Glozier, the smallest of the Glozier triplets, weighed only 15 ounces at birth and suffered a grade 4 intracranial hemorrhage.

participated in a multicenter trial examining the effectiveness of converting pediatric and young adult patients from a shunt to a third ventriculostomy. Results were published in the August 2019 issue of the Congress of Neurological Surgeons journal, *Neurosurgery*.

"In carefully selected patients, ETV is a durable treatment for many patients, and neurosurgeons need to train or retrain their way of thinking when seeing a shunt malfunction by always asking 'Is this patient a candidate for an ETV?'" said Paul Klimo, MD, chief of Pediatric Neurosurgery at Le Bonheur and senior author of the study. "If you don't think about doing an ETV, you will never give these kids the opportunity of being shunt-free."

Examining retrospective data from 80 patients (among the three participating centers) who were converted to an ETV showed that, though not all patients will be a candidate for conversion, an ETV should at least be considered in every child who presents with a shunt malfunction or who has an externalized shunt. Researchers defined conversion success as shunt independence at the last follow-up. The overall success rate was 64% with a median follow-up of two years.

Allie Glozier, now 20, has had no issues since undergoing her ETV placement. She is now studying to become an ultrasound technologist.

Allie was an ideal candidate for the procedure.

"It appeared that the block in the circulation of Allie's brain fluid was at a narrow channel called the cerebral aqueduct. This choke point prevents fluid from flowing from the top of the brain to the bottom; patients with an obstructed aqueduct are typically ideal candidates for an ETV," said Klimo.

Chief of Pediatric Neurosurgeon Paul Klimo, MD, was senior author of a study that evaluated the effectiveness of converting pediatric and young adult patients from a shunt to an endoscopic third ventriculostomy (ETV). He successfully performed the ETV placement for Allie Glozier, a patient with hydrocephalus who experienced 25 shunt revisions in her lifetime.

Allie underwent an ETV in March 2019 and has had no issues since the procedure. A first-year student studying to become an ultrasound technologist, Allie is relieved to be free of the headaches and lethargy that would inevitably come every year, when her shunt began to fail.

"It's a godsend," said her mom, Diana. "We have had no problems."

McGregor receives 2020 "Excellence in Training" award from UTHSC

Amy McGregor, MD

Pediatric Neurologist **Amy McGregor, MD**, received the 2020 "Excellence in Teaching" award from the University of Tennessee Health Science Center Department of Pediatrics. This annual award recognizes education contributions to the department.

Weatherspoon named a Health Care Hero by the *Memphis Business Journal*

Sarah Weatherspoon, MD

Pediatric Neurologist **Sarah Weatherspoon, MD**, was recently named a Health Care Hero by the *Memphis Business Journal* (*MBJ*). Each year the *MBJ* recognizes individuals and organizations for their contributions to improving health care in the Mid-South. Weatherspoon is director of the Infantile Epilepsy Center at Le Bonheur. She founded the Infantile Epilepsy Center in 2019 in an effort to provide early diagnosis and treatment for infantile spasms.

Shalini Narayana, PhD

Narayana receives 2020 Infrastructure Grant from the American Epilepsy Society

Shalini Narayana, PhD, was awarded the 2020 Infrastructure Grant by the American Epilepsy Society. This grant seeks to facilitate widespread collaboration in epilepsy research by supporting the creation of national or international multicenter research programs. Through this award Narayana will help create a Consortium for Standardizing TMS Language Mapping Protocols and Establishing Best Practice Guidelines for Using TMS in Presurgical Evaluation of Language in Children.

New providers join the Neuroscience Institute


Jeanelle S. Ali, PhD

Jeanelle S. Ali, PhD, joined Le Bonheur's Neuroscience Institute as a clinical neuropsychologist. She received her doctorate from the University of Memphis. She completed a pre-doctoral residency in neuropsychology rehabilitation and pediatric consultation at the Kennedy Krieger Institute/Johns Hopkins University School of Medicine and a post-doctoral fellowship in pediatric neuropsychology at St. Jude Children's Research Hospital. Ali is a member of the American Academy of Clinical Neuropsychology, the International Neuropsychological Society and Division 40 of the American Psychological Association.


Beth Anne Cavanaugh, MD

Beth Anne Cavanaugh, MD, joined the Neuroscience Institute as a pediatric neurologist and the director of Le Bonheur's Pediatric Stroke Program. She completed residencies in pediatrics and child neurology at Wake Forest University and a fellowship in vascular neurology at the University of Colorado. Cavanaugh is certified by the American Board of Psychiatry and Neurology and is a member of the International Pediatric Stroke Organization, Child Neurologist Society and American Academy of Neurology.


Nitish Chourasia, MD

Nitish Chourasia, MD, recently joined Le Bonheur's Neuroscience Institute as a pediatric neurologist and epileptologist. Chourasia completed his residency in child and adolescent neurology at the McGovern Medical School - UTHealth, in addition to fellowships in clinical neurophysiology from Baylor College of Medicine and pediatric epilepsy at Harvard Medical School. His specialties include pediatric epilepsy and clinical neurophysiology with expertise in epilepsy surgery evaluation and management of medically refractory epilepsies including genetic epilepsies. Chourasia is published in peer-reviewed journals and is a member of the Child Neurology Society, American Academy of Neurology, American Epilepsy Society and American Clinical Neurophysiology Society.


Andrew Schroeder, MD

Andrew Schroeder, MD, joined Le Bonheur's Neuroscience Institute as a neurologist. Schroeder completed his residency in pediatric neurology at the University of Tennessee Health Science Center. He is a member of the American Academy of Neurology and the Child Neurology Society.

IN BRIEF

Wheless publishes textbook "Fifty Years of Magnetoencephalography"

Co-Director of the Neursocience Institute James Wheless, MD, has published the textbook "Fifty Years of Magnetoencephalography" on which he served as an editor. The textbook celebrates the first half century of research in and clinical applications of magnetoencephalography (MEG), including its discovery and first applications as well as its evolution as a means of imaging the ongoing activity of the brain.


James Wheless, MD

Le Bonheur Children's Hospital

14th Annual Pediatric Neurology Symposium Rescheduled for April 2021

Due to the COVID-19 pandemic, the Pediatric Neurology Symposium has been moved to April 30 – May 1, 2021. If you already registered for the 2020 conference, your registration is valid for the new dates. If you would like to cancel your registration and be refunded, contact cme@mlh.org.

To register, www.methodistmd.org/cme or call (901) 516-8933 for the program.

Save the Date:

14th Annual

Pediatric Neurology Symposium

April 30 – May 1, 2021

Registration will be available in early 2021.

Le Bonheur Children's Hospital

Brain Waves is a quarterly publication of the Neuroscience Institute at Le Bonheur Children's Hospital. The institute is a nationally recognized center for evaluation and treatment of nervous system disorders in children and adolescents, ranging from birth defects and learning and behavioral disorders to brain tumors, epilepsy and traumatic injuries.

Scan to learn more about our Neuroscience Institute.

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Neuroscience Institute offers undergraduate opportunities through Rhodes College Collaborative

Established in 2017, The Summer Plus Fellowship is a partnership with Rhodes College to provide internships in neuroscience for undergraduates with an interest in a career in pediatric neuroscience. For two summers, fellows work full time in the Le Bonheur Neuroscience Institute, shadowing physicians and conducting research. Fellows also work eight to 10 hours a week during the intervening school year.

"It is an honor to work with this highly ranked group of Rhodes neuroscience students, who not only share their passion and energy for their chosen career path, but who have the potential to be future leaders in the field," said Tracee Ridley-Pryor, DNP, APRN, PMHNP-BC, CCRC, the program's coordinator and a psychiatric mental health nurse practitioner in Le Bonheur's Neuroscience Institute. "Providing Rhodes students access to hands-on, real-world learning experiences, while modeling innovative, high-quality care for patients is a privilege."

Tracee Ridley-Pryor, DNP, APRN, PMHNP-BC, CCRC

Part of the program requirements are to complete a formal research paper with at least one presentation of their research or program project. Summer Plus Fellows have had their research published in national journals and conferences.

Summer Plus Fellows Publications

- Gaudio E, Gienapp AJ, Wheless J. Perampanel Pharmacokinetics in Children: Correlation of Dose With Serum Concentrations. J Child Neurol. 2019;34(8):427–431. doi:10.1177/0883073819837465
- Lee RP, Xu R, Dave P, et al. Taking the next step in publication productivity analysis in pediatric neurosurgery. J Neurosurg Pediatr. 2018;21(6):655–665. doi:10.3171/2018.1.PEDS17535
- Ryan K, Rezaie R, Choudri A, Salinas F, Shay N, Holder, C, Tidwell, T, Bhattarai, P, Narayana S. Pervasive Motor Deficits Beyond Lesioned Hemisphere in Pediatric Arterial Ischemic Stroke.