

CLASS OF 2016

Saul Flores: 7/1/2014 - 6/30/2016



Location after Fellowship: Texas Children's Hospital, Baylor University School of Medicine

Research:

Glucocorticoid receptor expression in children undergoing cardiac surgery. A prospective cohort study. Manuscript submitted

During his nonclinical time, he was very invested in clinical and translational research. He finished a project surveying CICU physicians across the nation on their use of hydrocortisone for post-bypass low cardiac output syndrome. He presented this work at the Pediatric Cardiac Intensive Care Society meeting in 2014. Since then he developed an assay for measurement of the glucocorticoid receptor expression on circulating peripheral blood leukocytes from patients with low cardiac output syndrome compared to controls and over time post-bypass. These results were presented at the Pediatric Academic Society meeting in May 2016.

Peer-Reviewed Publications:

- 2017 **Flores S**, Cooper DS, FitzGerald M, Iliopoulos I, Daily J, Rodriguez M, Wong HR, Menon K, Nelson DP. "An International Survey of Corticosteroid Use for the Management of Low Cardiac Output Syndrome" Manuscript on Pediatric Critical Care Medicine. 2017 Apr 27. Doi: 10.1097/PCC.0000000000001180. PMID: 28459760
- 2016 Iliopoulos I, **Flores S**, Pratap JN, Cooper DS, Cassidy A, Nelson DP. "Clinical Effects of Intravenous Arginine-Vasopressin Therapy in Hypotensive Neonates and Infants after Cardiac Surgery" Manuscript on Cardiology of the Young. 2016 Dec 14:1-10. doi: 10.1017/S104795111600189X. PMID: 27964765
- 2016 **Flores S**, Short SR, Basu RK. "Perioperative Acute Kidney Injury in Pediatric Heart Transplant Recipients and Patients Requiring ECMO" Manuscript in press on Progress in Pediatric Cardiology
- 2015 **Flores S**, Moore RA, Statile CJ, Michelfelder EC, Wanstrath SG, Knilans TK, Morales DL, Cooper DS. "Critical Care for Patients with Congenital Abnormalities of the Coronary Arteries" Manuscript on Cardiology of the Young journal. 2015 de;25(8):1561-6. doi: 10.1017/S104795111500205X
- 2015 **Flores S**, Kimball TR, Nelson DP, Morales DL. "Single-stage repair of an unusual association: Congenital Gerbode defect, hypoplastic aortic arch and partially anomalous pulmonary venous return in an infant". Manuscript on World Journal for Pediatric and Congenital Heart Surgery. 2016 Feb 6. Pii: 2150135115603331. PMID: 26852365
- 2015 **Flores S**, Daily J, Cash MC, Hirsh R. "Management of a Child with Pulmonary Arterial Hypertension Presenting with Systemic Hypertension". Manuscript on Cardiology of the Young journal. 2016 Feb;26(2):378-81. doi: 10.1017/S1047951115001092. Epub 2015 Jun 17
- 2014 Moore RA, **Flores S**, Cooper DS. "Critical care of patients with paediatric valvar cardiac disease". Manuscript published in Cardiology in the Young journal. 2014, 24, 1071-1076. Doi:10.1017/S1047951114002169

Awards/Accomplishments:

- 2016 Pediatric Academic Society – Young Investigator, Travel Award Recipient. Baltimore, MD. May, 2016

National Abstract Presentations:

- 2016 "Validation of the Calcium Chloride + VIS score" (December 10, 2016) at the Pediatric Cardiac Intensive Care Society, Miami, FL
- 2016 "Characterization of the Glucocorticoid Receptor Expression in Children undergoing Cardiac Surgery" (December 9, 2016) at the Pediatric Cardiac Intensive Care Society, Miami, FL

- 2015 "Staphylococcus Lugdunensis Endocarditis in Aortico-Left Ventricular Tunnel" (January 19, 2015) at the Society of Critical Care Medicine, Phoenix, AZ
- 2014 "Clinical Effects of Intravenous Arginine-Vasopressin Therapy in Hypotensive Neonates and Infants after Cardiac Surgery. A retrospective Review" (December 12, 2014) at the Pediatric Cardiac Intensive Care Society, Miami, FL
- 2014 "The Critical Care Challenges of Using a Berlin Heart EXCOR LVAD in a Child Receiving Chemotherapy for Castleman's Disease" (December 12, 2014) at the Pediatric Cardiac Intensive Care Society, Miami, FL
- 2014 "Steroid Use for the Management of Low Cardiac Output Syndrome. An International Survey of 73 Centers" (December 12, 2014) at the Pediatric Cardiac Intensive Care Society, Miami, FL

National Platform Presentations:

- 2016 "Characterization of GCR expression in Children Undergoing Cardiac Surgery" (May 1, 2016) at the Pediatric Academic Society, Baltimore, MD

Book Chapters:

- 2016 Basu R, **Flores S**, Cooper E. Chapter Title: Hypertension – Evaluation and Management. Pediatric Comprehensive Critical Care. Pediatric Current Concepts. SCCM

Mary Sandquist: 7/1/2013 – 6/30/2016



Location after Fellowship: Norton Children's Hospital, University of Louisville, Kentucky

Research Experience

The focus of her clinical research project was to explore any evidence of neurologic compromise in children who have survived septic shock

Began to examine the role of TIMP-1 deficient mice in septic shock

The focus of her clinical research project was to explore any evidence of neurologic compromise in children who have survived septic shock. Since this was retrospective, there were no evaluations to use however she did find that there was a very high incidence of neurologic imaging abnormalities following a septic shock event in of 389 of the cohort of 1700 children with septic shock over 3 years. This work led to a platform presentation and a Star Research Award at the Society of Critical Care Annual Congress in 2016 and a manuscript.

HONORS AND AWARDS

2016 Society of Critical Care Medicine Star Researcher Award

PEER-REVIEWED PUBLICATIONS

Sandquist M, Wong, HR. Aug 2014. Micronutrients' role against sepsis. *Chest Physician*.

Sandquist M, Wong HR. Oct 2014. Biomarkers of sepsis and their potential value in diagnosis, prognosis and treatment. *Expert Review of Clinical Immunology*.

Sandquist M, Clee M, Patel S, Howard K, Yunger T, Nagaraj U, Jones B, Fei L, Vadivelu S, Wong HR. High Incidence of Neuroimaging Abnormalities Among Pediatric Patients with Sepsis who Undergo Neuroimaging. *Pediatric Critical Care Medicine*. May 2017.

ABSTRACTS AND PRESENTATIONS

Sandquist M, Clee M, Patel S, Nagaraj U, Jones B, Vadivelu S, Wong HR. High incidence of neuroimaging abnormalities after sepsis. Oral presentation: *Society of Critical Care Medicine Congress*. Orlando, FL. February 2016.

Laura Kitzmiller: 7/1/2013 – 6/30/2016



Location after Fellowship: Children's Hospital of Michigan Specialty Center-Detroit

Research Experience

The focus of her basic science project was the role of the therapeutic effects of pharmacological activation of AMP activated protein kinase in sepsis-induced acute lung injury. Her data revealed that activation of AMPK with a pharmacologic analogue was protective in septic shock with regard to survival, lung histology, inflammation, biogenesis and autophagy. She directly performed the experiments, analyzed the data, presented it at a national meeting and has written a manuscript as her work product. She presented elements of this work at the Critical Care Medicine Annual Congress in 2015.

Dr. Kitzmiller is also doing a clinical research project focused on the use of quantitative furosemide responsiveness in the setting of early AKI to predict evolution to severe AKI. This project is multicentered and retrospective. This work is ongoing and will continue after she finishes fellowship.

She also completed a Rapid Cycle Improvement Collaborative process focused on improving physician – family communication during and after rounds.

Abstracts

Kitzmiller L, Leford J, Hake P, Piraino G, Zingarelli B. Activation of AMP-Activated Protein Kinase Reduces Lung Inflammation In A Murine Model Of Sepsis. Poster presentation at Boat Research Day, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, March 2015.

Kitzmiller L, Leford J, Hake P, Piraino G, Zingarelli B. Activation of AMP-Activated Protein Kinase Reduces Lung Inflammation In A Murine Model Of Sepsis. Poster presentation at Society of Critical Care Medicine Annual Congress, Phoenix, AZ, January 2015.

Hammad Ganatra: 7/1/2013 – 6/30/2016



Location after Fellowship: Children's Hospital of Illinois, OSF Saint Francis Medical Center

Research Experience

The focus of his main project was the protective role of zinc in a pediatric mouse model of septic shock. His data supports a protective role for zinc supplementation in septic shock as indicated by improved survival, bacterial clearance, phagocytosis, formation of neutrophil extracellular trap formation and lower inflammatory cytokines. He also participated in 2 smaller projects focusing on fluid resuscitation in a mouse model of septic shock and the use of zinc to diminish the severity of co-infection between influenza and *S. aureus* pneumonia. He presented abstracts for this work at the Society of Critical Care Medicine Annual Congress in 2015.

Peer-Reviewed Publications

Ganatra H, Varisco BM, Harmon K, Lahni P, Wong HW. Zinc Supplementation Leads to Immune Modulation and Improved Survival in a Juvenile Model of Murine Sepsis. *Innate Immunity*. 2017 Jan 23;1, 67-76. PMID 27821649.

Book Chapters

Ganatra H, Varisco BM. Respiratory Complication of Intensive Care." Disorders of the Respiratory Tract in Children, 9th Edition.

Abstracts

Ganatra H, Wolfe V, Wong H, and Doughty L. Effect of Zinc supplementation in a murine model of Staphylococcal aureus superinfection after H1N1 Influenza. *Crit Care Med* 2015; 42 (12s): 1008.

Ganatra H, Wolfe V, Langner T, and Doughty L. Fluid resuscitation improves survival in murine endotoxemia. *Crit Care Med* 2015; 42 (12s): 948.

Yu Inata: 7/1/2013 – 6/30/2016



Location after Fellowship: Osaka Medical Ctr. & Research Institute for Maternal & Child Health

Research Experience

Focused on the mitochondrial quality control in sepsis-induced multiple organ dysfunction syndrome" role of AMP-activated Protein Kinase (AMPK), a regulator of energy homeostasis and mitochondrial biogenesis in the myocardial dysfunction seen in septic shock.

His work was focused on the role of AMPK, a regulator of energy homeostasis and mitochondrial biogenesis in the myocardial dysfunction seen in septic shock. He used a murine model of septic shock to evaluate the impact of an AMPK agonist on the cardiac function and downstream biochemical markers of AMPK activation and mitochondrial biogenesis. After septic shock was induced, mice treated with an AMPK agonist demonstrated significantly less myocardial dysfunction by echocardiography. In similarly treated mice, AMPK activation led to upregulation of PGC-1 α , a major regulator of mitochondrial function and biogenesis. Similarly, he demonstrated an age-dependent effect in the role of AMPK in sepsis-induced myocardial dysfunction showing that AMPK plays a much more important role in young mice compared with older mice. He presented these data at several national meetings including the Shock Society in 2014 and 2015 and Society of Critical Care Medicine's Annual Congress in 2015 and 2016.

Honors

- 2015 New Investigators Travel Award, 38th Annual Conference on Shock, Shock Society
- 2015 Annual Scientific Award, 44th Critical Care Congress, Society of Critical Care Medicine
- 2014 New Investigators Travel Award, 37th Annual Conference on Shock, Shock Society

Peer-Review Publications

Inata Y, Kikuchi S, Samraj RS, Hake PW, O'Connor M, Ledford JR, O'Connor J, Lahni P, Wolfe V, Piraino G, Zingarelli B. Autophagy and mitochondrial biogenesis impairment contribute to age-dependent liver injury in experimental sepsis: dysregulation of AMP-activated protein kinase pathway. *FASEB J* 2018 32(2). 728-41.

Abstracts

Inata Y, Hake P, Piraino G, Ledford J, Schulte C, Moore V, James J, and Zingarelli B. Age-dependent changes of metabolic signaling pathways in the myocardium in experimental sepsis in mice. *Shock* 2014

Inata Y, Age-dependent effects of pharmacologic activation of AMPK on sepsis-induced cardiac dysfunction in mice. *Shock* 2015

Inata Y, O'Connor J, O'Connor M, Hake P, Piraino, and Zingarelli B. Pharmacologic activation of AMPK Improves cardiac dysfunction in experimental sepsis in mice. *Crit Care Med* 2015; 42 (12s): 1052.

Inata Y, Hake P, Piraino G, Ledford J, Schulte C, Moore V, James J, and Zingarelli B. Genetic deficiency of AMPK α 1 impairs energy production and exacerbates organ injury in septic mice. *Crit Care Med* 2016; 43 (12s): 940.

Oral Presentations

Oral Presentations by and for New Investigators. "Age-dependent changes of metabolic signaling pathways in the myocardium in experimental sepsis in mice." 37th Annual Conference on Shock, Shock Society, 2014

Claire Stewart: 7/1/2013 – 6/30/2016



Location after Fellowship: Nationwide Children's Hospital Critical Care, The Ohio State University School of Medicine

Research Experience

Her non-clinical productivity was extraordinary. She was awarded a Master's of Education Program from the University of Cincinnati this spring. She completed all of the required course work and her thesis focused on improving code team training. As a part of this Master's program she learned the principles of educational research, developed a robust research question and the study design necessary to appropriately ask the question and collect data to formulate a conclusion. This particular project involved both quantitative and qualitative methods and as such gave her an excellent opportunity to learn educational study design. She also studied the outcomes of immunocompromised children with respiratory failure using data from our hospital as well as from Children's Hospital of Philadelphia.

ABSTRACTS

Stewart C, Fei L, Chima R. *Outcomes for Recent Cohort of Children Requiring High Frequency Oscillatory Ventilation*. Poster presentation at Society of Critical Care Medicine Annual Congress, Phoenix, AZ, January 2015.

Stewart C, Shoemaker J, Edmunds K, Davis A, Tegtmeyer K. *Code Team Training: Improving Team Dynamics and Adherence to AHA Guidelines*. Poster presentation at Society of Critical Care Medicine Annual Congress, Phoenix, AZ, January 2015.

Stewart C, Davis A, Edmunds K, Shoemaker J, Keller-Smith R, Tegtmeyer K. *Methods for Improving Adherence to AHA Guidelines During Pediatric Code Blue Activations*. Poster presentation at Society of Critical Care Medicine Annual Congress, Orlando, FL, February 2016.

Stewart C, Yehya, N, Fei L, Chima R. *A Multi-Center Study of HFOV in Immunocompetent and Immunocompromised Children*. Poster presentation at Society of Critical Care Medicine Annual Congress, Orlando, FL, February 2016.

BOOK CHAPTERS

1. **Stewart, C** and Kocoshis, S. "Disorders and Diseases of the Gastrointestinal Tract and Liver." *Fuhrman and Zimmerman Pediatric Critical Care*. 5th Ed. Mosby, 2016.

INSTITUTIONAL LECTURES/PRESENTATIONS

2015 **Stewart C**. *Code Team Training: Improving Adherence to American Heart Association Resuscitation Guidelines*. Office of Pediatric Clinical Fellowship Fellows' Crosstalk. Cincinnati Children's Hospital Medical Center Cincinnati, OH

2016 **Stewart C**. *A Multi-Center study of HFOV in Immunocompetent and Immunocompromised Children*. Platform presentation, Boat Research Day. Cincinnati Children's Hospital Medical Center Cincinnati, OH