Curriculum Vitae

Date: 09/29/2022 12:01 PM
Name: Tara M. Neumayr, M.D.

Contact Information

Office: Phone: 314-286-1755
Fax: 314-361-0733

Mail: Washington University in St. Louis
School of Medicine
Department of Pediatrics
Critical Care Medicine
660 S. Euclid Ave.
St. Louis, MO 63110

Email: Office: neumayr_t@wustl.edu

Present Position

Assistant Professor, Critical Care Medicine
Assistant Professor of Pediatrics, Nephrology

Education

1999	BA, Duke University, Durham, NC
2003	MD, University of South Dakota School of Medicine, Vermillion, SD
2003 - 2006	Pediatric Resident, Mayo Clinic, Rochester, MN
2006 - 2011	Pediatric Nephrology & Pediatric Critical Care Fellowships, Washington University School of Medicine, St. Louis, MO
2011 - 2012	Cardiac Critical Care Apprenticeship, Washington University School of Medicine, St. Louis, MO

Academic Positions / Employment

2011 - 2015	Instructor, Washington University, St. Louis, MO
2015 - Pres	Assistant Professor of Pediatrics, Nephrology, Washington University in St. Louis, St. Louis, MO
2016 - Pres	Assistant Professor, Critical Care Medicine, Washington University in St. Louis, St. Louis, MO

Clinical Title and Responsibilities

2011 - 2012	Attending Physician, Pediatric Intensive Care Unit
2012 - Pres	Attending Physician, Pediatric Cardiac Intensive Care Unit
2015 - Pres	Attending Physician, Pediatric Nephrology, Inpatient service, including consulting service, St. Louis Children's Hospital

Teaching Title and Responsibilities

2010 - 2015 St. Louis Children's Hospital Saigh Pediatric Simulation Center, Washington University School of Medicine, Pediatric Interns' Orientation Simulation Session

University, School of Medicine and Hospital Appointments and Committees

Hospital

2016 - 2016 Heart Center CICU Process Improvement Rounding Team

This group was formed to evaluate and redesign daily clinical rounds in the PCICU, which were a source of workflow inefficiency and widespread dissatisfaction. The team consisted of attending physicians from Pediatric Critical Care, Pediatric Cardiology, and Pediatric Cardiothoracic Surgery, fellows from Pediatric Critical Care and Pediatric Cardiology, nurse practitioners from the SLCH Heart Center, nurse administrators, and Heart Center charge nurses and bedside nurses. We met twice weekly for a period of about 3 months to completely redesign the daily workflow in the PCICU to the mutual benefit of all participants, including patients and their families. We conducted a 1-month pilot phase of the new design, collecting data to show strengths and weaknesses of the new rounding process. At the end of the pilot, I was chosen to co-chair the on-going committee, which was tasked with continued assessment and refinement of the rounding process. Follow-up data obtained demonstrated significant improvement in both efficiency and team satisfaction with the rounding process. The committee disbanded with the introduction of new leadership within the Heart Center.

2016 - 2017 Heart Center CICU Process Improvement Rounding Team, Co-Chair

This group was formed to evaluate and redesign daily clinical rounds in the PCICU, which were a source of workflow inefficiency and widespread dissatisfaction. The team consisted of attending physicians from Pediatric Critical Care, Pediatric Cardiology, and Pediatric Cardiothoracic Surgery, fellows from Pediatric Critical Care and Pediatric Cardiology, nurse practitioners from the SLCH Heart Center, nurse administrators, and Heart Center charge nurses and bedside nurses. We met twice weekly for a period of about 3 months to completely redesign the daily workflow in the PCICU to the mutual benefit of all participants, including patients and their families. We conducted a 1-month pilot phase of the new design, collecting data to show strengths and weaknesses of the new rounding process. At the end of the pilot, I was chosen to co-chair the on-going committee, which was tasked with continued assessment and refinement of the rounding process. Follow-up data obtained demonstrated significant improvement in both efficiency and team satisfaction with the rounding process. The committee disbanded with the introduction of new leadership within the Heart Center.

2016 - 2017 Heart Center Transitional Care Unit Process Improvement Rounding Team

This group was formed to evaluate and redesign daily clinical rounds in the TCU, which is comprised of non-PCICU patients in the Heart Center. The team consisted of attending physicians from Pediatric Cardiology, Pediatric Cardiothoracic Surgery, and Pediatric Critical Care, fellows from Pediatric Cardiology, Pediatric Chief Residents, nurse practitioners from the SLCH Heart Center and from Pediatric Pulmonology, SLCH Heart Center nurse administrators, and bedside nurses. I was chosen as the PCICU representative on the team, to facilitate integration of the PCICU processes and the new TCU processes. This committee was disbanded with the introduction of new leadership within the Heart Center.

2017 - Pres Continuous Renal Replacement Therapy Committee

This group was formed to review, evaluate, and, as necessary, redesign processes and practices surrounding continuous renal replacement therapy (CRRT) use in the ICU's at SLCH after bedside management of the CRRT circuits was transitioned from the dialysis nurse team to the PICU-based CRRT nurse team in 2017. This committee is comprised of CRRT-trained PICU nurses, pediatric intensivists, pediatric nephrologists, and clinical pharmacists. We meet monthly to review quality metrics, to identify challenges arising at the bedside, and to set priorities and assign tasks for team education and for development of standard practices with regard to CRRT. I serve a dual role as a representative from the PCICU and as a pediatric nephrologist. I took over the role of physician leader of this group when the previous leader left this institution to pursue other goals.

2018 - Pres Pediatric Cardiac Critical Care Consortium (PC4), SLCH Clinical Champion

PC4 is a unique collaborative of leaders in pediatric cardiac critical care, cardiac surgery, and cardiology from centers across North America. Formed in 2009 with funding from the NIH, the collaborative performs collection of specific clinical data on outcomes and practice, provides timely performance feedback to the collaborative as well as to individual centers, and offers an opportunity for continuous improvement based on data analysis and collaborative learning. Participation in PC4 was recently demonstrated to result in improved outcomes; this data was published in the Journal of the American College of Cardiology (JACC). As the clinical champion, I oversee and ensure the quality and timeliness of data entry, adjudicate areas of apparent discrepancy, analyze center-specific data and present that data to the Heart Center team, facilitate our center's involvement in collaborative-wide research and quality-improvement projects, and initiate, coordinate, and/or facilitate local quality improvement efforts.

I am currently a member of the PC4 Public Relations Committee. This committee works to create, maintain, and curate forward-facing digital/internet-based materials to highlight the work of PC4 in pediatric cardiac ICU research and QI. I have created an informational digital poster for patients and parents about the on-going Target-Based Care Initiative, which seeks to improve care through reduction in provider-based practice variability and transparent care goals.

2020 - Pres Acute Kidney Replacement Therapies Program, Medical Co-Director
The AKRT Program is responsible for developing and maintaining high-quality delivery of acute KRT at SLCH. We are developing and updating policies, procedures, and guidelines for AKRT at SLCH; we review all patients requiring AKRT and any event reports arising from their care; we review equipment status and needs; we oversee and contribute to the physician and nursing education around AKRT in our ICUs; we have created a dashboard of key metrics which we will leverage for quality improvement and development of QI projects. Since the creation of the AKRT Program from the former CRRT committee, we have expanded our ability to provide AKRT via the Prismaflex platform into our NICU, developed the aforementioned dashboard, and are embarking on QI projects in the areas of blood priming and pre-filter replacement fluids.

Medical Licensure and Certifications

2003 - 2006 MN Minnesota #46701
2006 - Pres American Board of Pediatrics
2011 - Pres MO Missouri #2011015005
2012 - Pres Pediatric Critical Care Medicine
2014 - Pres Pediatric Nephrology
2017 - Pres Advanced Cardiovascular Life Support (ACLS) #166506347468

Honors and Awards

1995 FOCUS Program "Science, Technology & Modern Culture", Duke University
1996 - 1999 All-Atlantic Coast Conference Academic Honors
1997 Lord Rothemere Scholar, Duke-Oxford Summer Program
1999 Graduation with Distinction in English, Senior Thesis, Duke University
1999 - 2000 Dr. Roy S. and Clara E. Hubbs Memorial Scholarship for Academic Merit, University of South Dakota School of Medicine
2001 - 2002 Rev. William Deer Memorial Scholarship for Academic Excellence, University of South Dakota School of Medicine
2002 - 2003 Mary W. Hanson Medicine Scholarship for Academic Excellence in the Junior Year, University of South Dakota School of Medicine
2003 Excellence in Pediatrics Award, University of South Dakota School of Medicine
2005 - 2006 Co-Chief Resident, Department of Pediatric and Adolescent Medicine, Mayo Eugenio Litta Children's Hospital, Mayo Clinic Graduate School of Medicine
2010 - 2011 Chief Fellow, Division of Pediatric Critical Care Medicine, St. Louis Children's Hospital, Washington University School of Medicine
2020 - Pres Invited Faculty, Acute Disease Quality Initiative (ADQI) for Pediatric Acute Kidney Injury
2022 Top Abstract Commendation at 4th International Symposium on AKI in Children

Editorial Responsibilities

Editorial Reviews

2016 - Pres Pediatric Critical Care Medicine

2020 - Pres Blood Purification
2020 - Pres Frontiers in Pediatrics
2021 - Pres Reviews in Cardiovascular Medicine
2021 - Pres Annals of Thoracic Surgery

Community Service Contributions

Committees and Activities

2019 - Pres MomDocs, Contributor

Professional Societies and Organizations

2006 - Pres American Society of Pediatric Nephrology
2006 - Pres Society of Critical Care Medicine
2012 - Pres International Pediatric Nephrology Association
2014 - Pres Academic Women's Network
2015 - Pres Pediatric Cardiac Intensive Care Society

Major Invited Professorships and Lectures

2004 Household and Environmental Pesticides: Issues for the Primary Pediatrician, Mayo Clinic Department of Pediatric and Adolescent Medicine Resident Lecture Series, Rochester, MN

2005 Evaluation after first UTI in children: What is the evidence?, Mayo Clinic Department of Pediatric and Adolescent Medicine Resident Lecture Series, Rochester, MN

2005 Heptavalent Pneumococcal Vaccine and Pediatric Acute Illness, Mayo Clinic Department of Pediatric and Adolescent Medicine Resident Lecture Series, Rochester, MN

2013 Acute Kidney Injury after Cardiopulmonary Bypass, Washington University in St. Louis Division of Pediatric Anesthesiology, St. Louis, MO

2018 CRRT in Critically Ill Children: Is Sooner Better Than Later?, Pediatric Grand Rounds, Washington University Department of Pediatrics, St. Louis, MO

2018 AKI and CRRT in Critically Ill Infants and Children, American Academy of Pediatrics Annual Meeting, Critical Care Section, Orlando, FL

2021 Initiation of KRT: Does Patience Have Its Limits?, Renal Grand Rounds, Washington University School of Medicine, St. Louis, MO

2021 Acute Kidney Injury: Current State, Future Directions, Pediatric Grand Rounds, Mercy Children's Hospital, St. Louis, MO

2022 Sodium & the Brain, Pediatric Neurocritical Care: Field to Follow-Up, St. Louis, MO, USA

2022 AKI, Fluid Overload, and Kidney Support Therapy after Cardiac Surgery in Children, Pediatric Cardiac Critical Care Consortium (PC4) Annual Meeting, Atlanta, GA, USA

2022 Long-Term Outcomes after Pediatric Acute Kidney Injury: Taking the "Acute" Out of AKI, Pediatric Grand Rounds, Washington University Department of Pediatrics, St. Louis, MO

Trainee/Mentee/Sponsorship Record

Current Trainees

2019 - Pres Aayush Khanal, Clinical Fellow, Fluid overload in critically ill pediatric patients with sepsis

Bibliography

A. Journal Articles

1. Neumayr TM, Watson AM, Wylam ME, Ouellette Y. Surfactant treatment of an infant with acute idiopathic pulmonary hemorrhage. *Pediatr Crit Care Med*. 2008;9(1):e4-6. doi:10.1097/01.PCC.0000298755.86878.20 PMID:18477904
2. Rogers SC, Ross JG, d'Avignon A, Gibbons LB, Gazit V, Hassan MN, McLaughlin D, Griffin S, Neumayr T, Debaun M, DeBaun MR, Doctor A. Sickle hemoglobin disturbs normal coupling among erythrocyte O2 content, glycolysis, and antioxidant capacity. *Blood*. 2013;121(9):1651-62. doi:10.1182/blood-2012-02-414037 PMCID:PMC3587328 PMID:23297128
3. Davis TK, Neumayr T, Geile K, Doctor A, Hmeil P. Citrate anticoagulation during continuous renal replacement therapy in pediatric critical care. *Pediatr Crit Care Med*. 2014;15(5):471-85. doi:10.1097/PCC.0000000000000148 PMID:24777299
4. Neumayr TM, Gill J, Fitzgerald JC, Gazit AZ, Pineda JA, Berg RA, Dean JM, Moler FW, Doctor A. Identifying risk for acute kidney injury in infants and children following cardiac arrest *Pediatric Crit Care Med*. 2017. doi:10.1097/PCC.0000000000001280 PMID:28737594
5. Gist KM, Blinder JJ, Bailly D, Borasino S, Askenazi DJ, Cooper DS, Krawczeski CD, Gaies M, Morales DLS, Hock KM, and Alten J for the Neonatal and Pediatric Heart and Renal Outcomes Network (NEPHRON) Investigators (Neumayr TM, contributing site PI). Neonatal and Paediatric Heart and Renal Outcomes Network: design of a multi-centre retrospective cohort study. *Cardiology in the Young*. 2019;29:511-518. doi:10.1017/S1047951119000210
6. Bjornstad EC, Krallman KA, Askenazi D, Zappitelli M, Goldstein SL, Basu RK, SPARC Investigators (Neumayr TM, contributing site PI). Preliminary assessment of acute kidney injury in critically ill children associated with SARS-CoV-2 infection: a multi center cross-sectional analysis *Clin J Am Soc Nephrol*. 2021;8(16):446-448. doi:10.2215/CJN.11470720 PMID:33144276
7. Rabinowitz EJ, McGregor K, O'Connor NR, Neumayr TM, Said AS. Systemic hypertension in pediatric veno-venous extracorporeal membrane oxygenation *ASAIO*. 2021;67(6):681-687. doi:10.1097/MAT.0000000000001267 PMID:33074862
8. Alten JA, Cooper DS, Blinder JJ, NEPHRON Investigators (Neumayr TM, contributing site PI). Epidemiology of acute kidney injury after neonatal cardiac surgery: a report from the multi center neonatal and pediatric heart and renal outcomes network *Crit Care Med*. 2021;49(10):e941-e951. doi:10.1097/CCM.0000000000005165 PMID:34166288
9. Sasaki J, Rodriguez Z, Alten JA, Fazlur Rahman AKM, Reichle G, Lin P, Banerjee M, Selewski D, Gaies M, Hock KM, Borasino S, Gist KM for the NEPHRON Collaborative (Neumayr TM, contributing site PI).. Epidemiology of neonatal acute kidney injury after cardiac surgery without cardiopulmonary bypass. *ATS*. 2021. doi:10.1016/j.athoracsur.2021.09.032
10. Lahart MA, Burns EL, Streb MM, Neumayr TM, Abarbanell AM, Hongjie G, Said AS. Impact of continuous renal replacement therapy on bivalirudin dosing in pediatric extracorporeal membrane oxygenation *ASAIO*. 2022. doi:10.1097/MAT.0000000000001681

11. Neumayr TM, Alge JL, Afonso NS, Akcan-Arikan A. Acute kidney injury after pediatric cardiac surgery *Pediatr Crit Care Med*. 2022. doi:10.1097/PCC.0000000000002933
12. Neumayr TM, Alten JA, Bailly DK, Bhat PN, Brandewie KL, Diddle JW, Ghbeis M, Krawczeski CD, Mah KE, Raymond TT, Reichle G, Zang H, Selewski DT, NEPHRON Investigators.. Assessment of fluid balance after neonatal cardiac surgery: a comparison of intake/output vs weight-based methods. *Pediatr Nephrol*. 2022. doi:10.1007/s00467-022-05697-w

C2. Chapters

1. Neumayr, TM. Acute renal failure. In: Austin, PF, Hmiel, PS, eds. *Pediatric practice: urology and nephrology* New York; 2011.
2. Lynch R, Wood EG, Neumayr TM. Fluid and Electrolyte Issues in Pediatric Critical Illness In: BP Fuhrman & JJ Zimmerman, eds. *Pediatric Critical Care* 5th ed. Philadelphia, PA; 2017:1007-1025.

C3. Editorials

1. * Neumayr TM. Peritoneal dialysis in infants after cardiopulmonary bypass: Is sooner better than later? *Pediatr Crit Care Med*. 2019;20(2):197-198. doi:10.1097/PCC.0000000000001823 PMID:30720654

C4. Invited Publications

1. Neumayr TM, Alge JL, Afonso NS, Akcan-Arikan A. Acute Kidney Injury after Pediatric Cardiac Surgery: A Concise Clinical Science Review (Accepted) *Pediatr Crit Care Med*.
2. Neumayr TM. Peritoneal Dialysis in Infants After Cardiopulmonary Bypass: Is Sooner Better Than Later? *Pediatr Crit Care Med*. 2019;20(2):197-198. doi: 10.1097/PCC.0000000000001823 PMID: 30720654
3. Neumayr, TM. Acute Kidney Injury in Neonates with Cardiac Disease: How Can We Care for the Smallest Among Us? *PCICS Newsletter*. 2019.

F. Abstracts

1. Neumayr TM, Alten JA, Bailly DK, Bhat PN, Brandewie KL, Diddle JW, Ghbeis M, Krawczeski CD, Mah KE, Raymond TT, Reichle G, Zang H, Selewske DT. NEPHRON Investigators.. *Assessment of fluid balance after neonatal cardiac surgery: intake/output vs. weight-based methods.* Cardiology 2022: 25th Annual Update on Pediatric and Congenital Cardiovascular Disease: Huntington Beach, CA; 2022.
2. Neumayr TM, Alten JA, Bailly DK, Bhat PN, Brandewie KL, Diddle JW, Ghbeis M, Krawczeski CD, Mah KE, Raymond TT, Reichle G, Zang H, Selewske DT. NEPHRON Investigators.. *Assessment of fluid balance after neonatal cardiac surgery: intake/output vs. weight-based methods* 4th International Symposium on AKI in Children: Cincinnati, OH; 2022.

Clinician Educator Portfolio

CLINICAL CONTRIBUTIONS

Summaries of ongoing clinical activities

2011 - 2012 Attending Physician, Pediatric Intensive Care Unit

The Pediatric Intensive Care Unit (PICU) was, during this period, a 24-bed unit with over 1500 admissions and 7000 patient days annually. This unit is dedicated to the care of critically ill children with a broad range of diagnoses, including, but not limited to, overwhelming septic shock, acute respiratory failure, multisystem trauma, traumatic brain injury, solid organ transplantation, neuromuscular failure, acute renal failure, poisoning and toxidromes, and high-risk postsurgical care. While completing my on-going education as an apprentice in the PCICU, I served for 4 weeks as the attending physician in the PICU during the 2011 – 2012 academic year. I continue to care for PICU patients in times of high PICU census, when some of those patients are admitted to the PCICU. Similar to my work in the PCICU, my additional training in Pediatric Nephrology frequently informs my care of PICU patients with electrolyte disorders and acute kidney injury and renal failure. As the attending physician in the PICU, I was responsible for delivery and coordination of care for these patients, which includes:

• Bedside rounding with the multidisciplinary team, including critical care fellows, pediatric and emergency medicine residents, pediatric nurse practitioners, PICU charge nurses and bedside nurses, respiratory therapists, clinical pharmacists, nutritional therapy, and social work.• Bedside teaching of fellows, residents, and nurse practitioners that is appropriate to the patient context and the educational needs of the various learners.• Evening care rounds with the on-call critical care physician, fellows, and residents.• Procedural performance such as endotracheal tube placement, invasive arterial monitoring, central venous catheter placement, and chest tube placement as necessary for the care of the patient.• Sedation of patients for procedures as necessary to patient care.• Supervision of fellows, residents, and nurse practitioners during procedural and sedation performances.• Participation in and supervision of the Rapid Response Team as it provides support for the floor services in caring for patients with acutely deteriorating clinical status.• Medical control for the SLCH Transport Team for critically ill patients being transferred to the SLCH PICU.• Interpretation of ancillary studies and monitoring devices, such as intracranial pressure monitors, independently and/or in consultation with various medical and surgical services.• Coordination and management of family meetings to address long-term patient goals or end-of-life care.• Documentation of care provided or supervision as delivered above.

2012 - Pres Attending Physician, Pediatric Cardiac Intensive Care Unit

The pediatric cardiac intensive care unit (PCICU) is a 16-bed unit dedicated to the medical and surgical care of patients with congenital heart disease - including single ventricle lesions and other complex cardiac anatomy - heart failure, arrhythmias, and pulmonary hypertension, as well as children following lung transplantation. This field has recently evolved to include patients who require implantable mechanical support - ventricular assist devices (VADs) for those with medically refractory heart failure, and lung assist devices for patients with pulmonary hypertension – while they await transplantation or, in rare cases, recovery. The level of complexity and acuity of these patients requires expertise in Pediatrics, Pediatric Critical Care Medicine, and Pediatric Cardiac Critical Care Medicine. I am also trained in Pediatric Nephrology, which is frequently useful in my care of our many patients with electrolyte disorders and/or acute kidney injury that may or may not require renal replacement therapy/dialysis, and of those with chronic renal insufficiency. As the attending physician in the PCICU, I am responsible for the delivery and coordination of care for these critically ill patients. This includes:

• Bedside rounding with a multidisciplinary team that may include cardiothoracic surgeons, cardiologists, pulmonologists, critical care and cardiology fellows, pulmonology fellows, neonatal ICU fellows, pediatric nurse practitioners, pediatric residents, PCICU charge nurses and bedside nurses, clinical pharmacists, nutritional therapy, respiratory therapists, chaplaincy, and social work.• Bedside teaching of fellows, nurse practitioners, and pediatric residents that is appropriate to the patient context and the educational needs of the individual learners.• Procedural performance such as endotracheal tube placement, invasive arterial monitoring, central venous catheter placement, and chest tube placement as necessary for the care of the patient.• Sedation of patients for procedures as necessary to patient care.• Supervision of fellows, residents, and nurse practitioners during procedural and sedation performances.• Interpretation of ancillary studies independently and/or in consultation with various medical and surgical services.• Coordination and management of family meetings to address long-term patient goals or end-of-life care.• Medical control for patients being transferred into the Heart Center (PCICU and floor cardiology patients) by the St. Louis Children’s Hospital (SLCH) Transport Team.• Documentation of care provided or supervision as delivered above.

2015 - Pres Attending Physician, Pediatric Nephrology, Inpatient service, including consulting service, St. Louis Children's Hospital

The Pediatric Nephrology inpatient attending is responsible for the care of children hospitalized with renal disorders, such as the nephrotic and nephritic syndromes, acute and chronic renal failure with or without requirement for renal replacement therapy/dialysis, and genetic and acquired renal tubular disorders, as well as for those patients who have undergone past renal transplantation and are experiencing acute infections, acute declines in allograft function from rejection or other causes, or other post-transplant phenomena. In addition to this, the attending Nephrologist provides expert consultation throughout the hospital and to outside hospitals and referring providers with regard to fluid and electrolyte disorders, concern for evolving renal injury or renal insufficiency, renal tubular disorders/dysfunction, congenital renal anomalies, and hypertension. The attending Nephrologist is responsible for determining the appropriate dialysis prescription for those patients requiring peritoneal dialysis, hemodialysis, or continuous renal replacement therapy in the hospital, and for overseeing, often in cooperation with the ICU teams, the safe and effective delivery of those therapies. Renal biopsies on both inpatients and outpatients may be performed by the inpatient Nephrology attending. The Nephrology attending also provides consultation and procedural prescription and oversight for therapeutic apheresis at SLCH, including therapeutic plasma exchange, photopheresis, and leukopheresis. The attending Nephrologist is responsible for supervision and education of fellows, residents, nurse practitioners, and dialysis/pheresis nurses. Patients with renal disease are often quite complex, requiring careful coordination of care both in the hospital and in preparation for returning home, and skillful family communication and guidance.

Development of clinical guidelines or care paths

2015 - 2016 Handbook for Apheresis Procedures in the Intensive Care Unit

I led the development of clinical guidelines for apheresis procedures in the pediatric ICU (PICU) and PCICU at SLCH with a goal of optimizing both efficiency and quality of our apheresis care. I compiled an informational Pheresis Handbook, detailing the procedures and processes necessary to perform apheresis in the ICU at SLCH, as well as an Apheresis Communication Guideline to establish standard procedures and processes for team communication and coordination when initiating apheresis in the PICU and PCICU. In developing these guidelines, I marshalled a working group that included, in addition to myself, PICU and PCICU faculty members, Pediatric Nephrology attendings and a nurse practitioner, and PICU and PCICU nurse management. In addition, I solicited and incorporated the input of the SLCH coordinator for extracorporeal membrane oxygenators (ECMO) and the perfusionists who assist in apheresis procedures for those patients on mechanical assist devices. I reviewed and incorporated the most current recommendations of the American Society for Apheresis as well as the best evidence from recent published literature. I relinquished further revisions of this guideline to the medical director for apheresis when he was named in 2017.

2017 - 2017 Peritoneal Dialysis in Postoperative Cardiac Surgical Patients in the PCICU
This guideline was created in conjunction with other pediatric cardiac intensivists, pediatric nephrologists, and pediatric cardiothoracic surgeons, setting forth mutually agreed upon indications for initiation of acute peritoneal dialysis in high-risk post-cardiac surgery patients as well as a guideline for the initial peritoneal dialysis prescription for these patients.

EDUCATIONAL CONTRIBUTIONS

Direct teaching

Classroom

2010 - 2015 St. Louis Children's Hospital Saigh Pediatric Simulation Center, Washington University School of Medicine, Pediatric Interns' Orientation Simulation Session

Other

2004 - 2006 Curriculum in Pediatrics for 2nd year medical students, Mayo Medical School, The Pediatric Physical Exam

2008 Pediatric Residents' Curriculum in Critical Care, Washington University School of Medicine, Electrolyte disturbances in the pediatric intensive care unit

2008 - 2012 St. Louis Children's Hospital Emergency Unit and Saigh Pediatric Simulation Center, Washington University School of Medicine, Residents' Code Simulation

2010 - 2012 Practice of Medicine II, Washington University School of Medicine, Mentor, Clinical practice in Pediatrics

2012 - Pres Washington University in St. Louis Division of Pediatric Critical Care Fellows' Conference Series, Section Chair, Renal Section
As the section chair for the Renal section of the PCCM fellows' core curriculum series, I am responsible for developing learning objectives and educational content for 4 – 6 2-hr sessions annually, ensuring the quality of faculty performance in each session, and ongoing reassessment and refinement of session goals and content. Course content focuses on basic physiology/anatomy/biochemistry, relevant technology utilized in the ICU, and problem-solving/application. For the Renal section, those topics include: (1) Renal Physiology and Anatomy, (2) Renal Replacement Therapy/Dialysis, (3) Acute Kidney Injury, (4) Hypertensive Crises, (5) Fluid and Electrolyte Disorders (6) Renal Transplantation, and (7) Chronic Kidney Disease.

Curriculum development

2010 Acute Dialysis Simulation for Pediatric Patients

I developed a series of 7 scenarios for high fidelity simulation which address acute, life-threatening problems arising in patients with severe acute kidney injury prior to, during, and after the initiation of renal replacement therapy. These have been used for interdisciplinary team training in the SLCH Dialysis and Infusion Center, involving dialysis nurses and nurse practitioners as well as Pediatric Nephrology attendings and fellows. They are also suitable to be included in a comprehensive educational initiative incorporating high fidelity simulation for our Pediatric Critical Care fellows. Our use of these scenarios in the SLCH Dialysis and Infusion Center was presented as a poster at the 2016 International Symposium on AKI in Children.

2016 Professionalism, Leadership, and Career Development (PLCD)

I continue to develop and lead a curriculum for Pediatric Critical Care fellows to foster development of leadership skills and a personal approach to career development and professionalism that will aid them in their careers in Pediatric Critical Care Medicine. The course utilizes books, articles, and web-based materials that address such topics as (1) the giving and receiving of feedback, (2) fostering resilience and "grit" in oneself and others, (3) characteristics and qualities of effective leadership, (4) work-life balance in the context of meaningful work, and (5) responsible and effective use of social media as a pediatric critical care physician. The format is facilitated small-group discussions based on the reading (or viewing) materials in a casual, non-threatening learning environment. We meet 5-6 times per academic year, and I spend 5 – 10 hours in preparation for each session, depending on the degree of changes made from prior sessions in format and background materials.

Educational Leadership

2019 - Pres Associate Program Director, Pediatric Critical Care Fellowship Program

While I am engaged in all aspects of our Pediatric Critical Care Fellowship Program, my particular focus is on fellows' scholarly and career development. I begin meeting with them early in their first year of fellowship in order to explore areas of interest that may develop into successful scholarly pursuits both in fellowship and after graduation as they transition to junior faculty. I meet with each of our ~15 fellows at least twice each academic year to assess scholarly project progress and overall career development goals.

In addition, I initiated and maintain our fellowship's Twitter and Instagram accounts. Our goals in starting these accounts were to interface with potential fellowship applicants - especially in the midst of the pandemic when in-person interactions were not possible for external applicants - and to highlight the achievements of our fellows, faculty, and division. I post on these platforms ~2-4 times per week and review and interact with content on the platforms almost daily. In just under 18 months, we have acquired 315 followers on Twitter and 579 followers on Instagram. Our Instagram account in particular is frequently mentioned positively by our applicants during the interview process.

2020 - Pres Program Director, Advanced Cardiac Critical Care Training Program

In this capacity, I am responsible for review of any applications to our CICU training program (typically 5-10 per year), inviting and scheduling interviews if offered, extending offers for training for selected applicants/interviewees, developing a comprehensive curriculum and clinical experience in pediatric cardiac critical care for accepted trainees, devising and collating appropriate feedback, and ensuring adequate progress toward successful completion of the program by trainees. Recently, I have been engaged with program directors for advanced cardiac critical care training in pediatrics around the country, coordinating application and interview practices and dates, participating in a cardiac ICU-focused journal club, and seeking to understand the present and future employment landscape and associated training needs nationally. Future projects may include development of curriculum standards, a standardized in-training exam, and possibly board or sub-board certification.

Graduate students, fellows, medical students, residents for whom mentorship was provided

2021 - Pres Yuen Lie Tjoeng - Junior Faculty, Seattle Children's Hospital

The GUARDIANS program was created to help form mentorship relationships across institutions in the field of Pediatric Critical Care, including Pediatric Cardiac Critical Care, particularly focused in the realms of wellness, networking, career development, administration, and scholarship. I was invited to serve as a mentor in this program at its outset at the beginning of 2021. Dr. Tjoeng and I meet at least quarterly. In preparation for these meetings, I review the provided thought questions and readings as well as my own experiences and perspectives since my years as a junior faculty member in the CICU.

ANNUAL SUMMARIES

OTHER

Participated in research studies

2017 - Pres Neonatal and Pediatric Heart and Renal Outcomes Network (NEPHRON)

The NEPHRON study group was created to examine AKI epidemiology and outcomes in pediatric cardiac ICU patients. It utilizes data from the Pediatric Cardiac Critical Care Consortium (PC4) as well as AKI- and RRT-specific retrospective data that was collected at each site. I was 1 of 2 site investigators at the outset of the study group and now serve as the sole site PI. The group has published 1 paper thus far, as cited above. We are currently in the process of 2 analyses of daily weighing practices in the CICU; I will be the first author of 1 of those analyses and a co-author on the other.

2021 - Pres Utilizing a CRRT database to predict future outcomes after pediatric acute kidney injury (the WE-ROCK study)

This collaborative was formed earlier this year in order to develop a database for pediatric patients who have required CRRT in the course of their critical illness, seeking to identify risk factors for mortality or chronic kidney disease in this group. As the site PI, I have obtained local IRB approval as a coordinating site, and we are in the process of finalizing a data use agreement that will allow us to enter retrospective data from our center into the study.