

## Critical Care Medicine



Listed from left to right. Front: Margaret A. Chase, Jill A. Fitch, Jo M. Craenen, Sree Chirumamilla. Middle: Nadeem Khan, Onsy S. Ayad, Anthony I. Lee, Maria H. Estrada. Back: Eric A. Lloyd, Mark W. Hall.

### Staff Physicians and Faculty



Nadeem Khan, MD, Chief

Onsy S. Ayad, MD  
Margaret A. Chase, MD  
Sree Chirumamilla, MD  
Jo M. Craenen, MD  
Maria H. Estrada, DO  
Jill A. Fitch, MD  
Mark W. Hall, MD  
Anthony I. Lee, MD  
Eric A. Lloyd, MD

The mission of the Section of Critical Care Medicine is to provide the highest standard of care to all critically ill children and their families. The critical care medicine faculty is responsible for providing around-the-clock, in-house physician coverage for the 26-bed Pediatric Intensive Care Unit (PICU). The busy clinical service provides care for approximately 1,600 to 1,700 patients per year. The section's physicians serve as primary attendings for all medical admissions to the PICU and provide concurrent care for all of the surgical patients. The critical care medicine faculty also contribute to the coverage of the seven-bed Cardiothoracic ICU. The critical care team utilizes an integrative multidisciplinary approach to bring quaternary care to the bedside of the sickest children in the central Ohio region. State-of-the-art complex therapies such as extracorporeal membrane oxygenation (ECMO), high frequency oscillatory ventilation (HFOV), inhaled nitric oxide (iNO) and continuous renal replacement therapies (CRRT) are available 365 days a year.

The Pediatric Analgesia and Sedation Service (PASS) began seeing patients in 2001 and is administered through the Division of Critical Care. Many patients require

painful and even psychologically difficult therapeutic and diagnostic procedures. Often these procedures cannot be completed compassionately without providing analgesics and/or sedatives. The goals of the PASS are to provide for the safety and welfare of the patient, minimize pain and psychologic discomfort, control behavior and return the patient to normal baseline state. The sedation service participates in the Pediatric Sedation Research Consortium which is an international multi-institutional collaborative group dedicated to improving pediatric sedation practice through sharing of prospective observational data on cases and outcomes. In 2007, PASS provided sedation for more than 554 patients equaling over 848 patient contact hours. The critical care faculty participates in clinical and didactic instruction for both the Pediatric and Surgical Residency programs. Faculty members provide lectures at the surgical and medical grand rounds. The faculty also provides training for anesthesia, cardiology, pulmonary, and adult as well as pediatric emergency medicine fellows. Critical care medicine faculty have taught at a wide array of local, national and international conferences in 2007. A PICU elective is provided for fourth-year medical students.

An ACGME-approved Pediatric Critical Care Medicine (PCCM) fellowship program has been in place since 2003. This highly successful program provides rigorous clinical and academic training for the next generation of ICU faculty. Having recently increased its complement to two fellows per year, the PCCM fellowship successfully competed in the 2007 NRMP fellowship match, filling all available positions.

The Section of Pediatric Critical Care Medicine at Nationwide Children's Hospital is actively building its research program in both clinical and basic sciences. Mark Hall, MD, an NIH-funded investigator, has produced award-winning work detailing the immunobiology of pediatric critical illness. He also is actively investigating the molecular regulation of inflammation by monocytes and macrophages in the laboratory. Our Pediatric Critical Care Medicine fellows have presented original scientific work at numerous national/international meetings in the past year including six abstracts accepted for presentation at the 2008 Society of Critical Care Medicine Annual congress.

The Assessment and Consultation Team (ACT) was implemented in September 2006. The team is available 24 hours a day and includes multiple members of the critical care team; a registered nurse, respiratory therapist and physician. The consult may be activated for any concern regarding a patient's clinical condition by a physician, nurse or parent. Nationwide Children's is among the first in the nation to empower parents to utilize ACT. The team

*quickly assesses the patient's condition and recommends, if necessary, further action or transfer to the intensive care unit. Since the introduction of ACT, there has been a significant decrease in the number of medical emergencies occurring outside of the intensive care unit.*

### **Clinical, Teaching and Research Interests**

**Nadeem Khan, MD**, is Medical Director of the Pediatric Intensive Care Unit at Nationwide Children's Hospital, a Clinical Associate Professor at The Ohio State University James Cancer Hospital and Solove Research Institute and a Clinical Assistant Professor of Pediatrics at The Ohio State University College of Medicine. Dr. Khan received MBBS degrees from Sind Medical College, University of Karachi, Pakistan, followed by a clinical clerkship at Carthage Area Hospital in Carthage, New York. Dr. Khan also was a research fellow at Toronto General Hospital in Canada, followed by a pediatric residency at Milton S. Hershey Medical Center at Pennsylvania State University in Hershey, Pennsylvania, and a pediatric critical care fellowship at Children's Hospital of Pittsburgh.

**Onsy S. Ayad, MD**, is Director of the Pediatric ECMO program, an Associate Medical Director of the Pediatric Intensive Care Unit at Nationwide Children's Hospital and Critical Care Liaison to the Stecker Scholarship Program in the Department of Pediatric Education at Nationwide Children's Hospital and an Assistant Professor of Clinical Pediatrics at The Ohio State University College of Medicine. He also is an Associate Attending at The Ohio State University James Cancer Hospital and Solove Research Institute. Dr. Ayad attended the Alexandria University College of Medicine in Alexandria, Egypt, and completed an internship and residency at Cooper Hospital/University Medical Center, Camden, New Jersey. He completed a fellowship in pediatric critical care medicine at Children's Hospital Medical Center in Cincinnati, Ohio. Clinical research and educational activities include vasopressin deficiency in children following cardiopulmonary bypass, incidence and outcome, vasopressin deficiency in children with septic shock and the effect of enteral feeding with Oxepa™ on the clinical outcome of children with acute lung injury.

**Margaret A. Chase, MD**, is an attending physician in the Pediatric Intensive Care Unit at Nationwide Children's Hospital and a Clinical Assistant Professor of Pediatrics at The Ohio State University College of Medicine. Dr. Chase received her medical degree from Eastern Virginia Medical School in Norfolk, Virginia, and completed residency in internal medicine and pediatrics at The Ohio State University/Nationwide

Children's Hospital. She completed a fellowship in pediatric critical care medicine at Children's Hospital Medical Center in Cincinnati, Ohio. Clinical research activities include the use of surfactant in acute lung injury. In addition, Dr. Chase serves as the MedFlight transport liaison for the ICU and is actively involved in the internal medicine/pediatrics residency program.

**Sree Chirumamilla, MD**, is an attending physician in the Pediatric Intensive Care Unit at Nationwide Children's Hospital and a Clinical Assistant Professor of Pediatrics at The Ohio State University College of Medicine. She received her medical degree from St. George's University in Grenada, West Indies, and completed a residency in pediatrics at Westchester Medical Center in Valhalla, New York. Dr. Chirumamilla completed a pediatric critical care fellowship at Children's Medical Center, Medical College of Virginia, Virginia Commonwealth University in Richmond, Virginia. Clinical research includes impact of Assessment Consultation Team implementation and renal saturation monitoring for early detection of renal failure in shock. Her educational activities include outreach education for MedFlight, hospitals, pediatric and family practice offices locally and in rural areas around Columbus. Dr. Chirumamilla is also a preceptor for third-year medical students in the Introduction to Clinical Medicine course. Her memberships include the American Academy of Pediatrics and the Society of Critical Care Medicine.

**Jo M. Craenen, MD**, is an attending physician in the Pediatric Intensive Care Unit and serves as one of the Interim Medical Directors of the Hospice Program at Nationwide Children's Hospital and is an Associate Professor of Pediatrics at The Ohio State University College of Medicine. Dr. Craenen received her medical degree from Catholic University, Louvain, Belgium, followed by an internship at Robert Packer Hospital Guthrie Clinic in Sayre, Pennsylvania. She was a pediatric resident at University Ghent, Ghent, Belgium, and Buffalo Children's Hospital in Buffalo, New York, followed by a fellowship in cardiology at Buffalo Children's Hospital. Dr. Craenen's memberships include the American Medical Association, Central Ohio Pediatric Society, Columbus Medical Association and the Midwest Pediatric Cardiology Society. Her clinical research involves evaluating the possibility of using cerebral oximetry as a guide to increased intracranial pressure. Regarding her teaching interests, Dr. Craenen provides residents with appropriate, case specific, didactic material for the cardiac patients in the Intensive Care Unit.

**Maria H. Estrada, DO**, is an attending physician in the Pediatric Intensive Care Unit at Nationwide Children's Hospital, a Clinical Associate Professor of Pediatrics at The Ohio State University College of Medicine and an Associate Attending at The Ohio State University James Cancer Hospital and Solove Research Institute. Dr. Estrada received her DO from New York College of Osteopathic Medicine and completed an internship and residency at Winthrop University Hospital, Mineola, New York. She completed a pediatric critical care medicine fellowship at Miami Children's Hospital in Florida. Dr. Estrada's memberships include the American Osteopathic Association, The American Academy of Pediatrics and The Society of Critical Care Medicine.

**Jill A. Fitch, MD**, is an attending physician in the Pediatric Intensive Care Unit and the Cardiothoracic Intensive Care Unit, Director of the Pediatric Critical Care Fellowship Program and Director of the Pediatric Analgesia and Sedation Service (PASS) at Nationwide Children's Hospital and a Clinical Associate Professor of Pediatrics at The Ohio State University College of Medicine. She is also an Associate Attending at The Ohio State University James Cancer Hospital and Solove Research Institute. Dr. Fitch completed medical school at Northeastern Ohio Universities College of Medicine in Rootstown, Ohio, followed by a fellowship in pediatric critical care medicine and a residency in combined internal medicine and pediatrics, both at the Cleveland Clinic Foundation. She is a Fellow of the American Academy of Pediatrics, Association of Pediatric Program Directors and former President of the Central Ohio Pediatric Society.

**Mark W. Hall, MD**, is Associate Director of the Pediatric Critical Care Medicine Fellowship program at Nationwide Children's Hospital, an investigator in the Center for Perinatal Research at The Research Institute at Nationwide Children's Hospital and an Assistant Professor of Pediatrics, Division of Critical Care Medicine at The Ohio State University College of Medicine. He holds appointments to both the Davis Heart and Lung Research Institute at The Ohio State University and The Heart Center at Nationwide Children's Hospital. He received his medical degree in 1994 from the University of Virginia in Charlottesville and went on to Children's Hospital of Pittsburgh for a residency in pediatrics in 1997; he was chief resident in 1998. He was a fellow in pediatric critical care medicine from 1998 to 2001 and held the Charles Schertz Research Fellowship from 2001 to 2002, both at Children's Hospital of Pittsburgh. Dr. Hall's primary research interest lies in the area of immunobiology

of pediatric critical illness, focusing on monocyte function in the settings of sepsis and Multiple Organ Dysfunction Syndrome (MODS). His clinical research focuses on immune monitoring and modulation in critically ill children. His basic science research focuses on the molecular regulation of the inflammatory response in human and murine monocytes/macrophages. Additionally, Dr. Hall is actively involved in the exploration of the relationships between neuroendocrine and immune function in the pediatric ICU.

**Anthony I. Lee, MD**, is an attending physician in the Pediatric Intensive Care Unit and the Cardiothoracic Intensive Unit at Nationwide Children's Hospital and a Clinical Assistant Professor of Pediatrics at The Ohio State University College of Medicine. He is also the Medical Director of the Virtual Pediatric Intensive Care Unit (VPICU). Dr. Lee received his medical degree from the Ross University School of Medicine in the Dominica, West Indies, and completed a combined residency in internal medicine and pediatrics at West Virginia University in Morgantown, West Virginia, and served an additional year as chief resident in pediatrics. He completed a pediatric critical care fellowship at Children's National Medical Center in Washington, D.C. Dr. Lee's interests include the field of medical informatics and the design and implementation of quality improvement initiatives utilizing information technology.

**Eric A. Lloyd, MD**, is an attending physician in the Pediatric Intensive Care Unit at Nationwide Children's Hospital and an Assistant Professor of Clinical Pediatrics at The Ohio State University College of Medicine. Dr. Lloyd received his medical degree from Northeastern Ohio Universities College of Medicine in Rootstown, Ohio, and completed a categorical residency in pediatrics at Advocate Lutheran General Children's Hospital in Park Ridge, Illinois. Dr. Lloyd completed a pediatric critical care fellowship at McGaw Medical Center of Northwestern University Program, Children's Memorial Hospital in Chicago, Illinois. Dr. Lloyd's memberships include the Society of Critical Care Medicine, the American Academy of Pediatrics and the American Medical Association.

### Research Funding (Over \$50,000)

**Mark W. Hall, MD**  
*Monocyte Pvrin Expression in Human Sepsis*, National Heart, Lung, and Blood Institute

### Publications

**Hall MW**, Gavrilin MA, Knatz NL, Duncan MD, Fernandez SA, Wewers MD. Monocyte mRNA phenotype and adverse outcomes from pediatric multiple organ dysfunction syndrome. *Pediatric Research* 62(5): 597-603, November 2007.

Stoner MJ, Goodman DG, Cohen DM, Fernandez SA, Hall MW. Rapid fluid resuscitation in pediatrics: Testing the ACCM guideline. *Annals of Emergency Medicine* 50(5): 601-607, November 2007.

## Presentations and Teaching Activities

**Mark W. Hall, MD**

*Immunomodulation in Pediatric Multi-organ Failure*, Plenary Session, The Society of Critical Care Medicine Annual Congress, February 2007

*Pediatric Septic Shock – The Golden Hour and Beyond*, Emergency Medicine Grand Rounds, Cleveland MetroHealth System, Cleveland, Ohio, April 2007

*The State of the Art in Pediatric Septic Shock*, Department of Pediatrics Grand Rounds, Mount Sinai School of Medicine, New York, New York, November 2007

**Anthony I. Lee, MD**

*Computerization of an Insulin Protocol Reduces Errors in Simulated Tight Glycemic Control Scenarios*, Society of Critical Care Medicine 36th Critical Care Congress, Orlando, Florida, February 2007

## Awards and Honors

**Onsy S. Ayad, MD**

Fellow, American Academy of Pediatrics

Member, American Medical Association

Member, Society of Critical Care Medicine (SCCM)

**Jo M. Craenen, MD**

Member, American Academy of Pediatrics

Member, American Medical Association

Member, Central Ohio Pediatrics Society

**Sree Chirumamilla, MD**

Fellow, American Academy of Pediatrics

Member, Society of Critical Care Medicine (SCCM)

**Maria H. Estrada, DO**

Member, American Osteopathic Association

Member, Society of Critical Care Medicine (SCCM)

**Jill A. Fitch, MD**

Fellow, American Academy of Pediatrics

Member, American Academy on Physicians and Patients

Member, Association of Pediatric Program Directors

Member, Central Ohio Pediatric Society

Past President 2006-2007, Central Ohio Pediatric Society

Member, Columbus Medical Symposium

Member, Lifeline of Ohio – Advisory Committee

Member, Pediatric Cardiac Intensive Care Society

Member, Society for Pediatric Sedation

Member, Society of Critical Care Medicine (SCCM)

Ohio Chapter of AAP Nominating Committee

**Mark W. Hall, MD**

2007 Nationwide Children's Hospital Fellow's Patient Oriented Research Award (awarded to David J. Marquardt, MD: Fellow; Mark W. Hall: Mentor)

Fellow, American Academy of Pediatrics

Listed, Best Doctors in America

Member, American Association of Immunologists

Member, American Society of Transplantation

Member, American Thoracic Society

Member, Society of Critical Care Medicine (SCCM)

**Nadeem Khan, MD**

Fellow, American Academy of Pediatrics

Member, American Academy of Pediatrics, Critical Care

Member, Child Health Corporation of America (CHCA) Patient Safety Collaborative

Member, Society of Critical Care Medicine (SCCM)

**Anthony I. Lee, MD**

Fellow, American Academy of Pediatrics

Member, American College of Physicians

Member, American Medical Association

Member, Society of Critical Care Medicine (SCCM)

Society of Critical Care Medicine Educational Scholarship Award, Society of Critical Care Medicine 36<sup>th</sup> Critical Care Congress

**Eric A. Lloyd, MD**

Fellow, American Academy of Pediatrics

Member, American Medical Association

Member, Society of Critical Care Medicine (SCCM)

## Fast Facts

PICU Admissions: 1,676

Average Length of Stay\*: 3.4

Average Daily Census\*: 15.7

Number of Beds: 26

\*Excludes observation patients