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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 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. In 2005, she was appointed Associate Division Head for Scholarship and Research and now leads our Division’s efforts to advance neonatal scholarship. Current NIH-funded bench research programs are focused on neurodevelopment and neonatal neuroprotection. We use a variety of animal models, from rodents and ferrets to non-human primates to study the effects of neonatal stress and neurotropic drugs on the developing brain and to test the safety and efficacy of erythropoietin (Epo) as a neuroprotective therapy. 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, and global neonatal-perinatal health. In 2013, Dr. Juul was awarded a $10.1 million U01 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.

**Division Clinical Services:**

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

*Thomas P. Strandjord, MD, Medical Director; David Loren, 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 high-frequency oscillatory and jet ventilation. The NICU medical team includes neonatal faculty, neonatal fellows, neonatal nurse practitioners, pediatric residents, interns and medical students. The inter-professional team includes dedicated respiratory therapists, neonatal pharmacists, nutritionists, 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 new unit 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 teaching team, and an NNP team. The UWMC NICU’s care model includes 24/7 coverage by in-house residents and, mid-level intensivists (fellow or NNP), under the direction of attending neonatologists. In AY 2016, the UWMC had 1,891 deliveries with 481 NICU admissions. The average daily census was 37.1 with 131 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):**

*Craig Jackson, MD, Medical Director; Elizabeth Jacobson, MD, Assoc. Medical Director*

The Neonatal Intensive Care Unit at Seattle Children's Hospital has been newly expanded to 26 licensed Level IV NICU beds. Patients are cared for by one of two NICU medical teams, in collaboration with our pediatric surgery service when appropriate. The “Green team” includes a faculty neonatologist, a neonatology fellow or neonatal nurse practitioner (NNP), and three pediatric residents. The “Blue team” includes a faculty neonatologist and an NNP. Daily multidisciplinary rounds with the medical team incorporate the patient’s family, nurse, dietician, and pharmacist, and as needed, a NICU respiratory therapist, social worker, and appropriate general surgeons, sub-specialty surgeons, and pediatric sub-specialists. 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 a 5-state area; almost all are transferred from Level III NICUs because of highly complex and challenging problems. Newborns with complex cardiac disease are admitted to the cardiac ICU, with involvement as needed by the NICU team. There is no obstetrical delivery service at SCH, but there is a close working relationship with the perinatal and neonatal services at the University of Washington Medical Center 2 miles away, and with the associated Prenatal Diagnosis Programs. The Seattle Children’s Hospital NICU’s care model includes an in house fellow or NNP and attending
neonatologist 24/7. In AY 2016, the SCH NICU had 450 NICU discharges with an average length of stay at 15.0 days and average daily census of 22.4. Seventy babies were less than 1500 grams at birth and our average daily census of 8.29 on ventilators.

**Overlake Hospital Medical Center Neonatal Intensive Care Unit (Level III):**  
*Shilpi Chabra, MD, Medical Director; Thomas Strandjord, MD, Assoc. Medical Director*

In 2012, Overlake Hospital opened a new NICU with a total capacity of 18 beds, 13 of which are single-bed rooms with space for a family member to stay near their infant. This model fits in well with the patient/family-centered care provided by the Neonatology team. This facility boasts Nutrition follow up, EEG capabilities, and same day cardiac consults. The Overlake Hospital NICU’s care model is 24/7 in-house NNPs under the direction of attending neonatologists. In AY 2016, Overlake had 4,018 deliveries with 429 NICU admissions. The average daily census was 10.4 with 17 preemies weighing less than 1500 grams at birth, and an average daily census of 0.1 on ventilators.

**Providence Regional Medical Center Everett Neonatal Intensive Care Unit (Level III):**  
*Michael D. Neufeld, MD, MPH, Medical Director; Zeenia Billimoria, 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 NNPs under the direction of attending neonatologists. In AY 2016, PRMCE had 4,801 deliveries with 642 NICU admissions. The average daily census was 23.5 with 75 preemies less than 1500 grams at birth with an average daily census of 1.16 on ventilators.

**Kadlec Regional Medical Center Neonatal Intensive Care Unit:**  
*Eric Mosqueda, MD, Medical Director*

The Division has provided neonatology medical direction oversight for the Kadlec Level III NICU since 2007. Staffed by local neonatologists and NNPs, this 16-bed NICU admits about 300 patients per year from its high-risk delivery service and from 4 community delivery hospitals in the Tri-Cities area, including north central Oregon, via the Kadlec ground transport team. Kadlec routinely transfers out newborns with birth weight <750 grams or those needing cardiac or pediatric surgical intervention, usually to Seattle Children’s. When possible, these patients are transported back to Kadlec as soon as they are medically ready. Many pediatric subspecialists from Seattle Children’s Hospital have clinics in the Tri-Cities area.

**Franciscan Health Care System; St Joseph Medical Center (Level III); St Francis (Level II)**  
*Christopher Traudt, MD, Interim Medical Director*
Franciscan Health Care System includes a network of hospitals with approximately 5,000 deliveries annually at its 3 obstetrical facilities: St Joseph Medical Center in Tacoma, St Francis Hospital in Federal Way, and St Elizabeth Hospital in Enumclaw. St Joseph Medical Center has a licensed capacity of 23 neonatal beds (18 Level II and 5 Level III, NICU) and has 24/7 in-house NNPs supported by faculty neonatologists. St. Francis Hospital has a licensed capacity of 6 Level II beds, with medical care from local pediatricians, with consultation and attendance at high-risk deliveries as needed from SCH NNPs and/or neonatologists. St. Elizabeth is a critical access hospital with 250-300 deliveries a year. Franciscan has recently added two hospitals to their system including Harrison in Silverdale and Highline in Burien. Both have Level II Nurseries. 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. 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. In AY 2016, St. Joseph’s had 4,121 deliveries with 433 NICU admissions. The average daily census was 14.6 with 34 preemies weighing less than 1500 grams at birth, and an average daily census of 0.3 on ventilators.
PERSONNEL

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
Associate Professor of Pediatrics
Associate Director, Pediatric Residency Program

Zeenia Billimoria, MD
Assistant Professor of Pediatrics
Associate Medical Director NICU, Providence Regional Medical Center Everett

Shilpi Chabra, MD
Associate Professor of Pediatrics
Medical Director, NICU, Overlake Hospital Medical Center

Cyril Engmann, MD
Professor of Pediatrics

Christine A. Gleason, MD
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

Melinda Hendrickson, MD
Clinical Associate Professor

W. Alan Hodson, MD, MMSc
Professor Emeritus of Pediatrics
J. Craig Jackson, MD, MHA
Professor of Pediatrics
Medical Director, NICU, Seattle Children's Hospital
Associate Division Head, Clinical Strategic Planning

Elizabeth N. Jacobson, MD
Clinical Assistant Professor of Pediatrics
Site Physician Sponsor, Children's Hospital Neonatal Consortium, Seattle Children's Hospital
Associate Medical Director, NICU, Seattle Children's Hospital

David Loren, MD
Associate Professor of Pediatrics
Associate Medical Director, NICU, University of Washington Medical Center
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

Ryan McAdams, MD
Associate Professor of Pediatrics

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

Taylor Sawyer, DO, MEd
Associate Professor of Pediatrics
Director, Neonatal-Perinatal Medicine Fellowship Training Program
Director, Neonatal Education & Simulation Based Training (NEST) Program

Kendra Smith, MD
Clinical Professor of Pediatrics
Neonatal Liaison to Seattle Children’s Hospital ECMO Program
Medical Director, Infant Transport Program, Seattle Children’s Hospital

Thomas P. Strandjord, MD
Clinical Associate Professor of Pediatrics
Associate Division Head, Evidence-based Education
Medical Director, NICU, University of Washington Medical Center
Assistant Medical Director, NICU, Overlake Hospital Medical Center

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

**Christopher Traudt, MD**  
Clinical Associate Professor of Pediatrics  
Interim Medical Director, NICU, St. Joseph’s Medical Center

**Rachel Umoren, MD, MS**  
Assistant Professor of Pediatrics

**Linda Wallen, MD**  
Clinical Professor of Pediatrics  
Associate Division Head, Clinical Operations

**David E. Woodrum, MD**  
Professor Emeritus of Pediatrics

### Fellows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Pediatric Residency Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Year</td>
<td>Eric Peeples, MD</td>
<td>Phoenix Children’s Hospital</td>
</tr>
<tr>
<td></td>
<td>Jyalakshmi (Ammu) Ravindran, MD</td>
<td>University of Washington</td>
</tr>
<tr>
<td>2nd Year</td>
<td>Gillian Pet, MD</td>
<td>University of Washington</td>
</tr>
<tr>
<td></td>
<td>Anita Shah, MD, MPH</td>
<td>Children's Hospital Boston</td>
</tr>
<tr>
<td>1st</td>
<td>Meenakshi Dutta, MD</td>
<td>Tulane University</td>
</tr>
<tr>
<td></td>
<td>Kendell German, MD</td>
<td>University of California San Francisco</td>
</tr>
<tr>
<td></td>
<td>Jeanne Krick, MD</td>
<td>Madigan Army Medical Center</td>
</tr>
</tbody>
</table>

**2016-2017 Incoming Fellows**  
Teresa Lam, MD  
Patrick Motz, DO, MPH

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**Seattle Children’s Hospital Neonatal Nurse Practitioner/Physician Assistant Program: (4)**

Jaime Ruddell, ARNP, Supervisor, Providence Everett Regional Medical Center  
April Morris, ARNP, Supervisor, Overlake Hospital Medical Center  
Meg Keith, ARNP, Supervisor, Seattle Children’s Hospital  
Roberta Tuato'o ARNP, Supervisor, Franciscan Health System  
This program provides NP/PA services at four regional medical centers in collaboration with Seattle Children’s Hospital and the Division of Neonatology.

**University of Washington Medical Center Neonatal Nurse Practitioner Program: (6)**

Shwu-Shin Hou, MN, ARNP, NNP-BC, Program Manager  
Jennie Collins, MD  
Amy Dunn Caldwell, ARNP  
Jennifer Fesinmeyer, ARNP
Tiffany Stanley, ARNP

Research Staff:
Daniel Moralejo, PhD, DVM, Research Scientist
Kylie Corry, Research Assistant

PENUT Grant Project Team:
Sandra Juul, MD, PhD, Principal Investigator; Clinical Coordinating Center
Dennis Mayock, MD, Site Investigator
Stephanie Hauge, MS, Lead Central Clinical Coordinator
Amy Silvia, MS, Research Coordinator
Colin Studholme, PhD, Biomedical Imaging Computing Group
Christopher Traudt, MD, Imaging Data Analysis
Samantha Walker, MS, Research Coordinator

Biomedical Image Computing Group:
Colin Studholme, PhD, Principal Investigator
David Hunt, PhD, Senior Fellow
Mary Kociuba, PhD, Senior Fellow
Mengyuan Liu, Graduate Student
Gwendolyn Van Steenkiste, Graduate Student
Thilo Strauss, PhD, Senior Fellow
Viktoria Taroudaki, PhD, Senior Fellow

Administrative Staff:
Paula Sword, Division Administrator
Jake Hawksworth, Director of Medical Specialties Neonatology, SCH
Marissa Atienza, Fellowship Program Administrator
Dan Kim, Administrative Assistant, UW
Neil Kline, Office Assistant III
Tanya Sisk, Senior Administrative Assistant, SCH
Kathy Peltz, Administrative Assistant III, SCH

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.

INFANT GROUND TRANSPORT PROGRAM
Kendra Smith, MD, Medical Director

Transport services are provided by the Seattle Children’s Transport and Airlift Northwest Teams. Seattle Children’s Transport Team is comprised of specially trained transport nurses and respiratory therapists. Airlift Northwest Team members are specially trained pediatric and adult critical care nurses along with Seattle Children’s respiratory therapists for neonates with complicated respiratory disorders. Infants from referral centers throughout the WWAMI (Washington, Alaska, Montana, Idaho) region are transported to facilities best suited to their needs. Both services provide en route cardiopulmonary monitoring, conventional ventilator support, high frequency oscillation, administration of nitric oxide, and blood gas analysis. Team members are trained in the interpretation of x-rays, newborn resuscitation, endotracheal tube intubation, insertion of umbilical catheters, treatment of pneumothoraces, cardiopulmonary resuscitation, blood pressure management, care of the infant requiring general or cardiac surgical procedures and other newborn emergencies. Members of the Division of Neonatology serve as Medical Control Providers for both teams.

INFANT DEVELOPMENT FOLLOW UP CLINIC

F. Curt Bennett, MD, Director

The University of Washington High Risk Infant Follow-up Clinic began in 1975, linked to the UWMC NICU for outcomes research purposes. Since then, it has expanded and taken on additional clinical service and interdisciplinary training functions. Its present staff includes health care professionals from developmental pediatrics, neonatology, psychology, audiology, nutrition, physical and occupational therapy, and social work. The majority of infants seen were either born prematurely or experienced prenatal drug exposure. Very low birth weight infants weighing less than 1500 grams at birth are prioritized for follow-up. Other infants with specific neonatal concerns, e.g., chronic lung disease, intracranial hemorrhage, or infection, are also followed. Scheduled evaluation times include 4, 12, 24, 36, and 54 months and 6 and 8 years corrected age. Approximately 600 high-risk infants and children are seen annually in the clinic. About 40 percent of these visits are infants in the first year of life. A recent expansion of this follow up clinic now accommodates neurodevelopmental screening for additional high-risk infants, including those with cyanotic congenital heart disease, hypoxic-ischemic encephalopathy, as well as selected surgical patients, and other high risk infants.

NEONATAL-PERINATAL DATABASE

Michael D. Neufeld, MD, MPH and 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 (VO) 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 VO 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.

Elizabeth Jacobson, MD, Site Physician Sponsor

Seattle Children's Hospital joined the national Children's Hospitals Neonatal Consortium in 2015, which allows for development of safety and quality improvement initiatives for the SCH NICU as part of the Children’s Hospitals Neonatal Database.
NEONATAL-PERINATAL FELLOWSHIP TRAINING PROGRAM

Taylor Sawyer, DO, MEd, Program Director  
Sandra Juul, MD, PhD; Thomas Strandjord, MD; and Christine Gleason, MD; Associate Program Directors

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. The program’s primary objective is to develop outstanding clinical skills. During their 3 years of training, fellows spend a total of 56 weeks each 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 2016, 57 neonatologists have successfully completed their clinical and research training in our program, and more than 50% have pursued an academic career.

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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</thead>
<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>
</tr>
<tr>
<td>Robert Hall</td>
<td>1968-1970</td>
<td>Professor of Pediatrics, University of Missouri, Mercy Children's Hospital</td>
</tr>
<tr>
<td>David Woodrum</td>
<td>1969-1971</td>
<td>Professor Emeritus of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<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>Name</td>
<td>Years</td>
<td>Position/Institution</td>
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<tr>
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</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>
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<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>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>
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<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>
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<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>
</tr>
<tr>
<td>A.C. Hoffmeister</td>
<td>1985-1987</td>
<td>Private Practice, Eugene, OR</td>
</tr>
<tr>
<td>Sandra Juul</td>
<td>1986-1989</td>
<td>Professor of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Charles Davis</td>
<td>1987-1989</td>
<td>United States Navy</td>
</tr>
<tr>
<td>Name</td>
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<td>Position and Location</td>
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<tr>
<td>-------------------------------</td>
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</tr>
<tr>
<td>Thomas Strandjord</td>
<td>1987-1990</td>
<td>Clinical Associate 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>
</tr>
<tr>
<td>Michael Neufeld</td>
<td>1999-2003</td>
<td>Clinical Associate Professor of Pediatrics, University of Washington, Seattle, WA</td>
</tr>
<tr>
<td>Eric Leung</td>
<td>1999-2003</td>
<td>Private Practice, Renton, WA</td>
</tr>
<tr>
<td>David Anderson</td>
<td>2000-2003</td>
<td>Private Practice, Walnut Creek, CA</td>
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<tr>
<td>Susan Miller</td>
<td>2002-2005</td>
<td>Assistant Professor of Pediatrics Columbia University, New York, NY</td>
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<tr>
<td>Robert Mertz</td>
<td>2002-2005</td>
<td>Private Practice, Seattle, WA</td>
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<td>Eric Demers</td>
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<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>
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<tr>
<td>Maneesh Batra</td>
<td>2004-2007</td>
<td>Associate Professor of Pediatrics, University of Washington, Seattle, WA</td>
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<tr>
<td>Marcella Mascher-Denen</td>
<td>2005-2008</td>
<td>Private Practice, Corpus Christi, TX</td>
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<tr>
<td>Jessica Slusarski</td>
<td>2006-2009</td>
<td>Assistant Professor, Brown University, Providence, RI</td>
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<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>Program Officer, Bill &amp; Melinda Gates Foundation, Seattle, WA</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>Kapiolani Medical Center for Women and Children, Honolulu, HI</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>
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<tr>
<td>Shaun Odell</td>
<td>2012-2015</td>
<td>Utah Valley Regional Medical Center, Provo, UT</td>
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<tr>
<td>Vijayeta (Vij) Rangarajan</td>
<td>2012-2015</td>
<td>Private Practice, Seattle, WA</td>
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RESIDENT EDUCATION

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

Our faculty, fellows, and neonatal nurse practitioners are involved in several aspects of the core training program for pediatric residents. Currently the University of Washington Pediatric Residency Program admits 38 residents per year. All residents complete one 4-week rotation in the UWMC NICU during their intern year and at least one rotation in the UWMC NICU and SCH NICU over the course of their subsequent 2 years of residency. Additionally, University of Washington family practice residents and emergency medicine residents rotate through the UWMC NICU for 2-4 weeks. For all of these trainees our faculty, fellows and nurse 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, Idaho) visiting professor program.

MEDICAL STUDENT EDUCATION

David 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

Taylor Sawyer, DO, MEd, Nest Program Director; Thomas Strandjord, MD, Director of Clinical Integration; Rachel Umoren, MD, MS, Director of Immersive Learning; Megan Gray, MD, Director of Kinesthetic Learning

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 high-quality, evidence-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. The specific aims of the NEST Program are
Improve neonatal outcomes through individual and interprofessional education, leverage emerging technologies for simulation-based training and research, define optimal processes for neonatal resuscitation, investigate methods to enhance the acquisition and retention of technical and behavioral skills and promote educational scholarship in the next generation of neonatal care providers. Current projects include: 'boot camps' for neonatal fellows, neonatal resuscitation training, neonatal procedural skills training, video laryngoscopy training and providing simulation-based training opportunities in the Division's community NICUs in Tacoma, Bellevue, and Everett. Simulation-based regional education outreach efforts are also underway in order to improve the care of neonates in the Seattle region.

RESEARCH FUNDING

ACTIVE RESEARCH FUNDING

Maneesh Batra, MD, MPH

  Seattle Children's Research Institute, Center for Clinical and Translational Research Academic Enrichment Fund, PI: A. Hedstrom, Total Award: $24,312

- Multi-center trial of limiting PGY2&3 resident work hours on patient safety (ROSTERS study) (U01HL111478), Seattle Site Co-Investigator, Effort 5% (2014-2017)
  NIH-NHLBI, PI: Czeiler CA, Brigham and Women's Hospital, Total Award: $238,000

- Pediatric Resilience-Burnout Study Consortium. Co-PI

- Validation and Introduction of a Low-Cost Bubble Continuous Positive Airway Pressure Kit and Oxygen Blender for Neonates. Co-Investigator, Demonstration of Programmatic Acceptability Lead
  Saving Lives at Birth (SLAB) Grand Challenges Seed Grant, Total award: $250,000, Subcontract to UW team: $10,000

- Ambassador J. Christopher Stevens Endowment for International Child Health Research and Education, Manager and Steward
  Seattle Children’s Foundation, Principal: $500,000, Annual Disbursement: $25,000

Cyril Engmann, MD

- Optimizing the Health Extension Program (OHEP) in Ethiopia, Co-Investigator (2015-2017)
  Bill & Melinda Gates Foundation, Total Award: $5,000,000

  Cargill Foundation, Total Award: $2,000,000
• *Landscaping the Early Childhood Development Environment in Tanzania and Uganda, Co-Investigator (2015-2016)*
  Bernard Van Leer Foundation, Total Award: $100,000

• *Maximizing the Quality of Scaling Up Nutrition (MQ-SUN), Chair of Consortium (2012-2016)*
  Department for International Development (DFID), United Kingdom, Total Award: $30,000,000

• *Maternal Child Survival Program, Principal Investigator (2014-2018)*
  United States Agency for International Development, Total Award: $10,000,000.00

• *Making Every Baby Count Initiative (MEBCI) in Ghana, Principal Investigator (2013-2018)*
  Children’s Investment Fund Foundation, Total Award: $12,421,572

• *Window of Opportunity in South Africa, Co-Investigator (2013-2016)*
  BHP Billetin Foundation, Total Award: $25,000,000

Anna Hedstrom, MD

• *“Does an Elevated Respiratory Severity Score Correlate with Hypercapnea in Neonates?”, Mentor, Principal Investigator (2015-2017)*
  Seattle Children’s Research Institute, Center for Clinical and Translational Research Academic Enrichment Fund, Mentor: M Batra, Total Award: $24,312

Sandra Juul, MD, PhD

• *High-dose Erythropoietin for Asphyxia and Encephalopathy (HEAL) CCC. Multi PIs. (9/15/16-6/30/21)*
  NIH, NINDS, Direct Costs: $10,000,000

• *Biomarkers of brain injury and inflammation in perinatal hypoxic ischaemic encephalopathy, Co-Investigator (2014-2015)*
  Innovative Research Grant, CP Alliance, Co-PI: A. Massaro, Direct Costs: $120,000

• *Preterm Epo Neuroprotection (PENUT) Trial (U01 Cooperative Multi-Site Cooperative Agreement Clinical Trial – Phase III, Principal Investigator (06/01/13-05/31/18)*
  NIH NINDS and NIDDK, Direct Costs: $10,145,471

• *Neonatal Erythropoietin and Therapeutic Hypothermia Short-Term Outcome Study (NEAT O Study); Site Investigator. (2013-2016)*
  University of California San Francisco subcontract, Thrasher Foundation, Direct Costs: $7,869

• *Biomarkers of Neonatal Encephalopathy in a Nonhuman Primate Model (R01), Principal Investigator (08/01/13-5/31/18)*
  NIH NICHD, Direct Costs: $3,233,245

• *Juul Research Program Development (2013-2019)*
  University of Washington Pediatrics & Neonatology, Direct Costs: $400,000
**Dennis Mayock, MD**

- *High-dose Erythropoietin for Asphyxia and Encephalopathy (HEAL) CCC.* Co-Investigator (9/15/16-6/30/21)
  
  NIH, NINDS, Direct Costs: $10,000,000

- *Trial of Late SURFactant (TOLSURF) to Prevent BPD,* Site Investigator (09/15/09-7/31/16)
  
  University of California San Francisco subcontract; NIH, PI: R. Ballard, Direct Costs: $155,042

- *Neonatal Erythropoietin and Therapeutic Hypothermia Short-Term Outcome Study (NEAT O Study); Site Investigator.* (2013-2016)
  
  University of California San Francisco subcontract, Thrasher Foundation, Direct Costs: $7,869

- *Preterm Epo Neuroprotection (PENUT) Trial (U01 Cooperative Multi-Site Cooperative Agreement Clinical Trial – Phase III), Site Investigator.* (04/01/13-05/31/18)
  
  NIH NINDS, PI: S. Juul, Direct Costs: $10,145,741

- *HIP Trial* (subcontract to Blakeley, Vanderbilt) Site PI.
  

**Ryan McAdams, MD**

- *GBS mediated in utero fetal injury,* Co-Investigator (07/01/12-06/30/17)
  
  NIH, PI: L. Rajagopal, Direct Costs: $620,956

- *Biomarkers of neonatal encephalopathy in a nonhuman primate model,* Co-Investigator (08/01/13-05/31/18)
  
  NIH, PI: S. Juul, Direct Costs: $3,233,245

**Taylor L. Sawyer, DO, MEd**

- *Development and Pilot Testing of a Novel Intubating Laryngeal Mask Airway for Neonates.* PI.
  
  (2015-2016)
  
  Coulter Translational Research Award, Direct costs: $39,144

**Kendra Smith, MD**

- *Partial liquid ventilation (LV) for the treatment of inflammatory lung disease in infants with congenital diaphragmatic hernia (CDH) requiring extracorporeal life support (ECLS) for severe respiratory failure,* Co-Investigator (01/01/13-12/31/15)
  
  Academic Enrichment Fund, Seattle Children’s Research Institute, PI: Sarah Handley, Total Award: $50,000

**Colin Studholme, PhD**
• **Characterizing the FASD Cerebral Cortex In Utero with DTI**, Co-Investigator (12/01/12-11/30/17)
  Oregon Health Sciences University subcontract, PI: C. Kroenke Total Award: $407,465

• **Motion Robust Mapping of Human Brain Functional Connectivity Changes In-Utero (FUN) (R01)**, Principal Investigator (04/01/13-03/31/17)
  NIH NIBIB, Total Award: $2,523,184

• **Motion Robust Mapping of Human Brain Microstructure and Macrostructure In-Utero (MIC) (R01 renewal)**, Principal Investigator (09/01/13-08/31/18)
  NIH NINDS, Total Award: $2,703,739

• **Preterm Epo Neuroprotection (PENUT) Trial (U01 Cooperative Multi-Site Cooperative Agreement Clinical Trial – Phase III, Co-investigator, Y3-5 (06/01/13-05/31/18)**
  NIH NINDS and NIDDK, PI: S. Juul, Direct Costs: $10,145,471,

• **Biomarkers of Neonatal Encephalopathy in a Nonhuman Primate Model (R01)**, Role: Co-investigator, Y3-5 (08/01/13-05/31/18),
  NIH NICHD, PI: S. Juul, Direct Costs: $3,233,245

• **Gestational malnutrition – a preventable cause of cognitive impairment in children**, Co-Investigator, (9/1/14-08/31/17)
  Bill & Melinda Gates Foundation (Grove), Year 1: $90,000

**Christopher Traudt, MD**

• **Mechanisms of cerebellar injury after posterior fossa hemorrhage**, PI (2014-2016)
  University of Washington Neonatology, Total Amount: $40,000

• **Mechanisms of cerebellar injury after posterior fossa hemorrhage**, PI (10/01/13-11/30/16)
  Pediatrics Endowed Professorship for Research Faculty Development, Total Amount: $229,585

• **Preterm Epo Neuroprotection Trial (PENUT Trial) Clinical Coordinating Center (CCC)**, Co-Investigator (04/01/13-03/31/18)
  NIH NINDS, PI: S. Juul, Direct Costs: $9,000,000

• **Biomarkers of neonatal encephalopathy in a nonhuman primate model**, Collaborator (08/01/13-07/31/18)
  NIH NICHD, PI: S. Juul, Direct Costs: $2,496,627

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**PENDING RESEARCH FUNDING (APPLICATIONS)**

**Maneesh Batra, MD**
• **Validation of a Bubble CPAP Kit, Validation Grant, Saving Lives at Birth**, M Batra, Co-investigator

**Cyril Engmann, MD**

• **USAID/Uganda Regional Health Integration to Enhance Services in East Central Uganda (RHITES EC) NFO No. RFA-617-16-000001, Co-Principal Investigator (2016-2018)**
  United States Agency for International Development/Uganda, Total Amount: $40,000,000

• **Every Baby Needs Human Milk: Driving the Uptake of Life-giving Human Milk through a Global Integrated Human Milk Promotion Secretariat, Co-Principal Investigator (2016-2018)**
  FLRF, Total Amount: $26,000,000

**Megan Gray, MD**

• **The Use of Technology-Enhanced Simulation and Kinematic Motion Sensor Technology to Evaluate Neonatal Cardiopulmonary Resuscitation**

**David Loren, MD**

• **Better Care Through Communication and Learning After Perinatal Adverse Events (RO1 Co-Investigator)**
  NICHD, RFP Patient Safety Research During Neonatal Care

**Dennis Mayock, MD**

• Developmental Impact of NICU Exposures (DINE) ECHO application, subcontract with Montefiore Medical Center at the Albert Einstein College of Medicine, Bronx, NY. Site PI.

**Taylor L. Sawyer, DO, MEd**

• **Evaluating and Improving Tracheal Tracheal Intubations Through Live Coaching using Video Laryngoscopy** (2015-2016)
  NICHD R21, Total Amount: $275,000

• **A Novel Airway Device for Neonates: The iLMA, PI.**
  CoMotion Innovation Fund: $50,000

**Colin Studholme, PhD**

• Motion robust analysis of a longitudinal BOLD imaging database of the human placenta
  Role: Co PI (With Manjiri Dighe in Radiology)
  NIH/NICHD, Total Award Application: $760,285.00

• "Non-human primate model of Zika Induced Fetal Brain Injury". Role: Co-Investigator.

**Rachel Umoren, MD, MS**

• Development of a simulation based training curriculum in neonatal resuscitation for Pediatric residents, Co-investigator,
  UW Center for Leadership and Innovation in Medical Education (CLIME) Small Grant Program
• The Physiologic Effects of Tactical Combat Casualty Care Training and Assessment, Co-Investigator.
  US Army Medical Research and Material Command (USAMRMC)

CLINICAL, RESEARCH, AND TEACHING ACTIVITIES

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. He is also a core investigator for the Global Alliance to Prevent Prematurity and Stillbirth (GAPPS), and is involved with the Child Health Epidemiology Reference Group (WHO/UNICEF).

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. Providing support to families of these infants, in an unfamiliar environment, through family-centered rounds and open dialogue.

Scholarly Focus: Dr. Billimoria is a neonatal outcomes researcher investigating resource utilization and temporal trends in outcomes using national databases. Her current areas of interest include IVH, BPD, ECMO and nitric oxide utilization.

Administration/Education Roles: Providing quality education and mentoring of fellows, residents and medical students, with emphasis on bedside learning and critical thinking.

Shilpi Chabra, MD

Clinical Interests: As an active member of the Seattle Children's Hospital Clinical Effectiveness Program, she is involved in the Gastroschisis management guideline development. Her interests include outcomes in gastroschisis, diaphragmatic hernia and other birth defects. She is also involved in QI projects such as effect of standardized feeding guidelines on growth outcomes in preterm infants in the NICU

Scholarly Focus: Chronic lung disease in preterm infants and its association with Vitamin A; fluid management in gastroschisis; postnatal growth retardation and outcomes; challenges of the late preterm infant; epidemiology of gastroschisis and other birth defects.
Administration/Education Roles: She is the Medical Director of the NICU at Overlake Hospital and participated in the designing of the new single bed NICU which opened in 2012. She is a Member of Pediatric Advisory Committee, Pediatric Section and Perinatal Joint Practice. She is involved in quality improvement projects at Overlake Hospital and has led the late-preterm Task Force. She has also helped establish the post-discharge nutrition clinic at Overlake Hospital. Nationally, she proposed and assisted the American Academy of Pediatrics in successfully petitioning for establishment of new ICD-9 codes for gastroschisis and omphalocele to the Centers for Medicare and Medicaid Services and the U.S. Department of Health and Human Services. She has a keen interest in teaching Pediatric residents and is passionate about educating fellows who are the future of Neonatology.

Cyril Engmann, MD

Clinical Interest: Maternal, newborn and child survival, nutrition 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 and is regularly invited to conduct educational briefings at the United States Congress. He frequently leads health and nutritional policy and education dialogues with many governments including the Governments of India, South Africa, Mozambique, Ethiopia and 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. He is passionate about the generation, integration, and implementation of evidence-based policy, research and program aspects of reproductive, maternal, newborn, child health and nutrition, globally.

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. In this role, he leads a department of over 130 personnel working in Africa, Asia, the Far East and Latin America on a diverse and complex portfolio of grants totaling over $100 M. The work of the department spans the value chain from discovery agenda's funded by the NIH; development and delivery, with particular focus on implementation science and priming for scale efforts. Prior to this appointment, he led the Bill and Melinda Gates Foundation Newborn Strategy and was Attending Neonatologist and Associate Professor of Pediatrics and Public Health at the University of North Carolina Schools of Medicine and Public Health. Domestically and abroad, Cyril is deeply involved in mentoring Masters and PhD students, and young faculty in global/public health, and within the NICU, residents and fellows. He sits on the External Advisory Council for the NIH Fogarty PARTNER Program at the University of Michigan and the strategic advisory group of the $25M Window of Opportunity Project in South Africa, and chairs the strategic advisory council for the USAID –Funded PREMAND (PREventing Maternal And Neonatal Death) study in Ghana.

Christine A. Gleason, MD

Clinical Interests: Care of the high-risk newborn, especially those infants born at the “limits of viability” (23-24 weeks gestation) who are at high risk for adverse neurodevelopmental outcomes.
She is interested in improving our clinical practices in caring for these “micronates” with a specific focus on management of pain and stress.

Scholarly Focus: From 1985 to 2010, Dr. Gleason’s scholarship was focused on the effects of drugs on the developing brain, with a specific focus on drugs such as alcohol and cocaine. More recently, she directed her efforts towards improving our management of neonatal pain and stress, with a specific focus on the use of analgesics and sedatives. Since 2010, she has focused on the “Scholarship of Integration” including writing chapters, and editing textbooks.

Administration/Education Roles: Dr. Gleason’s local teaching activities are focused on clinical education of pediatric residents and neonatology fellows. Regionally, she teaches as a visiting professor in the WWAMI program and also does case reviews and presentations at regional hospitals. Nationally, her teaching activities have been focused on neonatal fellowship education and certification via her leadership roles on the neonatal sub-board of the American Board of Pediatrics, the Organization of Neonatal Training Program Directors, and the American Pediatric Society (currently Secretary-Treasurer). She also serves as co-editor of a major neonatal textbook (Avery’s Diseases of the Newborn, 9th edition, 2012) and has been invited to serve as a visiting professor at academic medical centers and as a speaker at numerous medical conferences – both nationally and internationally.

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 Kinestatic Learning 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 overseeing 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.

Anna Hedstrom, MD
**Clinical Interests: Interdisciplinary, family-focused neonatal intensive care**

**Scholarly Focus:** Dr. Hedstrom is focused on the implementation of neonatal health in resource limited areas globally. In particular she researches was 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 as the unit evolves.

**Administration/Education Roles:** Dr. Hedstrom teaches medical students, residents and neonatology fellows at the University of Washington and Seattle Children’s Hospital. She also instructs Neonatal Resuscitation Program courses for residents, clinical faculty and providers in the community and abroad.

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**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. Newly appointed as Associate Medical Director at Overlake NICU where she hopes to incorporate the lean and safety cultures practiced at Seattle Children’s Hospital into daily practice.

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**W. Alan Hodson, MD, MMSc**

**Clinical Interests:** He maintains a long-standing interest in clinical neonatology with a special interest in neonatal respiratory diseases, and global health.

**Scholarly Focus:** His previous research involved developmental biology of the lung with relevance to lung function in premature infants, respiratory distress syndrome, and bronchopulmonary dysplasia.

**Administration/Education Roles:** He is currently working on establishing a postdoctoral training program for obstetricians and pediatricians in global maternal and neonatal medicine in collaboration with the Department of Obstetrics and Gynecology. The overall goal is to train a new generation of emerging obstetricians and pediatricians to prepare them for a lifelong career in this area leading to academic careers or leadership roles focused on reducing maternal and infant death, which continue at unacceptable rates in most underdeveloped countries. As a part-time Professor Emeritus, Dr. Hodson continues to be involved in the Division’s postdoctoral training program.
providing guidance to fellows in their pursuit of excellence as scholars in neonatal medicine. He is completing a history of the Division of Neonatology at the University of Washington.

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

*Clinical Interests:* Caring for complex, critically ill infants needing multidisciplinary care from pediatric sub-specialists, pediatric surgeons and sub-specialists, nurses, dieticians, respiratory therapists, pharmacists, social workers, occupational and physical therapists, and others. Dr. Craig Jackson finds it extremely gratifying to see successful outcomes for patients.

*Scholarly Focus:* Implementation of established therapies to ensure that they are used appropriately. This includes critical appraisal of the medical literature to create and enhance evidence-based guidelines for the care of NICU patients. In addition, using scientific principles to continuously improve the quality, safety, and efficiency of NICU care through “lean” methodology that requires rigorous data collection, methodical planning, careful implementation, frequent reassessment of outcomes, and complete documentation.

*Administration/Education Roles:* Medical Director of the Seattle Children’s NICU, Associate Division Head for Clinical Strategic Planning to develop and support regional contracts for neonatal services, chair of the CUMG contracting committee, member of the Clinical Integrated Network finance committee, and consultant to hospitals regarding neonatal medical direction, quality improvement, peer review, and pediatric strategic planning and business development.

**Elizabeth N. Jacobson, MD**

*Clinical Interests:* Care of newborns 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:* Associate Medical Director of the Seattle Children’s Hospital NICU and Site Physician Sponsor for SCH NICU in the Children’s Hospitals Neonatal Consortium and Database. Clinical training of medical students, residents, and fellows at the University of Washington Medical Center and Seattle Children’s Hospital.

**Sandra Juul, MD, PhD**

*Clinical Interests:* Optimizing care for the critically ill newborn, implementing neuroprotective approaches to care.

*Scholarly Interests:* Dr. Juul’s research mission is to improve the neurodevelopmental outcomes of at 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 on the HEAL trial (High dose erythropoietin (Epo) for asphyxia and encephalopathy).

Administration/Education Roles: Dr. Juul became Division Head in Jan 2015, and has been actively recruiting and hiring new research and clinical faculty. Nationally, she participates in the neonatal sub-board of the American Board of Pediatrics (yes, writing exam questions!), and she is chairperson of the Developmental Brain Disorders NIH study section, and is co-editor of the 10th edition of Avery, Diseases of the Newborn. 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.

David Loren, MD

Clinical Interests: Innovating family centered strategies for developing comprehensive multi-disciplinary care plans in the neonatal ICU. Dr. Loren is passionate about engaging families in partnerships with the clinical care team. He describes his 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. He is 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. He is interested in how clinical care teams maintain – and lose – situational awareness and how teams debrief crisis situations. He 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: He mentors and supports residents and fellows at the University of Washington and Seattle Children's Hospital NICUs. His administrative responsibilities include serving as the Associate Medical Director of the UWMC NICU, course director for medical students rotating in the NICU at the University of Washington, and as liaison between the Seattle Children’s Hospital Neonatal Nurse Practitioner program and neonatology attending teams. 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 the effects of fetal and neonatal drug exposure on fetal, neonatal and adult cerebrovascular function.
- Evaluation of different transfusion medicine practices effects on CMV transmission rates
- 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.

**Ryan McAdams, MD**

**Clinical Interests:** Promoting quality improvement and safety in medical practice with the goal to optimize patient outcomes by promoting excellent communication and family support.

**Scholarly Focus:** Understanding early epigenetic mechanisms that may alter long-term lung and brain development. Dr. McAdams is interested in the immunomodulatory regulation of lung and brain molecular genetics and wants to explore mechanisms in which the immune system regulates neural, hormonal, and paracrine actions on a cellular level. In the lung, he is studying how in utero inflammatory signaling pathways affect gene expression in the developing lung in order to identify potential therapeutic windows to mitigate fetal and neonatal lung injury. In the brain, he is currently studying the effects of early neonatal stress and pain treatment in neonates. He is researching the effects of stress and opioid exposure on micro RNA (miRNA) targeted gene expression, which may regulate hippocampal genes important in neurogenesis and synaptogenesis. He is also studying the safety of alternative therapies used for pain and sedation in neonates, such as dexmedetomidine. His other area of scholarly focus relates to improving neonatal global health in developing countries. He is studying health care provider and parental attitudes toward withdrawal and withholding newborn resuscitation in different regions of Mongolia. He is also working on ways to improve neonatal care practices in a NICU in Kiwoko, Uganda.

**Administration/Education Roles:** He is actively involved as an instructor educating health care providers in newborn resuscitation locally and internationally.

**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, he manages 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:* Better understanding neonatal pain and implementing qualitative initiative to improve management of neonatal pain in NICU. He is also interested in PPHN and its management.

*Scholarly Focus:* 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. Pratik is also interested in 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

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**Taylor Sawyer, DO, MEd**

*Clinical Interests:* Promoting the highest quality neonatal care through the use of evidence-based medicine and innovative learning methodologies, including medical simulation, with the goal to optimize patient outcomes.

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

*Administration/Education Roles:* Dr. Sawyer is the Director of the Neonatal-Perinatal Fellowship Training Program and the Director of the Neonatal Education and Simulation-based Training (NEST) Program. His local teaching activities are focused on educating pediatric residents and neonatology fellows in the NICUs at Seattle Children’s Hospital and University of Washington Medical Center and conducting outreach education within the Seattle region. Dr. Sawyer currently serves as Co-Chair of the International Pediatric Simulation Society’s (IPSS) Committee on Education and as Co-Chair for the IPSS Neonatal Simulation SIG. He is also a member of the Seattle Children’s Simulation Working Group.

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**Kendra Smith, MD**

*Clinical interests:* Dr. Smith’s clinical focus is on lung injury prevention in preterm and term neonates. She has studied ventilator techniques and different ventilation support modalities and is currently working clinically on strategies to minimize lung trauma in infants requiring ventilation due to respiratory failure at birth or in the first month of life. Because of these interests, she 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.

*Scholarly Focus:* In conjunction with her clinical interests Dr. Smith works in the research lab analyzing the effects of inhaled nitric oxide in circumstances of elevated pulmonary pressures while on Extracorporeal Life Support. She is working on three studies. One involves the use of inhaled nitric oxide in a model of pulmonary hypertension requiring extracorporeal life support; the second is a national clinical study trial evaluating a medication to lower pulmonary pressures in neonates and the third is a clinical trial using the Seattle CPAP device designed by researchers in Dr. Tom Hansen’s lab in neonates with respiratory distress with the hope of bringing it to underserved
countries. She is a member of the Center of Developmental Services and the Institute of Translational Health Sciences.

**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. As well, she serves as the Medical Director of the Seattle Children’s Ground Transport Team, is an advisor for Airlift Northwest’s Neonatal Transport services and is the Manager of Divisional Respiratory Care Programs.

**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 the use of video recording of newborn resuscitations in the education of newborn caregivers. He also studies the use of simulation in the training of medical personnel in the Newborn Resuscitation Program and advanced life support. He is taking a lead in the development of a program to assess clinical competency of Division faculty members by employing peer observation and simulation.

*Administration/Education Roles:* He serves as the Medical Director for the neonatal intensive care unit of the University of Washington Medical Center and Associate Medical Director for the neonatal intensive care unit of Overlake Hospital Medical Center. He is the Associate Division Head for Education. He is taking a lead in the development of a program to assess clinical competency of Division faculty members employing peer observation and simulation. 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. He has brought his expertise in medical physics and biophysics to the area and has created programs that allow for accurate viewing of the fetal brain *in utero* despite the potential confounds of fetal movement. He has also developed cutting edge programs that allow for measurement of the growth of specific fetal brain regions over time, permitting insight into normal and abnormal neurodevelopment. In addition to his ongoing research in this area, he will be 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:** Improving neurodevelopment outcomes of infants in the NICU. He is investigating the effects of neonatal brain injury on cerebellum development. Ex-preterm infants are known to have several long-term difficulties including autism-like features, learning impairments and motor impairments which are associated with cerebellar injury. How brain injury affects cerebellar development is unknown; however, several studies have shown that the cerebellar development is impaired by preterm birth. He along with Drs. Juul and Studholme will be studying how head bleeds affect cerebellum growth to be able to design trails of neuroprotection.

**Administration/Education Roles:** Dr. Traudt has served as interim Medical Director of the St. Joseph Medical Center NICU for the past year. In addition, he participates in NNP, resident and fellow education in the NICU as well as mentoring students and fellows in the laboratory.

**Rachel Umoren, MD**

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

*Scholarly Focus:* Simulation for health professional education with the goals of providing safe patient care and better clinical outcomes. Her research interests include the use of emerging technologies, including simulated environments and virtual standardized patients for training and as an investigative methodology in the areas of teamwork, conflict resolution, and ethics in local and global health settings.

*Administration/Education Roles:* She is the Director of Immersive Learning, Neonatal Education and Simulation Training (NEST) Program

**Linda Wallen, MD**

*Clinical Interests:* She has significant clinical responsibilities and 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 guidelines for management of common neonatal problems.

*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 Level II NICUs in the community to implement guidelines of care. She works with Dr. Kendra Smith in medical direction of the Seattle Children’s Hospital transport team.

**David E. Woodrum, MD**

*Clinical Interests:* Dr. Woodrum serves as a neonatal consultant for the Seattle Children’s/University of Washington Prenatal Diagnosis and Treatment Center, provides palliative care for medically complex and/or premature infants and participates as a consultant in both Seattle Children’s and University of Washington Medical Center’s ethics consultant service.
Scholarly Focus: Current scholarly effort is focused on the study/analysis of the content/framing of prenatal consultations; and how such consultations impact families’ preparation for and adjustment to problems associated with the birth and subsequent treatment of the high-risk infant.

Administrative/Education Roles: Educational activities, primarily directed to trainees and junior faculty, reflect clinical and scholarly interests. Administrative assignment is to work to continue the development of the Prenatal Diagnosis and Treatment Program.

PUBLICATIONS: JULY 2015 – JUNE 2016

(Professor, Fellow)

PEER-REVIEWED ARTICLES

2016


2015


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**CHAPTERS, TEXTBOOKS**

**2016**


2. Dighe, Manjiri, Kim, Yun Jung, Seshamani, Sharmishtaa, Blazejewska, Ania I, Mckown, Susan, Caucutt, Jason, Gatenby, Christopher, Studholme, Colin. “Regional placental blood oxygen level dependent (BOLD) changes with gestational age in normally developing pregnancies using long duration R2* mapping in utero”. Proc. SPIE 9788, Medical Imaging 2016: Biomedical Applications in Molecular, Structural, and Functional Imaging, 97881H (March 29, 2016); doi:10.1117/12.2217137

**2015**


4. **Jackson, C.** Chapter on “Respiratory Distress of the Preterm Infant” in Avery’s Diseases of the Newborn, 10th edition (submitted)

**OTHER PUBLICATIONS**

**2015**


**ABSTRACTS**

**2016**


5. Tate TP, Musa RI, Naulikha JM, Walson JL, PakGorstein S, Nduati RW, **Batra M.** “Causes of Alcoholism and Its Effects on Child Health in Kisii County, Kenya” Pediatric Academic Societies Annual Meeting, Baltimore, MD April 30 – May 1, 2016.


2015


PRESENTATIONS BY INVITATION (JULY 2015 – JUNE 2016)

2016

1. Chabra, S. “2016 NRP new guidelines: implications for Obstetrics”, Obstetrics Section meeting, Overlake Hospital and Medical Center. February 2016


15. **McAdams, R.** “Delayed Cord Clamping: Transferring Evidence into Practice” Invited Speaker, Western Society of Pediatric Research meeting, Carmel, CA, Jan 2016.
27. **Studholme, C.** "Building the University of Washington Fetal Brain MRI Database", OHBM workshop on "New prospects for imaging the developing brain: opportunities and challenges" Human Brain Mapping, Geneva, June 2016.
2015


2. **Chabra, S.** "Difficult neonatal case presentations: challenges in management”, Visiting Professor bedside teaching Rounds, Wadia Childrens Hospital, Mumbai, India, August 2015

3. **Chabra, S.** “NRP update 2016”, Perinatal Joint Practice meeting, Overlake Hospital and Medical Center. October, 2015.


9. **Engmann, C.** “Generating the evidence and publishing is important but not sufficient to drive change: policy, program and advocacy is also needed.” Invited Speaker: Western Kenya Conference on public health, communication, media and advocacy interface. Kisumu, Kenya. December, 2015.


12. **Hendrickson, M.**, Surfactant and RDS, Pharmacist In-Service Lecture, Overlake Hospital Medical Center, Bellevue, WA. August, 2015

13. **Hendrickson, M.** Bubble CPAP, NNP Education lecture, Seattle Children’s Hospital, Seattle, WA. November, 2015


18. **McAdams, R.** “Neontal Neuroprotection and Epo” In-service for pharmacists, Overlake Hospital Medical Center, Bellevue, WA. September, 2015.

21. McAdams, R. “Delayed Cord Clamping: Transferring Evidence into Practice” Obstetrical Section Meeting, Overlake Hospital Medical Center, Bellevue, WA. December, 2015
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