



Courtney Wusthoff, MD

Associate Professor of Neurology and, by courtesy, of Pediatrics (Neonatology) at the Stanford University Medical Center

Neurology & Neurological Sciences

CLINICAL OFFICES

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Bio

ACADEMIC APPOINTMENTS

- Associate Professor - Med Center Line, Neurology & Neurological Sciences
- Associate Professor - Med Center Line (By courtesy), Pediatrics - Neonatal and Developmental Medicine
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Neurology Director, LPCH Neuro NICU, Lucile Packard Children's Hospital, (2013- present)

PROFESSIONAL EDUCATION

- Board Certification: Epilepsy, American Board of Psychiatry and Neurology (2014)
- Board Certification: Pediatrics, American Board of Pediatrics (2009)
- Medical Education: University of California San Francisco (2004) CA
- Fellowship: Children's Hospital of Philadelphia- Child Neurology (2010) PA
- Board Certification: Neurology - Child Neurology, American Board of Psychiatry and Neurology (2009)
- Residency: Children's Hospital of Oakland (2009) CA
- Internship: Children's Hospital at Oakland (2006) CA

LINKS

- Get a Second Opinion: <https://stanfordhealthcare.org/second-opinion/overview.html>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My projects focus on clinical research in newborns with, or at risk, for brain injury. I use EEG in at-risk neonates to better understand the underlying pathophysiology of risk factors that may lead to worse outcomes. I am particularly interested in neonatal seizures and how they may exacerbate perinatal brain injury with a goal to identify treatments that might protect the vulnerable brain. I am also interested in EEG in other pediatric populations, as well as medical ethics and global health.

CLINICAL TRIALS

- High-dose Erythropoietin for Asphyxia and Encephalopathy, Not Recruiting

Publications

PUBLICATIONS

- **Immediate outcomes in early life epilepsy: A contemporary account.** *Epilepsy & behavior : E&B*
Berg, A. T., Wusthoff, C., Shellhaas, R. A., Loddenkemper, T., Grinspan, Z. M., Saneto, R. P., Knupp, K. G., Patel, A., Sullivan, J. E., Kossoff, E. H., Chu, C. J., Massey, S., Valencia, et al
2019; 97: 44–50
- **Differences in patient characteristics and care practices between two trials of therapeutic hypothermia** *PEDIATRIC RESEARCH*
Bonifacio, S. L., McDonald, S. A., Chock, V. Y., Wusthoff, C. J., Hintz, S. R., Laptook, A. R., Shankara, S., Van Meurs, K. P.
2019; 85 (7): 1008–15
- **Differences in patient characteristics and care practices between two trials of therapeutic hypothermia.** *Pediatric research*
Bonifacio, S. L., McDonald, S. A., Chock, V. Y., Wusthoff, C. J., Hintz, S. R., Laptook, A. R., Shankara, S., Van Meurs, K. P.
2019
- **Response to antiseizure medications in neonates with acute symptomatic seizures.** *Epilepsia*
Glass, H. C., Soul, J. S., Chu, C. J., Massey, S. L., Wusthoff, C. J., Chang, T., Cilio, M. R., Bonifacio, S. L., Abend, N. S., Thomas, C., Lemmon, M., McCulloch, C. E., Shellhaas, et al
2019
- **Neuroimaging of Early Life Epilepsy** *PEDIATRICS*
Coryell, J., Gaillard, W. D., Shellhaas, R. A., Grinspan, Z. M., Wirrell, E. C., Knupp, K. G., Wusthoff, C. J., Keator, C., Sullivan, J. E., Loddenkemper, T., Patel, A., Chu, C. J., Massey, et al
2018; 142 (3)
- **Use of electronic medical record templates improves quality of care for patients with infantile spasms.** *Health information management : journal of the Health Information Management Association of Australia*
Santoro, J. D., Sandoval, A., Ruzhnikov, M., Brimble, E., Chadwick, W., Wusthoff, C. J.
2018: 1833358318794501
- **Development of a NeuroNICU with a Broader Focus on All Newborns at Risk of Brain Injury: The First 2 Years.** *American journal of perinatology*
Van Meurs, K. P., Yan, E. S., Randall, K. S., Chock, V. Y., Davis, A. S., Glennon, C. S., Clark, C. L., Wusthoff, C. J., Bonifacio, S. L.
2018
- **Integrative Medicine in Child Neurology: what do providers think and what do they need to learn?**
Karamian, A., Yeh, A., Wusthoff, C.
LIPPINCOTT WILLIAMS & WILKINS.2018
- **Comparative Effectiveness of Levetiracetam vs Phenobarbital for Infantile Epilepsy** *JAMA PEDIATRICS*
Grinspan, Z. M., Shellhaas, R. A., Coryell, J., Sullivan, J. E., Wirrell, E. C., Mytinger, J. R., Gaillard, W. D., Kossoff, E. H., Valencia, I., Knupp, K. G., Wusthoff, C., Keator, C., Ryan, et al
2018; 172 (4): 352–60
- **Why West? Comparisons of clinical, genetic and molecular features of infants with and without spasms** *PLOS ONE*
Berg, A. T., Chakravorty, S., Koh, S., Grinspan, Z. M., Shellhaas, R. A., Saneto, R. P., Wirrell, E. C., Coryell, J., Chu, C. J., Mytinger, J. R., Gaillard, W. D., Valencia, I., Kriupp, et al

2018; 13 (3): e0193599

- **Cooling in neonatal hypoxic-ischemic encephalopathy: practices and opinions on minimum standards in the state of California** *JOURNAL OF PERINATOLOGY*
Wusthoff, C. J., Clark, C. L., Glass, H. C., Shimotake, T. K., Schulman, J., Bonifacio, S. L.
2018; 38 (1): 54–58
- **The impact of hypsarrhythmia on infantile spasms treatment response: Observational cohort study from the National Infantile Spasms Consortium** *EPILEPSIA*
Demarest, S. T., Shellhaas, R. A., Gaillard, W. D., Keator, C., Nickels, K. C., Hussain, S. A., Loddenkemper, T., Patel, A. D., Saneto, R. P., Wirrell, E., Fernandez, I., Chu, C. J., Grinspan, et al
2017; 58 (12): 2098–2103
- **Early-Life Epilepsies and the Emerging Role of Genetic Testing** *JAMA PEDIATRICS*
Berg, A. T., Coryell, J., Saneto, R. P., Grinspan, Z. M., Alexander, J. J., Kekis, M., Sullivan, J. E., Wirrell, E. C., Shellhaas, R. A., Mytinger, J. R., Gaillard, W. D., Kossoff, E. H., Valencia, et al
2017; 171 (9): 863–71
- **Seizures in Preterm Neonates: A Multicenter Observational Cohort Study.** *Pediatric neurology*
Glass, H. C., Shellhaas, R. A., Tsuchida, T. N., Chang, T., Wusthoff, C. J., Chu, C. J., Cilio, M. R., Bonifacio, S. L., Massey, S. L., Abend, N. S., Soul, J. S.
2017
- **Improving the Identification of Neonatal Encephalopathy: Utility of a Web-Based Video Tool** *AMERICAN JOURNAL OF PERINATOLOGY*
Ivy, A. S., Clark, C. L., Bahm, S. M., Van Meurs, K. P., Wusthoff, C. J.
2017; 34 (5): 520-522
- **Interrater agreement in the interpretation of neonatal electroencephalography in hypoxic-ischemic encephalopathy.** *Epilepsia*
Wusthoff, C. J., Sullivan, J., Glass, H. C., Shellhaas, R. A., Abend, N. S., Chang, T., Tsuchida, T. N.
2017; 58 (3): 429-435
- **Treatment Duration After Acute Symptomatic Seizures in Neonates: A Multicenter Cohort Study.** *journal of pediatrics*
Shellhaas, R., Chang, T., Wusthoff, C., Soul, J., Massey, S., Chu, C., Cilio, M. R., Bonifacio, S., Abend, N., Tsuchida, T., Glass, H.
2017; 181: 298-301 e1
- **MRI Patterns of brain injury and neurodevelopmental outcomes in neonates with severe anaemia at birth.** *Early human development*
Loureiro, B., Martinez-Biarge, M., Foti, F., Papadaki, M., Cowan, F. M., Wusthoff, C. J.
2017; 105: 17-22
- **Profile of neonatal epilepsies: Characteristics of a prospective US cohort.** *Neurology*
Shellhaas, R. A., Wusthoff, C. J., Tsuchida, T. N., Glass, H. C., Chu, C. J., Massey, S. L., Soul, J. S., Wiwattanadittakun, N., Abend, N. S., Cilio, M. R.
2017; 89 (9): 893–99
- **Initial Treatment for Nonsyndromic Early-Life Epilepsy: An Unexpected Consensus.** *Pediatric neurology*
Shellhaas, R. A., Berg, A. T., Grinspan, Z. M., Wusthoff, C. J., Millichap, J. J., Loddenkemper, T., Coryell, J., Saneto, R. P., Chu, C. J., Joshi, S. M., Sullivan, J. E., Knupp, K. G., Kossoff, et al
2017; 75: 73–79
- **Seizures in Infants Born Preterm: Defining the Scale of the Problem.** *The Journal of pediatrics*
Wusthoff, C. J.
2017; 187: 7–8
- **Improving the Identification of Neonatal Encephalopathy: Utility of a Web-Based Video Tool.** *American journal of perinatology*
Ivy, A. S., Clark, C. L., Bahm, S. M., Meurs, K. P., Wusthoff, C. J.
2016: -?
- **Contemporary Profile of Seizures in Neonates: A Prospective Cohort Study** *JOURNAL OF PEDIATRICS*
Glass, H. C., Shellhaas, R. A., Wusthoff, C. J., Chang, T., Abend, N. S., Chu, C. J., Cilio, M. R., Glidden, D. V., Bonifacio, S. L., Massey, S., Tsuchida, T. N., Silverstein, F. S., Soul, et al
2016; 174: 98-?
- **Development and Feasibility Testing of a Critical Care EEG Monitoring Database for Standardized Clinical Reporting and Multicenter Collaborative Research** *JOURNAL OF CLINICAL NEUROPHYSIOLOGY*

- Lee, J. W., LaRoche, S., Choi, H., Ruiz, A. A., Fertig, E., Politsky, J. M., Herman, S. T., Loddenkemper, T., Sansevere, A. J., Korb, P. J., Abend, N. S., Goldstein, J. L., Sinha, et al
2016; 33 (2): 133-140
- **Development and Feasibility Testing of a Critical Care EEG Monitoring Database for Standardized Clinical Reporting and Multicenter Collaborative Research.** *Journal of clinical neurophysiology*
Lee, J. W., LaRoche, S., Choi, H., Rodriguez Ruiz, A. A., Fertig, E., Politsky, J. M., Herman, S. T., Loddenkemper, T., Sansevere, A. J., Korb, P. J., Abend, N. S., Goldstein, J. L., Sinha, et al
2016; 33 (2): 133-140
 - **Neonatal EEG: An Update.** *Journal of clinical neurophysiology : official publication of the American Electroencephalographic Society*
Wusthoff, C. J.
2016; 33 (5): 375
 - **How to use: amplitude-integrated EEG (aEEG)** *ARCHIVES OF DISEASE IN CHILDHOOD-EDUCATION AND PRACTICE EDITION*
Shah, N. A., Wusthoff, C. J.
2015; 100 (2): 75-81
 - **Seizures and hypothermia: Importance of electroencephalographic monitoring and considerations for treatment** *SEMINARS IN FETAL & NEONATAL MEDICINE*
Boylan, G. B., Kharoshankaya, L., Wusthoff, C. J.
2015; 20 (2): 103-108
 - **Development and validation of a seizure prediction model in critically ill children.** *Seizure*
Yang, A., Arndt, D. H., Berg, R. A., Carpenter, J. L., Chapman, K. E., Dlugos, D. J., Gallentine, W. B., Giza, C. C., Goldstein, J. L., Hahn, C. D., Lerner, J. T., Loddenkemper, T., Matsumoto, et al
2015; 25: 104-111
 - **Development and validation of a seizure prediction model in critically ill children** *SEIZURE-EUROPEAN JOURNAL OF EPILEPSY*
Yang, A., Arndt, D. H., Berg, R. A., Carpenter, J. L., Chapman, K. E., Dlugos, D. J., Gallentine, W. B., Giza, C. C., Goldstein, J. L., Hahn, C. D., Lerner, J. T., Loddenkemper, T., Matsumoto, et al
2015; 25: 104-111
 - **Impact of bilirubin-induced neurologic dysfunction on neurodevelopmental outcomes.** *Seminars in fetal & neonatal medicine*
Wusthoff, C. J., Loe, I. M.
2015; 20 (1): 52-57
 - **50 Years Ago in The Journal of Pediatrics: Cerebrospinal Fluid Protein Values of Premature Infants.** *The Journal of pediatrics*
Wallenstein, M. B., Wusthoff, C. J.
2015; 166 (6): 1396
 - **Electrographic seizures are associated with brain injury in newborns undergoing therapeutic hypothermia** *ARCHIVES OF DISEASE IN CHILDHOOD-FETAL AND NEONATAL EDITION*
Shah, D. K., Wusthoff, C. J., Clarke, P., Wyatt, J. S., Ramaiah, S. M., Dias, R. J., Becher, J., Kapellou, O., Boardman, J. P.
2014; 99 (3): F219-F224
 - **Risk factors for EEG seizures in neonates treated with hypothermia: A multicenter cohort study.** *Neurology*
Glass, H. C., Wusthoff, C. J., Shellhaas, R. A., Tsuchida, T. N., Bonifacio, S. L., Cordeiro, M., Sullivan, J., Abend, N. S., Chang, T.
2014; 82 (14): 1239-1244
 - **Electrographic seizures and status epilepticus in critically ill children and neonates with encephalopathy** *LANCET NEUROLOGY*
Abend, N. S., Wusthoff, C. J., Goldberg, E. M., Dlugos, D. J.
2013; 12 (12): 1170-1179
 - **Amplitude-Integrated Electro-encephalography The Child Neurologist's Perspective** *JOURNAL OF CHILD NEUROLOGY*
Glass, H. C., Wusthoff, C. J., Shellhaas, R. A.
2013; 28 (10): 1342-1350
 - **Neurodevelopmental outcome in children with congenital heart disease** *SEMINARS IN FETAL & NEONATAL MEDICINE*
Martinez-Biarge, M., Jowett, V. C., Cowan, F. M., Wusthoff, C. J.
2013; 18 (5): 279-285

- **How to use: the neonatal neurological examination.** *Archives of disease in childhood. Education and practice edition*
Wusthoff, C. J.
2013; 98 (4): 148-153
- **Genetic testing in children with epilepsy.** *Continuum (Minneapolis, Minn.)*
Wusthoff, C. J., Olson, D. M.
2013; 19 (3 Epilepsy): 795-800
- **Diagnosing Neonatal Seizures and Status Epilepticus** *JOURNAL OF CLINICAL NEUROPHYSIOLOGY*
Wusthoff, C. J.
2013; 30 (2): 115-121
- **American Clinical Neurophysiology Society Standardized EEG Terminology and Categorization for the Description of Continuous EEG Monitoring in Neonates: Report of the American Clinical Neurophysiology Society Critical Care Monitoring Committee** *JOURNAL OF CLINICAL NEUROPHYSIOLOGY*
Tsuchida, T. N., Wusthoff, C. J., Shellhaas, R. A., Abend, N. S., Hahn, C. D., Sullivan, J. E., Nguyen, S., Weinstein, S., Scher, M. S., Riviello, J. J., Clancy, R. R.
2013; 30 (2): 161-173
- **Hypoglycaemia and neonatal brain injury** *ARCHIVES OF DISEASE IN CHILDHOOD-EDUCATION AND PRACTICE EDITION*
Boardman, J. P., Wusthoff, C. J., Cowan, F. M.
2013; 98 (1): 2-6
- **White Matter and Cortical Injury in Hypoxic-Ischemic Encephalopathy: Antecedent Factors and 2-Year Outcome** *JOURNAL OF PEDIATRICS*
Martinez-Biarge, M., Bregant, T., Wusthoff, C. J., Chew, A. T., Diez-Sebastian, J., Rutherford, M. A., Cowan, F. M.
2012; 161 (5): 799-807
- **Feeding and communication impairments in infants with central grey matter lesions following perinatal hypoxic-isaemic injury** *EUROPEAN JOURNAL OF PAEDIATRIC NEUROLOGY*
Martinez-Biarge, M., Diez-Sebastian, J., Wusthoff, C. J., Lawrence, S., Aloysius, A., Rutherford, M. A., Cowan, F. M.
2012; 16 (6): 688-696
- **Neonatal Seizures and Status Epilepticus** *JOURNAL OF CLINICAL NEUROPHYSIOLOGY*
Abend, N. S., Wusthoff, C. J.
2012; 29 (5): 441-448
- **Prediction of neurodevelopmental outcome after hypoxic-ischemic encephalopathy treated with hypothermia by diffusion tensor imaging analyzed using tract-based spatial statistics** *PEDIATRIC RESEARCH*
Tusor, N., Wusthoff, C., Smee, N., Merchant, N., Arichi, T., Allsop, J. M., Cowan, F. M., Azzopardi, D., Edwards, A. D., Counsell, S. J.
2012; 72 (1): 63-69
- **Amplitude-integrated electroencephalography: a runaway horse?** *Canadian journal of neurological sciences. Le journal canadien des sciences neurologiques*
Dysart, K. C., Kirpalani, H. M., Kirpalani, H. M., Wusthoff, C. J., Seshia, S. S.
2012; 39 (3): 267-268
- **Modified Pediatric ASPECTS Correlates with Infarct Volume in Childhood Arterial Ischemic Stroke.** *Frontiers in neurology*
Beslow, L. A., Vossough, A., Dahmouh, H. M., Kessler, S. K., Stainman, R., Favilla, C. G., Wusthoff, C. J., Zelonis, S., Licht, D. J., Ichord, R. N., Smith, S. E.
2012; 3: 122-?
- **The American Clinical Neurophysiology Society's Guideline on Continuous Electroencephalography Monitoring in Neonates** *JOURNAL OF CLINICAL NEUROPHYSIOLOGY*
Shellhaas, R. A., Chang, T., Tsuchida, T., Scher, M. S., Riviello, J. J., Abend, N. S., Sylvie Nguyen, S., Wusthoff, C. J., Clancy, R. R.
2011; 28 (6): 611-617
- **Risk of Later Seizure After Perinatal Arterial Ischemic Stroke: A Prospective Cohort Study** *PEDIATRICS*
Wusthoff, C. J., Kessler, S. K., Vossough, A., Ichord, R., Zelonis, S., Halperin, A., Gordon, D., Vargas, G., Licht, D. J., Smith, S. E.
2011; 127 (6): E1550-E1557
- **Electrographic Seizures During Therapeutic Hypothermia for Neonatal Hypoxic-Ischemic Encephalopathy** *JOURNAL OF CHILD NEUROLOGY*
Wusthoff, C. J., Dlugos, D. J., Gutierrez-Colina, A., Wang, A., Cook, N., Donnelly, M., Clancy, R., Abend, N. S.
2011; 26 (6): 724-728

- **The ketogenic diet in treatment of two adults with prolonged nonconvulsive status epilepticus** *EPILEPSIA*
Wusthoff, C. J., Kranick, S. M., Morley, J. F., Bergqvist, A. G.
2010; 51 (6): 1083-1085
- **Interictal EEG spikes identify the region of electrographic seizure onset in some, but not all, pediatric epilepsy patients** *EPILEPSIA*
Marsh, E. D., Peltzer, B., Brown, M. W., Wusthoff, C., Storm, P. B., Litt, B., Porter, B. E.
2010; 51 (4): 592-601
- **Limitations of single-channel EEG on the forehead for neonatal seizure detection** *JOURNAL OF PERINATOLOGY*
Wusthoff, C. J., Shellhaas, R. A., Clancy, R. R.
2009; 29 (3): 237-242
- **Hemosiderin-laden macrophages in the cerebrospinal fluid of a neonate after traumatic lumbar puncture** *PEDIATRIC INFECTIOUS DISEASE JOURNAL*
Wusthoff, C. J., Abend, N. S., Tennekoon, G.
2008; 27 (1): 83-84
- **Management of common neurologic symptoms in pediatric palliative care: Seizures, agitation, and spasticity** *PEDIATRIC CLINICS OF NORTH AMERICA*
Wusthoff, C. J., Shellhaas, R. A., Licht, D. J.
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- **Differences in pediatric oncologists' estimates of curability and treatment recommendations for patients with advanced cancer: Response** *PEDIATRIC BLOOD & CANCER*
Wusthoff, C. J., Ablin, A. R., McMillan, A.
2005; 45 (3): 358-358
- **Differences in pediatric oncologists' estimates of curability and treatment recommendations for patients with advanced cancer** *PEDIATRIC BLOOD & CANCER*
Wusthoff, C. J., McMillan, A., Ablin, A. R.
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- **The dilemma of confidentiality in Huntington disease** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*
Wusthoff, C.
2003; 290 (9): 1219-1220
- **Medical mistakes and disclosure: The role of the medical student** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*
Wusthoff, C. J.
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- **Numerical subtraction in the pigeon: Evidence for a linear subjective number scale** *PSYCHOLOGICAL SCIENCE*
Brannon, E. M., Wusthoff, C. J., Gallistel, C. R., Gibbon, J.
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