

High-volume brain tumor program benefits patients

Le Bonheur Children's Hospital has the highest brain tumor volumes when compared to a national database of other leading children's hospitals for first and second quarter 2015. This year, the neurosurgery team performed 183 brain tumor surgeries.

The brain tumor program is a partnership between Le Bonheur Children's Hospital, Semmes Murphey Clinic, PC, University of Tennessee Health Science Center and St. Jude Children's Research Hospital.

"There are numerous papers showing that centers with higher volumes have more reduced mortality and morbidity, complete resections and decreased length of stay. High-volume programs benefit patients with their large, experienced teams that collaborate on cases and the latest diagnostic tools," said Neuroscience Institute Co-Director and Chair

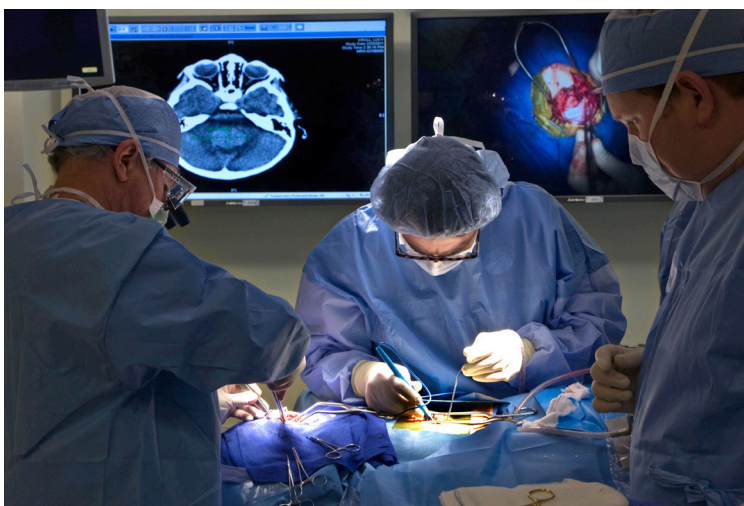
of the Division of Neurosurgery Frederick Boop, MD.

Le Bonheur has built a comprehensive program that includes the most advanced technology available, including intraoperative MRI, function MRIs, Magnetoencephalography (MEG) and Transcranial Magnetic Stimulation (TMS). Facilities include a six-bed

neurosurgical ICU, a 10-bed epilepsy monitoring unit and specialized neuroscience unit, all staffed with nurses who have specialized training.

The multidisciplinary team includes physicians representing radiology, neuropsychology, neuropathology and neuroendocrinology, plus specially trained nurses, rehabilitation

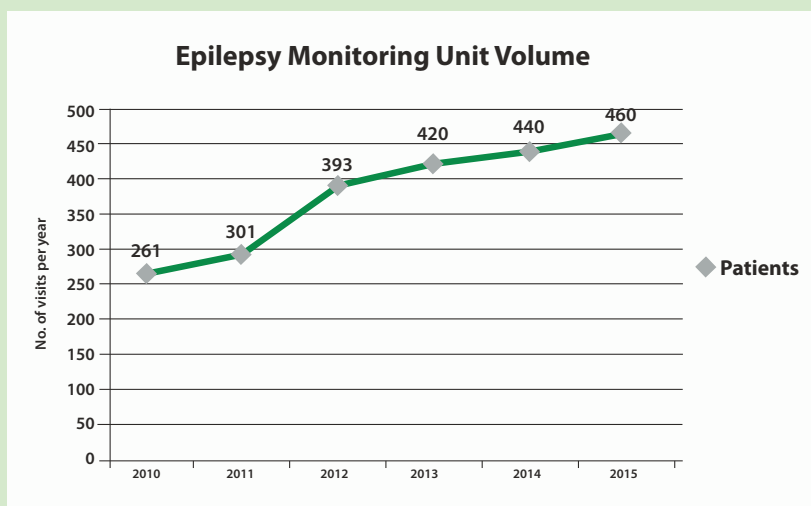
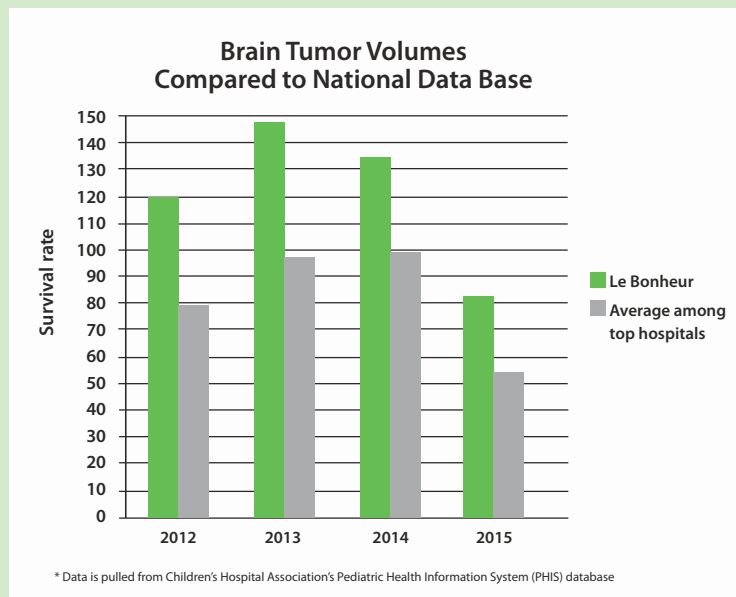
specialists, pharmacists, nutritionists and audiologists. Additionally, the weekly brain conference team includes pediatric neurosurgeons and neuroradiologists at Le Bonheur and neuro-oncologists and pediatric radiation oncologists at St. Jude.



Neuroscience Institute highlights: 2015

2015 BY THE NUMBERS*

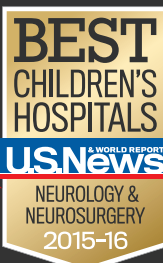
- 6,240** Patient days
- 3,196** EEGs
- 112** fMRIs
- 68** Magnetoencephalography (MEG) studies
- 47** Transcranial Magnetic Stimulation (TMS) studies
- 12,454** Neurology clinic visits
- 183** Brain tumor cases
- 659** Neurosurgery cases



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



Clinics cover variety of neurological conditions

In our clinics, we treat children with:

- 15q Duplication Syndrome
- Autism
- Behavioral, attention deficit and hyperactive disorders
- Blood vessel lesions including brain aneurysm, brain and spinal arteriovenous malformation and Vein of Galen malformations
- Brain tumors
- Cerebral palsy and related movement disorders
- Craniofacial disorders
- Dravet Syndrome
- Developmental delays and neuromotor disorders, such as cerebral palsy
- Epilepsy
- Headaches
- Head injuries
- Learning and language disorders
- Multiple Sclerosis
- Muscular Dystrophy
- Neuromuscular disease
- Pial Synangiosis
- Seizures
- Sleep disorders
- Spinal disorders and tumors
- Spina bifida
- Stokes
- Tuberous Sclerosis Complex
- Tics, Tourette's Syndrome

New stroke program provides clinic, emergency coverage

The Neuroscience Institute recently opened a comprehensive stroke program, which includes a multidisciplinary clinic and Emergency Department coverage. Le Bonheur is the only program in the area providing coordinated care for stroke patients.

Patients and families can see multiple specialists in one visit. The specialists discuss cases and work together to develop comprehensive plans of care. The team includes specialists from neurology, hematology, pharmacy, physical therapy, nutrition and social work.

In emergent situations, pediatric neurologists are available 24/7 to assess suspected pediatric stroke patients in Le Bonheur's Emergency Department. Expertise is also available via telemedicine.

The Neuroscience Institute has also joined the International Pediatric Stroke Study.



Neurologist Paras Bhattarai, MD, evaluates patient Roni Gordon in the new stroke clinic.

Muscular dystrophy clinic brings resources to one place for families

Le Bonheur's Muscular Dystrophy Association (MDA) Clinic provides comprehensive care from a multidisciplinary team in one appointment. The team includes pediatric specialist in neurology, pulmonology, cardiology and orthopedics. Patients also have access to nutrition/dietitian, occupational, physical and speech therapy, palliative care and social work.



Le Bonheur's Muscular Dystrophy Association (MDA) Clinic provides comprehensive care from a multidisciplinary team, including Neurologist Namrata Shah, MD, in one appointment.

The "one-stop shop" treats children with 43 distinct diagnoses – the most common being Duchenne Muscular Dystrophy, Becker's Muscular Dystrophy and spinal muscular atrophy.

The clinic is one of 28 clinics nationwide participating in the pilot MDA registry, designed to improve the care at MDA clinics across the country.

The physician researchers are working on several studies to improve the treatment of children with muscular dystrophy including Exon skipping for Duchenne Muscular Dystrophy and participating in the Cooperative International Neuromuscular Research Group.

Le Bonheurforms CP Clinic

Le Bonheur's Cerebral Palsy (CP) Clinic is the only multidisciplinary center in the region that provides comprehensive care for children with CP – a group of disorders of movement and posture development. The diagnosis affects two to three in every 1,000 children.



Neurologist Swati Karmarkar, MD, works with patients in the Cerebral Palsy (CP) Clinic – the only multidisciplinary center in the region for children with CP.

In the clinic, children have access to a physiatrist, physical therapists, orthopedic surgeons and orthotic and seating/mobility experts. In

addition, specialists collaborate closely with other providers involved in the child's care, such as the child's pediatrician or other therapists, to maximize the child's potential. The clinic also offers home visits to assess any need for specific equipment or accessibility concerns at home.

"Our goal is to offer individualized treatment for each child with CP designed to meet his or her specific needs and goals," said Pediatric Neurologist Swati Karmarkar, MD.

Individualized treatment through the clinic could include medication for tone reduction, botulinum toxin injections, evaluations for surgical interventions physical therapy including bracing and equipment and treatment for associated conditions like seizures and sleep disturbances.

Study: Tailoring treatments for high-grade gliomas

A new study aims to improve outcomes for patients with high-grade gliomas. Researchers are using mouse models to test the combination of surgery, chemotherapy and radiotherapy treatment for Glioblastoma multiforme (GBM), a Grade IV primary astrocytic tumor.

"Ultimately, we would like to develop a system where we could grow each individual patient's brain tumor in this model and test several different therapies to see which would work best. It's a sort of tailoring treatments based on each patient's specific tumor biology," said Neurosurgical Chief Resident Mike Decuyper, MD, PhD.

The research is led by the University of Tennessee Health Science Center departments of Neurosurgery and Pathology and the UTHSC Center for Cancer Research and funded by UT-West Cancer Center.

GBM has a poor overall prognosis, significant morbidity and limited therapeutic options. Death typically occurs within 15 months of diagnosis, even after maximal surgical and medical treatment.

The current treatment paradigm of surgical resection, chemotherapy and radiation has



Researchers are using murine models to test the combination of surgery, chemotherapy and radiotherapy treatment for improving outcomes for patients with Glioblastoma multiforme (GBM), a Grade IV primary astrocytic tumor.

poor overall results. This is due, in part, to the lack of accurate pre-clinical animal models that mimic the true disease state and are able to undergo the gamut of treatment options.

This project will compare the relative efficacies of various treatment protocols for human glioblastoma, orthotopically xenografted in a murine model. Survival intracranial resection surgery will be used in conjunction with several post-operative chemotherapy protocols using irinotecan and bevacizumab in hopes of generating data useful to human clinical trials.



Out-of-town patients find free lodging at FedExFamilyHouse

Last year, patients traveled to Le Bonheur's Neuroscience Institute in Memphis, Tenn. from 32 states. Out-of-town families who come to Le Bonheur treatment may stay at no cost at FedExFamilyHouse.

Located across the street from Le Bonheur, FedExFamilyHouse has 24-private suites, multiple dining facilities and recreational spaces and a small business center. Family-friendly amenities include outdoor spaces, living rooms, play area, teen lounge, large kitchens, dining space and laundry facilities.

For more information, visit www.fedexfamilyhouse.org.

RESEARCH AIMS TO IMPROVE SLEEP QUALITY FOR PATIENTS WITH NEUROLOGICAL CONDITIONS

Humans spend a third of their lives sleeping. For children with neurological disorders, achieving good sleep quality is a challenge. Research underway at Le BonheurChildren’s Sleep Center aims to better understand sleep challenges and find innovative solutions.

The Sleep Center at Le Bonheuris the only pediatric center in the region accredited by the American Association of Sleep Medicine. The eight-bed unit is open seven nights a week and includes a separate but attached room for the patient’s family member. The sleep center provides referring physicians with a full report within 10 days of the study.

“It’s more challenging to achieve good quality sleep in patients with neurological disorders because of the disrupted neurotransmitters due to the underlying brain injury. However, studies have shown that with regular cognitive behavioral therapy for insomnia, and with the help of some medications, a decent good quality sleep can be achieved,” said Ehab Dayyat, MD, Sleep Neurologist at Le BonheurChildren’s Hospital.

Projects underway include:

A multi-center global clinical trial to study the efficacy and safety of Xyrem in controlling cataplexy and excessive daytime sleepiness in patients with narcolepsy/cataplexy. This study includes 41 centers in the U.S. and eight centers in Europe.

Identifying a simple way using a questionnaire of six-questions to screen for the presence of sleep-disordered breathing, after comparing them with objective findings

from sleep studies.

Studying sleep changes in epilepsy patients with Vagal Nerve Stimulator.

Evaluating changes in sleep pattern in patients with dup15q syndrome using an actigraphic measurement and sleep studies.

Establishing a sleep center data registry with the Children’s Foundation Research Institute at Le Bonheur Children’s Hospital.

Educating pediatrics and medical/pediatrics residents and general pediatricians about the presence of sleep-disordered breathing in patients with Down Syndrome and when to screen for it.

Studying the most specific subjective questions to evaluate for the presence of excessive daytime sleepiness.

Collaborating with the University of Chicago to identify specific microbiome – inflammatory markers in the stool, to screen for the presence of sleep-disordered breathing.

Collaborating with the University of Tennessee Health Science Center (UTHSC) College of Nursing to study Continuous Positive Airway Pressure (CPAP) treatment in cognitive function.

Teaming up with the Pediatric Obesity program and Endocrinology team at Le Bonheurand UTHSC to measure the effect of sleep duration in obesity management.

Partnering with St. Jude Children’s Research Hospital to study the effect of excessive daytime sleepiness on cognition in patients with craniopharyngioma.

Study: Brain connectivity with infantile spasms

Researchers are studying why some children experience infantile spasms and how a treatment therapy affects brain connectivity.

Infants and young children with infantile spasms (IS) can experience tens to hundreds of seizures a day. Few treatment options are available, and the most common is adrenocorticotrophic hormone (ACTH). The sooner the spasms are diagnosed and treated the better the chances the spasms will stop. When there is a delay in diagnosis or treatment, affected children are more likely to develop other types of seizures that are difficult to control and experience developmental delay.

“This study may allow us to understand why some children experience infantile spasms and what the process behind this type of seizure is, as well as better understanding how adrenocorticotrophic hormone (ACTH)works to correct this process,” said Sarah Weatherspoon, MD.

The researchers will use magnetoencephalogram (MEG) to study functional brain connectivity and brain magnetic resonance imaging (MRI) to study structural brain connectivity in these children before and after ACTH treatment. Researchers will assess if there is abnormal brain connectivity on MEG and MRI before starting treatment. The team will also evaluate whether those children whose seizures stop with ACTH will show normalized brain connectivity after finishing a course of treatment.

The study is funded by Mallinckrodt Pharmaceuticals.

Study: Respiratory modulation of brain activity

Controlled deep, slow breathing is a common strategy in anger management, meditation and general stress relief? How does respiration modify cognitive and emotional states? A new study from researchers at Le BonheurChildren’s Hospital, the University of Tennessee Health Science Center and University of Memphis provides the first possible explanation to for howshow breathing influences brain function. The study, headed by Detlef Heck, Ph.D., Associate Professor in the Department of Anatomy and Neurobiology, UTHSC, which bridges work with animal and human subjectsclinical and basic research and, was presented at the National International Society for Neuroscience Meeting in Chicago in October. The team first published first results in from studies in mice in *Nature Communications* in 2014.

This Results from this current translational study project presents a radically new view of respiration – breathing not only provides oxygen, but also directly influences cognitive brain function.

“The brain generates oscillatory activity in a frequency range between 30 to 100 cycles per second whenever it performs cognitive tasks, such as thinking of a word associated with a picture, trying to remember something where we left our keys or simply focusing on a specific task. We found that The the strength of those oscillations increases and decreases with every breath. That is why we believe that respiration affects cognitive function. We are designing experiments to further test this hypothesis,” said Detlef HeckDetlef Heck, PhD, associate professor in the Department of Anatomy and Neurobiology in the College of Medicine, UTHSC.

The Clinical Neurosciences and Neurology departments at Le Bonheurand UTHSC participated in this study by conducting series of experiments using magnetoencephalography (MEG) and electrodes placed directly onto the surface of the cortex. The team continues this line of study and will be publishing the research shortly.

IN BRIEF

Oral appliance for Tourette syndrome

The Neuroscience Institute and the University of Tennessee Health Science Center College of Dentistry are part of a multi-site study to test the effectiveness of a new oral appliance for patients with Tourette syndrome.

The appliance, much like a mouth guard, is designed to reposition the lower jaw to lessen the severity and frequency of motor and vocal tics associated with Tourette’s.

The study is funded by TicTocStop, Inc., an organization founded by Craig Carton, who is also a host of the “Boomer and Carton” show on sports radio station WFAN in New York. Carton and two of his children have Tourette syndrome.

Nurse practitioners share at CNS meeting

Four Le Bonheurnurse practitioners shared research at the Child Neurology Society Nursing Meeting in October.

- “Febrile seizures, to treat or not to treat...that is the question!” – Lauren Siebrase, MSN, FNP-C
- “Evaluation and treatment management of childhood epilepsy syndromes” – Lai Brooks, DNP, FNP-BC, and Siebrase
- “Glut1 transporter deficiency presenting as alternating hemiplegia of childhood” – Kelli Ward, DESIGNATION, and Davi Ledet, BSN, MSN, MBA

Neurosurgeons present at AANS/CNS meeting

Le Bonheurand Semmes Murphey neurosurgeons presented research on brain stem gliomas and pineoblastomas at the American Association of Neurological Surgeons/Congress of Neurological Surgeons Section on pediatric neurological surgery meeting in December. Paul Klimo Jr., MD, also served as a panelist for the clinical symposia on Hydrocephalus: Shunting vs. ETV.

Spring Neurology Symposium set for April

Save the date for the 10th Annual Mac Armour Pediatric Neurology Symposium April 29-30 at the Big Cypress Hotel in Memphis, Tenn. Doug Nordli, MD, will be guest speaker. He serves as professor of neurology and pediatrics at Ann & Robert Lurie Children’s Hospital and Northwestern University. For more information or to register, visit www.methodistmd.org or call 901-516-8933.

Neuroradiologist’s stories included in new book

Le BonheurDirector of Neuroradiology Asim Choudhri, MD, is one of 20 radiologists who shared case studies in a new book, “Radiologists at Work: Saving Lives with the Lights Off” by Carolyn Jourdan.



Asim Choudhri, MD

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.

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2015 publications

Shah S, Shah N, Johnson R, West AN, Prasad N. Single Center Outcomes of Status Epilepticus at a Paediatric Intensive Care Unit. Can J Neurol Sci. 2015 Nov 20:1-8. [Epub ahead of print] PubMed PMID: 26586085.

Rossi NB, Khan NR, Jones TL, Lepard J, McAbee JH, Klimo P Jr. Predicting shunt failure in children: should the global shunt revision rate be a quality measure? J Neurosurg Pediatr. 2015 Nov 6:1-11. [Epub ahead of print] PubMed PMID: 26544083.

Khazaei A, Ebrahimzadeh A, Babajani-Feremi A. Identifying patients with Alzheimer's disease using resting-state fMRI and graph theory. Clin Neurophysiol. 2015 Nov;126(11):2132-41. doi: 10.1016/j.clinph.2015.02.060. Epub 2015 Apr 1. PubMed PMID: 25907414.

Brittain ST, Wheless JW. Pharmacokinetic simulations of topiramate plasma concentrations following dosing irregularities with extended-release vs. immediate-release formulations. Epilepsy Behav. 2015 Nov;52(Pt A):31-6. doi: 10.1016/j.yebeh.2015.08.029. Epub 2015 Sep 24. PubMed PMID: 26409125.

Aquilina K, Daniels DJ, Spoudeas H, Phipps K, Gan HW, Boop FA. Optic pathway glioma in children: does visual deficit correlate with radiology in focal exophytic lesions? Childs Nerv Syst. 2015 Nov;31(11):2041-9. doi: 10.1007/s00381-015-2855-7. Epub 2015 Aug 16. PubMed PMID: 26277358.

Klimo P Jr, Nesvick CL, Broniscer A, Orr BA, Choudhri AF. Malignant brainstem tumors in children, excluding diffuse intrinsic pontine gliomas. J Neurosurg Pediatr. 2015 Oct 16:1-9. [Epub ahead of print] PubMed PMID: 26474099.

Choudhri AF, Chatterjee AR, Javan R, Radvany MG, Shih G. Security Issues for Mobile Medical Imaging: A Primer. Radiographics. 2015 Oct;35(6):1814-24. doi: 10.1148/rq.2015140039. PubMed PMID: 26466188.

Patterson AL, Mudigoudar B, Fulton S, McGregor A, Poppel KV, Wheless MC, Brooks L, Wheless JW. SmartWatch by SmartMonitor: Assessment of Seizure Detection Efficacy for Various Seizure Types in Children, a Large Prospective Single-Center Study. Pediatr Neurol. 2015 Oct;53(4):309-11. doi: 10.1016/j.pediatrneurol.2015.07.002. Epub 2015 Jul 15. PubMed PMID: 26272007.

Choudhri AF, Patel RM, Siddiqui A, Whitehead MT, Wheless JW. Cortical Activation Through Passive-Motion Functional MRI. AJNR Am J Neuroradiol. 2015 Sep;36(9):1675-81. doi: 10.3174/ajnr.A4345. Epub 2015 Jul 30. PubMed PMID: 26228890.

McAbee JH, Modica J, Thompson CJ, Broniscer A, Orr B, Choudhri AF, Boop FA, Klimo P Jr. Cervicomedullary tumors in children. J Neurosurg Pediatr. 2015 Oct;16(4):357-66. doi: 10.3171/2015.5.PEDS14638. Epub 2015 Jun 26. PubMed PMID: 26114990.

Rentz AM, Skaliky AM, Pashos CL, Liu Z, Magestro M, Pelletier CL, Prestifilippo JA, Nakagawa J, Frost MD, Dunn DW, Wheless JW. Caring for Children With Tuberous Sclerosis Complex: What Is the Physical and Mental Health Impact on Caregivers? J Child Neurol. 2015 Oct;30(12):1574-81. doi: 10.1177/0883073815575364. Epub 2015 Apr 2. PubMed PMID: 25838447.

Mylonas DS, Siettos CI, Evdokimidis I, Papanicolaou AC, Smyrnis N. Modular Patterns of Phase Desynchronization Networks During a Simple Visuomotor Task. Brain Topogr. 2015 Sep 14. [Epub ahead of print] PubMed PMID: 26369342.

Khazaei A, Ebrahimzadeh A, Babajani-Feremi A. Application of advanced machine learning methods on resting-state fMRI network for identification of mild cognitive impairment and Alzheimer's disease. Brain Imaging Behav. 2015 Sep 12. [Epub ahead of print] PubMed PMID: 26363784.

Venable GT, Shepherd BA, Loftis CM, McClatchy SG, Roberts ML, Fillingim ME, Tansey JB, Klimo P Jr. Bradford's law: identification of the core journals for neurosurgery and its subspecialties. J Neurosurg. 2015 Sep 4:1-11. [Epub ahead of print] PubMed PMID: 26339849.

Rivas-Coppola MS, Patterson AL, Morgan R, Wheless JW. Bupropion Overdose Presenting as Status Epilepticus in an Infant. Pediatr Neurol. 2015 Sep;53(3):257-61. doi: 10.1016/j.pediatrneurol.2015.05.018. Epub 2015 Jun 14. PubMed PMID: 26183178.

Choudhri AF, Siddiqui A, Klimo P Jr, Boop FA. Intraoperative MRI in pediatric brain tumors. Pediatr Radiol. 2015 Sep;45 Suppl 3:S397-405. doi: 10.1007/s00247-015-3322-z. Epub 2015 Sep 7. PubMed PMID: 26346145.

Uh J, Merchant TE, Li Y, Li X, Sabin ND, Indelicato DJ, Ogg RJ, Boop FA, Jane JA Jr, Hua C. Effects of Surgery and Proton Therapy on Cerebral White Matter of Craniopharyngioma Patients. Int J Radiat Oncol Biol Phys. 2015 Sep 1;93(1):64-71. doi: 10.1016/j.jrobp.2015.05.017. Epub 2015 May 16. PubMed PMID: 26279025.

Wheless JW. Use of the mTOR inhibitor everolimus in a patient with multiple manifestations of tuberous sclerosis complex including epilepsy. Epilepsy Behav Case Rep. 2015 Aug 12;4:63-6. doi: 10.1016/j.ebrcr.2015.06.008. eCollection 2015. PubMed PMID: 26543807; PubMed Central PMCID: PMC4543076.

Gennarino VA, Alcott CE, Chen CA, Chaudhury A, Gillentine MA, Rosenfeld JA, Parikh S, Wheless JW, Roeder ER, Horowitz DD, Roney EK, Smith LJ, Cheung SW, Li W, Neilson JR, Schaaf CP, Zoghbi HY. NUDT21-spanning CNVs lead to neuropsychiatric disease and altered MeCP2 abundance via alternative polyadenylation. Elife. 2015 Aug 27;4. doi: 10.7554/eLife.10782. PubMed PMID: 26312503; PubMed Central PMCID: PMC4586391.

Narayana S, Papanicolaou AC, McGregor A, Boop FA, Wheless JW. Clinical Applications of Transcranial Magnetic Stimulation in Pediatric Neurology. J Child Neurol. 2015 Aug;30(9):1111-24. doi: 10.1177/0883073814553274. Epub 2014 Oct 23. PubMed PMID: 25342309.

Hua C, Shulkin BL, Indelicato DJ, Li Y, Li X, Boop FA, Merchant TE. Postoperative cerebral glucose metabolism in pediatric patients receiving proton therapy for craniopharyngioma. J Neurosurg Pediatr. 2015 Aug 21:1-7. [Epub ahead of print] PubMed PMID: 26295365.

Alford EL, Wheless JW, Phelps SJ. Treatment of Generalized Convulsive Status Epilepticus in Pediatric Patients. J Pediatr Pharmacol Ther. 2015 Jul-Aug;20(4):260-89. doi: 10.5863/1551-6776-20.4.260. Review. PubMed PMID: 26380568; PubMed Central PMCID: PMC4557718.

Arizep JM, Walsh V, Baker CI. Characteristic visuomotor influences on eye-movement patterns to faces and other high level stimuli. Front Psychol. 2015 Jul 29;6:1027. doi: 10.3389/fpsyg.2015.01027. eCollection 2015. PubMed PMID: 26283982; PubMed Central PMCID: PMC4518262.

McAbee JH, Ragel BT, McCartney S, Jones GM, Michael LM 2nd, DeCuypere M, Cheng JS, Boop FA, Klimo P Jr. Factors associated with career satisfaction and burnout among US neurosurgeons: results of a nationwide survey. J Neurosurg. 2015 Jul;123(1):161-73. doi: 10.3171/2014.12.JNS141348. Epub 2015 Feb 13. PubMed PMID: 25679276.

Bishop MW, Somerville JM, Bahrami A, Kaste SC, Interiano RB, Wu J, Mao S, Boop FA, Williams RF, Pappo AS, Samant S. Mesenchymal Chondrosarcoma in Children and Young Adults: A Single Institution Retrospective Review. Sarcoma. 2015;2015:608279. doi: 10.1155/2015/608279. Epub 2015 Jun 3. PubMed PMID: 26146478; PubMed Central PMCID: PMC4469840.

Krieg TD, Salinas FS, Narayana S, Fox PT, Mogul DJ. Computational and experimental analysis of TMS-induced electric field vectors critical to neuronal activation. J Neural Eng. 2015 Aug;12(4):046014. doi: 10.1088/1741-2560/12/4/046014. Epub 2015 Jun 8. PMID: 26052136

Abramson ZR, Susarla SM, Lawler ME, Choudhri AF, Peacock ZS. Geometry of anterior open bite correction. J Craniofac Surg. 2015 May;26(3):e223-5. doi: 10.1097/SCS.0000000000001440. PubMed PMID: 25950521.

Caron E, Wheless CE, Patters AB, Wheless JW. The charges for seizures in the pediatric emergency room: a single center study. Pediatr Neurol. 2015 May;52(5):517-20. doi: 10.1016/j.pediatrneurol.2015.02.010. Epub 2015 Feb 18. PubMed PMID: 25882079.

Dunin-Wasowicz D, Mazurkiewicz-Beldzińska M, Steinborn B, Wheless J, Józwiak S. Treatment of pediatric epilepsy in Poland. Eur J Paediatr Neurol. 2015 May;19(3):320-6. doi: 10.1016/j.ejpn.2014.12.023. Epub 2015 Jan 17. PubMed PMID: 25682573.

Klimo P Jr, Venable GT, Boop FA, Merchant TE. Recurrent craniopharyngioma after conformal radiation in children and the burden of treatment. J Neurosurg Pediatr. 2015 May;15(5):499-505. doi: 10.3171/2014.10.PEDS14384. Epub 2015 Feb 20. PubMed PMID: 25700121.

Boop FA, Bate B, Choudhri AF, Burkholder B, Klimo P Jr. Preliminary experience with an intraoperative MRI-compatible infant headholder: technical note. J Neurosurg Pediatr. 2015 May;15(5):539-43. doi: 10.3171/2014.10.PEDS14447. Epub 2015 Feb 13. PubMed PMID: 25679382.

Jayaraman MV, Hussain MS, Abruzzo T, Albani B, Albuquerque FC, Alexander MJ, Ansari SA, Arthur AS, Baxter B, Bulsara KR, Chen M, Delgado-Almandado JA, Fraser JF, Heck DV, Hettis SW, Kelly M, Lee SK, Leslie-Mawzi T, McTaggart RA, Meyers PM, Prestigiacomo C, Pridle GL, Patsalides A, Starke RM, Tarr RW, Frei D, Rasmussen P. Standards and Guidelines Committee of the Society of NeuroInterventional Surgery (SNIS). Embolectomy for stroke with emergent large vessel occlusion (ELVO): report of the Standards and Guidelines Committee of the Society of NeuroInterventional Surgery. J Neurointerv Surg. 2015 May;7(5):316-21. doi: 10.1136/neurintsurg-2015-011717. Epub 2015 Mar 12.

Choudhri AF, Whitehead MT, Siddiqui A, Klimo P Jr, Boop FA. Diffusion characteristics of pediatric pineal tumors. Neuroradiol J. 2015 Apr;28(2):209-16. doi: 10.1177/1971400915581741. Epub 2015 May 11. PubMed PMID: 25963154.

Tan QK, Stockton DW, Pivnick E, Choudhri AF, Hines-Dowell S, Pena LD, Deimling MA, Freemark MS, Kishnani PS. Premature pubarche in children with Pompe disease. J Pediatr. 2015 Apr;166(4):1075-8. e1. doi: 10.1016/j.jpeds.2014.12.074. Epub 2015 Feb 14. PubMed PMID: 25687635.

Rentz AM, Skaliky AM, Liu Z, Wheless JW, Dunn DW, Frost MD, Nakagawa J, Magestro M, Prestifilippo J. Tuberous sclerosis complex: a survey of health care resource use and health burden. Pediatr Neurol. 2015 Apr;52(4):435-41. doi: 10.1016/j.pediatrneurol.2014.11.013. Epub 2014 Nov 29. PubMed PMID: 25771998.

Skaliky AM, Rentz AM, Liu Z, Wheless JW, Pelletier CL, Dunn DW, Frost MD, Nakagawa J, Magestro M, Prestifilippo J, Pashos C. The burden of subependymal giant cell astrocytomas associated with tuberous sclerosis complex: results of a patient and caregiver survey. J Child Neurol. 2015 Apr;30(5):563-9. doi: 10.1177/0883073814523318. Epub 2014 Mar 24. PubMed PMID: 24667738.

Narenthiran G, Boop F. Print and electronic books and journals. Childs Nerv Syst. 2015 Apr 10. [Epub ahead of print].

Pellock JM, Wheless JW, Douglass LM. In response: Lennox-Gastaut syndrome may be a curable, reversible epileptic encephalopathy. Epilepsia. 2015 Mar;56(3):500-1. doi: 10.1111/epi.12915. PubMed PMID: 25778756.

Tsui K, Gajjar A, Li C, Srivastava D, Broniscer A, Wetmore C, Kun LE, Merchant TE, Ellison DW, Orr BA, Boop FA, Klimo P, Ross J, Robison LL, Armstrong GT. Subsequent neoplasms in survivors of childhood central nervous system tumors: risk after modern multimodal therapy. Neuro Oncol. 2015 Mar;17(3):448-56. doi: 10.1093/onnou/nou279. Epub 2014 Nov 13. PubMed PMID: 25395462; PubMed Central PMCID: PMC4483102.

Patay Z, Orr BA, Shulkin BL, Hwang SH, Ying Y, Broniscer A, Boop FA, Ellison DW. Successive distinct high-grade gliomas in L-2-hydroxyglutaric aciduria. J Inherit Metab Dis. 2015 Mar;38(2):273-7. doi: 10.1007/s10545-014-9782-8. Epub 2014 Oct 23. PubMed PMID: 25338511.

Ákos Szabó C, Salinas FS, Li K, Franklin C, Leland MM, Fox PT, Laird AR, Narayana S. Modeling the effective connectivity of the visual network in healthy and and photosensitive, epileptic baboons. Brain Struct Funct. 2015 Mar 7. PMID: 25749860

Goyal N, Male S, Doss VT, Arthur A, Elijovich L. Spontaneous dissection of the bilateral internal carotid and vertebral arteries: a rationale for endovascular management. J Neurol Sci. 2015 Mar 15;350(1-2):112-4. doi: 10.1016/j.jns.2015.02.006. Epub 2015 Feb 9.

Arnaudovic A, Billups C, Broniscer A, Gajjar A, Boop F, Qaddoumi I. Delayed diagnosis of childhood low-grade glioma: causes, consequences, and potential solutions. Childs Nerv Syst. 2015 Mar 6. [Epub ahead of print]

Klimo P Jr, Ragel B, Jones GM, McCafferty R. Severe Pediatric Head Injury During the Iraq and Afghanistan Conflicts. Neurosurgery. 2015 Mar 23. [Epub ahead of print]

Woo HH, Arthur AS, Mocco J, Orrico KO, Wilson JA, Hoh BL; on behalf of the American Association of Neurological Surgeons, Congress of Neurological Surgeons, and Cerebrovascular Section. MR CLEAN: past the tipping point of clinical equipoise. J Neurosurg. 2015 Mar 31:1-2. [Epub ahead of print].

Arnaudovic A, Splavski B, Boop FA, Arnaudovic KI. Pediatric and adult Chiari malformation Type I surgical series 1965-2013: a review of demographics, operative treatment, and outcomes. J Neurosurg Pediatr. 2015 Feb;15(2):161-77. doi: 10.3171/2014.10.PEDS14295. Epub 2014 Dec 5. PubMed PMID: 25479580.

Duckworth EA, Nickelic C, Hoit D, Belayev A, Moran CJ, Arthur AS. The first North American use of the Pipeline Flex flow diverter. J Neurointerv Surg. 2015 Feb 4. pii: neurintsurg-2014-011548.rep. doi: 10.1136/neurintsurg-2014-011548.rep. [Epub ahead of print]

McAbee JH, Ragel BT, McCartney S, Jones GM, Michael LM 2nd, DeCuypere M, Cheng JS, Boop FA, Klimo P Jr. Factors associated with career satisfaction and burnout among US neurosurgeons: results of a nationwide survey. J Neurosurg. 2015 Feb;15(2):161-77. doi: 10.3171/2014.10.PEDS14295. Epub 2014 Dec 5. PubMed PMID: 25479580.

Boop FA, Bate B, Choudhri AF, Burkholder B, Klimo P Jr. Preliminary experience with an intraoperative MRI-compatible infant headholder: technical note. J Neurosurg Pediatr. 2015 Feb 13:1-5. [Epub ahead of print]

Klimo P Jr, Venable GT, Boop FA, Merchant TE. Recurrent craniopharyngioma after conformal radiation in children and the burden of treatment. J Neurosurg Pediatr. 2015 Feb 20:1-7. [Epub ahead of print]

Spiotta AM, Fiorella D, Vargas J, Khalessi A, Hoit D, Arthur A, Lena J, Turk AS, Chaudry MI, Gutman F, Davis RP, Chesler DA, Turner RD. Initial Multicenter Technical Experience With the Apollo Device for Minimally Invasive Intracerebral Hematoma Evacuation. Neurosurgery. 2015 Feb 14. [Epub ahead of print]

Narayana S, Rezaie R, McAfee SS, Choudhri AF, Babajani-Feremi A, Fulton S, Boop FA, Wheless JW, Papanicolaou AC. Assessing motor function in young children with transcranial magnetic stimulation. Pediatr Neurol. 2015 Jan;52(1):94-103. doi: 10.1016/j.pediatrneurol.2014.08.031. Epub 2014 Sep 18. PubMed PMID: 25439485.

Sullivan MN, Gonzales AL, Pires PW, Bruhl A, Leo MD, Li W, Oulidi A, Boop FA, Feng Y, Jaggar JH, Welsh DG, Earley S. Localized TRPA1 channel Ca2+ signals stimulated by reactive oxygen species promote cerebral artery dilation. Sci Signal. 2015 Jan 6;8(358):ra2. doi: 10.1126/scisignal.2005659. PubMed PMID: 25564678.

Wright KD, Panetta JC, Onar-Thomas A, Reddick WE, Patay Z, Qaddoumi I, Broniscer A, Robinson G, Boop FA, Klimo P Jr, Ward D, Gajjar A, Stewart CF. Delayed methotrexate excretion in infants and young children with primary central nervous system tumors and postoperative fluid collections. Cancer Chemother Pharmacol. 2015 Jan;75(1):27-35. doi: 10.1007/s00280-014-2614-6. Epub 2014 Oct 24. PubMed PMID: 25342291; PubMed Central PMCID: PMC4282603.

Harreld JH, Mohammed N, Goldsberry G, Li X, Li Y, Boop F, Patay Z. Postoperative Intraspinal Subdural Collections after Pediatric Posterior Fossa Tumor Resection: Incidence, Imaging, and Clinical Features. AJNR Am J Neuroradiol. 2015 Jan 22. [Epub ahead of print]

Papanicolaou AC, Rezaie R, Narayana S, Kilintari M, Choudhri AF, Boop FA, Wheless JW (2015). Non-Invasive Pre-surgical Functional Mapping. In Pediatric Epilepsy, Diagnosis and Therapy 4th Edition. Edited by John Pellock, Douglas Nordli, Raman Sankar, and James Wheless. Demos Medical Publishing/Demos Health.

Khazaei A, Ebrahimzadeh A, Babajani-Feremi A, "Application of pattern recognition and graph theoretical approaches to analysis of brain network in Alzheimer's disease," Journal of Medical Imaging and Health Informatics vol. 5, no. 6, pp. 1145-1155, 2015.

Hadi MS, Siadat M, Babajani-Feremi A, "Validation of brain connectivity analysis using fMRI simulation," The International Journal of Engineering Systems Modelling and Simulation, vol. 7, no. 4, pp. 279-293, 2015.

Dimitriadis S, Zouridakis G, Rezaie R, Babajani-Feremi A., Papanicolaou, A.C. Functional Connectivity Changes Detected with Magnetoencephalography after Mild Traumatic Brain Injury. Neuroimage: Clinical (In press).

Volgyi E, Rezaie R, Hare M, Tylavsky F, Papanicolaou A. Physical activity, body composition and resting cortical activity in preschool children. International Journal of School and Cognitive Psychology (In Press).

Befeler AB, Gordon WE, Fernandez J, Muhlbauer MS, Sorenson JM. Efficacy of delayed follow-up imaging in traumatic brain injury. J Neurosurg. In press.

Doss VT, Hoit D, Arthur A, Elijovich L. Comparison of Intra-Operative Indocyanine Green Angiography and Digital Subtraction Angiography for Clipping of Intracranial Aneurysms. Interventional Neurology, In Press, 2015.

Mainali S, Goyal N, Elijovich L. Spontaneous Thrombosis of a Ruptured Brain Arteriovenous Malformation. Interventional Neurology, In Press, 2015.

Papanicolaou AC, Rezaie R, Narayana S, Choudhri AF, Wheless JW, Castillo EM, Baumgartner JM, Boop FA. Commentary: Epilepsia's Wada survey.

Papanicolaou AC. The Limbic System. Textbook of Neurology I. Evdokimidis (Ed.) Univ. Of Athens Press, (In Press)

Papanicolaou AC. The problem of Consciousness in modern Neurology. Textbook of Neurology I. Evdokimidis (Ed.) Univ. Of Athens Press (In Press)

Babajani-Feremi A, Narayana A, Rezaie R, Choudhri AF, Fulton SP, Boop FA, Wheless JW, Papanicolaou AC, "A comparison of language mapping by several techniques: electrographic high gamma activity, fMRI, and TMS versus electrocortical stimulation," Clinical Neurophysiology (In Press).

Antonakakis M, Dimitriadis SI, Zervakis M, Michelyoyannis S, Rezaie R, Babajani-Feremi A, Zouridakis G, Papanicolaou AC. Altered Cross-Frequency Coupling in Resting-State MEG after Mild Traumatic Brain Injury. International Journal of Psychophysiology (In Press)