Pediatrics 2017 Annual Report – Division Highlights

Critical Care

DIVISION DESCRIPTION

The Division of Pediatric Critical Care Medicine (PCCM) delivers comprehensive, state-of-the-art care to critically ill children admitted to American Family Children's Hospital. The Division also provides pediatric procedural sedation to children in the AFCH Diagnostic and Therapy Center, which includes the Pediatric Sedation Program.

Our scholarly endeavors include advocacy, medical education, clinical and basic science research, and global health.

2017 HIGHLIGHTS

- Jayadevi Chandrashekhar and Kaylyn Freeman, a research specialist and undergraduate student researcher in the Waisman Center lab of **Pelin Cengiz, MD,** had one of their microscope images (https://news.wisc.edu/cool-science-images-2017/#&gid=1&pid=2) chosen as a winner of the UW-Madison 2017 Cool Science Image Contest. The image shows the presence of a protein called tyrosine kinase in a mouse brain which protects neurons that might otherwise be damaged by lack of oxygen.

- Kristin Haraldsdottir, a graduate student in the lab of **Marlowe Eldridge, MD**, received a Caroline tum Suden/Frances Hellebrandt Professional Opportunity Award from the American Physiological Society (APS). The award provides funds for junior physiologists to attend and participate fully in the APS' Experimental Biology meeting, and is a merit award granted to graduate students or postdoctoral fellows who are the first author of an abstract submitted to the APS.

  In addition, Melissa Brix, Ryan Centanni, Lauren Vilderg and Hannah Yoder, undergraduate students in the lab of **Marlowe Eldridge, MD,** all received the 2017 American Physiological Society's Barbara A. Horwitz and John M. Horowitz Outstanding Undergraduate Abstract Awards (http://www.the-aps.org/eb-undergrad). The same students were also selected for a higher honor, the APS's David S. Bruce Award for Excellence in Undergraduate Research.

- **Gregory Hollman, MD,** received a 2017 UW Health Clinical Practice Physician Excellence Award (link to YIR story on physician awards) for his extraordinary commitment to safety and quality patient- and family-centered care. Dr. Hollman developed the Pediatric Sedation Clinic to serve the needs of children who required MRIs but were unable to hold still for scans; his practice now focuses solely on serving patients in that clinic.

RECENT PUBLICATIONS

Al-Subu AM, **Hagen S**, **Eldridge M**, **Boriosi J**. Aerosol therapy through high flow nasal cannula in pediatric patients. Expert Rev Respir Med. 2017 Dec;11(12):945-953. doi: 10.1080/17476348.2017.1391095. Epub 2017 Oct 16. PubMed PMID: 28994337.

Bates ML, Jacobson JE, **Eldridge MW.** Beta adrenergic regulation of intrapulmonary arteriovenous anastomoses in intact rat and isolated rat lungs. Front Physiol. 2017 Apr 19;8:218. doi: 10.3389/fphys.2017.00218. eCollection 2017. PubMed PMID: 28469578; PubMed Central PMCID: PMC5396286.

Bensman RS, Slusher TM, Butteris SM, Pitt MB, On Behalf Of The Sugar Pearls Investigators, Becker A, Desai B, George A, **Hagen S**, Kiragu A, Johannsen R, Miller K, Rule A, Webber S. Creating online training for procedures in global health with PEARLS (Procedural Education for Adaptation to Resource-Limited Settings). Am J Trop Med Hyg. 2017 Nov;97(5):1285-1288. doi:10.4269/ajtmh.16-0936. Epub 2017 Aug 18. PubMed PMID: 28820680.

Boriosi JP, Eickhoff JC, Klein KB, **Hollman GA**. A retrospective comparison of propofol alone to propofol in combination with dexmedetomidine for pediatric 3T MRI sedation. Paediatr Anaesth. 2017 Jan;27(1):52-59. doi: 10.1111/pan.13041. Epub 2016 Oct 25. PubMed PMID: 27779360.

Braun RK, Broytman O, Braun FM, Brinkman JA, Clithero A, Modi D, Pegelow DF, **Eldridge M**, Teodorescu M. Chronic intermittent hypoxia worsens bleomycin-induced lung fibrosis in rats. Respir Physiol Neurobiol. 2017 Apr 27. pii: S1569-9048(16)30325-1. doi: 10.1016/j.resp.2017.04.010. [Epub ahead of print] PubMed PMID: 28456608. *

Fain SB, **Eldridge MW**. Exploring new heights with pulmonary functional imaging: insights into high-altitude pulmonary edema. J Appl Physiol. 2017 Apr 1;122(4):853-854. doi: 10.1152/japplphysiol.00168.2017. Epub 2017 Feb 23. PubMed PMID: 28235856.

Goss KN, Kumari S, Tetri LH, Barton G, **Braun RK**, Hacker TA, **Eldridge MW**. Postnatal hyperoxia exposure durably impairs right ventricular function and mitochondrial biogenesis. Am J Respir Cell Mol Biol. 2017 May;56(5):609-619. doi: 10.1165/rcmb.2016-0256OC. PubMed PMID: 28129517; PubMed Central PMCID: PMC5449491.

Mastropietro CW, Cashen K, Grimaldi LM, Narayana Gowda KM, Piggott KD, **Wilhelm M**, Gradidge E, Moser EA, Benneyworth BD, Costello JM. Extubation failure after neonatal cardiac surgery: A Multicenter Analysis. J Pediatr. 2017 Mar;182:190-196.e4. doi: 10.1016/j.jpeds.2016.12.028. Epub 2017 Jan 4. PubMed PMID: 28063686.

Mosher JM, Gjerde CL, **Wilhelm M**, **Srinivasan S**, **Hagen SA**. Interactive discussion compared to passive lecture for medical student learning and retention. Focus on Health Professional Education. 2017;18(1):16-26.

Patel JR, Barton GP, **Braun RK**, Goss KN, Haraldsdottir K, Hopp A, Diffee G, Hacker TA, Moss RL, **Eldridge MW**. Altered right ventricular mechanical properties are afterload dependent in a rodent model of bronchopulmonary dysplasia. Front Physiol. 2017 Oct 25;8:840. doi: 10.3389/fphys.2017.00840. eCollection 2017. PubMed PMID: 29118720; PubMed Central PMCID: PMC5660986.

Szadkowski A, Pollock AJ, **Al-Subu AM**. Hyperkalemia and acute kidney injury in an adolescent: Thinking outside the box. Pediatr Emerg Care. 2017 Dec 1. doi: 10.1097/PEC.0000000000001374. [Epub ahead of print] PubMed PMID: 29200139. *

Traube C, Silver G, Reeder RW, Doyle H, Hegel E, Wolfe HA, Schneller C, Chung MG, Dervan LA, DiGennaro JL, Buttram SD, Kudchadkar SR, Madden K, Hartman ME, deAlmeida ML, Walson K, Ista E, Baarslag MA, Salonia R, Beca J, Long D, Kawai Y, Cheifetz IM, Gelvez J, Truemper EJ, Smith RL, **Peters ME**, O'Meara AM, Murphy S, Bokhary A, Greenwald BM, Bell MJ. Delirium in critically ill children: An international point prevalence study. Crit Care Med. 2017 Apr;45(4):584-590. doi: 10.1097/CCM.0000000000002250. PubMed PMID: 28079605; PubMed Central PMCID: PMC5350030.

**ePub only; no print citation available when report was compiled*

GRANT SUPPORT

Faculty/Role	Funding Agency	Title
Al-Subu, Awni (PI)	Philips Healthcare	High flow nasal cannula interface clinical evaluation
Brazelton, Thomas (co-I) with Dean, Shannon M; Kelly, Michelle M; Ross, Joshua (co-Is) and Carayon, Pascale (PI)	AHRQ & Johns Hopkins University	Teamwork and care transitions in pediatric trauma: implications for HIT design
Cengiz, Pelin (PI)	DHHS, PHS, National Institutes of Health	Estrogen receptors and TrkB mediated neuroprotection in neonatal hypoxia-ischemia
Eldridge, Marlowe (PI) with Lamers, Luke J (co-I)	DHHS, PHS, National Institutes of Health	Right heart-pulmonary vascular interactions in bronchopulmonary dysplasia
Eldridge, Marlowe (PI)	DOD, Navy	Development of decompression and oxygen pre-breathe schedules for submarine escape and rescue using UW sheep model
Eldridge, Marlowe (PI)	DOD, Navy	Improving safety of submarine escape and rescue from shallow depth
Eldridge, Marlowe (PI)	VA, William S. Middleton VAMC	Pegelow intergovernmental personnel assignment (IPA)
Eldridge, Marlowe (PI)	Wisconsin Alumni Research Foundation	Cardiac contractile function and glucose metabolism in postmenopausal women during exercise: Effects of estrogen
Eldridge, Marlowe (co-I) with Schrage, William (PI)	DHHS, PHS, National Institutes of Health	Peripheral vasodilation in obese humans
Ferrazzano, Peter A (PI)	DHHS, PHS, National Institutes of Health	Age-dependent microglial responses in hypoxia-ischemia
Ferrazzano, Peter A (PI)	DHHS, PHS, National Institutes of Health	MRI markers of functional outcome after severe pediatric TBI
Ferrazzano, Peter A (PI)	University of Pittsburgh	Approaches and decisions for acute pediatric traumatic brain injury (ADAPT)