Division of Neonatology

Academic Year 2019
Annual Report

Department of Pediatrics
University of Washington
and
Seattle Children’s Hospital
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERVIEW</td>
<td>4</td>
</tr>
<tr>
<td>PERSONNEL</td>
<td>8</td>
</tr>
<tr>
<td>CLINICAL ACTIVITIES</td>
<td>13</td>
</tr>
<tr>
<td>Medical Consultation Program/Children’s Communication Center</td>
<td>13</td>
</tr>
<tr>
<td>Infant Ground Transport Program</td>
<td>13</td>
</tr>
<tr>
<td>Infant Development Follow-Up Clinic</td>
<td>13</td>
</tr>
<tr>
<td>Neonatal-Perinatal Database</td>
<td>14</td>
</tr>
<tr>
<td>TEACHING ACTIVITIES</td>
<td>15</td>
</tr>
<tr>
<td>Neonatal-Perinatal Medicine Fellowship Training Program</td>
<td>15</td>
</tr>
<tr>
<td>Neonatology Fellow Research Curriculum</td>
<td>16</td>
</tr>
<tr>
<td>Resident Education</td>
<td>19</td>
</tr>
<tr>
<td>Medical Student Education</td>
<td>19</td>
</tr>
<tr>
<td>NEST Program</td>
<td>19</td>
</tr>
<tr>
<td>RESEARCH FUNDING</td>
<td>20</td>
</tr>
<tr>
<td>Active Research Funding</td>
<td>20</td>
</tr>
<tr>
<td>Pending Research Funding (Applications)</td>
<td>25</td>
</tr>
<tr>
<td>CLINICAL, RESEARCH, AND TEACHING ACTIVITIES</td>
<td>26</td>
</tr>
<tr>
<td>PUBLICATIONS: JULY 2018 – JUNE 2019</td>
<td>39</td>
</tr>
<tr>
<td>Peer-Reviewed Articles</td>
<td>39</td>
</tr>
<tr>
<td>Chapters, Textbooks</td>
<td>46</td>
</tr>
<tr>
<td>Other Publications</td>
<td>47</td>
</tr>
<tr>
<td>PRESENTATIONS BY INVITATION</td>
<td>48</td>
</tr>
<tr>
<td>FACULTY ORG CHART</td>
<td>53</td>
</tr>
</tbody>
</table>
Mission Statement: We will improve neonatal outcomes by
- Providing outstanding evidence-based neonatal clinical care
- Educating the next generation of neonatal caregivers
- Advancing neonatal scholarship

History of Division Faculty:
The Division of Neonatal Biology and Respiratory Diseases of the Department of Pediatrics at the University of Washington was officially created in 1963 with the recruitment of Dr. Tim Oliver. He then recruited Dr. W. Alan Hodson from Johns Hopkins in 1966 as a second faculty member. A third faculty member, Dr. Dick Wennberg, was added in 1969 and a fourth, Dr. David Woodrum, in 1971. Dr. Oliver left Seattle in 1971 to become Chair of Pediatrics at Pittsburgh and Dr. Hodson became head of the Division, a position he held until 1997 when he stepped down and Dr. Christine Gleason was recruited from Johns Hopkins as Division Head of Neonatology. At that time, Pulmonary Medicine officially became its own division under the direction of Dr. Greg Redding. Since 1997, the Division has substantially expanded its clinical activities, research programs, and its outstanding neonatal fellowship training program. Dr. Gleason stepped down as Division Head in 2014 when Dr. Sandra Juul was successfully recruited in January 2015.

History of Division Research:
Between 1966 and 1970, research funding for the Division was obtained from the NICHD with a Neonatal Biology Training Grant, an individual research award, and a satellite clinical research center. In 1972, Division members worked together with members of the Department of Medicine to obtain a 5-year Specialized Center of Research (SCOR) Grant in respiratory disease from the NHLBI. This SCOR became an independent pediatric pulmonary SCOR when it was renewed in 1976, with a second 5-year renewal in 1982. In 1987, a Program Project grant entitled “Pathophysiology of Respiratory Disorders of the Newborn” was funded through the NHLBI for a 5-year period ending in 1992. From 1992 to the present, the Division’s scholarship has diversified; new directions in developmental neuroscience were included beginning in 1998 after Dr. Christine Gleason became Division Head. In 2000, Dr. Sandra Juul was recruited. NIH-funded bench research programs focused on neurodevelopment and neonatal neuroprotection, with translation to multicenter clinical trials of erythropoietin (Epo) neuroprotection. The addition of senior scientist Dr. Colin Studholme to the Division in 2011 brought state of the art neuroimaging techniques for fetal and neonatal brain imaging. The overarching basic science research goal of the Division is to improve the neurodevelopmental outcomes of at-risk infants. Clinical research is focused on neuroscience, medical education, ethics and global neonatal-perinatal health. In 2013, Dr. Juul was awarded a $10.1 million UO1 grant supporting a 5-year multi-center clinical trial investigating Epo as a neuroprotective agent in extremely preterm infants, and in 2016 a second U01 grant was awarded to study the neuroprotective effects of Epo for term infants with hypoxic ischemic encephalopathy. Dr. Dennis Mayock is the Associate Division Head for Clinical Research.
**Division Clinical Services:**

**University of Washington Medical Center Neonatal Intensive Care Unit (Level IV):**

*Thomas P. Strandjord, MD, Medical Director; Toby Cohen, MD, Assoc. Medical Director*

The UWMC NICU admits critically-ill newborns from one of the highest risk obstetric services in the nation. The multi-professional perinatal and NICU teams have special expertise in management of the most fragile growth-restricted and premature fetuses and newborns. The high-risk perinatal program receives obstetrics referrals from throughout the WWAMI region for fetal abnormalities, severe maternal illness, and extreme prematurity and is the site of delivery for the most complex birth defects, including infants requiring EXIT procedures for airway anomalies. Additional advanced services include therapeutic hypothermia and the full range of ventilation strategies including inhaled nitric oxide, high –frequency oscillatory and jet ventilation. The NICU medical team includes neonatal faculty, neonatal fellows, neonatal nurse practitioners, neonatal hospitalists, pediatric residents, interns and medical students. The inter-professional team includes dedicated respiratory therapists, neonatal pharmacists, dieticians, physical therapists, speech language pathologists and social work support. The nursing team includes three tiers of RN expertise and leadership. A state-of-the-art 50-bed NICU opened October 2012. The NICU includes 42 single-bed rooms with space for a family member to stay with their infant plus several additional rooms for multiples as well as an integrated OR for surgical procedures. Patients are cared for by one of two multi-disciplinary teams, a resident-based team, and an NNP/hospitalist team. The UWMC NICU’s care model includes 24/7 coverage by in-house residents and, mid-level intensivists (fellow or NNP/hospitalist), under the direction of attending neonatologists. In AY 2018, the UWMC had 1910 deliveries with 509 NICU admissions. The average daily census was 37 with 21 preterm infants weighing less than 1500 grams at birth and an average daily census of 3.7 on ventilators.

**Seattle Children’s Hospital Neonatal Intensive Care Unit (Level IV):**

*Robert DiGeronimo, MD, Medical Director; Zeenia Billimoria, MD, Assoc. Medical Director*

The Neonatal Intensive Care Unit at Seattle Children’s Hospital is the highest rated Level IV NICU in the Seattle area and serves as the major tertiary referral center for medically and surgically complex neonates in the Pacific Northwest. Seattle Children’s NICU admits nearly 500 patients annually and has over 500 affiliated faculty that represent all pediatric subspecialties including: 12 pediatric surgeons, 5 pediatric neurosurgeons and 4 pediatric cardiac surgeons – more than any other hospital in the region. The Children’s NICU provides the full spectrum of neonatal medical care including therapeutic hypothermia for acute hypoxic ischemic encephalopathy, seizures, high frequency ventilation, inhaled nitric oxide and ECMO for severe respiratory failure, renal replacement therapy including dialysis and surgical expertise in the areas of congenital diaphragmatic hernia, intestinal failure, bowel atresia, craniofacial anomalies, reconstructive pelvic medicine, post-hemorrhagic hydrocephalus, neural tube defects and neurovascular malformations. In addition, we offer multidisciplinary care teams providing neuro-critical care and management of bronchopulmonary dysplasia. Daily rounds with the medical team incorporate the patient’s family, NICU nurses, dietician, pharmacist and respiratory therapist. The NICU team accepts admissions of critically ill neonates up to 44 weeks’ post menstrual age (i.e., up to 4 weeks after due date) from the 5-state WAMI region. The Seattle Children’s Hospital NICU’s care model includes an in-house fellow or NNP and attending neonatologist 24/7. Seattle Children's Prenatal Diagnosis and Treatment Program partners with the University of Washington to provide care for pregnant women and their
families when pregnancy is complicated by known or suspected conditions in the developing fetus. Our program integrates obstetric, neonatology and pediatric specialty care for families facing complicated pregnancy management or decision-making. In AY 2018, the SCH NICU had 483 admissions. The average daily censures was 26.8 with 69 preterm infants weighing less than 1500 grams at birth and 14 ECMO days.

**UW Medicine/Northwest Hospital and Medical Center Neonatal Intensive Care Unit (Level II):**
*Toby L Cohen, MD, Medical Director; Thomas P. Strandjord, MD, Assoc. Medical Director*

In November of 2018 Northwest Hospital Special Care Nursery, a Level II NICU began a collaborative effort with the UW Division of Neonatology and Seattle Children’s Hospital to support care for infants born prematurely at greater than 32 weeks, as well as term infants who may be suffering from a variety of neonatal conditions including but not limited to breathing difficulties and infections. Northwest Hospital delivery service sees approximately 1100 newborn infants annually. Although historically the service delivers primarily low risk patients there is always the potential need for the expertise provided by 24/7 in house coverage by our team of Advanced Neonatal Practitioners who have immediate access to consultation with UW/SCH neonatologists and a premier critical care neonatal transport system. The unit is being remodeled to support the focus on family centered care with increased opportunity and available space for couplet care.

**UW Medicine/Valley Medical Center Neonatal Intensive Care Unit (Level III)**
*Christina Long, DO, Medical Director*

In July 2017, Neonatologists and Advanced Neonatal Practitioners from University of Washington/Seattle Children’s Hospital began a collaborative effort to staff the NICU at UW/Valley Medical Center. The unit has a 29-bed capacity. The single bed rooms provide space and privacy for our patients and their families. Two, unique, infant stabilization rooms allow immediate resuscitation of infants in the NICU after birth without requiring transport after stabilization. Valley has a robust high- risk perinatal clinic and the Neonatologists work closely in conjunction with the high-risk team to provide consults for families prenatally. The Valley NICU uses a multi-disciplinary approach to patient care with NICU dedicated pharmacists, dieticians, physical therapists, speech therapists, respiratory therapists, social work, and NICU nurses. This multi-disciplinary staff meets with families to provide the best family-centered care for our patients. Advanced services provided at Valley include therapeutic hypothermia with 24/7 Pediatric Neurology support and a large range of ventilation strategies including high-frequency oscillatory ventilation. Advanced Neonatal Practitioners staff the NICU with 24/7 in- house coverage under the direction of attending Neonatologists. In AY 2018, Valley had 3474 number of deliveries with 212 NICU admissions.
Providence Regional Medical Center Everett Neonatal Intensive Care Unit (Level III):  
Michael D. Neufeld, MD, MPH, Medical Director; Anna Hedstrom MD, Assoc. Medical Director

Providence Regional Medical Center Everett’s 29-bed capacity NICU opened on Mother’s Day in 2002. The unit was developed through the efforts of an alliance between PRMCE and Seattle Children’s Hospital. Individual rooms provide privacy for patients and their families. The multidisciplinary team meets daily with parents and concentrates on family-centered care, teaching parents how to take care of their infants, especially those with special needs. In preparation for discharge, parents are provided in-depth instruction on how to manage emergencies that may arise in the home, including the need for CPR. The care model at PRMCE is 24/7 in-house Advanced Neonatal Practitioners under the direction of attending neonatologists. In AY 2018, PRMCE had 4603 deliveries with 602 NICU admissions. The average daily census was 22.5 with 49 preterm infants weighing less than 1500 grams at birth.

Franciscan Health Care System; St Joseph Medical Center (Level III); St Francis (Level II); Highline Medical Center (Level II):  
Stephen Welty, MD, Medical Director; Elizabeth Flanigan MD, Associate Medical Director; Meenakshi Dutta MD, Highline Medical Director

Franciscan Health Care System includes a network of hospitals with approximately 9,000 deliveries annually at its 5 obstetrical facilities: St Joseph Medical Center in Tacoma, St Francis Hospital in Federal Way, St Elizabeth Hospital in Enumclaw, Harrison Medical Center in Silverdale, and Highline Medical Center in Burien. St Joseph Medical Center has a licensed capacity of 23 neonatal beds and has 24/7 in-house Advanced Neonatal Practitioners supported by faculty neonatologists. St. Francis Hospital has a licensed capacity of 10 Level II beds that receive medical care from local pediatricians, with consultation and attendance at high-risk deliveries as needed from SCH Advanced Neonatal Practitioners and/or neonatologists. For 12 hours/day, Saint Francis has in house coverage with the Advanced Neonatal Practitioners with support from Neonatology Providers and for the other 12 hours/day, Neonatology provides coverage directly and via telemedicine. Highline Medical Center has a licensed capacity of 5 Level II beds, with inpatient Level II care and consultative services provided by Seattle Children’s Neonatologists on call. St. Elizabeth is a critical access hospital with 345 deliveries a year. Seattle Children’s Hospital partnered with the Franciscan Health Care System to begin providing Neonatology services and medical direction on April 1, 2013, and St. Joseph Medical Center opened its new Level III NICU in June 2013, and Highline Medical Center began its collaboration with Seattle Children’s in November 2018. This partnership has made it possible for the vast majority of patients to stay within their community while receiving excellent care for their fragile newborns. On 1/22/18, we lowered the gestational age at which we would manage patients at SJMC to 25 weeks when previously we had used 27 weeks gestation for our threshold of care at SJMC. With the continued emphasis on non-invasive ventilation as our primary mode of respiratory support, we average between 4 and 6 babies on nasal CPAP per day and less than one baby per day on invasive ventilatory support. In September of 2018, we expanded our care to provide inhaled nitric oxide for infants with hypoxic respiratory failure and we utilized it on three patients with excellent clinical responses. In AY 2018, St. Joseph’s had approximately 4100 deliveries with 480 NICU admissions. Our average daily census was 17.0 with 44 premature infants weighing less than 1500 and 14 weighing less than 1000 grams at birth.
Sandra E. Juul, MD, PhD  
W. Alan Hodson Endowed Chair in Pediatrics  
Professor of Pediatrics  
Head, Division of Neonatology, Department of Pediatrics  

Maneesh Batra, MD, MPH  
Professor of Pediatrics  
Associate Director, Pediatric Residency Program  

Zeenia Billimoria, MD  
Assistant Professor of Pediatrics  
Associate Medical Director, NICU, Seattle Children’s Hospital  

Shilpi Chabra, MD  
Associate Professor of Pediatrics  

Toby Cohen, MD  
Professor of Pediatrics  
Medical Director, NICU, Northwest Hospital  
Associate Medical Director, NICU, University of Washington Medical Center  

Pattaraporn Chun, MD  
Clinical Assistant Professor of Pediatrics  

Robert DiGeronimo, MD  
Clinical Professor of Pediatrics  
Medical Director, NICU, Seattle Children’s Hospital  
Neonatal Medical Director, Neonatal Transport and Extracorporeal Life Support Programs, Seattle Children’s Hospital  

Meenakshi Dutta, MD  
Clinical Assistant Professor of Pediatrics  
Medical Director, NICU, Highline Medical Center  

Cyril Engmann, MD  
Clinical Professor of Pediatrics and Global Health  
Global Program Leader/Director, Maternal, Newborn, Child Health & Nutrition, PATH  

Elizabeth Flanigan, MD  
Clinical Associate Professor of Pediatrics  
Associate Medical Director NICU, St. Joseph’s Medical Center
Kendell German, MD
Assistant Professor of Pediatrics
Director of Research, Infant Development Follow-Up Clinic

Christine A. Gleason, MD
Emeritus Professor of Pediatrics

Megan Gray, MD
Assistant Professor of Pediatrics
Associate Director, Neonatal-Perinatal Medicine Fellowship Training Program

Sarah J. Handley, MD
Clinical Assistant Professor of Pediatrics
Physician Liaison, Neonatal Nurse Practitioner Program, Seattle Children’s Hospital

Anna Hedstrom, MD
Assistant Professor of Pediatrics
Associate Medical Director NICU, Providence Regional Medical Center Everett

Melinda Hendrickson, MD
Clinical Associate Professor of Pediatrics

J. Craig Jackson, MD, MHA
Professor of Pediatrics
Associate Division Head, Regional Neonatal Program Development

Elizabeth N. Jacobson, MD
Clinical Assistant Professor of Pediatrics, Division of Neonatology
Quality and Safety Medical Director, Neonatology Regional Network
Site Physician Sponsor, Children’s Hospital Neonatal Consortium, Seattle Children’s Hospital

Janessa Law, MD
Assistant Professor of Pediatrics

Christina Long, DO
Clinical Associate Professor of Pediatrics
Medical Director, NICU, Valley Medical Center

Davia Loren, MD
Associate Professor of Pediatrics
Course Director PEDS669, Medical Student Elective in NICU, University of Washington Medical Center

Dennis E. Mayock, MD
Professor of Pediatrics
Associate Division Head, Scholarship and Clinical Research
Ulrike Mietzsch, MD
Clinical Associate Professor of Pediatrics
Medical Director, Neuro-NICU, Seattle Children’s Hospital

Michael D. Neufeld, MD, MPH
Clinical Associate Professor of Pediatrics
Medical Director, NICU, Providence Regional Medical Center Everett

Pratik Parikh, MD
Assistant Professor of Pediatrics

Krystle Perez, MD, MPH
Assistant Professor of Pediatrics

Mihai Puia-Dumitrescu, MD, MPH
Assistant Professor of Pediatrics

Taylor Sawyer, DO, MEd
Associate Professor of Pediatrics
Director of Medical Simulation, Seattle Children’s Hospital
Director, Neonatal-Perinatal Medicine Fellowship Training Program
Director of Outreach Education, Neonatal Education & Simulation Based Training (NEST) Program
Associate Division Head, Education

Andy Shih, PhD
Associate Professor of Pediatrics
Principal Investigator at the Shih Lab at Seattle Children’s Research Institute

Kendra Smith, MD
Clinical Professor of Pediatrics

Thomas P. Strandjord, MD
Clinical Professor of Pediatrics
Medical Director, NICU, University of Washington Medical Center
Associate Medical Director, NICU, Northwest Hospital

Colin Studholme, PhD
Professor of Pediatrics and Professor of Bioengineering
Adjunct Professor of Radiology

Christopher Traudt, MD
Assistant Professor of Pediatrics
Associate Medical Director, NICU, Valley Medical Center

Rachel Umoren, MD, MS
Assistant Professor of Pediatrics
Director of the Neonatal Education and Simulation Training (NEST) Program
**Linda Wallen, MD**  
Clinical Professor of Pediatrics  
Associate Division Head, Clinical Operations

**Elliott Weiss, MD, MSME**  
Assistant Professor of Pediatrics  
Assistant Professor, Division of Bioethics

**Stephen Welty, MD**  
Professor of Pediatrics  
Medical Director, NICU, St. Joseph’s Medical Center

**Thomas Wood, BM BCh, PhD**  
Assistant Research Professor of Pediatrics

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**Fellows:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Pediatric Residency Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Year</td>
<td>Teresa Lam, MD</td>
<td>Loma Linda University Medical Center</td>
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<tr>
<td></td>
<td>Patrick Motz, DO, MPH</td>
<td>Wright State University</td>
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<tr>
<td>2nd Year</td>
<td>Brianna Brei, MD, MPH</td>
<td>Rush University Medical Center</td>
</tr>
<tr>
<td></td>
<td>Shubha Setty, MD</td>
<td>Emory University</td>
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<tr>
<td>1st Year</td>
<td>Sarah Kolnik, MD, MBA</td>
<td>New York University</td>
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<tr>
<td></td>
<td>Katherine Kenningham, MD</td>
<td>University of Washington</td>
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<tr>
<td>2019-2020</td>
<td>Rushabh Shah, MD</td>
<td>Albany Medical Center</td>
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<tr>
<td></td>
<td>Ben Al-Haddad, MD, MSc, PhD</td>
<td>University of Washington</td>
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</tbody>
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**Seattle Children’s Hospital Neonatal APP Program: (8)**

April Morris, MN, ARNP, Manager, Advance Practice Services  
Chris Cooper, ARNP, DHP, Supervisor, Swedish Medical Center Issaquah  
Meg Keith, MSN, ARNP, Supervisor, Seattle Children’s Hospital  
Kim Gustafson, MSN, ARNP, Supervisor, CHI-Franciscan Health System  
Vanessa Rothstein, PA-C, Supervisor, Providence Regional Medical Center Everett  
Carol Otto MSN, ARNP, Supervisor, Valley Medical Center

This program provides Neonatal APP services at eight regional medical centers in collaboration with Seattle Children’s Hospital and the Division of Neonatology.
University of Washington Medical Center Neonatal Nurse Practitioner Program: (9)

Shwu-Shin Hou, MN, ARNP, NNP-BC, Program Manager
Jennie Collins, MD
Amy Dunn Caldwell, ARNP
Jennifer Fesinmeyer, ARNP
Tiffany Stanley, ARNP
Kimberly Jones, ARNP
Catherine Baker, ARNP
Mary Akers, ARNP
Rocio Humphrey, ARNP

Research Staff:
Daniel Moralejo, PhD, DVM, Lab Manager
Kylie Corry, MS, Research Scientist
Cole Fisher, Research Scientist
Tommy Wood, BM BCh, PhD, Research Assistant Professor

HEAL Grant Project Team:
Sandra Juul, MD, PhD, Principal Investigator; Clinical Coordinating Center
Dennis Mayock, MD, Site Principal Investigator and Executive Committee
John Feltner, Lead Clinical Coordinator (HEAL)
Isabella Esposito, Research Coordinator
Elizabeth Jacobson, MD
Craig Jackson, MD, MHA
Pratik Parikh, MD
Krystle Perez, MD, MPH
Thomas Strandjord, MD
Christopher Traudt, MD
Linda Wallen, MD
Elliott Weiss, MD, MSME

PENUT Grant Project Team:
Sandra Juul, MD, PhD, Principal Investigator; Clinical Coordinating Center
Dennis Mayock, MD, Site Investigator and Executive Committee
Bailey Clopp, Lead Clinical Coordinator (PENUT)
Todd Richards, PhD, Lead Physicist
Colin Studholme, PhD, Biomedical Imaging Computing Group
Christopher Traudt, MD, Imaging Data Analysis

Biomedical Image Computing Group:
Colin Studholme, PhD, Principal Investigator
David Hunt, PhD, Senior Fellow
Mary Kociuba, PhD, Senior Fellow
CLINICAL ACTIVITIES

MEDICAL CONSULTATION PROGRAM/CHILDREN’S COMMUNICATION CENTER

The Division provides 24/7 neonatal consultation services and medical control for neonatal ground and air transport for the 5-state WWAMI region for about 400 patients per year.

NEONATAL TRANSPORT PROGRAM

Robert DiGeronimo, MD, Medical Director; Christopher Baker, MSN, MBA, RN C-NPT, Clinical Manager

Neonatal transport services for Seattle Children’s and its affiliated hospital partners is provided by dedicated teams from Seattle Children’s and Airlift Northwest. Our transport team are leaders in safe newborn transport and have ground, rotor and fixed wing capability. Teams are comprised of specially trained transport nurses and respiratory therapists. Infants from referral centers throughout the WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) region are transported to Seattle Children’s. Services provided include various modes of non-invasive support, high frequency ventilation, administration of nitric oxide, blood gas analysis and mobile extracorporeal membrane oxygenation for critically ill patients too unstable to move via conventional support.
INFANT DEVELOPMENT FOLLOW-UP CLINIC

Emily Myers, MD; Kendell German, MD; Nina Natarajan, MD

The University of Washington Center on Human Development and Disability offer the Infant Development Follow-Up Clinic and the Late and Moderate Preterm Baby Clinic to provide interdisciplinary neurodevelopmental assessments for infants at risk for developmental differences. Infants receive standard evaluations at 4, 12, 18, and 24 months, then annually through 5 years old. Developmental Pediatrics, Neonatal Neurology, Neonatology, Advanced Practice Nursing, Psychology, Speech/Language Pathology, Audiology, Nutrition, Occupational Therapy, Physical Therapy and Social Work staff the clinic. The clinic sees approximately 2500 infants and children annually. The clinic also provides interdisciplinary training and follow-up for patients in clinical research studies.

Infants who qualify to be seen in these clinics are those that meet any of the following criteria:

- Infants born before 36 weeks gestation
- Birthweight of <1500g
- Infants exposed in-utero to drugs or alcohol
- Infants with prenatal, perinatal, or neonatal brain injuries (IVH, HIE, stroke)
- Infants with complex medical disease requiring, selected surgical interventions
- Infants who required a neonatal intensive care unit hospitalization.

Recent changes to these clinics include the introduction of the Reach Out and Read program; and the creation of the Seattle Children’s Hospital Committee on Infant Developmental Follow-Up that provides guidance on developmental follow-up needs for children discharged from the Seattle Children’s Hospital NICU. Ongoing research in the clinic includes follow-up for the PENUT and HEAL trials, the evaluation of the Reach Out and Read program in the NICU and follow-up clinics and the creation of a patient database to facilitate quality improvement and outcomes research.

NEONATAL-PERINATAL DATABASES

Michael D. Neufeld, MD, MPH; Thomas P. Strandjord, MD, Database Coordinators

The University of Washington Medical Center Neonatal Intensive Care Unit maintains a quality improvement and research NICU database that includes all infants admitted to the NICU, as well as all infants delivered at UWMC over 22 weeks gestation. The database is maintained by Division staff and faculty. In addition, since 2000, the University of Washington NICU has participated in the Vermont-Oxford Network (VON) database for 401-1500 gram infants. Data is selected for inclusion in the NICU database by consensus of the neonatology faculty and fellows. The NICU database contains a superset of the data required by the VON database and as such includes extensive admission, diagnostic, outcome and local QA/QI data. The outcome (morbidity and mortality) data is generated annually and reviewed with the faculty and fellows. In addition, ad hoc queries are performed at the request of fellows and faculty and reviewed as a group.
Seattle Children’s Hospital belongs to the Children’s Hospitals Neonatal Consortium of more than 30 children's hospital Level IV NICUs. This allows for involvement in benchmarking and quality evaluation and improvement initiatives for the SCH NICU through the Children’s Hospitals Neonatal Database and focus groups on specific diagnoses, such as severe bronchopulmonary dysplasia, congenital diaphragmatic hernia, and hypoxic-ischemic encephalopathy.

Robert DiGeronimo, MD, Site Physician Co-Sponsor
Seattle Children’s Hospital belongs to the Extracorporeal Life Support Organization (ELSO), an international non-profit consortium of over 350 health care institutions dedicated to the development and evaluation of novel therapies to support organ failure. Participation in ELSO affords the opportunity to participate in and query the extracorporeal membrane oxygenation database to support clinical research, quality improvement and evidence based guideline recommendations.

TEACHING ACTIVITIES

NEONATAL-PERINATAL FELLOWSHIP TRAINING PROGRAM
Taylor Sawyer, DO, MEd, Program Director; Megan Gray, MD, Associate Program Director
The Neonatal-Perinatal Medicine Fellowship Training Program at the University of Washington began in the mid-1960s. Our mission is to educate and inspire the next generation of neonatologists who will provide state-of-the-art, evidence-based clinical care, and to assist and mentor them in finding and pursuing their scholarly passion so they are poised to be the future academic leaders of our field. During their 3 years of training, fellows spend a total of 56 weeks on clinical service: 46 weeks on rotations in the two teaching hospital NICUs (Seattle Children's Hospital & University of Washington Medical Center); 8 weeks on clinical services including perinatology, cardiac ICU, and pediatric surgery; and 2 weeks in one of the Division's community hospital NICUs. Fellows also attend NICU follow-up clinic 8 half-days each year. Additionally, fellows achieve a high degree of scholarly/academic competence in order to excel in a career in academic neonatology. We have designed our program to provide ample protected time for scholarly activities. Our research areas of focus include neuroscience, global health, education/simulation, quality improvement, and biomedical ethics. We have strong research mentors both within and outside the Neonatology Division. As of 2018, 62 neonatologists have successfully completed their clinical and research training in our program, and more than 50% have pursued an academic career. Our graduates have a first time board pass rate of 100% over the past 5 years.
NEONATOGALY FELLOW RESEARCH CURRICULUM

Meenakshi Dutta, MD, Kendell German, MD, Pattaraporn Chun, MD

The Neonatology Fellow Research Curriculum is a program that spans all three years of Neonatology fellowship. This program aims to provide structured research education as well as individualized research guidance. At monthly to quarterly meetings, fellows meet as a group to discuss progress on their research projects and trouble-shoot problem areas. Brief structured didactic teaching is provided on Biostatistics topics and interactive lectures are led by program staff or guest speakers on such topics as mentorship, research support services and grant writing. The goal of this curriculum project is to support fellows in their completion of fellowship requirements for scholarly productivity and spur their interest in a career in academic medicine.

DIVISION FELLOWSHIP GRADUATES:

Note: The program was inactive 7/95 – 6/99.

<table>
<thead>
<tr>
<th>Name</th>
<th>Years of Training</th>
<th>Current Position/Institution:</th>
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<tbody>
<tr>
<td>Richard Wennberg</td>
<td>1966-1968</td>
<td>Clinical Professor of Pediatrics, University of Washington (Retired from the University of California, Davis), Seattle, WA</td>
</tr>
<tr>
<td>Thomas Helmrath</td>
<td>1967-1969</td>
<td>Medical Director, Riverside Hospital, Columbus, OH</td>
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<tr>
<td>Robert Hall</td>
<td>1968-1970</td>
<td>Professor of Pediatrics, University of Missouri, Mercy Children’s Hospital</td>
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<tr>
<td>David Woodrum</td>
<td>1969-1971</td>
<td>Professor Emeritus of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Colby Parks</td>
<td>1969-1971</td>
<td>Private Practice, Anchorage, AK</td>
</tr>
<tr>
<td>Ron Bloom</td>
<td>1969-1971</td>
<td>Professor of Pediatrics, University of Utah, Salt Lake City, UT</td>
</tr>
<tr>
<td>Errol Alden</td>
<td>1970-1972</td>
<td>Executive Director, American Academy of Pediatrics</td>
</tr>
<tr>
<td>Thomas Nelson</td>
<td>1971-1973</td>
<td>Professor of Pediatrics, Georgetown University, Washington, DC</td>
</tr>
<tr>
<td>Rosemary Orr</td>
<td>1971-1973</td>
<td>Professor of Anesthesiology, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Jacquelyn Bamman</td>
<td>1972-1974</td>
<td>Director, Neonatal &amp; Pulmonary Medicine, Ventura County Hospital, Ventura, CA</td>
</tr>
<tr>
<td>Janet Murphy</td>
<td>1972-1974</td>
<td>Associate Professor Emeritus of Pediatrics, University of Washington(Retired), Seattle, WA</td>
</tr>
<tr>
<td>David Belenky</td>
<td>1973-1975</td>
<td>Private Practice, Seattle, WA</td>
</tr>
<tr>
<td>John Prueitt</td>
<td>1973-1975</td>
<td>Private Practice, Seattle, WA</td>
</tr>
<tr>
<td>Paul Hinkes</td>
<td>1973-1975</td>
<td>Private Practice, Glendale, CA</td>
</tr>
<tr>
<td>John Yount</td>
<td>1973-1975</td>
<td>Private Practice, Salem, OR</td>
</tr>
<tr>
<td>Name</td>
<td>Years</td>
<td>Position</td>
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<tr>
<td>Robert Guthrie</td>
<td>1974-1976</td>
<td>Professor of Pediatrics, Drexel University, Philadelphia, PA</td>
</tr>
<tr>
<td>Jonelle Rowe</td>
<td>1974-1976</td>
<td>Professor Emeritus of Pediatrics, University of Connecticut Health Center, Farmington, CT</td>
</tr>
<tr>
<td>Charles Haberkern</td>
<td>1975-1977</td>
<td>Clinical Professor of Anesthesiology, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Robert Perelman</td>
<td>1975-1977</td>
<td>Director, Department of Education, American Academy of Pediatrics</td>
</tr>
<tr>
<td>William E. Truog</td>
<td>1976-1978</td>
<td>Professor of Pediatrics, University of Missouri, Kansas City, MO</td>
</tr>
<tr>
<td>Dale Kessler</td>
<td>1976-1978</td>
<td>Director, Neonatal Medicine, Maine Medical Center, Portland, ME</td>
</tr>
<tr>
<td>Dennis Mayock</td>
<td>1979-1981</td>
<td>Professor of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Kelly Wright</td>
<td>1979-1981</td>
<td>Private Practice, Memphis, TN</td>
</tr>
<tr>
<td>Greg Sorensen</td>
<td>1982-1984</td>
<td>Vice President, Medical Affairs, Bon Secours Health System, Richmond, VA</td>
</tr>
<tr>
<td>J. Craig Jackson</td>
<td>1982-1985</td>
<td>Professor of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Richard Badura</td>
<td>1982-1985</td>
<td>Private Practice, Seattle, WA</td>
</tr>
<tr>
<td>Jon Watchko</td>
<td>1983-1986</td>
<td>Professor of Pediatrics, University of Pittsburgh, Pittsburgh, PA</td>
</tr>
<tr>
<td>Gary Twiggs</td>
<td>1985-1987</td>
<td>Private Practice, Newport Beach, CA</td>
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<tr>
<td>A.C. Hoffmeister</td>
<td>1985-1987</td>
<td>Private Practice, Eugene, OR</td>
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<tr>
<td>Sandra Juul</td>
<td>1986-1989</td>
<td>Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Charles Davis</td>
<td>1987-1989</td>
<td>United States Navy</td>
</tr>
<tr>
<td>Thomas Strandjord</td>
<td>1987-1990</td>
<td>Clinical Professor of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Matt Lee</td>
<td>1989-1992</td>
<td>Research Assistant Professor, University of Southern California, Los Angeles, CA</td>
</tr>
<tr>
<td>James Berger</td>
<td>1990-1993</td>
<td>Private Practice, Ogden, UT</td>
</tr>
<tr>
<td>Valerie Newman</td>
<td>1993-1994</td>
<td>Private Practice, Portland, OR</td>
</tr>
<tr>
<td>Peter Tarczy-Hornoch</td>
<td>1992-1995</td>
<td>Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Michael Neufeld</td>
<td>1999-2003</td>
<td>Clinical Associate Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Eric Leung</td>
<td>1999-2003</td>
<td>Private Practice, Renton, WA</td>
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<tr>
<td>David Anderson</td>
<td>2000-2003</td>
<td>Private Practice, Walnut Creek, CA</td>
</tr>
<tr>
<td>Susan Miller</td>
<td>2002-2005</td>
<td>Private Practice, Naples, Florida</td>
</tr>
<tr>
<td>Name</td>
<td>Years</td>
<td>Position/Institution</td>
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<tr>
<td>Robert Mertz</td>
<td>2002-2005</td>
<td>Private Practice, Seattle, WA</td>
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<tr>
<td>Eric Demers</td>
<td>2002-2005</td>
<td>Private Practice, Seattle, WA</td>
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<tr>
<td>Katherine Salinas/Simon</td>
<td>2004-2006</td>
<td>Private Practice, Austin, TX</td>
</tr>
<tr>
<td>Maneesh Batra</td>
<td>2004-2007</td>
<td>Associate Professor of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Marcella Mascher-Denen</td>
<td>2005-2008</td>
<td>Private Practice, Corpus Christi, TX</td>
</tr>
<tr>
<td>Jessica Slusarski</td>
<td>2006-2009</td>
<td>Associate Professor, Brown University, Providence, RI</td>
</tr>
<tr>
<td>Annie Nguyen-Vermillion</td>
<td>2007-2010</td>
<td>Private Practice, Seattle, WA</td>
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<tr>
<td>Janna Patterson</td>
<td>2007-2010</td>
<td>Senior Vice President, Global Child Health and Life Support</td>
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<tr>
<td>Andrew Beckstrom</td>
<td>2008-2011</td>
<td>Private Practice, Seattle, WA</td>
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<tr>
<td>Elizabeth Jacobson</td>
<td>2008-2011</td>
<td>Clinical Assistant Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Pattaraporn Tanya Chun</td>
<td>2010-2013</td>
<td>Assistant Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Rachel Fleishman</td>
<td>2010-2013</td>
<td>Assistant Professor, Drexel University College of Medicine; St. Christopher's Hospital for Children, Philadelphia, PA</td>
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<tr>
<td>Anna Hedstrom</td>
<td>2011-2014</td>
<td>Assistant Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Stacey Soileau</td>
<td>2011-2014</td>
<td>Ochsner Health System, New Orleans, LA</td>
</tr>
<tr>
<td>Shaun Odell</td>
<td>2012-2015</td>
<td>Private Practice, Utah Valley Regional Medical Center, Provo, UT</td>
</tr>
<tr>
<td>Vijayeta (Vij) Rangarajan</td>
<td>2012-2015</td>
<td>Private Practice, Seattle, WA</td>
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<tr>
<td>Eric Peeples</td>
<td>2013-2016</td>
<td>Assistant Professor, University of Nebraska</td>
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<tr>
<td>Jayalakshmi (Ammu) Ravindran</td>
<td>2013-2016</td>
<td>Private Practice, University of San Francisco</td>
</tr>
<tr>
<td>Gillian Pet</td>
<td>2014-2017</td>
<td>Assistant Professor Washington University, St. Louis</td>
</tr>
<tr>
<td>Anita Shah</td>
<td>2014-2017</td>
<td>Private Practice, Children’s Hospital of Orange County</td>
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<tr>
<td>Meenakshi Dutta</td>
<td>2015-2018</td>
<td>Clinical Assistant Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Kendell German</td>
<td>2015-2018</td>
<td>Assistant Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Jeannie Krick</td>
<td>2015-2018</td>
<td>Neonatologist, Madigan Army Medical Center, Tacoma, WA</td>
</tr>
<tr>
<td>Teresa Lam</td>
<td>2016-2019</td>
<td>Private Practice, Providence Medical Center, Anchorage, Alaska</td>
</tr>
<tr>
<td>Patrick Motz</td>
<td>2016-2019</td>
<td>Private Practice, Kaiser Permanente, Roseville, California</td>
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</tbody>
</table>
RESIDENT EDUCATION

Maneesh Batra, MD, MPH, Associate Director, Pediatric Residency Program

Our faculty, fellows, and advanced neonatal practitioners are involved in several aspects of the core training program for pediatric residents. Currently the University of Washington Pediatric Residency Program accepts 43 residents per year. All residents complete one 4-week rotation in the UWMC NICU during their intern year and one or more rotations in the UWMC NICU and SCH NICU over the course of their subsequent 2 years of residency. For all of these trainees our faculty, fellows and advance neonatal practitioners provide bedside teaching during the rotation. Additionally, our Division has been responsible for training all pediatric interns in the Newborn Resuscitation Program (NRP). Finally, several of our faculty are invited to participate each year in the WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) visiting professor program.

MEDICAL STUDENT EDUCATION

Davia Loren, MD, Course Director

An elective rotation in the UWMC NICU is offered to 4th year medical students. Division faculty also lecture in various medical school courses (for example, Ethics) and offer research experience for students in their laboratories. In addition, selected faculty have participated in the University of Washington’s medical school “College Faculty” program.

NEONATAL EDUCATION AND SIMULATION-BASED TRAINING (NEST) PROGRAM

Rachel Umoren, MD, MS, Program Director; Taylor Sawyer, DO, MEd, Director of Outreach Education; Thomas Strandjord, MD, Director of Clinical Integration; Megan Gray, MD, Director of Research

In 2014, the Division of Neonatology joined an elite group of neonatal divisions who own and operate a dedicated neonatal simulation program. The Neonatal Education and Simulation-based Training (NEST) Program sets the UW and Seattle Children’s Division of Neonatology apart and highlights the Division’s dedication to simulation-based education. The mission of the NEST Program is to improve neonatal outcomes through advanced technology-enhanced training and simulation research. The program’s vision is to provide international leadership in neonatal education, simulation-based training and scholarship. Current projects include: ‘boot camps’ for residents and fellows, neonatal resuscitation training, neonatal procedural skills training, development of a computer-based perinatal counseling simulator, and virtual reality neonatal disaster training. The NEST program works to improve the care of neonates in the Seattle region by conducting educational outreach with pediatric providers and neonatal transport teams.
Maneesh Batra, MD, MPH
2015-Present  Ambassador J. Christopher Stevens Endowment for International Child Health Research and Education), Seattle Children’s Foundation
Role: Manager and Steward. Principal: $500,000, Annual Disbursement: $25,000

Shilpi Chabra, MD
2017-2019  NIH/NICHD R21 HD089151, Improving Safety and Quality of Tracheal Intubations in Neonatal ICUs. Role: Co-Investigator and Site PI, Total Award: $275,000

Cyril Engmann, MD
2014-2018  Maternal Child Survival Program: Grant from the United States Agency for International Development, Program Lead: C. Engmann, Total Award: $10,000,000
2014-2018  Making Every Baby Count Initiative (MEBCI): Grant from the Children’s Investment Fund Foundation, Program Lead: Cyril Engmann, Total Award: $12,421,572
2015-2018  Scaling up Human Milk Banking in Vietnam and India, Co-investigator: C. Engmann Cargill Foundation, Total Award: $2,000,000
2015-2018  Optimizing the Health Extension Program (OHEP) in Ethiopia: Grant from the Bill & Melinda Gates Foundation, Co-PI C. Engmann, Total Award: $5,000,000
2016-2018  Milk Banking, Compendium for Capacity Building & Best Practice Assessment. Program Lead: C. Engmann. Grant from the Family Larsson Rosenquist Foundation, Total Award: $1,277,300
2016-2020  Advancing Maternal Immunization. MNCHN Program Lead: C. Engmann Grant from the Bill & Melinda Gates Foundation, Total Award: $9,000,000
2016-2020  Technical Assistance for Nutrition, Chair of Consortium: C Engmann Grant from the Department for International Development, United Kingdom Total Award: $20,000,000
2017-2020  Scaling up Early Childhood Development: Expanding Nurturing Care in the early years. Grant from the Conrad Hilton Foundation. Role: MNCHN Program Lead, Total Award: $8,200,000
2018-2023 Demographic and Health Surveys-8. United States Agency for International Development, Role: Program Lead, Total Award: $5,070,891

Kendell German, MD

2019-2020 Urine F2-Isoprostanones and Oxidative Stress in ELGANs and Correlation with Iron Administration. Thrasher Research Fund, Early Career Award. Role: PI, Total Award: $26,750

Megan Gray, MD

2016-2019 Multimodal Simulation for Emergency and Disaster Preparedness, Academic Enrichment Fund Program, Seattle Children’s Hospital. Role: Co-PI, Total Award: $50,000 annually

2017-2018 Speaking up for Patient Safety, UW Patient Safety Innovations Program. Role: Co-Investigator, Total Award: $50,000 annually

2018-2019 Development and Validation of a Milestone-based Prenatal Counseling Communication Scale, UW Center for Leadership & Innovation in Medical Education Grant. Role: PI, Total Award: $5,000

2018-2020 The Organization of Neonatal Training Program Directors National Neonatology Curriculum Project, AAP Section on Neonatal Perinatal Medicine Educational Grant. Role: Co-Investigator. Total Award: $25,000

2018-2020 The ONTPD National Neonatology Flipped Classroom Curriculum and the Development of Best Practices for Flipped Classroom Facilitation, SPARK-Ed - Penn Medicine Grant. Role: Co-Investigator, Total Award: $5,000

Anna Hedstrom, MD

2012-Present Adara Development, “For International Travel to Uganda. I provide annual nursing and physician educational updates on neonatal topics, assist in design of unit protocols for care delivery and data collection and support the implementation of Continuous Positive Airway Pressure (CPAP) and oxygen blending” in the Kiwoko Hospital NICU Travel Funding, Award: ~$2,500 annually

2017-2019 Use of the respiratory severity score (RSS) to predict intubation (CPAP failure) in very preterm neonates. For study of the use of the RSS to predict CPAP failure/intubation in neonates < 32 weeks. Seattle Children’s Hospital, CCTR. Role: Principal Investigator, Total Award $60,000 (0.1 FTE)

Craig Jackson, MD, MHA

2016-Present Site co-investigator (0.05 FTE) on NIH-funded HEAL Study, a national, multi-center, randomized clinical trial: “High-dose erythropoietin for asphyxia and encephalopathy” (PI: Sandra Juul).
Sandra Juul, MD, PhD

2013-2019 Preterm Erythropoietin Neuroprotection Trial (PENUT Trial) CCC. 1U01NS077953-01 NINDS. Sandra Juul, MD, PhD, PI. Total Award: $10,145,741

2013-2019 Biomarkers of neonatal encephalopathy in a nonhuman primate model. SR01HD073128-02. Sandra Juul, MD, PhD, PI. Total Award: $3,233,245

2015-2018 NIH/NINDS 5R21NS093154-02. Novel ferret model of preterm encephalopathy Sandra Juul, MD, PhD, PI. Total Award: $424,875

2016-2022 High-dose Erythropoietin for Asphyxia and Encephalopathy (HEAL) CCC. 1U01NS092764-01A1, NINDS. Sandra Juul, MD, PhD and Yvonne Wu MD, MS, Multi-PIs. Total Award: $10,100,000

2017-2019 Uridine neuroprotection in neonatal hypoxic-ischemic brain injury. Bill and Melinda Gates Foundation, Sandra Juul, MD, PhD, PI. Total Award: $489,128

2018-2020 Epigenetic biomarkers of cerebral palsy in the ELGAN CP Alliance. Sandra Juul, MD, PhD and An Massaro, MD Co-PIs. Total Award: $179,925

2019-2021 Stem cells in addition to hypothermia for neuroprotection in perinatal hypoxic-ischemic brain injury, Thrasher Grant Research Foundation. Role: Co-PI, Total Award: $26,750

Janessa Law, MD

2019-2021 Stem cells in addition to hypothermia for neuroprotection in perinatal hypoxic-ischemic brain injury, Thrasher Grant Research Foundation. Role: PI, Total Award: $26,750

Dennis Mayock, MD

2013-2019 Preterm Erythropoietin Neuroprotection Trial (PENUT Trial) CCC. 1U01NS077953-01 NINDS. Role: Co-Investigator, Total Award: $10,145,741

2016-2018 Developmental Impact of NICU Exposures (DINE) Study. NICHQ. Role: Site Investigator

2016-2022 High-dose Erythropoietin for Asphyxia and Encephalopathy (HEAL) CCC. 1U01NS092764-01A1, NINDS. Role: Co-Investigator, Total Award: $10,100,000


Ulrike Mietzsch, MD

2015-2020 Impact of Neonatal Neurocritical Care Service Line, Riley Children’s Foundation. Role: PI, Total Award: $227,000

2016-2023 High-Dose Erythropoietin in Asphyxia and Encephalopathy (HEAL), NINDS. Role: Site PI until 10/18, now Co-Site PI, Total Award: $101,300
2018-2020  HEAL-EEG – Neurophysiologic measures of Epo treatment for hypoxic-ischemic encephalopathy (HIE), NINDS. Role: Site PI Indiana University School of Medicine, Total Award: $23,428

Pratik Parikh, MD

2017-2019  Academic Enrichment Fund. Does Nanocurcumin protect the preterm brain from injury? Role: Principal Investigator, Total Funding requested: $25,000

2018-2020  Bill and Melinda Gates Foundation, Uridine neuroprotection in neonatal hypoxic-ischemic brain injury. Role: Co-Investigator, 01/01/2018 to 7/1/2019. Total Funding: $489,128.00

2019-2021  Neonatal Biological Research Award, Exosome derived from erythropoietin preconditioned neural stem cell as neuroprotective agent in in-vitro model of neonatal brain injury. Role: PI, 1/1/19 to 12/31/2021, Total Funding: $6,000.

2019-2021  Thrasher Early Career Award. Urine F2-Isoprostanes and Oxidative Stress in ELGANs and Correlation with Iron Administration. Role: Co-Investigator, 01/01/2019 to 12/31/2021. Total Funding: $25,000.00

Mihai Puia-Dumitrescu, MD, MPH

2019-2020  Multinational and multicenter Phase 2b trial: A double-blind Randomized, Sham-Controlled, Parallel-Group, Dose-Ranging Study to Determine the Efficacy, Safety, and Tolerability of AeroFactTM (Aerosolized SF-R1), Role: PI

Taylor Sawyer, DO, MEd

2017-2019  Improving safety and quality of tracheal intubations in neonatal ICUs. NIH/NICHD1 R21 HD089151-01A1. Role: Co-PI, Total Award: $275,000


Andy Shih, PhD

2017-2022  Deciphering the Cerebral Microinfarct and its Role in Vascular Cognitive Impairment, R01 NS097775. Role: PI, Total Award: $1,964,790

2018-2020  Cytoskeletal Dynamics of Brain Pericytes and Impact on Capillary Flow, R21 NS106138. Role: PI, Total Award: $275,000

2019-2021  The Effects of Amyloid Beta on Pericyte Remodeling and Brain Capillary Function In Vivo, R21 NS106138. Role: PI, Total Award: $275,000

2019-2020  Deep In Vivo Two-photon Imaging of White Matter Pericytes During Ischemia, Albert Trust Foundation. Role: Co-PI, Total Award: $75,000
Kendra Smith, MD
2014-Present  Pfizer Pharmaceutical Company. A Multi-center, Randomized, Placebo-controlled, Double-blind, Two-armed, Parallel Group Study to Evaluate Efficacy and Safety of IV Sildenafil in the Treatment of Neonates with Persistent Pulmonary Hypertension of the Newborn or Hypoxic Respiratory Failure and at Risk for Persistent Pulmonary Hypertension, with a Long Term Follow-up Investigation of Developmental Progress 12 and 24 Months after Completion of Study. Annual Direct Costs: $51,827

2015-2018  United Therapeutics. Intravenous Remodulin (Treprostinil) as Add-on Therapy for the Treatment of Persistent Pulmonary Hypertension of the Newborn. Annual Direct Costs: $97,718


Colin Studholme, PhD
2013-2018  NIH NIBIB. “Motion robust mapping of human brain functional connectivity changes in utero.” Year 1 Award: $499,857

2013-2018  NIH NINDS. Motion robust mapping of human brain microstructure and macrostructure in utero (Competing renewal of High resolution in-utero mapping of fetal brain development from combined MRI). Year 1 Award: $459,691

2013-2018  NIH NINDS. Preterm Epo Neuroprotection Trial (PENUT Trial) Clinical Coordinating Center (CCC). Award: $1,789,418

Christopher Traudt, MD

Rachel Umoren, MD
2016-2019  Multimodal Simulation for Emergency and Disaster Preparedness, Seattle Children’s Academic Enrichment Fund Program (PI Gray). Role: Co-PI, Total Award: $50,000

2017-2019  eHBB: Virtual reality technology to improve newborn healthcare delivery in low and middle-income countries, Bill and Melinda Gates Foundation. Role: PI, Total Award: $1,109,135

2017-2020  WeCare Plus: An Innovative, Community-Based Collaboration to Decrease Infant Mortality, Indiana State Department of Health: Safety PIN (PI Litzelman). Role: Consultant, Total Award: $2,100,000

2018-2019  Development and Validation of a Milestone-based Prenatal Counseling Communication Scale, Center for Leadership & Innovation in Medical Education (CLIME) Small Grant Program (PI Gray). Role: Co-PI, Total Award: $5,000
**Elliott Weiss, MD, MSME**

2017-2019 Parental Attitudes in Neonatal Clinical Trial Enrollment: Decision-Making Preferences and Reasoning among Participants and Non-Participants, Clinical Research Scholars Program (CRSP) Intensive Path, Center for Clinical & Translational Research. Role: PI, Total Annual Award: $58,000

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**Megan Gray, MD**

2018-2020 mHealth Care for Sick Kids: Faster Transport using NLM Resources, National Institutes of Health – G08. Role: Co-Investigator

2018-2020 Patient Safety Learning Laboratory to Improve the Safety of Neonatal Interfacility Transfers in a Regional Care Network, Agency for Healthcare Research and Quality. Role: Co-Investigator

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**Anna Hedstrom, MD**


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**Sandra Juul, MD, PhD**

2019-2024 Preterm birth, neuroinflammation, and susceptibility to subsequent brain injury. NINDS, Role PI. Total award: $7,706,729.00

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**Dennis Mayock, MD**

2018-2023 Co-analysis of Longitudinal Fetal Brain and Placenta Functional MRI in Healthy and Growth Restricted Pregnancies. NICHD, Role: Co-Investigator

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**Pratik Parikh, MD**

Maneesh Batra, MD, MPH

Clinical Interests: Newborn health, survival and long-term outcomes in developed and developing country settings.

Scholarly Focus: Epidemiology and newborn outcomes in developed and developing country settings. Dr. Batra has been involved with a series of studies involving the Washington State Birth Events Records Database (BERD) including: environmental risk factors for ventricular septal defects, pregnancy outcomes among Somali women, risk factors for recurrent shoulder dystocia, and effects of mode of delivery on pregnancy and newborn outcomes. His primary interests revolve around improving newborn care in resource-poor settings. He has been involved with developing guidelines of care in a special care nursery in central Uganda since 2002.

Administration/Education Roles: Associate Director of the pediatric residency program and co-director of the residency pathways in global health and community pediatrics/advocacy. He is involved with the clinical training of students, residents, and fellows at the University of Washington and with the training of health workers of all levels in Kenya, Uganda, and Ethiopia.

Zeenia Billimoria, MD

Clinical Interests: Providing care to critically ill, high-risk newborns as part of a multi-disciplinary team. Caring for neonates requiring ECMO.

Scholarly Focus: Dr. Billimoria’s interests lie in studying outcomes of neonates in Washington State using the CHARS database. She is currently studying the outcomes of early term infants. She is also interested in telemedicine and has been working on projects with the NEST team.

Administration/Education Roles: Dr. Billimoria is the Associate Medical Director of Seattle Children’s Hospital NICU. She participates in simulation education with special interest in ECMO simulation.

Shilpi Chabra, MD

Clinical Interests: Dr. Chabra has a keen interest in helping decrease bronchopulmonary dysplasia in the extremely low birth weight preterm neonates especially with regards to the role of non-invasive ventilation and vitamin A. She is extremely passionate about management of infants with gastroschisis, both prenatal and postnatal. She helped develop the Seattle Children's gastroschisis clinical pathway that is being used statewide, and continues to update and review these guidelines.

Scholarly Focus: Mainly involves outcomes of gastroschisis, especially with regards to the effects of prematurity and small-for-gestational age including the optimal ultrasound formulae to assess fetal growth restriction and utility of a checklist to determine the timing of delivery. Other interests include long-term effects of pregnancy infections on child health; bronchopulmonary dysplasia and role of non-invasive ventilation; evaluation of safety of commonly used drugs in lactating women and breastfed infants; outcomes of late and moderately preterm infants and trends in gastroschisis and diaphragmatic hernia outcomes using large database.
**Administration/Education Roles:** As a member of the AAP Advocacy committee and the Washington Chapter Vaccine subcommittee, she has advocated for childhood vaccinations and assisted in dissemination of 2017 AAP Hepatitis B vaccine guidelines. She is extremely passionate about resident and fellow 'trainee wellbeing' leading a national workshop on “Promoting physician wellness”. She has been involved in several quality improvement projects such as effects of effects of 39-week initiative on late preterm births and empiric antibiotic treatment for maternal chorioamnionitis on success of exclusive breastfeeding. She served a physician advisor for Washington State Hospital Association and helped establish the Overlake infant nutrition clinic, which serves as Washington State Department of Health model for preterm infants’ safe transition from hospital to home. She loves educating Pediatric residents/fellows and mentors several Pediatric Residents and Neonatology Fellows who are the future of Neonatology.

**Toby Cohen, MD**

**Clinical Interests:** Improving care of premature and term infants with focus on delivery room stabilization and potentially better practices to optimize both short- and long-term outcomes. Other interests include the provision of optimal nutritional practices for preterm infants for avoidance of long term complications associated with prematurity, management of pulmonary hypertension in preterm and term infants, use of non-invasive ventilatory strategies to avoid ventilator associated complications, and equity in perinatal healthcare delivery.

**Scholarly Focus:** Quality Improvement utilizing an interdisciplinary team-based approach for positive culture change in the NICU. Current projects include implementation of ELBW infant care bundles in the delivery room and NICU with focus on the “Golden Hour” to implement best practices for transitioning preterm newborns during a time of increased vulnerability, and focus on decreasing catheter related blood stream infections in the NICU.

**Administration/Education Roles:** Serves as the Medical Director at University of Washington -Northwest (Level II) and as Associate Medical Director at University of Washington Medical Center- Montlake (Level III NICU). Provides resident and fellow education, works collaboratively with the APP teams at the University and community NICUs on Quality Improvement, and provides staff education in the NICU.

**Pattaraporn Chun, MD**

**Clinical Interests:** Providing care to critically ill infants, with an emphasis on implementing evidence-based neuroscience and neurobehavioral knowledge to optimize neurodevelopmental outcomes of high-risk newborns.

**Scholarly Focus:** Dr. Chun’s research interest includes neurodevelopment and neuroprotection for infants at high risk of developmental delay. She has studied metabolite changes as potential biomarkers of brain injury in a non-human primate model. She is pursuing a graduate degree in Neuroscience at the University of Washington.

**Administration/Education Roles:** Through mentoring medical students, pediatric residents and neonatal fellows, Dr. Chun’s primary teaching goal is to promote self-directed learning with a focus on bedside critical thinking and incorporation of evidence based medical knowledge.
Robert DiGeronimo, MD

Clinical Interests: Neonatal respiratory failure management, ECLS, BPD, surgical diseases of the newborn, transport medicine.

Scholarly Focus: Outcomes based research in quaternary care Children’s Hospital NICUs using large multicenter databases to include the Children’s Hospital Neonatal Collaborative (CHNC) Database, the Extracorporeal Life Support Organization and Congenital Diaphragmatic Hernia Study Group. Dr. DiGeronimo is currently the co-site sponsor for Seattle Children’s Hospital for the CHNC and is involved in numerous study focus groups in the areas of congenital diaphragmatic hernia, necrotizing enterocolitis, bronchopulmonary dysplasia, ECMO and hypoxic ischemic encephalopathy. He is also involved in numerous NICU quality improvement initiatives involving NICU care at Seattle Children’s Hospital as well as nationally.

Administration/Education Roles: NICU Medical Director for Seattle Children’s including oversight responsibility for neonatal ECMO and transport. He is involved with the clinical training of residents, fellows, nurse practitioners and PA students at Seattle Children’s as well as at other affiliated teaching sites.

Meenakshi Dutta, MD

Clinical Interests: Care of critically ill neonates, with special focuses on newborns with complex multi-system disorders, critical respiratory failure and pulmonary hypertension, and neonates undergoing stabilization for inter-facility transport.

Scholarly Focus: Dr. Dutta’s prior research interests have included quality improvement and neonatal transport. She is not currently involved in active research, but participates in division-based and site-specific quality improvement work throughout the Seattle area.

Administration/Education Roles: Dr. Dutta serves as medical director for the Neonatal ICU at Swedish Issaquah and the Special Care Nursery at Highline Medical Center in Burien, WA. She is the supervisor for the division’s neonatal hospitalist program, and acts as faculty lead for the neonatal fellowship research education curriculum.

Cyril Engmann, MD

Clinical Interest: Maternal, newborn and child health, development and survival; optimizing maternal, newborn and child nutrition, growth and early childhood development in low and high-income settings; assuring holistic, family-centered, high quality care to infants and their families in community and facility settings.

Scholarly Focus: Dr Engmann is widely regarded as a global leader in the field of maternal, newborn child health and nutrition (MNCHN). He is regularly invited to partner with a broad cross-section of stakeholders including United Nations agencies such as the World Health Organization and UNICEF, private foundations, academic centers and non-governmental organizations. He frequently leads MNCHN policy, implementation and educational dialogues in the USA and with national governments including the Governments of the United Kingdom, India, South Africa, Mozambique, Ethiopia, Ghana. He chairs a consortium that advises Britain on how best to spend and invest its overseas development money on nutrition through conducting in-depth country and international-level research and analysis, and regularly conducts educational briefings at the US Senate. Cyril remains passionate about the generation, transfer,
preservation and pragmatic utilization of knowledge through interdisciplinary collaborations, establishing strategies, and executing integrated programs that improve the human condition and put bold solutions into action.

**Administration/Education Roles:** Cyril Engmann is the Global Program Leader for Maternal, Newborn, Child health and Nutrition at PATH, an international non-governmental health organization driving transformative innovation to save lives in 70 countries. The MNCHN departments work spans the value chain from research, policy and planning, technical assistance, program and implementation science at global and national level, and represents funding received from a wide variety of sources including the National Institutes of Health & Centers for Disease Control, private foundations such as Gates, CIFF, Hilton, Family Larsson Rosenquist, and governments including USAID & DFID.

Elizabeth Flanigan, MD

**Clinical Interests:** Providing evidence based care to critically ill, high-risk newborns that is family centered. Her specific areas of interest include neonatal resuscitation, minimizing invasive ventilation, effective communication with parents, and neurodevelopmental outcomes.

**Scholarly Focus:** Dr. Flanigan is primarily an academic clinician who is working to improve care of infants by bringing evidence based care to the bedside.

**Administrative/Education roles:** Dr. Flanigan is the Associate Medical Director of the NICU within the Franciscan Healthcare System within this role she is focused on quality improvement and protocol development. Providing quality education and mentoring of fellows, residents and medical students, with emphasis on clinical thinking and communication.

Kendell German, MD

**Clinical Interests:** Working as part of a family-centered, interdisciplinary team aimed at providing evidence-based and developmentally-appropriate critical care for hospitalized infants.

**Scholarly Focus:** Dr. German’s research focuses on improving neurodevelopmental outcomes for NICU patients and graduates. She is the PI of ongoing research studies aimed at evaluating the effects of supplemental iron administration on markers of oxidative injury in the brain and neurodevelopmental outcomes in formerly preterm neonates. She is also engaged in collaborative research activities between the NICU and follow-up clinics including evaluating the effects of a reading intervention program and the establishment of a database aimed at facilitating developmental outcomes research and quality improvement studies.

**Administration/Education Roles:** Dr. German is involved with educational projects aimed at NICU follow-up training and NICU graduate care at the University of Washington, and nationally through the Society for Developmental and Behavioral Pediatrics and the American Academy of Pediatrics. She serves as the Director of Research for the Infant Development Follow-Up program, the co-director of the Reach Out and Read program at the University of Washington and is a member of the Seattle Children’s Hospital Committee on Infant Developmental Follow-Up.
Christine A. Gleason, MD

**Clinical interests:** Dr. Gleason’s primary areas of interest are neonatal drug development, ethical issues at the “limits of viability,” neonatal pain management and neonatal abstinence syndrome.

**Scholarly focus:** Health policy, particularly maternal and newborn care issues, and the scholarship of integration. She is particularly interested in writing (all kinds!) and textbook editing (Avery’s Diseases of the Newborn for example).

**Administrative/Education roles:** Dr. Gleason has been co-editor of Avery’s Diseases of the Newborn, a major neonatal textbook, for the last three editions. She also serves as Medical Editor of the Neonatal SubBoard of the American Board of Pediatrics. Her national leadership roles include 1) Secretary/Treasurer of the American Pediatric Society; 2) Member of the Board of Directors of PAS Inc. (Pediatric Academic Societies' annual meeting); 3) NICHD Data & Safety Monitoring Committees for two clinical trial networks (neonatal & maternal-fetal medicine); 4) Member of the Coordinating Committee for the International Neonatal Consortium.

Megan Gray, MD

**Clinical Interests:** The application of evidence based medicine to optimize growth and healing for all infants who require intensive care. She has a focus on maximizing the breastmilk and/or breastfeeding experience for mother baby dyads and preserving early family bonding.

**Scholarly Focus:** Improving medical education and emergency preparedness for all team members in the Neonatal Intensive Care Unit (NICU). She is investigating how interdisciplinary simulation can lead to improvements in clinically relevant outcomes and measures of teamwork. She is the Director of Research in the Neonatal Education and Simulation-Based Training Program (NEST) where she is investigating how to use motion based technology to deepen our understanding of how providers perform chest compressions.

**Administration/Education Roles:** Resident, fellow and interdisciplinary education through simulation and other technology based platforms. She works with Drs. Sawyer, Umoren and Strandjord as part of the NEST Program to provide education for neonatal care teams within the WWAMI region.

Sarah Handley, MD

**Clinical Interests:** ECMO in the neonate and management of the chronically ill/surgical neonate.

**Administration/Education Roles:** She is committed to fellow and resident education and assists in the Fellows' Curriculum Conference (Comprehensive review of Neonatal Board Topics over 3 years). She is also active in quality improvement in our community neonatal intensive care nurseries, along with outreach teaching in the community, and serves as liaison between the Seattle Children’s Hospital Neonatal Nurse Practitioner program and neonatology attending teams.

Anna Hedstrom, MD

**Clinical Interests:** Interdisciplinary, family-focused neonatal intensive care and investigation of targeting respiratory support to a newborn's specific needs

**Scholarly Focus:** Dr. Hedstrom’s research has focused on clinical research and the implementation of neonatal intensive care in resource limited areas globally. In particular, she researches ways to provide
safe, ethically sound and scientifically supported continuous positive airway pressure (CPAP) for newborns. She has also designed and implemented a novel data collection process in a rural Ugandan NICU with which she is able to assess clinical course and outcomes real-time. Her current research focuses on the use of a respiratory severity score as a tool to predict increased respiratory support after birth. This includes investigation of use of a respiratory score to guide support decisions including “in and out” surfactant administration.

**Administration/Education Roles:** Dr. Hedstrom is the Associate Medical Director of the neonatal unit at Providence Regional Medical Center Everett. Her teaching includes medical students, residents, neonatology fellows, nurse practitioners and physician assistants at the University of Washington and Seattle Children’s Hospital as well as instructing providers in the community and abroad in neonatal care and resuscitation.

**Melinda Hendrickson, MD**

**Clinical Interests:** Focus on reduced ventilator induced lung injury with application of non-invasive ventilation methods in the preterm infant and better growth and neurodevelopmental outcomes of NICU babies with improved nutritional practices.

**Scholarly Focus:** Implementation of potentially better practices to reduce chronic lung disease. Extremely low birth weight infants have high incidence of chronic lung disease following treatment of acute Respiratory Distress Syndrome, Chronic lung disease in preterm infants is a marker for long term neurodevelopmental outcomes and contributes to hospital length of stay. With less invasive respiratory support, chronic lung disease rates may decrease and severity may decrease with other members of the neonatology division, she will monitor the impact of new practice management guidelines in the delivery room on the development of chronic lung disease

**Administration/Education Roles:** Resident and fellow education in the NICU as well as mentoring the NNP staff in university affiliated community nurseries. With her colleagues in Tacoma, she developed a family medicine residency curriculum for a NICU rotation at St Joseph Medical Center.

**J. Craig Jackson, MD, MHA**

**Clinical Interests:** Prenatal neonatal counseling; neonatal palliative care; critical care of infants with complex surgical and pediatric subspecialty problems.

**Scholarly Focus:** Development of methods to teach empathetic communication skills to clinicians, and methods to help parents make difficult medical decisions for their fetuses and newborns.

**Administration/Education Roles:** Associate Division Head for Regional Neonatal Program Development; neonatology liaison to the Prenatal Diagnosis Clinics at Seattle Children’s Hospital and the University of Washington Medical Center; member of the CONNECT program leadership team for teaching communication skills to clinicians; member of Children’s University Medical Group Board of Directors; chair of the CUMG Contracting and Payer Relations Committee; member of CUMG Physician Education, Billing, Compliance Committee; CUMG representative on the Clinical Integrated Network Finance Committee; member of the SCH/UW Pediatric Intern Retreat Steering Committee; and division educator on professional billing documentation and compliance.
Elizabeth N. Jacobson, MD

Clinical Interests: Quality of care of newborns, including those with congenital, surgical and/or multi-complex disorders. Dr. Jacobson pursues multi-disciplinary, evidence-based, guideline-directed, and individualized management for these patients.

Scholarly Focus: Evidence-based guideline development for neonates, particularly those undergoing surgical operations.

Administration/Education Roles: Quality and Safety Medical Director, Neonatology Regional Network; Site Physician Sponsor for SCH NICU in the Children’s Hospitals Neonatal Consortium/Database. Clinical training of medical students, residents, and fellows, as well as neonatal PAs.

Sandra Juul, MD, PhD

Clinical Interests: Optimizing care for the critically ill newborn with a particular focus on discovering and implementing neuroprotective approaches to care.

Scholarly interests: Dr. Juul’s research mission is to improve the neurodevelopmental outcomes of high-risk neonates. As such, she has focused on developing neonatal models of brain injury, neuroprotective interventions, biomarkers of neonatal disease, and discerning and maintaining iron sufficiency in the preterm infant. Animal models used or developed in her lab include the Vannucci model of hypoxia ischemia, middle carotid artery occlusion as a model of stroke, and novel models of neonatal stress in rodents, a ferret model of preterm encephalopathy, and a nonhuman primate model of perinatal asphyxia. Dr. Juul has been fortunate to translate her bench research on erythropoietin (Epo) neuroprotection to the bedside, and is now principal investigator of the ongoing NIH funded clinical trial of Preterm Epo Neuroprotection (PENUT), and co-principal investigator of a multicenter phase III of Epo neuroprotection in term infants with hypoxic ischemic encephalopathy (HEAL).

Administration/Education Roles: Dr. Juul became Division Head Jan 2015, and has been actively recruiting and hiring new research and clinical faculty. Nationally, she is currently the Chair of the neonatal sub-board of the American Board of Pediatrics (yes, writing exam questions!), is a member of the Committee of the Fetus and Newborn and liaison to the AAP Executive Committee and is past Chair of the Developmental Brain Disorders NIH study section, and co-editor of Avery’s Diseases of the Newborn, 10th edition. She is a sought after speaker at National and International meetings. Locally, Dr. Juul participates in the research education of undergraduate students, residents and fellows in her lab, as well as the clinical education of pediatric residents and neonatology fellows. She is also a member of the promotions committee.

Janessa Law, MD

Clinical Interests: Practicing evidence-based medicine to optimize care for critically ill neonates with a focus on improving neurodevelopmental outcomes in high-risk infants.

Scholarly Focus: Dr. Law’s research focus includes neuroprotection and neuro-repair for neonates affected by hypoxic ischemic brain injury at birth. She studies the use of human neural stem cells as a possible treatment option in a rodent model of hypoxia-ischemia. She is also part of the Juul Lab team studying the potential use of erythropoietin to decrease neonatal brain injury.

Administration/Education Roles: Whether working with advanced neonatal fellows or starting medical students, Dr. Law’s primary teaching goal is to demonstrate and encourage critical thinking and inquiry while seeking to practice evidence based medicine.
Christina Long, DO

**Clinical Interest:** Providing family-centered care for all NICU patients.

**Scholarly Focus:** Administration and quality improvement to improve neonatal outcomes. Dr. Long has an interest in continuing to develop evidence-based guidelines for management of neonatal problems and assessing their effectiveness in improving neonatal care and outcomes.

**Administration/Education Roles:** Serves as the NICU Medical Director at Valley Medical Center. Dr. Long is involved in teaching medical students, residents, fellows, and nurse practitioner students during their NICU rotations.

Davia Loren, MD

**Clinical Interests:** Dr. Loren is passionate about engaging families in partnerships with the clinical care team. She describes her motivation as “In this I believe...a society is defined by how it provides care for its most vulnerable members.”

**Scholarly Focus:** Dr. Loren studies inter-professional and parent-provider communication centered on issues of transparency and accountability. She has been a principle investigator and co-investigator on several projects studying communication of unanticipated outcomes and disclosure of medical errors throughout the continuum of perinatal and newborn care. She is interested in how clinical care teams maintain — and lose — situational awareness and how teams debrief crisis situations. She is also collaborating with leaders in patient advocacy to produce documentaries exploring how parents and clinical team members integrate their experiences of the newborn ICU.

**Administration/Education Roles:** She mentors and supports residents and fellows at the University of Washington and Seattle Children’s Hospital NICUs. Her administrative responsibilities include course director for medical students rotating in the NICU at the University of Washington. Dr. Loren also leads Neonatal Resuscitation Program courses for residents, clinical faculty and community providers.

Dennis E. Mayock, MD

**Clinical Interests:** Evaluation of therapies that may potentially improve the neurodevelopmental outcomes of preterm and term infants. Foster interest in neonatal trainees in clinical research project design, management and completion.

**Scholarly Focus:** Clinical research activities that have the potential to improve the quality of life for NICU patients, not only while inpatients but also the long-term improvement in their health. This focus includes the multiple clinical activities:

- Participation in studies that minimize the development of bronchopulmonary dysplasia such as inhaled nitric oxide and late surfactant treatments.
- Evaluation of whether high dose erythropoietin treatment has neuroprotective effects in pre-term and term infants.

**Administration/Education Roles:** Associate Division Head for Scholarship and Research in the Clinical arena. Design programs to educate future clinical researchers. Education responsibilities include training future pediatricians, neonatologists, neonatal nurse practitioners, and NICU nursing staff.
Ulrike Mietzsch, MD

Clinical Interests: Neonatal Neurocritical Care and Transport – Dr. Mietzsch has a longstanding special interest in neonates with congenital or acquired brain injury and strives to provide the best available care to these patients. Dr. Mietzsch’s clinical and research focus is in neonatal neurocritical care with emphasis on bringing together a multidisciplinary team to provide optimal treatment. This is based on the latest evidence, use of advanced diagnostic and therapeutic technologies during transport, hospital stay and beyond.

Scholarly Focus: Quality improvement research that evaluates the impact of a neonatal neurocritical care program on short and long-term outcome of neonates with congenital or acquired brain injury. Clinical research activities include participation in multicenter trials to improve the outcome and quality of life for babies with brain injury. The research studies evaluate the neuroprotective effects of high-dose erythropoietin in term neonates with birth asphyxia and its effect on neurophysiologic markers on EEG.

Administration/Education Roles: Dr. Mietzsch currently serves as the Medical Director of the NeuroNICU at Seattle Children’s Hospital. Educational responsibilities include training pediatricians, neonatologists, neurologists, neonatal nurse practitioners, nursing staff, and the neonatal critical care transport team.

Michael D. Neufeld, MD, MPH

Clinical Interests: Long-term neurodevelopmental outcomes of premature infants. He is also interested in quality improvement, patient safety, eliminating nosocomial infections, and medical education.

Scholarly Focus: His research has focused on maternal infection and the risk of cerebral palsy in term and preterm infants and markers of inflammation and the risk of severe retinopathy of prematurity. He mentors MPH students studying perinatal epidemiology as well as Neonatology fellows and Developmental and Behavioral Medicine fellows interested in neonatal outcomes.

Administration/Education Roles: Medical Director of the NICU at Providence Regional Medical Center in Everett (PRMCE), where he has developed a 3rd-year rotation for neonatal fellows. He is also Medical Director of the Neonatal Transport Team at PRMCE, along with Tom Strandjord. Together, they manage the Division's clinical database, participation in the Vermont Oxford Network, and developed a database of patients seen in the High-Risk Infant Follow-up clinic. He mentors neonatology fellows in data management and in research projects using the databases.

Pratik Parikh, MD

Clinical Interests: Neonatal neuroprotection, neonatal pain and neurodevelopmental outcomes.

Scholarly Focus: His area of research is neonatal neuroprotection. His research is focused towards understanding mechanism of neuronal injury in term and preterm infants. Simultaneously testing novel molecules for neuroprotection in animal model of neonatal brain injury. He is developing a pilot study, to look at curcumin as a potential neuroprotective agent in neonatal hypoxic injury model. Dr. Parikh is also interested in preterm brain injury, has developed a novel rodent model of preterm brain injury, and is working with Dr. Juul in developing a Ferret model of preterm brain injury.

Administration/Education Roles: Resident and fellow education in the NICU
Krystle Perez, MD, MPH

Clinical Interest: Providing evidence-based care for critically ill newborns, improving neonatal care and outcomes in developed and developing countries, and medical education.

Scholarly Focus: Her scholarly focus is on global health specifically revolving around the mechanisms to improve neonatal care and outcomes in low resource environments. Her area of expertise falls primarily in low resource settings in Latin America and the Caribbean.

Administration/Education Roles: Providing education and mentorship to medical students, residents and fellows in training.

Mihai Puia-Dumitrescu, MD, MPH

Clinical Interests: Improving outcomes of premature and critically ill infants through evidence based, family-centered clinical practice. Interested in increasing the use of point of care ultrasound in infants, Dr. Puia-Dumitrescu is a member of the Seattle Children's POCUS super-users group (a group of neonatology, anesthesia, critical care, and emergency medicine physicians).

Scholarly Focus: Improving the lives of premature or critically ill infants through high quality clinical research. Understanding the importance of epidemiologic and quantitative skills in the conduct of clinical research, Dr. Puia-Dumitrescu obtained an MPH from the University of Miami in 2012, and a clinical research fellowship from Duke Clinical Research Institute in 2018. Leveraging his understanding in epidemiology and biostatistics together with his clinical knowledge, Dr. Puia-Dumitrescu is conducting clinical trials (he is the current PI for the AEROFACT 2B trial here at UW), pharmaco-epidemiologic and drug safety studies, and report outcomes of premature and critically ill infants. He has a strong commitment to academic medicine, pediatric clinical research, and improvement in the health of critically ill infants.

Administration/Education Roles: Involved in educating future clinical researchers, in-training pediatric residents, neonatology fellows, neonatal nurse practitioners, and neonatal nursing staff.

Taylor Sawyer, DO, MEd

Clinical Interests: Neonatal resuscitation and care of extremely premature infants.

Scholarly Focus: Medical education and the use of medical simulation to improve clinical skills and patient outcomes.

Administration/Education Roles: Dr. Sawyer is the Director of Medical Simulation at Seattle Children's Hospital, Director of the UW/Seattle Children's Neonatal-Perinatal Fellowship Training Program, Director of Outreach Education for the UW Neonatal Education and Simulation-based Training (NEST) Program, Chair of the American Academy of Pediatrics Section on Simulation and Innovative Learning Methods, an Executive Committee Member of the International Pediatric Simulation Society, a member of International Liaison Committee on Resuscitation (ILCOR) Neonatal Delegation, and a member of the Neonatal Resuscitation Program (NRP) Steering Committee. He is an active educator and is involved in multiple graduate and continuing medical education courses and workshops locally, regionally, and nationally.

Andy Shih, Ph.D.

Scholarly Focus: Dr. Shih initiated his independent research at the Medical University of South Carolina (2012-2018) before moving to the city of Seattle. His research uses state-of-the-art in vivo imaging methods to examine the basis of neurovascular function and dysfunction in models of stroke and small vessel disease. His recent studies have focused on microscopic ischemic lesions often observed in VCID
(cerebral microinfarcts), and their enduring effects that may contribute to cognitive impairment. A second line of research examines microvascular pericytes and their role in maintaining vascular stability in the developing and adult brain. His research has been continually funded by the NIH (NINDS and NIA), and by Foundations such as the American Heart Association, Dana Foundation NeuroImaging Award, Alzheimer’s Association New Investigator Award, and Charleston Conference on Alzheimer’s Disease New Vision Award. More information can be found on his lab website: Theshihlab.com.

Kendra Smith, MD

**Clinical interests:** Dr. Smith's clinical focus is on lung injury prevention in preterm and term neonates. She works clinically on strategies to minimize lung trauma in infants requiring ventilation due to respiratory failure in the neonatal period.

**Scholarly Focus:** Dr. Smith is the site Principal Investigator at Seattle Children’s Hospital for the industry-sponsored trial by United Therapeutics entitled “Intravenous Remodulin (Treprostinil) as Add-on Therapy for the Treatment of Persistent Pulmonary Hypertension of the Newborn: A Randomized, Placebo-Controlled, Safety and Efficacy Study.” She is also working on a hospital-based study entitled “Liquid Assisted Ventilation for Lung Recruitment and Protection in Patients with Congenital Diaphragmatic Hernia Requiring Extracorporeal Life Support” which is funded by private monies from the Ladybug Foundation. To promote improved care for infants while on transport she works with others in the Division on telemedicine for our transport services and referral sites.

**Administration/Education Roles:** Dr. Smith is involved in the Extracorporeal Life Support Program at Seattle Children’s Hospital and serves on the Steering Committee, which focuses on improving techniques to maximally support newborn infants not responsive to conventional therapies. She also serves as the Manager of Divisional Respiratory Care Programs with the goal of promoting improved ventilation strategies for neonates requiring ventilatory support in our region.

Thomas P. Strandjord, MD

**Clinical Interests:** Improving outcomes of premature infants, with particular interest in delivery room resuscitation.

**Scholarly Focus:** Quality Improvement and medical education in newborn care and resuscitation. His current projects include quality improvement projects designed to improve stabilization of very low birthweight infants. He also studies the use of simulation in the training of medical personnel in the Newborn Resuscitation Program and advanced life support.

**Administration/Education Roles:** He serves as the Medical Director for the neonatal intensive care unit of the University of Washington Medical Center. He also assists in the management of a clinical database of all infants admitted to the University of Washington Medical Center NICU. This database serves as a resource for quality improvement projects and clinical research projects.

Colin Studholme, PhD

**Scholarly Focus:** Fetal and neonatal brain imaging. Dr. Studholme has brought expertise in computational imaging, imaging physics and image analysis to pre-natal and post-natal imaging. His group has been developing and applying new imaging and image analysis tools to more accurately and robustly map early
brain functional and structural connectivity before and shortly after birth, to provide markers for abnormal development and brain injury. His work at UW has expanded to recruiting and scanning a large cohort of normal pregnancies to construct a reference database for how the normal human brain develops before birth and how brain anatomy varies at different gestational ages during pregnancy. In addition to studying normal brain growth he is involved in projects on neurodevelopmental abnormalities such as ventriculomegaly, fetal alcohol exposure, fetal cardiac abnormalities and intra-uterine growth restriction. In addition to his ongoing research in this area, he is a co-investigator on the randomized controlled trial of Epo neuroprotection in extremely preterm infants (PENUT Trial), with the specific aim of evaluating brain growth of Epo treated infants as compared to controls.

Christopher Traudt, MD

Clinical Interest: The application of family-centered care in the Neonatal Intensive Care Unit (NICU). The NICU can be very intimidating to parents and he believes that care of the infant is incomplete without parental guidance throughout the NICU stay.

Scholarly Focus: Dr. Traudt participates in ongoing division studies of neurodevelopment and neuroprotection in both animal models and in the PENUT and HEAL trials. His particular expertise is in MRI analysis. He is investigating the effects of neonatal brain injury on cerebellar development.

Administration/Education Roles: Associate Medical Director for Valley Medical Center. He is an active teacher of both Residents and Fellows in the NICU as well as in the laboratory setting.

Rachel Umoren, MD

Clinical Interest: Education and family support for parents with infants in the NICU

Scholarly Focus: Simulation research with the goals of safe patient care and improved clinical outcomes. Her research interests include the use of emerging technologies, including virtual and augmented reality simulations as an investigative methodology in the areas of teamwork, communication, and neonatal resuscitation in local and global health settings.

Administration/Education Roles: She is the Director of the Neonatal Education and Simulation Training (NEST) Program and Telemedicine Lead for the Neonatology group.

Linda Wallen, MD

Clinical Interests: Dr. Wallen is passionate about the practice of evidence-based medicine. She is an avid life-long learner, and applies her knowledge to the care of our critically ill newborns. She is particularly involved with improving the respiratory outcomes of extremely preterm infants.

Scholarly Focus: Coordination of evidence-based guidelines for management of neonatal problems at all Division sites of practice, with the goal of measuring the effect of guidelines on the quality of care.

Administrative/Education Roles: She coordinates the clinical schedule and the delivery of care at all of the NICUs staffed by the Division of Neonatology. She works directly with the medical directors at the community sites to develop strong medical management and excellent care. Additionally, she is working with medical directors at community NICUs to implement guidelines of care and quality improvement initiatives. Dr. Wallen has a passion for teaching and continuing to learn through teaching. She believes
that evidence-based practice should be the cornerstone of clinical practice, and is working to establish evidence based guidelines for management of common neonatal problems.

Elliott M Weiss, MD, MSME

**Clinical Interests:** Newborn health, ECMO, neonatal bioethics

**Scholarly Focus:** Dr. Weiss’s primary research interest is in the area of medical decision-making, with a special focus on parents as decision makers for their sick infants in the NICU. This work encompasses several different facets of decision making. For example, how do we decide which NICU interventions require parental awareness, concurrence, verbal agreement, or signed consent? This decision is currently largely influenced by historical factors, local custom, and perceived liability concerns with less consideration of parental preferences. How do we present medical decisions? Insights from behavioral economics suggest that choice architecture and bias are crucially important—and have been largely ignored within medicine. When is a decision made? We structure communication and consent as though decisions are made the moment choices are presented by the physician, but it is likely the decision was made far earlier. In sum, Dr. Weiss aims to understand how parents approach decision-making to better tailor consent practices to their values and preferences.

**Administration/Education Roles:** Dr. Weiss co-leads monthly resident ethics teaching rounds at the UWMC and SCH NICUs. He is also the track director of neonatal bioethics, which promotes bioethics research among neonatology trainees. He created the Neonatology and Decision-Making interest group that meet twice a month to discuss topics pertinent to clinical and research neonatal ethics. He also serves on the SCH ethics committee.

Stephen Welty, MD

**Clinical Interest:** General Neonatology, comprehensive care in patients with severe BPD. Non-Invasive Respiratory support.

**Scholarly Focus:** QA: Guideline development for nasal CPAP and measuring the effect. Guideline and Critical Pathway Development for lowering gestational age at SJMC, measuring outcomes. Mentoring remains a focus for junior faculty and fellows. He is one of the founding members of the national BPD collaborative and remain involved there in an advisory capacity.

**Administration/Education Roles:** Dr. Welty is the Medical Director of the Franciscan Health System Neonatal service line in the South Sound area.

Thomas Wood, MD

**Scholarly Focus:** Dr. Wood specializes in animal models of premature brain injury and neonatal hypoxic-ischemic encephalopathy, particularly in rodents and ferret. He is also participating in secondary analyses of data from the PENUT trial that is relevant to neurodevelopment.

**Administration/Education Roles:** Tommy is an active mentor for Neonatology fellows and junior faculty peers, as well as undergraduate students and Chemical Engineering graduate students, engaged in basic neuroscience research. This year he was also a guest lecturer in endocrinology and physiology for a 400/500-level Chemical Engineering class in nanotechnology applications for health.


to Shigella and enterotoxigenic E. coli: The Global Burden of Disease Study 1990-2016, Lancet Global Health 2018 Sept 2018


2019


3. Chabra S, Strandjord T, Peeples E. Prolonged Non-Invasive Ventilation in Extremely Low Birth Weight Preterm Infants is Associated with Bronchopulmonary Dysplasia. Accepted J Neo Perinat Medicine, Jan. 2019


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**CHAPTERS, TEXTBOOKS**

2018


4. **Juul SE and Christensen RD.** Developmental hematology. In Avery’s Diseases of the Newborn. 10th edition. Eds, Gleason and Juul 2018

2019


### OTHER PUBLICATIONS

**2018**

1. Debbie Atherly, **Cyril Engmann.** Into a hopeful era against infant respiratory infection. Jul. 2018. https://www.path.org/articles/hopeful-era-against-infant-respiratory-infection/


**2019**


2018


3. **Chabra S**. Invited speaker, Vanderbilt University Medical Center, Veterans Affairs Anesthesiology Service, Nashville, Tennessee. Presentation Title: "Physician Wellbeing and strategies to decrease Burnout.” Oct 2018


5. **Engmann C**. Co-featured speaker with the Assistant Secretary General of the United Nations at the World Health Assembly Scaling Up Nutrition hub. May 2018


11. Jackson JC. Invited Lecture“Case reviews of neonatal transfers from Kadlac over previous year”, “PDA occlusion in cath lab” and “HIE treatments.” Richmond, WA Sept 2018.

12. **Juul, S**. Visiting Professor, Sophie Womack Lectureship at Wayne State University. May 24, 25, 2018


22. **Shih A.** Invited Speaker, World Congress for Microcirculation, Vancouver, Canada. Sept. 2018

23. **Shih A.** Invited Speaker, ISN&N, Non-neuronal mechanisms of VCID, Dresden, Germany. Oct. 2018


27. **Umoren R.** Invited Speaker, Virtual reality simulations for healthcare: The potential for VR and Serious Gaming to address known gaps in the implementation cascade for maternal-newborn health interventions in low and middle income countries. eHBB Project Launch. Nairobi, Kenya. September 7, 2018.


2019


27. **Sawyer T.** Post-Event Debriefing in Neonatal Care. University of Calgary, Department of Pediatrics, Division of Neonatology. Calgary, Alberta Canada Feb. 2019


29. **Shih A.** Invited Speaker, The 3rd VCID Translational Workshop, Carlsbad, California. 2019


32. **Shih A.** Invited Speaker, Neurovascular Unit Symposium, Columbia University, NY, 2019.

33. **Shih A.** Invited Speaker, Cold Spring Harbor Laboratory Blood-brain barrier course, CSHL, Long Island, NY. Apr. 2019


University of Washington Division of Neonatology
Faculty Organizational Chart

Mission Statement: We will improve the neonatal outcomes of pregnancy by:

- Providing outstanding evidence based neonatal clinical care
- Educating the next generation of neonatal caregivers
- Advancing neonatal scholarship

ACADEMIC AFFAIRS (OVERSIGHT & DIRECTION):
DIVISION HEAD: Sandra Juul

LEADERSHIP COUNCIL:
Craig Jackson, Taylor Sawyer, Thomas Strandjord, Dennis Mayock, Linda Wallen, Robert DiGeronimo

EDUCATIONAL PROGRAMS:
- Fellowship Training Program
- Pediatric Residency Program
- Medical Students Clerkship
- Faculty CME/Performance Improvement
- Regional Outreach
- NEST

SCHOLARSHIP/RESEARCH:
- Clinical
- Basic/Translational
- Educational/Simulation
- Global Neonatal-Perinatal Health
- Clinical Informatics
- Quality Improvement

CLINICAL AFFAIRS:
- Clinical Operations/NICU
- Medical Direction
- Service Contracts
- Transport Program
- NNP Programs
- High-Risk Infant Follow-up
- Prenatal Diagnosis/Counseling
- Strategic Planning

NATIONAL/INTERNATIONAL SERVICE:
- World Health Organization
- PATH
- AAP
- MOD
- NIH Study Section