Eastern Society for Pediatric Research
18th Annual Meeting

Program Guide

March 17-19, 2006
Hyatt Regency – Old Greenwich, CT

In cooperation with

The Children’s Hospital of Philadelphia®
A pediatric healthcare network
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Bruce D. Gelb, MD
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Mount Sinai School of Medicine
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Chairperson, Planning Committee
Lawrence M. Nogee, MD
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Heber Nielsen, MD
Lawrence M. Nogee, MD
Lance Parton, MD
Iman Sharif, MD
Barbara Stonestreet, MD

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1989–1991 Joseph B. Warshaw, MD
1991–1993 Marc Yudkoff, MD
1993–1996 Alan R. Fleischman, MD
1996–1999 Ira H. Gewolb, MD
1999–2002 Mitchell J. Kresch, MD
2002–2005 Luc P. Brion, MD

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Dear Colleagues:

Welcome to the 18th Annual Meeting of the Eastern Society for Pediatric Research (Eastern SPR)! We are sure that this will be an exciting meeting with excellent State-of-the-Art Plenary Talks, a Lunch with the Professor’s Educational Program, featured speakers at subspecialty sessions and a large number of high-quality abstracts. The organization of this meeting would not have been possible without the help of the American Pediatric Society and the Society for Pediatric Research, especially Deborah Atwood, Information Services Director of the APS/SPR, and Debbie Anagnostelis, APS/SPR Executive Director, as well as Marathon Multimedia. We would like to acknowledge the Eastern SPR Planning Committee and the other members of the Eastern SPR Council for their help.

We are pleased that we have been able to again use the services of The Children’s Hospital of Philadelphia to run our 2006 meeting and sponsor the CME program. With the growth and success of our recent meetings, the administrative burdens of organizing and running the meetings have increased significantly, and we expect that the services of the professional meeting planners at The Children’s Hospital of Philadelphia will continue to enhance our meeting. This has already consisted of a secure website for membership/registration payments, timely announcements, enhanced room booking services, and, for the meeting, will include improved informatics enabling presenters to load their presentations at a central station in advance.

We would like to thank our corporate and academic sponsors who were instrumental in making this meeting possible. We are confident that this meeting continues to satisfy the mission of the Eastern SPR in providing a forum for young investigators to present their research in a structured, yet informal and relaxed atmosphere, and by offering timely educational programs that address important current clinical and basic science questions in Pediatrics. Thank you for attending!

We look forward to sharing this time with you.

Bruce D. Gelb, MD
President

Rashmin C. Savani, MB, ChB
Secretary-Treasurer

Lawrence M. Nogee, MD
Chair, Planning Committee

Old Greenwich, CT – March 17-19
Meeting Services & CME Accreditation

Faculty

Steve Abman
University of Colorado, The Children’s Hospital, Denver, CO

Mark L. Batshaw
Children’s National Medical Center, Washington, DC

Sandra Braganza
Albert Einstein College of Medicine, The Children’s Hospital at Montefiore, Bronx, NY

Linda Brown
Yale University School of Medicine, New Haven, CT

Michael Bye
Columbia University Medical Center, New York, NY

Alvin J. Chin
University of Pennsylvania School of Medicine, Philadelphia, PA

David Cooke
Johns Hopkins University Hospital, Baltimore, MD

Cindy W. Christian
The Children’s Hospital of Philadelphia, Philadelphia, PA

Jonathan Davis
Winthrop University Hospital, Mineola, NY

Elizabeth Engle
Harvard University and Boston Children’s Hospital, Boston, MA

Monique dePaepe
Brown University, Providence, RI

Francis DiMario, Jr.
Connecticut Children’s Medical Center, University of Connecticut School of Medicine, Hartford, CT

Eugene Dinkevich
SUNY Downstate Medical Center, Brooklyn, NY

David Goldman
Albert Einstein College of Medicine, The Children’s Hospital at Montefiore, Bronx, NY

Richard Gorlick
Albert Einstein College of Medicine, The Children’s Hospital at Montefiore, Bronx, NY

John Harrington
New York Medical College, Hawthorne, NY

Hallam Hurt
The Children’s Hospital of Philadelphia, Philadelphia, PA

Stella Kourembanas
Boston Children’s Hospital, Boston, MA

Edward L. Lawson
Johns Hopkins University Hospital, Baltimore, MD

Nancy Ross-Ascuitto
Tulane Hospital for Children, New Orleans, LA

Registration and CME Desk Hours
Registration will be held in the Round Hill Foyer of the Hyatt Regency. Registration hours are as follows:

- Friday, March 17
  - 4:30pm – 7:00pm
- Saturday, March 18
  - 7:30am – 7:00pm
- Sunday, March 19
  - 7:30am – 1:00pm

Abstract Publication
All abstracts being presented at the 2006 Eastern SPR Annual Meeting are printed in this Program Guide, beginning on page 15.

Audio/Visual Information
All oral presentations must be made using PowerPoint. Computers and LCD projectors will be provided. Slide projectors will not be provided. Speakers will need to bring their presentations on a CD-ROM, ZIP drive, or flash memory.

Speaker Check In Required!

Speakers must have their presentations loaded onto a central computer during the session prior to the session in which the presentation is to be made (i.e., Friday evening for Saturday morning presentations, Saturday morning for Saturday afternoon presentations, and Saturday afternoon for Sunday morning presentations). Please take your CD-ROM, ZIP drive or flash memory to the Registration Area located in the Round Hill Foyer.

Business Center
The Business Center at the Hyatt Regency is located on the ground floor, near the Grand Staircase and Gift Shop.

CME Accreditation
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of The Children’s Hospital of Philadelphia and the Eastern Society for Pediatric Research. The Children’s Hospital of Philadelphia is accredited by the ACCME to provide continuing medical education for physicians.

The Children’s Hospital of Philadelphia designates this educational activity for a maximum of 11.0 Category 1 credits toward the Physician’s Recognition Award of the AMA. Each physician should claim only those hours of credit that he or she actually spent in the educational activity.

Certification Statement
The Children’s Hospital of Philadelphia designates this continuing medical education activity for a maximum of 11.0 Category 1 credits toward the Physician’s Recognition Award of the American Medical Association (AMA). Each physician should claim only those hours of credit that he or she actually spent in the educational activity.

Disclosure
It is the policy of The Children’s Hospital of Philadelphia, Continuing Medical Education (CME) Department to insure balance, independence, objectivity, and scientific rigor in all its individually sponsored or jointly sponsored educational programs. As an accredited CME sponsor, The Children’s Hospital of Philadelphia requires that its speakers comply with the ACCME Standards for Commercial Support of CME.

All faculty participating in The Children’s Hospital of Philadelphia-sponsored programs are required to disclose to the program audience any real or apparent conflict(s) of interest that may have a direct bearing on the subject matter of the continuing educational program. This pertains to relationships with pharmaceutical companies, biomedical device manufacturers, or other corporations whose products or services are related to the subject matter of the presentation topic. The intent of this policy is not to prevent a speaker with a potential conflict of interest from making a presentation. It is merely intended that any potential conflict should be identified openly so that the listeners may form their own judgments about the presentation with the full disclosure of the facts. It remains for the audience to determine whether the speaker’s outside interests may reflect a possible bias in either the exposition or the conclusions presented.

Procedures for CME Credit
Physicians wishing to receive CME credits will need to register for the meeting and to report to the Eastern SPR Annual Meeting Registration Desk, located in the Round Hill Foyer, and sign the sign-in sheets. Those physicians wishing CME credits for both Saturday and Sunday must sign in each day. The Poster Sessions are not designated for CME credits.

CME Certificates will be mailed from the Continuing Medical Education Department at The Children’s Hospital of Philadelphia within three to four weeks after the Annual Meeting concludes.
### Eastern SPR Schedule-at-a Glance

#### Friday, March 17

<table>
<thead>
<tr>
<th>6:00pm–7:30pm</th>
<th><strong>Poster Session I</strong></th>
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<td>— Regency ABC —</td>
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#### Saturday, March 18

**Eastern SPR Schedule-at-a Glance**

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<thead>
<tr>
<th>8:15am–10:45am</th>
<th><strong>Cardiopulmonary Development</strong></th>
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<td></td>
<td>— Mead C —</td>
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<tr>
<td></td>
<td><strong>FEATURED TALK:</strong> T-box Genes and Cardiovascular Development</td>
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<tr>
<th>8:15am–10:45am</th>
<th><strong>Endocrinology and Obesity</strong></th>
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<tr>
<td></td>
<td>— Winthrop B —</td>
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<td></td>
<td><strong>FEATURED TALK:</strong> Insulin Resistance, GLUT4, and the Endoplasmic Reticulum Stress Response</td>
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<tr>
<th>8:15am–10:45am</th>
<th><strong>General Pediatrics I: Preventative Pediatrics</strong></th>
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<td>— Mead A —</td>
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<td><strong>FEATURED TALK:</strong> Medical Challenges in the Field of Child Protection 2006</td>
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<th>8:15am–10:45am</th>
<th><strong>Hematology and Oncology</strong></th>
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<td>— Winthrop A —</td>
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<tr>
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<td><strong>FEATURED TALK:</strong> Osteosarcoma: Identifying Prognostic Factors and Therapeutic Leads</td>
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<th>8:15am–10:45am</th>
<th><strong>Neonatology I: Neonatal Clinical Studies</strong></th>
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<td>— Round Hill —</td>
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<td><strong>FEATURED TALK:</strong> Do Gestational Cocaine Exposure and/or Socioeconomic Status Have an Association with Neurocognitive Development?</td>
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<th>11:00am–12:00pm</th>
<th><strong>Plenary Session I</strong></th>
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<td>— Round Hill —</td>
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<tr>
<td></td>
<td>A Journey Around the Urea Cycle</td>
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<tr>
<th>12:00pm–1:00pm</th>
<th><strong>Lunch with the Professor</strong></th>
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<td>— Regency ABC —</td>
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<td>The Ins and Outs of Submitting a Scientific Manuscript</td>
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<tr>
<th>12:00pm–1:00pm</th>
<th><strong>Eastern SPR Business Meeting</strong></th>
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<td>— Sheffield —</td>
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<th>1:15pm–3:45pm</th>
<th><strong>Plenary Session II</strong></th>
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<td>— Round Hill —</td>
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<td></td>
<td>Role of Nitric Oxide in the Pathogenesis and Treatment of Bronchopulmonary Dysplasia</td>
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<td>Faculty Young Investigator Finalists, Trainee Award Finalists</td>
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<th>4:00pm–6:00pm</th>
<th><strong>Genetics: Predictors and Mechanisms of Disease</strong></th>
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<td>— Mead A —</td>
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<td><strong>FEATURED TALK:</strong> Cryptococcus neoformans: A Fungal Co-factor in Urban Asthma?</td>
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<th>4:00pm–6:00pm</th>
<th><strong>Neonatology II: Animal Models and Translational Studies</strong></th>
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<tr>
<td></td>
<td>— Winthrop A —</td>
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<td></td>
<td><strong>FEATURED TALK:</strong> Pulmonary Hypertension: Basic Mechanisms and New Therapeutic Approaches</td>
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#### Sunday, March 19

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<th>8:30am–9:30am</th>
<th><strong>Plenary Session III</strong></th>
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<td>— Round Hill —</td>
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<td>Inherited Eye Movement Disorders Highlight Genes Essential to Human Brainstem Development</td>
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<th>9:45am–12:15pm</th>
<th><strong>Developmental Biology</strong></th>
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<td>— Winthrop A/B —</td>
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<td><strong>FEATURED TALK:</strong> New Light on BPD: The Pulmonary Microvasculature Is Growing, But How?</td>
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<th>9:45am–12:15pm</th>
<th><strong>General Pediatrics III: Medical Education</strong></th>
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<td>— Mead C —</td>
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<td><strong>FEATURED TALK:</strong> Teaching Evidence-Based Medicine in a Busy Residency Program, Can It Be Done Effectively?</td>
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<th>9:45am–12:15pm</th>
<th><strong>Infectious Diseases</strong></th>
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<th>9:45am–12:15pm</th>
<th><strong>Neonatology III: Basic Science Studies</strong></th>
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</table>
26 Population-Based Analysis of Surgery in Infants Under One Year of Age
Jennifer K. Son, Craig Lillehei, Kimberlee Gauvreau, Kathy J. Jenkins. — Abstract 26

27 Management of Neonatal Hyperbilirubinemia: Pediatricians’ Practices and Educational Needs
Gillian B. Birchwood, Anna Petrova, Rajeev Mehta, Thomas Hegyi. — Abstract 27

28 Computerized Drug Dose Calculation To Reduce Medication Errors in the Neonatal Intensive Care Unit
Kabir M. Abubakar, Anthonya Umeh, Jennifer Berg, Jean Rorrke, Laura Folk, Martin Keseler. — Abstract 28

29 A Dedicated Lactation Consultant in the NICU Increases the Percentage of Outborn Versus Inborn Neonates Receiving Human Milk
Mariannne Augustine, Natalie Dweck, Dhruti Pandya, Rhonda Valdes-Greene, Paul Visintainer, Heather L. Brumberg. — Abstract 29

30 Relationship Between Having a Primary Care Provider and Child Maltreatment
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31 Are Children Referred for Child Maltreatment at Risk for Underimmunization?
Melissa S. Stockwell, Jocelyn Brown, Shaofu Chen, Frank M. Chimkin, Matilde Irigoyen. — Abstract 31

32 Barriers to Universal Screening for Lead Poisoning: a Survey of Inner-City Pediatric Healthcare Providers
Rachel Outterson, Nathan Graber, Maia Galvez, Vinay Aakalu, Deborah Vasquez, Ray Cornbill. — Abstract 32

9:30 ErbB Ligand-Specific Induction of Fetal Mouse Lung Type II Cell Proliferation and Differentiation
Lucia D. Pham, Sujatha M. Ramadurai, Sandra L. Murray, Heber C. Nielsen. — Abstract 43

9:45 Hormonal Induction of DC-LAMP, a Lamellar Body Membrane Protein, in Differentiating Human Fetal Alveolar Epithelial Cells
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10:00 Increased Human Alveolar Epithelial Barrier Function Induced by Differentiation and Transdifferentiation
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10:15 FEATURED TALK
T-box Genes and Cardiovascular Development
Alvin J. Chin

Endocrinology and Obesity
8:15am–10:45am Winthrop B
Moderator: David Cooke, Johns Hopkins University Hospital, Baltimore, MD

8:15 Hyperglycemia on Admission to the Pediatric Intensive Care Unit: Frequency and Association with Patient Outcome
Genna W. Klein, Joanne M. Hojsak, Sharon J. Hyman, Robert Rapaport. — Abstract 46

8:30 The Prevalence of Hypertension in Obese Minority Youth
M. Puri, M. Garcia, H. Nussbaum, J. Flynn, K. Freeman, J. DiMartino-Nardi. — Abstract 47

8:45 Effect of Metformin and Dietary/Lifestyle Therapy on Metabolic Risk Factors in Overweight Children with Dyslipidemia
Radhiya Purushothaman, Viral Gala, Mhechand Oad, Amrit Bhangoo, Sunil Sinha, Margarita Smotkin-Tangorra, Irina Kazachkova, Jessica Hileman, Deborah DeSantis, Henry Anhalt, Lisa Altshuler, Svetlana Ten. — Abstract 48

9:00 Prevalence of Vitamin D Deficiency in Obese Children and Adolescents
Margarita Smotkin-Tangorra, Radhiya Purushothaman, Ashutosh Gupta, Golali Nejati, Sunil Sinha, Henry Anhalt, Svetlana Ten. — Abstract 49

9:15 Break

9:30 Prevalence of Abnormal Glucose Tolerance in Obese Minority Adolescents with Polycystic Ovary Syndrome
Mala Puri, Mireya Garcia, Hadassa Nussbaum, Katherine Freeman, Joan DiMartino-Nardi. — Abstract 50

9:45 Patterns of Weight Gain of 3-9 Year Old Children and the Relationship of These Patterns to Obesity
Herbert I. Goldman. — Abstract 51

10:00 Adiponection Responses to Oral Glucose Tolerance Tests in Adolescents with Morbid Obesity
Vatcharapan Umpaichitra, Arlene B. Mercado, Christina Juan, Jose B. Quintos, Salvador Castells. — Abstract 52
FEATURED TALK
Insulin Resistance, GLUT4, and the Endoplasmic Reticulum Stress Response
David Cooke

General Pediatrics I: Preventative Pediatrics
8:15am–10:45am Mead A

8:15 Human Milk Feeding by Gestational Age and Neonatal Intensive Care Status in a Nationally Representative Population of US Infants
Cynthia R. Howard, Kathleen A. Marinelli, Peggy Auringer, Nirupama Laroia, Ruth A. Lawrence. — Abstract 53

8:30 Are Hospitals Too Neutral About Breastfeeding? A Qualitative Study of New Mothers’ Feeding Choices for Their Infants
Daryl Wisler-Scher, Matilde Irigoyen. — Abstract 54

8:45 Relative Impact of Cost and Knowledge on Intake of Folate and Other Micronutrients
Ashish S. Chogle, Willeatha Taylor, Robert J. Karp. — Abstract 55

9:00 Improving Appropriate Therapy for Children with Asthma
Sandra F. Braganza, Iman Sharif, Philip O. Ozuah. — Abstract 56

9:15 Prenatal Lead Exposure in New York City Immigrant Communities
Nathan Graber, Tatyana Gabinskaya, Joel Forman, Melvin Gertner. — Abstract 57

9:30 Pain Associated with Aspiration Prior to Intramuscular Vaccine Injection
Moshe Ipp, Anna Taddio, Jonathan Sam, Morton Goldbach, Patricia C. Parkin. — Abstract 58

10:00 Exposure to Community Violence in Children
Fernanda E. Kupferman-Meik, Rafael Javier, Jennifer Salhany, Phil Drucker, Maryse Roumain. — Abstract 59

FEATURED TALK
Medical Challenges in the Field of Child Protection
Cindy W. Christian

Hematology and Oncology
8:15am–10:30am Winthrop A
Moderator: Richard Gorlick, Albert Einstein College of Medicine, The Children’s Hospital at Montefiore, Bronx, NY

8:15 Increased Prevalence of Overweight Status in Survivors of Acute Lymphoblastic Leukemia Treated Without Cranial Radiation
Nina S. Kadan-Lottick, Linda C. Stork, Bruce C. Bostrom, Joseph P. Neglia. — Abstract 33

8:30 Behavioral Social Adjustment in Survivors of Childhood Acute Lymphoblastic Leukemia Treated Without Cranial Radiation
David Breiger, Thomas A. Kaleita, Nina S. Kadan-Lottick, Joseph P. Neglia, Pim Brouwers. — Abstract 34

8:45 Preliminary Findings of Neurobehavioral Outcomes in Survivors of Childhood Acute Lymphoblastic Leukemia (ALL) Treated Without Cranial Radiation

9:00 Break

9:15 Mechanisms of Phthalate-Induced Toxicity in Neonatal PMN
Nkiru Nwebube, Anna Vetrano, Kirin Syed, Chris Caravans, Sowmya Murthy, Priya Falit, Nazeek Hanna, Barry Weinberger. — Abstract 36

9:30 Pulmonary Health in Sickle Cell Disease
Anita Bhandari, Nathan Hagstrom, Craig Schramm. — Abstract 37

10:00 FEATURED TALK
Osteosarcoma: Identifying Prognostic Factors and Therapeutic Leads
Richard Gorlick

Neonatology I: Neonatal Clinical Studies
8:15am–10:45am Round Hill
Moderator: Hallam Hurt, Department of Pediatrics, Division of Neonatology, The Children’s Hospital of Philadelphia, Philadelphia, PA

8:15 Changes in Tidal Volume Requirement with Advancing Postnatal Age in Ventilated Extremely Low Birth Weight Infants
Sepideh Montazami, Kabir Abubakar, Martin Keszler. — Abstract 60

8:30 Effect of Supine and Prone Sleep Positions in Apnea of Prematurity
Dharmendra J. Nimavat, Joseph D. Decristofaro, John J. Chen, Wenyang Mao, Doreen DeMeglio. — Abstract 61

8:45 Apnea in Preterm Infants and Tobacco Use in Pregnancy: Is There an Association?
Shama Praveen, Naveed Hussain, Cheryl Oncken. — Abstract 62

9:00 Volume Guarantee Accelerates Recovery from Endotracheal Tube Suctioning in Ventilated Preterm Infants
Kabir M. Abubakar, Sepideh Montazami, Martin Keszler. — Abstract 63

9:15 Ranitidine Use and Late-Onset Sepsis in the Neonatal Intensive Care Unit
Simona Bianconi, Madhu Godavalli, Vesna G. Sutija, Anna L. Lopez, Lilliana Barillas-Arias, Nitin Ron. — Abstract 64
9:30  Break

9:45  Is the Pro-Inflammatory Pulmonary Response of Preterm Infants Influenced by the Type of Surfactant?
Vanessa V. Mercado, Ioana Cristea, Sonya Strassberg, Elizabeth Buescher, Jean Yang, Lance A. Parton. — Abstract 65

10:00  Special Health Care Needs of Infants at the Threshold of Viability

10:15  FEATURED TALK
Do Gestational Cocaine Exposure and/or Socioeconomic Status Have an Association with Neurocognitive Development?
Hallam Hurt

Neurobiology

8:15am–10:45am  Mead B
Moderator: Francis DiMario, Jr., Connecticut Children’s Medical Center, University of Connecticut School of Medicine, Hartford, CT

8:15  Risk Factors for Perinatal Brachial Plexus Palsy; a 6 Year Study

8:30  Using Auditory Brainstem Responses To Assess Central Nervous System Integrity in the Neonatal Intensive Care Unit
Bernard Z. Karmel, Judith M. Gardner, Anthony Barone, Anantham Harin, Ha T.T. Phan, Brij Kapadia, Marina Korneeva, Poonam Rauniyar, Simon S. Rabinowitz. — Abstract 68

8:45  Role of Inhaled Nitric Oxide in Evolution of Brain Lesions in the Premature Infant
Heather Kaplan, Scott A. Lorch, Xianqun Luan, Sandra Wadlinger, Sabah Servaes, Richard J. Martin, William E. Truog, Avital Cnaan, Roberta A. Ballard, the NO-CLD Trial Group. — Abstract 69

9:00  Break

9:15  NFκB Thiol Modifications Following Hypoxia-Reoxygenation in Cerebral Cortical Cells
Noah Cook, Guang Yang, Robert Kalb, Andrew Gow. — Abstract 70

9:30  Maturation and Antenatal Corticosteroids Reduce Non-Neuronal Apoptosis and Caspase-3 Activity in the Preterm Cerebral Cortex
Shadi N. Malae, Teddy Si Youn, Grazyna B. Sadowska, Virginia Hovanesian, Matthew D. Sarasin, Silvia M. Hartmann, Barbara S. Stonestreet. — Abstract 71

9:45  Gray Matter Volume Reduction in Very Low Birth Weight Infants Is Related to Gram Negative Infection
Maricor Castillo, John Van Dyke, Linda Heier, Conrad Cassie, Sarah Sarvis, J. M. Perlman. — Abstract 72

10:00  Hypoxia Down-Regulates Expression of Prostaglandin D Synthase in Mouse Brain
Americo E. Esquibies, Reza Farahani, Gabriel G. Haddad. — Abstract 73

10:15  FEATURED TALK
Brain Abnormalities in Tuberous Sclerosis Complex
Francis DiMario, Jr.
Adolescent Medicine

4:00pm–4:15pm Winthrop B
Moderator: Sandra Braganza, Albert Einstein College of Medicine, The Children’s Hospital at Montefiore, Bronx, NY

4:00 PM The Prevalence of Hypertension in Obese Minority Adolescents with Polycystic Ovarian Syndrome
M. Puri, M. Garcia, H. Nussbaum, J. Flynn, K. Freeman, J. DiMartino-Nardi. — Abstract 80

4:15 PM Managing Childhood Overweight: Relationship Between Parent and Child Self-Efficacy
Katherine O’Connor, Iman Sharif. — Abstract 81

4:30 PM Knowledge of Abortion Methods by Adolescents
Mandy S. Coles, Laura P. Koenigs. — Abstract 82

4:45 PM Break

5:00 PM Developmental and Service Needs of Teens and Young Adults with Congenitally Acquired HIV: A Follow up Study
Katllyne Lubin, Marsha Edell, Netburn Laura. — Abstract 83

5:15 PM Seroprevalence of HIV-1 Infection in an Adolescent and Young Adult Population: An Anonymous Survey in a Community Hospital in the South Bronx
Murli U. Purswani, Stefan Hagmann, Aida R. Matias, Caroline A. Nubel, Ram Kairam. — Abstract 84

5:30 PM Risk-Taking Behaviors and Depression in Adolescents Seeking Care in the Pediatric Emergency Department
Maia S. Rutman, Thomas Chun, Bruce M. Becker. — Abstract 85

Cardiology: Clinical Studies

4:00pm–5:45pm Mead C
Moderator: Nancy Ross-Ascuitto, Department of Pediatrics, Tulane Hospital for Children, New Orleans, LA

4:00 PM Pulmonary Hypertension in Children with Sickle Cell Disease
Muhammad A. Khan, Erika Berman Rosenzweig, Robyn J. Barst, Margaret T. Lee, Tania Small, Mitchell S. Cairo, Sujit S. Sheth. — Abstract 86

4:15 PM Cardiac Risk After Craniohypophysectomy Therapy: A Cross-Sectional Pilot Study
Sandy Mong, Scott L. Pomeroy, Frank Cecchin, Mark E. Alexander. — Abstract 87

4:30 PM Medical Injury Diagnosis and High Resource Utilization During Congenital Heart Surgery Admissions
Oscar J. Benavidez, Jean A. Connor, Kimberlee Gauvreau, Kathy J. Jenkins. — Abstract 88

4:45 PM Flow Disturbances with Small Pressure Change: Relevance to Obstructed Total Caval Pulmonary Connection (TCPC)
Joshua Wiesman, Nancy Ross-Ascuito, Donald Gaver, Robert Ascuito. — Abstract 89

5:00 PM Break

5:15 PM Prevalence of Congenital Cardiovascular Malformations Varies Between Whites, Blacks, and Hispanics
Amitoz S. Manhas, Paul Visintainer, Cheryl Hunter-Grant, Heather L. Brumberg. — Abstract 90

5:30 PM Improvement in Mortality for Congenital Heart Surgery in Guatemala
Luis A. Larrazabal, Kathy J. Jenkins, Kimberlee Gauvreau, Guillermo A. Gaitan, Aldo R. Castaneda. — Abstract 91

Emergency Medicine

4:00pm–5:45pm Mead B
Moderator: Linda Brown, Department of Pediatrics, Yale University School of Medicine, New Haven, CT

4:00 PM Round Versus Square Head Otoscope for the Diagnosis of Acute Otitis Media

4:15 PM A Brief Screen for Adolescent Depression in the Pediatric Emergency Department
Maia S. Rutman, Edmond Shenassa, Thomas Chun, Bruce M. Becker. — Abstract 93

4:30 PM Break

4:45 PM Ultrasound Measurement of the Inferior Vena Cava Diameter in the Assessment of Children with Dehydration
Lei Chen, Yunie Kim, Karen Santucci. — Abstract 94

5:00 PM Predicting Pertussis in a Pediatric Emergency Department (PED) Population
Jennifer E. Mackey, Wojciek Susan, Boyle Margaret, Long Ray, Callahan M. James, Grant D. William. — Abstract 95

5:15 PM The Association of Body Mass Index and Ankle Injuries in Children
Mark R. Zonfrillo, Jeffrey A. Seiden, Ellen M. House, Eugene D. Shapiro, Robert Dubrow, Mark D. Baker, David M. Spiro. — Abstract 96

5:30 PM End Tidal Carbon Dioxide Changes with Bronchodilator Therapy During Acute Asthma Exacerbations in Children

General Pediatrics II: Attitudes and Perceptions of Caregivers and Caretakers

4:00pm–6:00pm Mead A
Moderator: John Harrington, New York Medical College, Hawthorne, NY

4:00 PM Parent Attributions for Difficulties Experienced by Children with ADHD
Bridget Perrin, Leandra Godoy, Chris Sheldrick, Ellen C. Perrin. — Abstract 110

4:15 PM Parental Beliefs on Overweight and Lifestyle Changes in Latino and African-American Early School Age Children
Shuba Kamath, Carolyn Rosen, Richard Adams, Danielle Laraque. — Abstract 111

4:30 PM Pediatric Healthcare Provider Beliefs Regarding Low-Level Lead Exposure and Adverse Effects in Children
Rachel E. Outterson, Vinay K. Aakalu, Nathan Graber, Maida Galvez, Deborah Vasquez, Ray Cornbill. — Abstract 112
Bright Futures Health Supervision Guidelines Encounter
Forms for Families Did Not Increase Parental Participation in Well-Child Care
Eugene Dinkevich, Pam Sass, Anne Skamai. — Abstract 113

Break

The Prevalence and Correlates of the Use of Over-the-Counter Cough and Cold (OTCC) Medicines in Asthmatic Children in South Bronx
Maria Andrea Alano, Sameera Haroon, Delsa Compres, Ronald Bainbridge, Ayoade Adeniyi, Richard Neugebauer, Anantha Harijith. — Abstract 114

Use of Complimentary and Alternative Therapies in an Hispanic Immigrant Inner City Population
Ranjini Chugh, Margarita Fermin, Candace Erickson. — Abstract 115

Custody Concerns: Parental Wills in an Inner-City Pediatric Clinic
Mathew H. Baldasaro, Cheryl D. Tierney. — Abstract 116

Genetics:
Predictors and Mechanisms of Disease

Moderator: Mark L. Batshaw, Children’s National Medical Center, Washington, DC

Single Nucleotide Polymorphisms of IL8 (-781) and Autistic Spectrum Disorders
John W. Harrington, Nora Ali, Patrick Maffucci, Ioana A. Cristea, Lance Parton. — Abstract 105

Do TNFα Polymorphisms Predict BPD?
Sonya S. Strassberg, Ioana A. Cristea, Dajun Qian, Nora Ali, Jason A. Herrick, Lance A. Parton. — Abstract 104

Shared Genetic Susceptibility to Retinopathy of Prematurity (ROP) and Bronchopulmonary Dysplasia (BPD)
Matthew J. Bizzarro, Vineet Bhandari, Dianne S. Krause, Brian Smith, Ian Gross. — Abstract 103

Urine Proteomic Biomarkers Distinguish Steroid-Sensitive (SSNS) and Steroid-Resistant (SRNS) Idiopathic Nephrotic Syndrome (INS) of Childhood
Robert P. Woroniecki, Ibrahim F. Shatat, Frederick J. Kaskel, Tatyana N. Orlowa, Edmond O’Riordan, Michael S. Goligorsky. — Abstract 107

Expression Profiles as Predictors of Bronchopulmonary Dysplasia in Extremely Low Gestational Age Newborns

Is Proximity to a Nuclear Power Plant Associated with Increased Rates of Congenital Malformations?
Tania Mangones, Paul Visintainer, Cheryl Hunter-Grant, Heather L. Brumberg. — Abstract 109

Circulating Stem Cells in the Preterm Neonate
Matthew J. Bizzarro, Vineet Bhandari, Dianne S. Krause, Brian Smith, Ian Gross. — Abstract 98

CC10 Reduces the Inflammatory Response in Piglet Meconium Aspiration Syndrome (MAS)

Quantification of Nitric Oxide Metabolites in a Newborn Piglet Model of Lipopolysaccharide-Induced Sepsis
Michael A. Padula, Ted H. Elsasser, Diane Wray-Cahen, Andrew J. Gow, Harry Ischiropoulos. — Abstract 100

Neonatal Resuscitation in Lambs with 100% Oxygen Decreases Pulmonary Vasodilator Response to Inhaled Nitric Oxide (NO) and Acetylcholine (ACh)
Satyan Lakshminrusimha, Frederick C. Morin III, Robin H. Steinhorn, Daniel D. Swartz, Rita M. Ryan, Sylvia F. Gugino, Bobby Mathew, Karen A. Wynn, James A. Russell. — Abstract 101

Resuscitation in 21% Versus 100% O2—Effects on Arterial Blood Gases (ABG) and Antioxidant Enzyme (AOE) Activities in Preterm Newborn Lambs

MMP-2 and MMP-9 Activity in Lung Homogenates Following Resuscitation in Room Air or Oxygen in Term and Preterm Newborn Lambs
Vasanth H. Kumar, Daniel D. Swartz, Anupama Patel, Lori C. Nielsen, Huamei Wang, Karen A. Wynn, Rita M. Ryan. — Abstract 103
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4 Lamotrigine and Phenytoin, but Not Amiodarone, Impair Peripheral Chemoreceptor Responses to Hypoxia
E. Vincent S. Faustino, David F. Donnelly. — Abstract 120

5 Fecal ASCA Measurements in the Assessment of Pediatric Patients with Known or Suspected Crohn’s Disease

6 Expedited HIV-Testing in the Labor and Delivery Setting: The Use of Rapid HIV-Testing in a South Bronx Community Hospital
Claudia J. Alvarado, Laura Daugialaite, Carlos Barahona, Caroline A. Nubel, Kelly Monaghan, Marilyn Crane, Stefan Hagmann, Murli U. Purswani. — Abstract 122

7 RSV Genotype and Severity of Disease in Children
Richard A. Martinello, Issac Lazar, Carla Weibel, Eugene D. Shapiro, Jeffrey S. Kahn. — Abstract 123

8 A Computer-Based, Multivariate, Economic Analysis of Neonatal-Intensive-Care-Unit-Based Influenza Vaccine Administration to Parents in a Low-Socio-Economic, Urban Setting
Shetal I. Shah, Martha Caprio, Pradeep V. Mally, Karen Hendricks-Munoz. — Abstract 124

9 Is Urinary Transforming Growth Factor Beta-1 (TGF-β) a Useful Biomarker in Idiopathic Nephrotic Syndrome (INS) of Childhood?
Ibrahim F. Shatat, Edmond O’Riordan, Frederick J. Kaskel, Robert P. Woroniecki. — Abstract 125

10 Characteristics of Pulmonary Hypertension (PH) in Infants < 37 Week Gestation (GA)
V. H. Kumar, S. Lakshminrusimha, A. A. Hutchison, K. Keleher, R. M. Ryan. — Abstract 126

11 Comparison of Pulmonary Outcomes in a Premature Cohort: O₂ Requirement at 36 Weeks GA, Outpatient Diuretic Use, and Respiratory Readmissions

12 Ventilator Associated Pneumonia in a High Risk NICU Population
Folasade I. Kehinde, Navedd Hussain, Ted S. Rosenkrantz. — Abstract 128

13 Prophylactic Fluconazole Therapy for Very Low Birth Weight Infants Colonized with Candida
Vaishali Jha, Monica Bajaj, Vinayak Govande, Myron Sokal, Dominique Jean-Baptiste, Nam-Young Chung, Elsa Santos-Cruz, M.Roger Kim. — Abstract 129

14 Outbreak of Parainfluenza Virus Type 3 in a Neonatal Intensive Care Unit
Aryeh Simmonds, Barbara Clones, Jose Munoz, Marisa Montecalvo, Edmund F. LaGamma. — Abstract 130

15 Infection-Induced Placental Inflammatory Responses: Does the Type of Organism Matter?
Mehmet Bayraktar, Morgan Peltier, John Noh, David Sorrentino, Vasudha Tulsyan, Barry Weinberger, Nazeeh Hanna. — Abstract 131

16 Placental Pathology in Asymptomatic Infants Screened for Early-Onset Sepsis
Shirley Y. Huang, Rebecca N. Baergen, Marie Ambroise, Jeffrey M. Perlman. — Abstract 132

17 Is It Safe To Keep Umbilical Vein Catheters for Longer Than 7 Days?
Nadine El-Khoury, Sulaiman Sannoh, Barbara Clones, Boriana Parvez. — Abstract 133

18 The Effects of Low Dose Indocin (0.1mg) Treatment on PDA Closure in VLBW Neonates
Dalbir Singh, Pradeep Mally, Karen Hendricks-Munoz. — Abstract 134

19 Hydrolyzed Protein Formula for Gut Priming in VLBW Infants
R. Vemberil, M. Dejhalla, M. Katzenstein, E. F. LaGamma, B. Parvez. — Abstract 135

20 Autonomic Reactivity During Car Seat Testing in Preterm Infants
Lisa R. Eiland, Rakesh Sahni. — Abstract 136

21 A Unique Way of Decreasing Hospital Cost: The Infant Apnea Program
Bgee E. Kunjumon, Pradeep Mally, Jessie Caprio, Anthony Perallo, Rishi Vorha, Karen Hendricks-Munoz. — Abstract 137

22 Hemangioma and Retinopathy of Prematurity: A Possible Association
Vijayakumar Praveen, Ramesh Vidalvalur, Ted S. Rosenkrantz, Navedd Hussain. — Abstract 138

23 Incidence of Periventricular Leukomalacia: Seventeen Years of Experience at a Community Hospital
Natinder Saini, Madhavi Jasti, Khaja Raziuddin, Rica Vizarra Villoncgo, Vesna G. Sutija. — Abstract 139

24 Resuscitation Decisions (RD) in the Delivery Room (DR) at the Edge of Viability (EOV) and with Known Trisomy 18 (TR18). Is the Gender of the Provider Important?
Melanie P. McGraw, Jeffrey M. Perlman. — Abstract 140

25 Reliability of Immunization Records in Internationally Adopted Children
Bindy Crouch, Paul J. Lee, Maria Alonso, Dorothy Lane, John J. Chen, Leonard R. Krilov. — Abstract 141

26 Referring Hospitals Survey for Pediatric Transport Team—Quality of Service Assessment Tool
Michael F. Canarie, Heather A. Schmenk, Isaac Lazar. — Abstract 142

27 Sitting in the Front Seat of a Passenger Vehicle: Real-Time Usage and Possible Risk Factors at One Elementary School
John W. Harrington. — Abstract 143

28 Hospital Admissions for Children with Autistic Spectrum Disorder in a Tertiary Care Setting: Diagnostic Etiology and Length of Stay
John W. Harrington, Ana Garnecho. — Abstract 144

29 Prevalence of Parent Reported ADHD in 6-12 Year Old Inner City, Primary Care Patients
Daniela I. Sima, Margarita Fermin, Candace Erickson. — Abstract 145
Plenary Session III
8:30am–9:30am
8:30 Announcement of Young Investigator Awardees
8:40 Inherited Eye Movement Disorders Highlight Genes Essential to Human Brainstem Development
Elizabeth Engle, Harvard University and Boston Children’s Hospital, Boston, MA

Developmental Biology
9:45am–12:15pm
9:45 Gap Junctions in Mouse and Zebrfish Left-Right Development
Ivy Lin, Zhaoxia Sun, Roseanne Titcombe, Martina Brueckner. — Abstract 149
10:00 Multiple Signal Transduction Pathways Interact Genetically with a Noonan Syndrome-Related PTPN11 Gain-of-Function Mutation
In-Kyong Kim, Kimihiko Oishi, Huiwen Ying, Fitnat Topbas, Michael Kaplan, Marek Mlodzik, Leslie Pick, Bruce D. Gelb. — Abstract 150
10:15 Transient In Utero Knockout of CFTR Results in a Disruption of Organogenesis and Intestinal Epithelial Differentiation in Sprague-Dawley Rats
Kelly E. Moulton, J. Craig Cohen, Janet E. Larson. — Abstract 151
10:30 Valproic Acid, a Structural Homologue of Diet-Derived Butyrate, Regulates Tyrosine Hydroxylase Gene Expression (TH): A Possible Gut-Brain Link to Behavior
Pranav Patel, Bistra Nankova, Edmund F. LaGamma. — Abstract 152
10:45 Break
11:00 Macrophage-Specific Transgenic Overexpression of the Receptor for Hyaluronan-Mediated Motility (RHAMM) Increases Inflammatory Responses
Zheng Cui, Hengjiang Zhao, Guoyuan Cao, Horace M. DeLisser, Rashmin C. Savani. — Abstract 153
11:15 Heme Oxygenase-1 Is a Signaling Molecule That Regulate Its Own Expression
Qing S. Lin, Sebastian Weis, Guang Yang, Phyllis A. Dennery. — Abstract 154
11:30 Mechanical Strain Activates Rho and Induces Stress Fiber Formation in Fetal Lung Type II Epithelial Cells
Ophira Silbert, Yulian Wang, Benjamin Maciejewski, Sunil Shaw, Juan Sanchez-Esteban. — Abstract 155
10:15 Administration of Inactivated Trivalent Influenza Vaccine (TIV) to Parents of High-Risk Infants in the Neonatal Intensive Care Unit (NICU): Effect on Vaccination Rates
Shetal I. Shah, Martha Caprio, Pradeep Mally, Karen Hendricks-Munoz. — Abstract 165

10:30 Influenza Vaccine Coverage Among Children Aged 6-23 Months: 2000–2005
Jennifer R. Verani, Matilde Irigoyen, Shaofu Chen, Frank Chimkin. — Abstract 166

11:00 B-Type Natriuretic Peptide (BNP) System in an Ovine Model of Persistent Pulmonary Hypertension of the Newborn (PPHN)

10:15 Carcinoembryonic Antigen Cell Adhesion Protein: A Novel Type II Cell Marker of Infant Lung Injury?
Nicole A. Bailey, Linda K. Gonzales, Venkatadri Kolla, Roberta A. Ballard, Philip L. Ballard. — Abstract 172

10:30 Angiotensin II Stimulates Endothelial Superoxide Generation Via Src Kinase in Bovine Pulmonary Artery Endothelial Cells
Xunmei Li, Lance A. Parton, Susan C. Olson. — Abstract 173

10:45 Hyperoxia Translocates eNOS and Caveolin-1 from Endothelial Cell Surface to Cytoplasm
Antoni D’Souza, Jing Huang, Xiangmin Zhao, Susan Olsen, Lance A. Parton, Rajamma Mathew. — Abstract 174

11:00 Pulmonary Hypertension: Basic Mechanisms and New Therapeutic Approaches
Stella Kourembanas

9:45am–11:45am Mead A
Moderator: Michael Bye, Department of Pediatrics, Columbia University Medical Center, New York, NY

9:45 Childhood Asthma and Extreme Values of Body Mass Index: The Harlem Children’s Zone Asthma Initiative

10:00 Defining Exercise Induced Bronchospasm… Asthma or a Separate Entity?
Nedda Salehi, Paul Salva. — Abstract 179

11:15 Effect of Bias Flow on Work of Breathing During Bubble Nasal Continuous Positive Airway Pressure: A Pilot Study
Doron J. Kahn, Robert H. Habib, Michael D. Weisner, Andrew M. Steele, Rachana Singh, Sherry E. Courtney. — Abstract 182

11:30 Effect of Nitric Oxide Synthase Inhibition on Ovine Bronchial Derived Relaxing Factor: Changes with Development and Hyperoxic Ventilation
Satyan Lakshminrusimha, Frederick C. Morin III, Robin H. Steinhorn, Rita M. Ryan, Sylvia F. Gugino, Vasanth H. Kumar, James A. Russell. — Abstract 183
CONCLUSIONS: Capnography can be successfully utilized in the pediatric ED. ETCO2 is significantly lower in children with acute asthma compared with controls.

Success Rate of Endotracheal Intubations in an Urban Pediatric Emergency Department

Susan A. Walsh, Lei Chen. Department of Pediatric Emergency Medicine, Yale New Haven Children’s Hospital, New Haven, CT.

BACKGROUND: Airway Management skills are essential to Pediatric Emergency Medicine (PEM) physicians. Endotracheal intubation (ETI) is an important skill to acquire during sub specialty training. No previous research has prospectively evaluated the success rates of endotracheal intubations performed in a pediatric emergency department by trainees, including PEM fellows.

OBJECTIVE: To investigate the success rates of endotracheal intubations performed in an urban pediatric emergency department by trainees.

DESIGN/METHODS: Over a 25 month period (10/2003 to 11/2005) we prospectively enrolled all patients who had intubations attempted in our Pediatric Emergency Department. We recorded the success or failure of each attempt by health care providers at various levels of training. Reasons for failure were recorded. Final diagnosis was also recorded.

RESULTS: Over the study period, 58 total patients were enrolled in the study. The subjects varied in age from 5 days to 19 years old. All subjects were successfully intubated. Sixteen patients were traumatic patients where in-line c-spine immobilization was maintained during intubation attempts. The most common traumatic diagnosis was closed head injury. Most common medical diagnoses were seizure and respiratory arrest.

Out of 58 subjects, pediatric emergency medicine (PEM) fellows attempted intubations in 33 patients. Their success rate was 91% (30/33, 95% C.I. 75%-98%). The first attempt success rate was 78% (26/33, 95% C.I. 61% - 91%). Ten (30%) were trauma airways. PEM attempts had a success rate of 91% (10/11, 95% C.I. 59%-99%). Recorded reasons may have contributed to the failure of the PEM fellows and attendings were “blood in the airway” and “opharyngeal bleeding”. Anesthesiologists and otolaryngologists performed 4 endotracheal intubations during the study period. The indications included suspected epiglottitis, trauma to airway and failed attempt by attending/fellow.

Residents in pediatric and emergency medicine accounted for 14 attempts during the study period. Their success rate was 71% (10/14, 95% C.I. 42% - 92%). The success rate on first attempt was 57% (8/14 95% C.I. 29% - 82%).

CONCLUSIONS: Although individual skills may vary, in general PEM fellows are highly successful at performing ETI in both traumatic and non-traumatic patients in the Pediatric Emergency Department.

Influenza Vaccine Coverage Among Child Asthmatics: 2000-2005

Jennifer R. Verani, Mattilde Iriyuon, Shafiu Chen, Frank Chinkin, Division of General Pediatrics, Columbia University Medical Center, New York, NY.

BACKGROUND: Influenza is a significant cause of morbidity among children with asthma. Despite guidelines for vaccinating child asthmatics against influenza, studies have found low coverage, ranging 10-25% in outpatient settings. Risk factors for under immunization require elucidation.

OBJECTIVE: (1) To assess the influenza vaccine coverage levels among child asthmatics within an inner city practice network over a five year period, (2) to identify demographics or patterns of health services utilization associated with under-immunization.

DESIGN/METHODS: We conducted a retrospective chart review of influenza vaccine coverage among child asthmatics for the 2000-2005 influenza seasons at a practice network in New York City serving a minority, Medicaid population. The study population included five annual cohorts of children aged 2-18 years as of 3/31 of each year with an ICD9 code for asthma or reactive airway disease and ≥1 primary care visit in the last 12 months (n=22,617). The source for immunization, demographic and visit data was the hospital immunization registry and linked billing/registration system. Coverage was defined as ≥1 influenza vaccine that season. Using chi-square we analyzed the impact of age, gender and utilization of health services within a year preceding the influenza season (primary care, subspecialty clinic, ER, ICU and hospital admission).

RESULTS: The 2000-2005 coverage was 23.5%. Coverage increased annually from 20.7% in 2000-2001 to 29.9% in 2003-2004 (29.9%), and dropped in 2004-2005 to 22.2%. Coverage decreased with age: 27.2% for 2-4 y/o, 23.7% for 5-11 y/o and 19.6% for ≥12 y/o (p<0.001). Girls had lower coverage than boys (22.6% vs. 24.2% p<0.005). Increased use of health services was associated with greater coverage. We found relatively high rates among patients with ICU admissions for asthma (all: 53.6% for asthma: 55.8%; for asthma: 37.3%, for asthma: 40.4%, ≥1 visits to subspecialty clinics (all 40.7%, for asthma: 43.3%) and the ER (all: 26.3%, for asthma: 33.0%). Coverage in the primary care setting increased with visits (1 visit: 16.6%; ≥6 visits: 38.3%), and with any visit for asthma (32.9%).

CONCLUSIONS: Influenza vaccine coverage among child asthmatics was low and showed no significant improvement over a five year period. Adolescents and girls were less likely to be vaccinated. The utilization of health services was associated with increased coverage.

Does the Use of Metformin in Adjunct to Exogenous Insulin Induce Better Glycemic Control in Overweight Adolescents with Type I Diabetes in a Clinic Setting?

Soukaina Adelohou, Holly F. Allen, Pediatrics, Baystate Children’s Hospital, Springfield, MA.

BACKGROUND: Metformin is an oral anti-hyperglycemic agent commonly used in the treatment of type 2 diabetes (T2DM). Metformin increases insulin sensitivity primarily at the hepatic level. Insulin resistance is often present in adolescents with and without diabetes due at least partly to high levels of counter regulatory hormones during puberty. It is well known that both overweight and pubertal adolescents with type 1 diabetes (T1DM) have higher insulin requirements.

OBJECTIVE: The goal of the present work is to evaluate the impact of metformin in conjunction with insulin on insulin requirement, HbA1c, and BMI for adolescents with T1DM in a clinic setting.

DESIGN/METHODS: The database of the endocrine clinic was queried for all patients with a diagnosis of diabetes under age 18 who were prescribed metformin. Charts were reviewed, and each patient with T1DM who was patient with T1DM was matched with 2 controls of comparable age, gender, duration of diabetes, HbA1c and BMI. We evaluated change in BMI, BMI SDS score, insulin dose/kg/day and HbA1c during a 9 month period after initial perscription of metformin. Results are mean±SEM.

RESULTS: We studied 39 patients who were prescribed metformin - mean dose 1 g per day, aged 14.5±0.76, 6/7F, 6M/28B. At baseline the mean weight was 78.2±1.60 kg, BMI 29.0±1.4 kg/m², BMI SDS of 1.8±0.17, HbA1c of 9.4±0.5% and insulin dose 1.4±0.2 U/kg/day. The 26 controls were all well matched for age, gender, insulin dose, HbA1c and duration of diabetes,
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Poster Board 6  Fellow in Training
Catheter Infections in Pediatric Peritoneal (PD) and Hemodialysis (HD) Patients

OBJECTIVE: To investigate the frequency, microbiology and antimicrobial therapy of catheter infections in children on PD and HD at our institution.

RESULTS: We retrospectively reviewed records on all pts on chronic dialysis from 8/99-11/05.

RESULTS: 20 pts died in this study (HD 13; PD 7), were studied, ages 1mo-21yrs. 16/20 (80%) were infected at least once during this period. 63 episodes of infection were seen in 16 (80%) pts, 43 episodes in 10 PD pts; 20 episodes of peritonitis/catheter-related infections in 6 pts on PD. 3/13 (23%) pts on HD had one episode, 7 had 24 episodes (range 4-8). In HD, the first infection occurred on average, 4.3 mos after catheter insertion, average 1 episode/4-6mos. The first infection occurred 5.4 mos after HD catheter insertion; each had 1 infection episode/5.8 mos. The most frequent bacteria in HD pts were coag neg Staph [S. epidermidis 88.6%; S. hominis 6.9%], Staph aureus 6 (13.9%), of which all were MSSA, and Enterococcus c 4 (9.3%). Gram neg orgs: Brevibacterium casei 2 (4.6%), E.coli 2, (4.6%) and one each of Serratia marcescens, Alcaligenes xylosoxidans, Acinetobacter lwoffii and Baccillus. The most frequent pathogens in catheter infections/ peritonitis in 20 pts on PD were Candida sp 5 (25%), followed by coag negative Staph 5 (25%), S aureus 2 (10%), Enterococcus 2 (10%), K pneumoniae 2 (10%) and one each of P. aeruginosa and Neisseria sicca.

CONCLUSIONS: NAPRTCS data (2004) show HD catheter infection rate was 1 episode/yr and PD catheter related infections/peritonitis in 1 pt/15months compared to our rate of 2.7 and 2.0 episodes/yr, respectively. Our high infection rate is probably due to improper aseptic technique and should improve with more AV fistula utilization. Antibiotic recommendations for presumptive treatment of HD catheter infections are nafcillin or oxacillin, and a 3rd generation cephalosporin, and for PD catheter infection is Cefazolin, and Cefazolin or Vancomycin. These recommendations should be removed from the hospital formulary. The recommendations should be replaced with empirical recommendations based on local microbial sensitivities.

7

Poster Board 7  Fellow in Training
Quantification of Impulse Experienced by Neonates During Routine and Intra-Hospital Transport Using an Air-Foam Mattress as Measured by Biophysical Accelerometry
Sheetal I. Shah, Martha Caprio, Praddep Mally, Karen Hendrickx-Manor, NICU, NYU School of Medicine, New York, NY.

BACKGROUND: Newborn transport incurs morbidity. Force transmitted to the neonate during transport using an ambulance may increase the severity of injury. Force transmitted to the newborn during transport may be significant enough to cause injury. We observed decreased impulse with use of an air-foam mattress during transport.

OBJECTIVE: To determine the effect of the air-foam mattress on impulse during transport.

RESULTS: For interhospital transports, neonates using the air-foam mattress had less total impulse.

60,756 data points analyzed for the Intra-hospital trial

CONCLUSIONS: Neonates transported with an air-foam mattress had less impulse in the X-Z planes. For intrahospital transports, neonates using the air-foam mattress & gel pillow experienced less total impulse.

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Poster Board 8  Fellow in Training
Impact of Ethnicity on Retinopathy of Prematurity (ROP)
Angela M. McGeever, Shobhana Desai, Jay S. Greenspan, Jennifer F. Cullen, David Webb, Shannon M. Chabatu, Neonatal, Thomas Jefferson University, Nemours Children’s Clinic, Philadelphia, PA; Drexel University College of Medicine, Philadelphia, PA; ParadigmHealth, Conshohocken, PA.

BACKGROUND: Severe ROP (Stage 3 and 4) is a primary cause of visual morbidity for very low birthweight infants. Known risk factors include gestational age, birthweight, and ethnicity.

OBJECTIVE: To assess the relationship between infant race/ethnicity on the risk of severe ROP for a large sample of NICU infants in over 20 US hospitals.

CONCLUSIONS: Results revealed lower rates of ROP among Blacks confirming findings from earlier studies. Interestingly, relatively high rates of ROP were also found among Hispanic and Asian neonates compared to Black infants. Controlling for possibly confounding variables and measures of illness severity did not alter these results. Further research in this area is warranted.

9

Poster Board 9
Can the Length of Stay Predict Survival To Discharge in Extremely Low Birth Weight (ELBW) Infants?
Tarik Nakhi, Sonia Imazumi, Judy Saslaw, Zubair Aghai, Nosrat Razi, Gary Stah! Pediatrics/Neonatology, Cooper University Hospital, Camden, NJ.

BACKGROUND: Late death of ELBW infants in the neonatal intensive care unit (NICU) is often not the focus of outcome reports.

OBJECTIVE: To improve our understanding of the time of death in ELBW infants cared for in the NICU. Enhance our prenatal consultations and family education during the infant’s hospital stay.

CONCLUSIONS: Results revealed lower rates of ROP among Blacks confirming findings from earlier studies. Interestingly, relatively high rates of ROP were also found among Hispanic and Asian neonates compared to Black infants. Controlling for possibly confounding variables and measures of illness severity did not alter these results. Further research in this area is warranted.

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Poster Board 10
Hypothermia and Re-Warming in Extremely Low Birth Weight Infants and the Subsequent Clinical Consequences
Nicol Barber, Joseph D. DeCristofaro, John Chen, Commonwealth Neonatology, Richmond, VA; Shroff, SUNY-Downstate Medical Center, Brooklyn, NY.

BACKGROUND: Thermoregulation and temperature homeostasis are important in the care of ELBW infants. Severe hypothermia on admission (<35°C) has been associated with increased mortality and prolonged oxygen use.

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Poster Board 8  Fellow in Training
Impact of Ethnicity on Retinopathy of Prematurity (ROP)
Angela M. McGeever, Shobhana Desai, Jay S. Greenspan, Jennifer F. Cullen, David Webb, Shannon M. Chabatu, Neonatal, Thomas Jefferson University, Nemours Children’s Clinic, Philadelphia, PA; Drexel University College of Medicine, Philadelphia, PA; ParadigmHealth, Conshohocken, PA.

BACKGROUND: Severe ROP (Stage 3 and 4) is a primary cause of visual morbidity for very low birthweight infants. Known risk factors include gestational age, birthweight, and ethnicity.

OBJECTIVE: To assess the relationship between infant race/ethnicity on the risk of severe ROP for a large sample of NICU infants in over 20 US hospitals.

CONCLUSIONS: Results revealed lower rates of ROP among Blacks confirming findings from earlier studies. Interestingly, relatively high rates of ROP were also found among Hispanic and Asian neonates compared to Black infants. Controlling for possibly confounding variables and measures of illness severity did not alter these results. Further research in this area is warranted.

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Poster Board 9
Can the Length of Stay Predict Survival To Discharge in Extremely Low Birth Weight (ELBW) Infants?
Tarik Nakhi, Sonia Imazumi, Judy Saslaw, Zubair Aghai, Nosrat Razi, Gary Stahl! Pediatrics/Neonatology, Cooper University Hospital, Camden, NJ.

BACKGROUND: Late death of ELBW infants in the neonatal intensive care unit (NICU) is often not the focus of outcome reports.

OBJECTIVE: To improve our understanding of the time of death in ELBW infants cared for in the NICU. Enhance our prenatal consultations and family education during the infant’s hospital stay.

CONCLUSIONS: Results revealed lower rates of ROP among Blacks confirming findings from earlier studies. Interestingly, relatively high rates of ROP were also found among Hispanic and Asian neonates compared to Black infants. Controlling for possibly confounding variables and measures of illness severity did not alter these results. Further research in this area is warranted.

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Poster Board 10
Hypothermia and Re-Warming in Extremely Low Birth Weight Infants and the Subsequent Clinical Consequences
Nicol Barber, Joseph D. DeCristofaro, John Chen, Commonwealth Neonatology, Richmond, VA; Shroff, SUNY-Downstate Medical Center, Brooklyn, NY.

BACKGROUND: Thermoregulation and temperature homeostasis are important in the care of ELBW infants. Severe hypothermia on admission (<35°C) has been associated with increased mortality and prolonged oxygen use.
OBJECTIVE: To determine whether mild hypothermia on admission, specifically temperatures between 35 and 36°C, is associated with poor outcomes and whether rapid rewarming portends a worse prognosis.

DESIGN/METHODS: Retrospective chart review of all inborn ELBW infants admitted to NICU over a 3 yr period. A total of 129 ELBW infants were eligible; after exclusions, 86 patients remained. Data collection included patient demographics, vital signs, respiratory support, admission temperature, time of first temperature ≥36.5°C, Aga, gradient, use of inotropes and early pulmonary complications (pneumothorax, pulmonary hemorrhage), as well as mortality or presence of severe illness. These data were used to perform a chi-square test, Pearson’s parametric correlation and Spearman non-parametric correlation, and multivariate logistic regression where appropriate.

RESULTS: Of the 86 patients evaluated, 59 (68.6%) were found to have a poor outcome. Mean admission temperature for poor outcome group was 35.3 ± 3.6°C for the good outcome group (p < 0.01). Of the 86 required re-warming for hypothermia. The rate of re-warming ranged from 0.1 to 4.8°C per hr. Re-warming rate in the good outcome group was no different than the poor outcome group (1.2 ± 0.99). The mean re-warming rate in patients that required no inotropes was 1.24, one inotrope 0.92, two inotropes 0.64.

CONCLUSIONS: Admission temperatures less than 36°C were associated with increased morbidity and mortality. We speculate that focus on thermoregulation from the moment of delivery through initial stabilization in the NICU will improve outcome in ELBW infants.

11 Poster Board 11 House Officer

Is There an Association Between Maternal Obesity and Severity of Neonatal Illness in Very Low Birth Weight Infants?

Christie J. Bruno, Robert Locke, Amy Macley, David A. Paul, Neonatology, Christiana Care Health Services, Newark, DE; Pediatrics, Thomas Jefferson University Hospital, Philadelphia, PA.

BACKGROUND: Maternal obesity is prevalent in reproductive age women and in several decades it has increased at a faster rate than the adult population. Obesity is associated with an altered inflammatory response, but the effect of maternal weight on neonatal disease severity is unknown. Our hypothesis was that maternal body mass index (BMI) would be associated with severity of neonatal illness.

OBJECTIVES: To determine the effect of maternal BMI and pregnancy weight gain on the severity of neonatal illness at birth.

METHODS/DATA: Cohort study of infants with birth weight less than 1500 g at a level III neonatal intensive care unit from 7/03-7/05, n=278. Pregnancy BMI was determined based on mother’s height and weight on the day of delivery. Obesity was classified by a pregnancy BMI ≥30. Weights and heights during pregnancy were normalized per week of gestation. Neonatal severity of illness was determined using the Score for Neonatal Acute Physiology (SNAP) based on data from the 1st 24 hours of life. Statistical analysis included Pearson correlation, ANOVA, and multivariable linear regression.

RESULTS: In the study population, 49% of mothers were classified as obese during pregnancy (BMI ≥30 or pre-pregnancy BMI ≥26). Pregnant women were 2.5 times more likely to be obese during pregnancy than pre-pregnancy BMI ≥26. Weight gain during pregnancy was normalized per week of gestation. Maternal BMI >30 or pre-pregnancy BMI >26 correlated with SNAP (model r2=.55, p<.01).

CONCLUSIONS: Maternal obesity was associated with increased weight gain and BMI needs further exploration.

12 Poster Board 12 Developmental Trajectories over the First 2 Years as a Function of Gestational Age (GA), Birth Weight (BW), Intrauterine Growth Retardation (IUGR), Central Nervous System (CNS) Injury, Gender, and Maternal Education in Premature Infants

Judith M. Gardner, Bernard Z. Karmel, Anthony Barone, Anantham Harin, Elizabeth M. Lennon, Anthony Barone, Anantham Harin, Elizabeth M. Lennon, Michael J. Flory, Jiliu Xu, Alma T. T. Ibrahim S.I. Mohamed, Nancy Garrison, Ralph J. Wynn, Satyan Lakshminrusimha, Rita M. Yuen, Department of Pediatrics (Neonatology), State University of New York, Women’s and Children’s Hospital of Buffalo, Buffalo, NY.

BACKGROUND: We are conducting a multicenter trial to establish dosing needed to achieve optimal TH levels in ELBW neonates. We are conducting a multicenter trial to establish dosing needed to achieve optimal TH levels in ELBW neonates. We are conducting a multicenter trial to establish dosing needed to achieve optimal TH levels in ELBW neonates.

OBJECTIVES: To compare the effects of TH supplementation in ELBW neonates’s on changes in vital signs & hospital course in ELBW Neonates

METHODS: Retrospective chart review of all inborn ELBW infants admitted to NICU between January 2001 and December 2003 to identify changes in the incidence and severity of OP in relation to these changes. We documented the lowest serum P, the peak A P and the prevalence of osteopenia-related fractures (either multiple fractures, or a single fracture associated with an AP>500).

RESULTS: The number of ELBW babies who survived for at least 14 days was 61 in 2001 and 112 in 2002-3. There were significant improvements after the change in protocol in having P level at least once, the lowest P <3, a peak A P > 900 and 1000, and osteopenia-related fractures.

Effect of Implementation of Nutrition Lab Monitoring and Protocols

13 Poster Board 13 Fellow in Training

Initiation of Nutritional Protocols in a Level III NICU Decreases Osteopenia of Prematurity

Ibrahim S.I. Mohamed, Nancy Garrison, Ralph J. Wynn, Satyan Lakshminrusimha, Rita M. Yuen, Department of Pediatrics (Neonatology), State University of New York, Women’s and Children’s Hospital of Buffalo, Buffalo, NY.

BACKGROUND: With improved survival rates of extremely premature infants, osteopenia of prematurity (OP) remains a significant clinical problem.

OBJECTIVE: To describe the change in incidence and severity of OP after instituting a nutritional protocol intervention.

METHODS: After a number of infants with osteopenia-related fractures were identified in 2001, we reviewed our NICU nutritional practices and then implemented necessary changes in January 2002. Although calcium (Ca) was measured regularly, additional routine measurement of serum Phosphorus (P) and Alkaline Phosphatase (AP) was instituted. A previous policy prohibiting Ca in peripheral intravenous fluids was changed and an osmolality limit instituted instead. Fortification of breast milk and increased concentration of preterm formula were instituted at lower cc/kg/day of total feedings. P and Ca intake was monitored and supplemented as needed, including as oral Na phosphate or Ca carbonate. We reviewed electronic charts of all babies <1000 gm admitted to the NICU between January 2001 and December 2003 to identify changes in the incidence and severity of OP in relation to these changes. We documented the lowest serum P, the peak A P and the prevalence of osteopenia-related fractures (either multiple fractures, or a single fracture associated with an AP>500).

RESULTS: The number of ELBW babies who survived for at least 14 days was 61 in 2001 and 112 in 2002-3. There were significant improvements after the change in protocol in having P level at least once, the lowest P <3, a peak A P > 900 and 1000, and osteopenia-related fractures.

Conclusions:

Effect of Implementation of Nutrition Lab Monitoring and Protocols

14 Poster Board 14 Fellow in Training

Effects of Thyroid Hormone (TH) Supplementation on Vital Signs & Hospital Course in ELBW Neonates

A. S. Navak, J. P. Ribeiro, C. Sanchez, S. G. Golombek, E. F. LaGamma, THOP Study Group, Newborn Medicine, Mary Fareri Children’s Hospital, NYMC, Valhalla, NY.

BACKGROUND: Thyroid hormone (TH) is essential for brain development, low levels vary inversely with the severity of illness in ELBW neonates. We are conducting a multicenter trial to establish dosing needed to achieve optimal TH levels in the first 6 postnatal weeks. Our goal is to prevent transient hypothyroxinemia without increasing morbidity/mortality.

OBJECTIVE: To compare the effects of TH supplementation in ELBW neonates’s on changes in vital signs (see Abrst - Ribeiro, PAS’06) & its influence on other co-morbidities as an interim safety analysis.

METHODS/DESIGN: ELBW neonates 24-28 wks GA (4/05 to 11/05) were randomized at birth to receive either placebo, KI 30 mcg/kg/d, continuous or bolus daily infusions of either 4 or 8 mcg/kg of T3, 42d; T3 groups also received T4 at 1 mcg/kg/d continuous infusion x 14d. We recorded the highest daily HR, sBP, daily weights & total caloric intake through discharge. Discharge factors were noted.

RESULTS: Out of 29 subjects, the highest & lowest 25%ile for HR (n=14) with related BP & comparing the highest to the lowest cohort. Mortality was 43, 29, 20% for the high, low & placebo group, respectively.

CONCLUSIONS: Serial developmental exams revealed that infants with severe CNS injury, IUGR &/or male gender had worse outcomes. Secondary variables such as maternal education did not uniformly influence the impact of perinatal events. The interplay of factors affecting neurobehavioral development is not straightforward and is deserving of carefully longitudinally investigated understanding.

Supported: NINDS #45109
15 Poster Board 15 House Officer
Cysteine Supplementation in Parenterally Fed Neonates: Systematic Review
Laura M. Scoller, Luc P. Briot, Pediatrics, Children’s Hospital of Philadelphia, Philadelphia, PA; Pediatrics, Albert Einstein College of Medicine, Bronx, NY.
BACKGROUND: Several lines of evidence suggest that cysteine supplementation of neonatal parenteral nutrition (PN) may improve growth and nitrogen retention, reduce oxidation injury, improve bone mineralization (by enhancing solubility of calcium and phosphate in PN solutions), and limit liver toxicity (by reducing the amount of methionine, precursor of cysteine, in the PN solution), but may induce hyperammonemia for at least 2 weeks.
OBJECTIVE: To determine the effects of supplementing parenteral nutrition with cysteine or its precursor N-acetylcysteine on neonatal outcomes.
DESIGN/METHODS: The standard search method of the Cochrane Neonatal Review Group was used. MEDLINE (1966-2005), EMBASE (1974-2005), the Cochrane Central Register of Controlled Trials (CENTRAL) and recent abstracts from APS-SPR and JFEP were searched. All randomized (RCTs) and quasi-randomized trials that examined the effects of cysteine or N-acetylcysteine supplementation of neonatal PN were reviewed. Predetermined outcome variables included growth, mortality, morbidity secondary to oxidation injury, bone accretion, acidosis, liver injury, medium-chain triglyceride (MCT) intolerance, and sevoflurane. RESULTS: Five trials fulfilled entry criteria. One RCT involving 91 very low birth weight (VLBW) infants showed that a 6-day N-acetylcysteine supplementation of cysteine-containing PN did not significantly affect the risks of death by 36 gestational weeks, bronchopulmonary dysplasia (BPD), or death and BPD, retinopathy of prematurity (ROP), or severe ROP, necrotizing enterocolitis requiring surgery, periventricular leukomalacia, intraventricular hemorrhage (IVH), or severe IVH. Short-term cysteine supplementation of cysteine-free PN was assessed in 4 small trials (2 RCTs and 2 quasi-randomized; 2 in a absent form only); summary statistics showed no significant change in growth (weight, length or head circumference) (r=36) or nitrogen retention (n=9%), despite doubling of total cysteine (r=20) and free cysteine (n=40). No data were available on bone accretion, acidosis, or liver disease.
CONCLUSIONS: Short-term N-acetylcysteine supplementation of cysteine-containing PN appears to have no benefit in VLBW infants. A large RCT is required to assess whether routine cysteine supplementation of cysteine-free TPN improves short- and long-term neonatal outcomes.

16 Poster Board 16 Fellow in Training
Pasteurization Preserves the Concentration of IL-8 in Human Milk
Marilynn V. Giorgi, Howard Heiman, Champa N. Codipilly, Debra Potak, Richard J. Schanler, Neonatal-Perinatal Medicine, Schneider Children’s Hospital, New Hyde Park, NY; Neonatal-Perinatal Medicine, Schneider Children’s Hospital at North Shore, Manhasset, NY; Pediatrics, Albert Einstein College of Medicine, Bronx, NY.
BACKGROUND: Purification of human milk is an alternative feeding when mothers’ milk is not available for preterm infants. Human milk not only provides nutrition, it enhances the immature immunologic system of the neonate through a complex immunomodulating system that may alter the IL-8 concentration available to the infant.
METHODS: We utilized 150 milk samples from 15 mothers of infants weighing ≤1500g. Samples were collected from mothers by electric breastpump, and random aliquots were stored at -70°C and the second aliquot was pasteurized at 62.5°C for 30 minutes.
RESULTS: The concentrations of IL-8 increased after pasteurization, but were not available for preterm infants. Human milk not only provides nutrition, it enhances the immature immunologic system of the neonate through a complex immunomodulating system that may alter the IL-8 concentration available to the infant.
OBJECTIVE: To quantify the effect of instrumental DS (IDS) on ventilation in ELBW infants on volume guaranteed (VG) ventilation.
RESULTS: Irrespective of leak, for BNCPAP, intra-prong NCPAP was substantially and increasingly greater as flow magnitude increased (Figure, left). For VNCPAP, intra-prong NCPAP closely approximated the desired values. Distally, the relative to no leak, the BNCPAP overshoot was attenuated, while VNCPAP could be 25-50% less than the desired NCPAP (Figure, right). For medium and large leaks, distal NCPAP was increasingly less than desired and exhibited limited flow dependence.
CONCLUSIONS: Our data demonstrate the need to minimize leaks for consistent VNCPAP delivery, irrespective of device. Critically, at high flows, BNCPAP can be substantially greater (>100%) than the desired NCPAP. Optimal VNCPAP is facilitated by minimizing leaks and should be confirmed via intra-prong pressure monitoring.

19 Poster Board 19 Fellow in Training
Use of Intra-tracheal Pressure Measurements To Minimize Air Leaks and Assess Respiratory Mechanics During High Frequency Oscillatory Ventilation (HFOV) in Infants
Rachana Singh, Robert H. Habib, Doron J. Kahn, Sherry E. Courney, Neonatal-Perinatal Medicine, Schneider Children’s Hospital, New Hyde Park, NY; Pediatrics, Schneider Children’s Hospital, Medical University of Ohio, Toledo, OH; Equilibrated Biosystems Inc., Smithtown, NY.
BACKGROUND: Changes in ventilatory strategies during HFOV can impact gas exchange and lung mechanics. The sidestream technique is commonly used to monitor airway pressures (Paw vs. airway opening pressure) in infants on HFOV. Most of these studies have not considered the effect of the tubing used to connect the ventilator port to the endotracheal tube (ETT) and have not accounted for the effect of the distal and proximal DS on airway pressures.
OBJECTIVES: To determine the effects of DS on airway pressures during HFOV.
RESULTS: Irrespective of leak, for BNCPAP, intra-prong NCPAP was substantially and increasingly greater as flow magnitude increased (Figure, left). For VNCPAP, intra-prong NCPAP closely approximated the desired values. Distally, for small, relative to no leak, the BNCPAP overshoot was attenuated, while VNCPAP could be 25-50% less than the desired NCPAP (Figure, right). For medium and large leaks, distal NCPAP was increasingly less than desired and exhibited limited flow dependence.
20 Poster Board 20  Fellow in Training

Risk of an Adverse Outcome Among Prematurely Born Small for Gestational Age Infants

Vasudha Tulsyan, Rajeev Mehta, Thomas Hevpi, Anna Petrova, Pediatrics, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ.

BACKGROUND: There is limited knowledge regarding risk factors and impact of growth restriction on the outcome of preterm infants.

OBJECTIVE: To identify the maternal/placental risk factors and neonatal outcome of small for gestational age (SGA) infants (GA <34 weeks).

METHODS: We designed a matched case-control study of 50 SGA infants (birth weight for GA <10th percentile). Fifty AGA infants (birth weights for GA <34 weeks between 10th and 90th percentiles) were assembled as the controls. Maternal and placental risk factors and neonatal outcome variables that included mortality, bronchopulmonary dysplasia (BPD), intraventricular hemorrhage (IVH), sepsis, thrombocytopenia, and necrotizing enterocolitis (NEC) were analyzed in relationship to the neonatal growth status.

RESULTS: There were no differences in GA, parity, mode of delivery, maternal smoking and drug/alcohol, neonatal gender, Apgar score, and ventilatory support after birth between SGA and AGA infants. Mothers delivering SGA infants were more likely to be of Asian or Hispanic origin (33.7% vs. 12.4%, p<0.01), and to be diagnosed with pregestational hypertension (38% vs. 16%, p<0.01) or preeclampsia (16% vs. 2%, p<0.01) and fetal distress (22% vs. 8%, p<0.05), and were less likely to have clinical or histological chorioamnionitis. Chorionic plate thrombi and placental infarctions were diagnosed more frequently among SGA than in AGA infants (19.5% vs. 4.3%, p<0.02, and 29.3% vs. 13%, p=0.06, respectively). A greater proportion of the SGA infants developed thrombocytopenia (82% vs. 68%, p=0.05) and were transferred to the NICU (64.0% vs. 40.0%, p<0.01). As shown below (Table), the neonatal mortality among the cases and controls was comparable but the mortality rate was strongly associated with the infant’s small for GA birth weight.

CONCLUSIONS: Maternal/placental hypoxic morbidity associated growth restriction has a significant impact on the outcome among very prematurely born neonates.

Table. Neonatal mortality and morbidity in association with growth restriction

<table>
<thead>
<tr>
<th>Morbidity/ Morbidity</th>
<th>SGA (n=50)</th>
<th>AGA (n=50)</th>
<th>OR (95% CI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVH</td>
<td>20 (40%)</td>
<td>22 (44%)</td>
<td>0.85 (0.38-1.87)</td>
</tr>
<tr>
<td>BPD</td>
<td>17 (34%)</td>
<td>16 (32%)</td>
<td>1.09 (0.47-2.52)</td>
</tr>
<tr>
<td>NEC</td>
<td>6 (12%)</td>
<td>8 (16%)</td>
<td>0.72 (0.23-2.23)</td>
</tr>
<tr>
<td>Sepsis</td>
<td>22 (44%)</td>
<td>26 (52%)</td>
<td>0.70 (0.32-1.59)</td>
</tr>
<tr>
<td>Mortality</td>
<td>22 (44%)</td>
<td>11 (22%)</td>
<td>2.79 (1.16-6.66)</td>
</tr>
</tbody>
</table>

* Odds Ratio and 95% Confidence Interval

21 Poster Board 21  Fellow in Training

Postnatal Nutrition-Associated Cholestasis: Increased Susceptibility of Small for Gestation Age (SGA) Infants

Daniel T. Robinson, Richard A. Ehrenkranz, Pediatrics, Yale University School of Medicine, New Haven, CT.

BACKGROUND: Cholestasis is a significant complication of parenteral nutrition (PN) in neonates. An autopsy study performed at Yale-New Haven Children’s Hospital (YNHCH) revealed an association between SGA infants and postnatal-associated cholestasis (Zumbrun, Ped Dev Path, 2004). OBJECTIVE: To determine if SGA is an independent risk factor for the development of PN-associated cholestasis.

METHODS: In a retrospective case-control study, medical records of preterm infants treated in the YNHCH NICU from 1994-2004 were reviewed. All study infants had a gestational age (GA) <34 weeks and exposure to PN ≥7 days. Cases had PN-associated cholestasis (direct bilirubin ≥22mg/dl). Controls, matched by GA and birth date, did not have cholestasis. Although two controls were sought for each case, at this time, a second control has been identified for only 20 cases. At this time, a second control has been identified for only 20 cases.

RESULTS: We surveyed 25 AGA and 2 SGA neonates (GA 26 ± 0.4wks, BW 861 ± 40g; x ± sem); 22 were <1000g. The maximum weight loss was 8% ± 0.9 at 5d and BW was regained by day 9 ± 1. Subsequently, the rate of weight gain was 18 ± 0.6 g/kg/d through 35d (81% ±15% g/kg/day). A OBJECTIVE: To determine whether the actual nutrient support of VLBW infants at community level III NICU in compliance with AAP recommendation of 120 kcal/kg/d. To compare somatic growth of VLBW infants with previous publications (Peds 104:280, 1999).

22 Poster Board 22  House Officer

Effects of Early Initiation of Parenteral Nutrition in Neonatal Morbidity Among Preterm Infants

Caroline O. Chua, Shruti Gupta, Lourdes M. Cohen, Pediatrics, Flushing Hospital Medical Center, Flushing, NY.

BACKGROUND: A major factor in the care of low birth weight infants (LBWIs) is the ability to provide aggressive total parenteral nutrition (TPN). While there are known infectious, metabolic and other risks associated with TPN, it also positively influences long-term well-being in LBWIs. OBJECTIVE: To determine whether early administration of TPN to LBWIs leads to changes in neonatal growth, duration of TPN administration, length of hospitalization, and changes in incidence of chronic lung disease (CLD), infections, metabolic derangements or other complications.

METHODS: Descriptive correlation study was performed by reviewing charts of 80 infants (≤32 weeks gestation and birth weight (BW) ≤1500 grams admitted to a tertiary care NICU from Jan 1999 to Oct 2005. Demographic data were extracted, including gestational age, sex, BW, APGAR score, receipt of prenatal steroid or surfactant, presence of central lines, clinical risk index for babies (CRIB) score, and oxygen index. Babies were divided into 2 groups. Group 1 received TPN within the first 24 hrs of life, and Group 2 received TPN after 24 hrs of life. Comparisons were made between groups for: time to recover BW, length of time on TPN and of hospitalization, and the incidence of CLD, sepsis, necrotizing enterocolitis (NEC), cholestasis, and metabolic complications. Groups were compared using student’s t-test, chi-square, correlation, and ANOVA. RESULTS: The 2 groups were comparable at baseline. TPN was started at a mean age of 17 hrs in Group 1 and 54 hrs in Group 2. Infants in Group 1 regained BW at 9.8 vs.14.2 days in Group 2 (< p<0.001), and had a lower incidence of sepsis (p <0.01). There was a trend toward a lower incidence of CLD in Group 1 vs. Group 2, which reached statistical significance (p < 0.05) when infants with BW ≤1200 grams were compared. Babies in Group 1 had fewer days on TPN (23.7 vs. 27.9) and decreased hospital stays (57.1 vs. 63.5 days). The incidence of cholestasis, metabolic derangements, and NEC were similar in both groups.

CONCLUSIONS: Early administration of TPN in preterm infants with BW ≤1500 grams was safe and did not increase the risk of adverse clinical or metabolic sequelae. Aggressive nutritional intake resulted in better neonatal growth, decreased incidence of CLD, and a lower propensity to infection.

23 Poster Board 23  Fellow in Training

Postnatal Nutrition and Growth in VLBW Infants: Can In Utero Growth Rate Be Achieved?

Manu Deshials, Nadine El-Khoury, Heather Brummer, Boriana Parvez, Edmund F. La Gamma, Newborn Medicine, Maria Fareri Children’s Hosp, NVMC, Valhalla, NY.

BACKGROUND: Postnatal growth retardation is a major morbidity in VLBW infants: 99% of ELBW infants have weight <10th percentile at 36wks corrected age. Growth rate varies among NICU’s, mainly due to variations in nutritional practice. We hypothesize that adequate early nutrition is important to prevent postnatal growth retardation & to optimize long-term growth and development in preterm infants.

OBJECTIVE: To determine the nutritional status and growth of VLBW infants during the first 9 wks of postnatal life.

METHODS: This was an observational survey of nutritional practices of preterm infants (GA ≤28 wks, BW ≤1000g) in VLBW infants ≤40 wks postmenstrual age at discharge admitted to our NICU during the period of 2000-2004. Pertinent data were collected from the medical records. Nutrient intake and weight were followed daily for 35d and thereafter weekly until 63d or discharge. After the weight was regained, weight was followed at least weekly. Growth data were analyzed in relationship to the neonatal growth status.

RESULTS: The 2 groups were comparable at baseline. TPN was started at a mean age of 17 hrs in Group 1 and 54 hrs in Group 2. Infants in Group 1 regained BW at 9.8 vs.14.2 days in Group 2 (< p<0.001), and had a lower incidence of sepsis (p <0.01). There was a trend toward a lower incidence of CLD in Group 1 vs. Group 2, which reached statistical significance (p < 0.05) when infants with BW ≤1200 grams were compared. Babies in Group 1 had fewer days on TPN (23.7 vs. 27.9) and decreased hospital stays (57.1 vs. 63.5 days). The incidence of cholestasis, metabolic derangements, and NEC were similar in both groups.

CONCLUSIONS: Early administration of TPN in preterm infants with BW ≤1500 grams was safe and did not increase the risk of adverse clinical or metabolic sequelae. Aggressive nutritional intake resulted in better neonatal growth, decreased incidence of CLD, and a lower propensity to infection.

24 Poster Board 24  Fellow in Training

A Caloric Intake Achieving the “Reference Fetuses” Growth-Rate Is Alone Not Sufficient To Enable Later Catch-Up Growth To Birth Weight Percentile

F. L. Gamboa, T. Poon, J. Lin, A. Weisz, C. F. La Gamma, Newborn Medicine, Maria Fareri Children’s Hospital, NYMC, Valhalla, NY; NICU, OLMCC, Bronx, NY.

BACKGROUND: Adequate nutrition is essential for optimizing the growth and outcome of preterm infants. Although many NICUs have established feeding protocols, the actual caloric intake is dependent on the clinical condition of the infant and the preference of the attending neonatologist. OBJECTIVE: 1. To determine whether the actual nutrient support of VLBW infants at community level III NICU is in compliance with AAP recommendation of 120 kcal/kg/d. To compare somatic growth of VLBW infants with previous publications (Peds 104:280, 1999).
Conclusions: Our neonates had a BW nadir earlier, regained it sooner than NICHD standards & then achieved the accrual rate of the "reference fetus" despite never attaining an intake of 120 kcal/kg/d. Although both NICHD and our patients had similar rates of weight gain, the initial drop from an age-appropriate %'ile never recovered in either cohort. We speculate that catch-up growth may require anabolic demands and hormonally processing or simply increasing the total caloric intake (higher caloric density, continuing TPN longer).

OBJECTIVE: To determine if delivery at <37 weeks gestation is associated with increased complications in infants with gastroschisis.

DESIGN/METHODS: We conducted a retrospective chart review of patients with gastroschisis born from 1987 to 2005. Data on GA, BW, discharge weight, culture positive sepsis, GI obstruction, perforation, NEC, TPN cholestasis, duration of TPN, time to reach full enteral feeds and associated anomalies was collected. Healthy preterm infants with GA 26-36 weeks were used as controls. RESULTS: 30 records of 49 patients with gastroschisis were available for review. Table 1 shows the demographic data

Table 1: Demographics

| <37 weeks | GA 23 | GA 33
| infants | (N=19) | (N=11) | (N=23)
| Culture A sepsis | 6 (32%) | 0 (0%) | 6 (26%)*
| Full enteral feeds(days) | 25±6(7-56) | 15±6(9-26)* | 19±6(11-32)***
| TPN(days) | 30±22(7-68) | 14±5(8-25)* | 22±5(10-40)**

| Mean ±SD;*p<0.05 preterm vs healthy preterm; **p<0.05 preterm vs healthy preterm; two-tailed t-test. |

Though 21% of preterm gastroschisis infants were SGA at birth, 58% were SGA at discharge. Preterm neonates with gastroschisis had significantly more morbidities as compared to term infants with gastroschisis or preterm healthy neonates.

Table 2: Comorbidities

| <37 weeks | Healthy preterm infants | GA 33
| (N=19) | (N=11) | (N=23)
| Culture A sepsis | 6 (32%) | 0 (0%) | 6 (26%)*
| Full enteral feeds(days) | 25±6(7-56) | 15±6(9-26)* | 19±6(11-32)***
| TPN(days) | 30±22(7-68) | 14±5(8-25)* | 22±5(10-40)**

| Mean ±SD;*p<0.05 preterm vs healthy preterm; **p<0.05 preterm vs healthy preterm; two-tailed t-test. |

In the 9 patients who had a renal ultrasound, 15% had vesicoureteral reflux.

Conclusions: When compared to term infants with gastroschisis and healthy preterm infants, the preterm infants with gastroschisis had longer hospitalizations and higher rate of sepsis and other complications. Attempts should be made to avoid preterm delivery, and meticulous attention should be given to the nutritional needs of patients with gastroschisis to prevent growth failure. We found an association of gastroschisis with VUR and recommend screening.

Objective: To evaluate the practices and beliefs of New Jersey Pediatricians regarding the management of hyperbilirubinemia in term infants.

Design/methods: A survey questionnaire addressing aspects of neonatal hyperbilirubinemia management was sent to a random sample of 800 New Jersey pediatricians.

Results: The adjusted response rate of 49.1% (n=356) was calculated from the 725 eligible respondents. The practicing pediatricians reported high utilization (77.9%) of the cephalocaudal progression of jaundice and low utilization (16.1%) of transcutaneous bilirubinometry for the quantification of the severity of jaundice. Most of the respondents (87.4%) identified jaundice as an indicator for serum bilirubin (SB) testing prior to the neonate’s discharge from hospital, whereas post-discharge, only 57.7% felt that a TSB was indicated (P=0.01). If the neonate’s age was under 72 hours, less than one-third of the respondents reported initiation of phototherapy at TSB levels lower than the treatment parameters recommended by the AAP in 1994, whereas if the infant was more than 72 hours old, almost 60% were initiating phototherapy at TSB lower than the 1994 AAP guidelines. Most respondents did not regard neonatal jaundice noted after discharge and gestational ages 37-38 weeks as being significant in the development of severe hyperbilirubinemia. However, the majority did recognize the importance of jaundice presenting within the first 24 hours and Rh/ABO indicators. Conclusions: The pediatricians’ practices regarding the low utilization of laboratory diagnosis for the quantification of jaundice after discharge and underestimation of risk factors that contribute to the development of severe hyperbilirubinemia are associated with initiation of phototherapy at lower than AAP recommended treatment parameters and recognition of neonatal hyperbilirubinemia as an important public health concern.

Objective: To evaluate the effect of a computerized drug dose calculation using the Neofax® for PDA on the number of drug prescription errors in the NICU.

Design/methods: All Residents, Fellows, Nurse Practitioners, Nurses and dispensing Pharmacists in our university level 3 NICU were provided with and trained to use the PDA based Neofax®. All drug dose calculations were made using the PDA. The accuracy of all drug dose calculations was checked by the pharmacist and bedside nurse. The frequency (expressed as errors/100 orders) and types of all MEs were recorded over a 12-month period (period 1) and compared to the 12 months before intervention (period 2). Data were analyzed using chi-square.

Results: The baseline prescription error rate was 1/100 orders in period 1 and decreased by 10% in period 2 to a rate of 0.3/100 orders (p<0.0001). Though there were substantially more errors due to higher census and acuity in period 2, there were no other changes in our patient population or staffing patterns during this time.

Period 1 Period 2

| Total # of Orders | 13577 | 31680 |
| Total Error rate/100 orders (prescribing, dispensing, etc) | 1.77 | 0.66 |
| Total # of Prescription Errors | 126 | 106 |
| Total Prescription error rate/100 orders | 1.0 | 0.3 |

*p<0.0001 compared to period 1 | The national benchmark for all MEs is 5/100 orders.

Conclusions: Using the Neofax® for PDA drug dose calculator significantly reduced the frequency of drug dose calculation errors. It is possible that increased awareness of medication errors in the NICU also contributed to this effect.
A Dedicated Lactation Consultant in the NICU Increases the Percentage of Outborn Versus Inborn Neonates Receiving Human Milk


BACKGROUND: Human milk (HM) is correlated with positive neonatal outcomes. Lactation consultants provide the framework to facilitate increased rates of hospitalized neonates receiving HM. The impact of having a lactation consultant (LC) on inborn (IB) versus outborn (OB) infants receiving HM while in the NICU is unclear.

OBJECTIVE: Determine if the addition of a dedicated LC affects the rates of inborn vs. outborn neonates receiving HM in the NICU over time.

DESIGN/METHODS: Retrospective chart review (1/3-9/03) of 406 neonates (149 OB, 257 IB) at a Level 4 NICU during 3 time intervals of 3 months each: T1 (before LC), n=65 OB, 77 IB), T2 (after LC’s arrival, n=51 OB, 79 IB), T3 (subsequent period after T2, n=42 OB, 101 IB). Data consisted of neonatal and maternal characteristics, demographic factors, and infant feeding practices.

RESULTS: The percentage of infants receiving HM vs. formula only during the hospital stay increased significantly over time after hiring LC (T1 55%, T2 62%, T3 69%, p=0.049). Multivariate analyses showed a significant increase across time periods in the odds of receiving HM for OB infants, adjusting for birth weight, infection, days on oxygen and length of stay (p<0.003), but not for IB infants (p=0.54).

CONCLUSIONS: The addition of a full time LC to the NICU environment increases the percentage of neonates receiving HM, specifically in the OB population. The proportion of HM-fed IB infants likely showed little change over the time periods because of current high levels of breastfeeding in this facility. Understanding where the LC has the greatest impact will allow better resource utilization by a targeted approach.

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34
8:30am
Behavioral Social Adjustment in Survivors of Childhood Acute Lymphoblastic Leukemia (ALL) Treated Without Cranial Radiation
David Breiger, Thomas A. Kaelite, Nina S. Kadan-Lottick, Joseph P. Neglia, Pim Brouwers. Late Effects, Psychology, and ALL Working Groups, Children’s Oncology Group. BACKGROUND: A subset of childhood acute lymphoblastic leukemia (ALL) patients experience psychosocial difficulties. An ongoing Children’s Oncology Group (COG) study is assessing the effects of chemotherapy on behavior and social adjustment in childhood ALL survivors. OBJECTIVE: To characterize patterns of behavioral adjustment and social functioning in patients treated for standard risk ALL without radiation. DESIGN/METHODS: Cross-sectional study of patients previously treated with systemic and intrathecal chemotherapy, without radiation, on recent COG protocols. Parents completed the Child Behavior Checklist: 6-18 (CBCL) as part of a comprehensive neurobehavioral evaluation. Enrollment goal for the entire study is 336 subjects from 21 sites. RESULTS: The initial 102 patients (46% F) enrolled had a mean age at evaluation of 11.6 years (yrs), age at diagnosis (dx) of 3.7 yrs, and interval since dx of 7.5 yrs. The sample was evenly divided between the two CBCL age groups (6-11 and 12-16 yrs). Mean Syndrome Scale scores were in the average range except for the Somatic Complaints Scale, which exceeded the average score by one standard deviation. Boys 12-16 yrs old had a higher mean raw score (3.7 vs 1.1) on the Somatic Complaints Scale and a higher Internalizing Composite Scale mean raw score (12.0 vs 5.6) than 90% and 85% of the CBCL normative sample, respectively. Notably, more subjects than the expected 3% had scores in the borderline to clinical range on 6 of 8 Syndrome Scales and 3 of 3 Composite Scales: Withdrawn/Depressed (12.7%), Somatic Complaints (19.6%), Social Problems (6.9%), Thought Problems (5.9%), Attention Problems (7.8%), Aggressive Behavior (4.9%), Internalizing Composite (13.7%), Externalizing Composite (4.9%), Total Problems (8.8%). CONCLUSIONS: Preliminary findings of behavioral and social adjustment in ALL survivors as assessed by the CBCL were generally in the average range for age and gender. However, heightened somatic concerns, particularly for boys 12-16 yrs old, are significantly more than expected proportions of children had social/behavioral difficulties compared to the CBCL normative sample. Future multivariate analyses will identify behavior subtypes, and determine predictors of both positive and negative psychosocial outcomes in the entire study sample.

35
8:45am
Preliminary Findings of Neurobehavioral Outcomes in Survivors of Childhood Acute Lymphoblastic Leukemia (ALL) Treated Without Cranial Radiation
Nina S. Kadan-Lottick, Pim Brouwers, Thomas A. Kaelite, David Breiger, Linda C. Stark, Bruce C. Bostrom, Joseph P. Neglia. Late Effects, Psychology, and ALL Working Groups, Children’s Oncology Group. BACKGROUND: Cranial radiation can cause considerable neurobehavioral impairment. An ongoing Children’s Oncology Group (COG) study is assessing the late neurocognitive effects of ALL survivors treated with chemotherapy only. OBJECTIVE: 1) Characterize patterns of neurocognitive function in non-irradiated standard risk ALL patients, and 2) Identify factors associated with impairment. DESIGN/METHODS: Cross-sectional study of patients previously treated with systemic and intrathecal chemotherapy, without radiation, on recent COG protocols. Evaluations for all patients included the Wechsler Intelligence Scale for Children-IV (WISC-IV), Wechsler Individual Achievement Test-2nd Ed. (WIAT-II-A), Behavior Rating Inventory of Executive Function (BRIEF), FAS Fluency (FAS), Grooved Pegboard (GP), and the Beery Developmental Test of Visual Motor Integration (VMI). Enrollment goal for the entire study is 336 subjects from 21 sites. RESULTS: The initial 102 patients (46% F) enrolled had a mean age at evaluation of 11.6 years, age at diagnosis (dx) of 3.7 yrs, and interval since dx of 7.5 yrs. Patients had an average WISC-IV Full Scale IQ (mean 101.0±12.3), with a lower Processing Speed Index (mean 94.4±11.8). WIAT-II scores were average for word reading, mathematics, and spelling, as were mean BRIEF and FAS scores for executive functioning. Boys 12-16 yrs old had a higher mean raw score (3.7 vs 1.1) on the Somatic Complaints Scale and a higher Internalizing Composite Scale mean raw score (12.0 vs 5.6) than 90% and 85% of the CBCL normative sample, respectively. Notably, more subjects than the expected 3% had scores in the borderline to clinical range on 6 of 8 Syndrome Scales and 3 of 3 Composite Scales: Withdrawn/Depressed (12.7%), Somatic Complaints (19.6%), Social Problems (6.9%), Thought Problems (5.9%), Attention Problems (7.8%), Aggressive Behavior (4.9%), Internalizing Composite (13.7%), Externalizing Composite (4.9%), Total Problems (8.8%). CONCLUSIONS: Preliminary findings of behavioral and social adjustment in ALL survivors as assessed by the CBCL were generally in the average range for age and gender. However, heightened somatic concerns, particularly for boys 12-16 yrs old, are significantly more than expected proportions of children had social/behavioral difficulties compared to the CBCL normative sample. Future multivariate analyses will identify behavior subtypes, and determine predictors of both positive and negative psychosocial outcomes in the entire study sample.

36
9:15am
Efficacy of Single Donor Platelets in Neonates Is Not Affected by Platelet Yield
Nikra Nwewube, Anna Vetrano, Kirin Syed, Chris Caravano, Somwya Murthy, Priya Patil, Nazehr Hanna, Barry Weinberger. Pediatrics/Neonatology, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ. BACKGROUND: NICU and PICU patients are exposed to numerous polyvinyl chloride (PVC)-rich medical devices that contain the plasticizer di-(ethylhexyl) phthalate (DEHP). We have previously shown that metabolites of DEHP, including the active compound mono-(2-ethylhexyl) phthalate (MEHP), are elevated in the urine of premature infants. It has recently been suggested that MEHP exerts biologic effects by blocking eicosanoid-mediated anti-inflammatory signaling pathways, such as those that regulate apoptosis and susceptibility to the inflammatory effects of MEHP. OBJECTIVE: We hypothesize that MEHP alters pmN inflammatory responses - respiratory burst, chemotaxis and apoptosis - and that this is related to effects on eicosanoid signaling. MEHP may affect eicosanoid responses by inducing expression or activity of PPARγ or of cyclooxygenase-2 (COX-2), which could alter the synthesis of anti-inflammatory eicosanoids. In addition, we compared the effects of MEHP on pmN from adults and neonates, who exhibit impaired anti-inflammatory eicosanoid responses.

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9:30am
Pulmonary Health in Sickle Cell Disease
Anita Bhandari, Nathan Hagstrom, Craig Schramm. Pediatrics, Division of Pediatric Pulmonology, Connecticut Children’s Medical Center, Hartford, CT; Pediatrics, Division of Hematology and Oncology, Connecticut Children’s Medical Center, Hartford, CT. BACKGROUND: Sickle Cell Disease (SCD) is the most common inherited disease in the African American population. Pulmonary complications are a frequent cause of hospital admissions and are a leading cause of morbidity and mortality in children with SCD. Despite the frequency and severity of pulmonary complications, pulmonologists do not play a major role in the management of these children. OBJECTIVE: To evaluate the utilization of pulmonary subspecialty services across National Sickle Cell Centers. DESIGN/METHODS: We conducted a survey of US centers using a questionnaire regarding the utilization of pulmonary services. A questionnaire was mailed to 89 SCD Centers across the US. RESULTS: Of the 89 Centers, 23 responded. Most SCD Centers do not have a pulmonologist as part of the multidisciplinary team (21/23); 2 out of the 23 centers reported having a pulmonologist as part of their team, while 20 out of 23 centers used pulmonary service as a consultative service. One of the 23 centers had no pulmonologist available for consultation. The centers that had pulmonologists available showed a trend towards greater utilization of objective measures of pulmonary health such as pulmonary function tests. Of the centers responding to the survey, 33% of patients had spirometry done routinely as part of pulmonary function testing, 29% also had a post bronchodilator study, with 31% having plethysmography. Diffusing capacity was assessed in only 28% of the patients with SCD. More complex tests such as sleep studies (<25%) and exercise test (5%) were rarely obtained. CONCLUSIONS: The centers that had pulmonologists available showed a trend towards greater utilization of objective measures of pulmonary health such as pulmonary function tests, which may indicate early-morbid lung diseases such as asthma; allowing for early intervention that might improve health outcomes. This underscores the importance of the multidisciplinary approach in taking care of these patients.

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9:45am
House Officer
Mechanisms of Phthalate-Induced Toxicity in Neonatal pmN
Nikra Nwewube, Anna Vetrano, Kirin Syed, Chris Caravano, Somwya Murthy, Priya Patil, Nazehr Hanna, Barry Weinberger. Pediatrics/Neonatology, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ. BACKGROUND: NICU and PICU patients are exposed to numerous polyvinyl chloride (PVC)-rich medical devices that contain the plasticizer di-(ethylhexyl) phthalate (DEHP). We have previously shown that metabolites of DEHP, including the active compound mono-(2-ethylhexyl) phthalate (MEHP), are elevated in the urine of premature infants. It has recently been suggested that MEHP exerts biologic effects by blocking eicosanoid-mediated anti-inflammatory signaling pathways, such as those that regulate apoptosis and susceptibility to the inflammatory effects of MEHP. OBJECTIVE: We hypothesize that MEHP alters pmN inflammatory responses - respiratory burst, chemotaxis and apoptosis - and that this is related to effects on eicosanoid signaling. MEHP may affect eicosanoid responses by inducing expression or activity of PPARγ or of cyclooxygenase-2 (COX-2), which could alter the synthesis of anti-inflammatory eicosanoids. In addition, we compared the effects of MEHP on pmN from adults and neonates, who exhibit impaired anti-inflammatory eicosanoid responses.

Infants with pmN underproduction (n=30) had a greater rise in plt compared to infants with plt destruction (n=51) following transfusion (95.3±58 vs 59±57.5±1000/mm³ p<0.01). There were no differences in volume/kg transfused between groups. After controlling for GA, BW, volume and etiologic, plt yield was not associated with post-transfusion rise in plt but plt underproduction remained associated with an increased rise plt.

CONCLUSIONS: In our population, there was no association between plt yield of SDP and plt rise following transfusion. Infants with thrombocytopenia related to plt underproduction had a greater rise in plt following transfusion compared to those with plt destruction; independent of plt yield or volume of SDP transfused.
Cardiopulmonary Development Platform Session
Saturday, March 18, 2006
8:15am–10:45am

39
8:15am
Fellow in Training
Sildenafil Citrate (Viagra®), a Selective Phosphodiesterase Type 5 Inhibitor Is a Powerful Pro-Angiogenic Agent
Anjali Priyadarshni, Lijuan Zhan, Nilanjana Maulik, Division of Neonatology, University of Connecticut Health Center, Farmington, CT; Molecular Cardiology Laboratory, University of Connecticut Health Center, Farmington, CT.
BACKGROUND: Myocardial ischemia is a major risk for infants undergoing early surgical interventions for congenital heart disease resulting in shock and low flow states. Recent studies in animal models has shown that sildenafil, a potent phosphodiesterase 5 (PDE 5) inhibitor, protects myocardium from ischemia/reperfusion (IR) injury.
OBJECTIVE: To test the hypothesis that sildenafil induces cardiac protective effect through nitric oxide (NO)/cyclicGMP pathway by upregulating angiogenic factors like vascular endothelial growth factor (VEGF) and its receptor KDR activity, hence oxygenase 1 (HO-1), thioredoxin (TrX), angiopoietins and proangiogenic factors like Tie-2.
DESIGN/METHODS: We examined the effect of sildenafil using ex-vivo isolated rat heart model as well as using in vitro human coronary arterial endothelial cells (HCAEC) in culture. Rats were pretreated with sildenafil at a dose of 0.7 mg/kg body weight intraperitoneally. After 60 min, isolated hearts were subjected to ischemia for 30 minutes followed by 2hr of reperfusion. HCAEC’s were pretreated with two doses at 10 μM and 20 μM of sildenafil and subjected to 8hrs of hypoxia followed by 24 hrs of normoxia. Untreated controls were used for both models. Matrigel assay and western blot analyses were performed.
RESULTS: Sildenafil treated animals showed statistically significant up regulation of TRX-1 (11 KD, 1:9 fold) and HO-1 (32 KD) expression. In vitro study with HCAEC’s showed significantly increased tubergenesis along with increased angiogenic factors like Ang-1 (60 KD,1.5 fold), Tie-2 (5 fold), along with VEGF (40 KD CALL-2 fold) and its receptor KDR (4.5 fold) expression. Sildenafil along with HO-1 inhibitor, SnPP (10 μM) inhibited the expression of VEGF to 1 fold, TRX-1 to 0.8 fold and Ang-1 to 0.7 fold as well as reduction in tubergenesis.
CONCLUSIONS: These results demonstrated that sildenafil in therapeutic doses could protect the heart from IR injury probably through upregulation of TRX/HO-1/VEGF pathway along with NO-cGMP. Further studies are needed to understand the molecular mechanism(s) of sildenafil induced cardioprotective effect, which would help in expanding the utility of this drug for pediatric cardiovascular diseases.

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8:30am
Colocalization of RHAMM and HA During Cardiac Morphogenesis
Kathleen L. Maschhoff, Lindsay M. Johnson, Paul Q. Anziano, Rashmin C. Savani, Neonatology, Children’s Hospital of Philadelphia, Philadelphia, PA; Pediatrics, University of Pennsylvania School of Medicine, Philadelphia, PA.
BACKGROUND: Defects in septation and valve formation are the most common birth defects in humans. Many of these defects arise from abnormal development of the endocardial cushions, which begins when some endocardial cells in the AV junction and outflow regions of the developing heart undergo an epithelial-mesenchymal transformation (EMT) and invade the underlying cardiac jelly. Members of the TGFβ family are key regulators of this process. The glycosaminoglycan hyaluronic acid (HA) has also been shown to be crucial for EMT. In addition to its structural role, HA appears to play a role in controlling signaling events in the endocardial cushions.
OBJECTIVE: Delineate the expression pattern of hyaluronan and RHAMM (receptor for hyaluronan mediated mobility) during endocardial cushion development and correlate this expression with TGFβ signaling.
DESIGN/METHODS: The spatiotemporal expression pattern of RHAMM was determined by RT-PCR, Western blot analysis, and immunofluorescence. HA was localized in the developing heart using biotinylated HA binding protein.
RESULTS: During endocardial cushion formation (ED 9.5-10.5), RHAMM is expressed in both the myocardium and the endocardium. Double staining for RHAMM and HA revealed that HA is predominantly expressed in the myocardium. During EMT, the 70 kD isoform of RHAMM is concentrated around RHAMM-expressing cells. Later in gestation (ED 12.5-13.5) RHAMM is predominately expressed in the myocardium and the endocardium. Double staining for RHAMM and HA revealed that HA is associated with reduced neonatal cardiac proliferation and increases in differentiated cardiac p70S6K activity. There is a globally high expression and activity of each protein in the cardiac PI3K/p70S6K signaling pathway during late gestation and in early postnatal stages of development. These results suggest that βAR regulate cardiomyocyte proliferation via the PI3K/p70S6K signaling pathway.
CONCLUSIONS: Altering intracellular calcium signals derived from the extracellular fluid via βAR may induce cardioprotective effect, which would help in expanding the utility of this drug for pediatric cardiovascular diseases.

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8:45am
Anterior Heart Field Function Is Regulated by Intracellular Calcium Signals
George A. Porter, Ashwani K. Sharma. Pediatrics, Yale University School of Medicine, New Haven, CT.
BACKGROUND: We previously demonstrated that altered intracellular calcium signaling causes abnormal development of the cardiac outflow tract (OFT). Conversely, others have shown that hearts of embryos with abnormal OFT development also have abnormal intracellular calcium signaling. In the current study, we derived from the anterior heart field (AHF), which lies within the pharyngeal arches, and disruption of the AHF leads to right ventricular and OFT defects.
OBJECTIVE: We hypothesize that intracellular calcium signaling regulates the generation of myocytes from the AHF. Our objective was to determine the effects of altered calcium signals on the differentiation and migration of myocytes from the AHF into the cardiac OFT.
DESIGN/METHODS: We performed organ culture of intact mouse E9.5 AHF and OFT placed on collagen plugs. We also studied primary cultures of dissociated AHFs and OFTs. Specimens were treated to disrupt calcium signaling and analyzed for differentiation and migration using various antibodies to cardiac myocytes proteins. Quantitative RT-PCR was performed to compare the expression levels of several markers of cardiac development. Calcium imaging was performed to analyze the effects of treatments on intracellular calcium levels.
RESULTS: The calcium channel antagonist, nifedipine, decreased intracellular calcium levels in these specimens. Nifedipine also inhibited the differentiation and migration of AHF cells toward the OFT in organ culture, and the OFT to AHF migration. The calcium channel agonist, BayK8664, or increasing extracellular calcium in the media dramatically increased the number and migration of differentiated cardiac myocytes. Agents that affect intracellular stores of calcium did not inhibit growth and differentiation as well as nifedipine, suggesting that calcium from the sarcoplasmic reticulum is not as important as that from the extracellular fluid. Gene expression analysis demonstrated decreases intracellular calcium levels selectively altered the expression of genes important for early cardiac development.
CONCLUSIONS: Altering intracellular calcium signals derived from the extracellular fluid via βAR mediates the effects of calcium channels affects the development of the cardiac OFT by decreasing the differentiation and migration of cells from the AHF. These results suggest that intracellular calcium signals are an important modulator of cardiac OFT development.
**Hormonal Induction of DC-LAMP, a Lamellar Body Membrane Protein, in Differentiating Human Fetal Alveolar Epithelial Cells**

Venkatadri Kollu, Linda W. Gonzalez, Pina Winp, Sree Annapallli, Philip L. Ballard, Pediatrics/Neonatology, Children's Hospital & Univ of PA, Philadelphia, PA.

**BACKGROUND:** Type II cell maturation is characterized by induction of surfactant components and formation of lamellar bodies (LB), which are derived from multivesicular bodies via the lysosomal-venular pathway. Except for ABCA3, which is required for LB formation, the membrane proteins are unique to and specifically identify LB are largely unidentified.

**OBJECTIVE:** We identified and characterized DC-LAMP, a second unique protein of LB, in differentiating human fetal lung epithelial cells.

**DESIGN/METHODS:** Epithelial cells were isolated from human fetal lungs (16-21 wk gestation) and cultured alone (control) or with dexamethasone (D, 10 nM), or 8-Br-cAMP (C, 0.1 mM) + isobutylmethylxanthine (I, 0.1 mM) or both (DCI) for 1-5 days. Semithin cells were either transduced with AdTFF-1 (1.6-pfu/cell; over-expression), or transfected with TFF-1 siRNA oligonucleotides (inhibition). Expression of DC-LAMP was analyzed by cDNA microarray, real time PCR, Western blot, and immunofluorescence staining.

**RESULTS:** Control epithelial cells after 5 d culture showed minimal staining for DC-LAMP. In DCI-treated cells, staining of LAMP-1, a lysosomal marker, was similarly intense and vesicular in both control and DCI-treated cells. In time-course studies of DCI induction, DC-LAMP mRNA and protein were detectable at 24 h, increasing in a linear fashion to day 5, similar to the time course for induction of SP-B. Overexpression of thyroid transcription factor-1 (TFF-1) by adenovirus transduction in the absence of DCI induced DC-LAMP mRNA to a high level (>10-fold), and knock-down of endogenous TFF-1 by siRNA in the presence of DCI inhibited DC-LAMP mRNA expression (10-39%, n=2), suggesting that TFF-1 is a sufficient and required transcription factor for DC-LAMP expression. In DCI-treated cells, knock-down of DC-LAMP by siRNA reduced DC-LAMP mRNA expression >50% (n=2) with no effect on SP-B mRNA or protein (8 kd) or GAPDH expression.

**CONCLUSIONS:** DC-LAMP is a hormonally regulated, TFF-1-dependent membrane protein, segregated to lamellar bodies during type II cell differentiation. We speculate that it plays a unique, but as yet unidentified, role in LB formation or function.

**Increased Human Alveolar Epithelial Barrier Function Induced by Differentiation and Transdifferentiation**

Cherie D. Foster, Linda S. Vanhese, Linda W. Gonzalez, Susan S. Margolis, Susan H. Guttentag, Pediatrics, Division of Neonatology, University of Pennsylvania School of Medicine/CHOP, Philadelphia, PA.

**BACKGROUND:** The alveolar epithelium provides a resistant barrier to water flux and solute transport from the lung interstitium to the alveolar space. However, comparative profiles of developing human type II (T2) and type I (T1) cell barrier properties have not been well characterized.

**OBJECTIVE:** To describe the changes in alveolar epithelial barrier function in an established in vitro model of human T2 cell differentiation and T1 cell transdifferentiation.

**DESIGN/METHODS:** epithelial cells from 2nd trimester human fetal lung were cultured for 7d on Transwell permeable membrane supports in one of 3 conditions: Waymouth's alone (Way), 10M dexamethasone + 0.1 mM each 8-Br-cAMP and IBMX DCI) to establish the T2 cell phenotype, or 4d of DCI followed by 3d of Waymouth's to promote T2 transdifferentiation. Cell barrier function was assessed after 7d in culture by measurement of transepithelial resistance (TER) and by measuring the diffusion of the fluorescent dyes carboxyfluorescein and Texas Red Dextran across the cell monolayer. Results are expressed as mean ± SE for 3-4 experiments and were analyzed by ANOVA.

**RESULTS:** TER increased from 152±12 Ohms/cm2 in Way to 362±28 in DCI (p<0.01). Transdifferentiation resulted in further increase in TER to 430±35 Ohms/cm2 (p<0.001 vs. Way). In the fluorescent dye studies, carboxyfluorescein concentration in the collecting chamber decreased from 64.6±4.3 g/mL (Way) to 57.1±1.9 (DCI) and 45.0±4.0 (DCI/Way) (p<0.01 vs. Way). Dextran permeability decreased in a similar manner: 573.4±2.6 μg/mL/Way to 304.0±29.6 (DCI) (p<0.001) and 123±22 (DCI/Way) (p<0.001 vs. Way). Both DCI and DCI/Way treatment resulted in increased epithelial barrier function, with transdifferentiated cells (DCI/Way) demonstrating the highest alveolar epithelial barrier function.

**CONCLUSIONS:** Differentiation towards a T2 cell phenotype and transdifferentiation towards a T1 cell phenotype resulted in changed alveolar epithelial barrier properties, with increased TER and decreased permeability when compared to untreated human fetal cells. Increased TER and decreased permeability may serve as a functional marker to distinguish Type I cells from Type II cells in further studies of the developing human alveolar epithelium.

Supported by NIH K08 HL077266-01A1
49 9:00am Fellow in Training
Prevalence of Vitamin D Deficiency in Obese Children and Adolescents
Margarita Smotkin-Tangorra, Radhika Purushothaman, Ashutosh Gupta, Golali Nejati, Sunil Sinha, Henry Anhalt, Svetlana Tsen. Pediatric Endocrinology, Infants and Childrens Hospital of Brooklyn, Brooklyn, NY; Pediatrics, Infants and Childrens Hospital of Brooklyn, Brooklyn, NY; Pediatric Endocrinology, Avera Children’s Hospital of SD; Pediatric Endocrinology, Saint Barnabas Medical Center, Livingston, NJ.
BACKGROUND: Current understanding of the role of vitamin D has broadened. It regulates calcium homeostasis, glucose metabolism, autoimmunity and carcinogenesis. Data regarding vitamin D status of obese pediatric subjects is not available.
OBJECTIVE: To characterize the incidence of IGT in obese minority adolescent girls with PCOS.
METHODS: 31 girls {4 African American (AA), 27 Caribbean Hispanic (CH) with a mean age of 15±1.8 years, BMI 39±7.5 kg/m², BMI z-score 5.2±2.3 with the diagnosis of PCOS were included in this study. Participants were compared with a control group of 34 nonobese girls (14 AA, 20 CH) with a mean age of 13±1.7 years, BMI 35±6.3 kg/m², BMI z-score 3.7±1.2. Insulin sensitivity was assessed using the hyperinsulinemic-euglycemic clamp technique.}
RESULTS: The prevalence of IGT was 19% in those subjects with PCOS compared to 6.6% in the obese girls without PCOS. In our cohort, fasting plasma blood glucose (FBS) measurements at baseline and 2 h, respectively.
CONCLUSIONS: Our preliminary data suggest that in morbid obesity, unlike in mild-moderate obesity, there may be a loss of normal regulatory endocrine loops or significant effects of glucose feedings during infancy.

50 9:30am Fellow in Training
Prevalence of Abnormal Glucose Tolerance in Obese Minority Adolescents with Polycystic Ovary Syndrome
Malati Puri, Mireya Garcia, Hadassa Nussbaum, Katherine Freeman, Joan DiMartino-Nardi. Pediatric Endocrinology, Montefiore Medical Center, Bronx, NY; Biostatistics, Montefiore Medical Center, Bronx, NY.
BACKGROUND: Impaired glucose tolerance (IGT) and diabetes mellitus (DM) is present in approximately 30-40% of women with polycystic ovarian syndrome (PCOS). Recent data suggest that insulin resistance is present in the early stages of PCOS.
OBJECTIVE: To characterize the incidence of IGT in obese minority adolescent girls with PCOS and to compare it to the incidence of IGT in obese minority girls without PCOS.
METHODS: 31 girls (4 African American (AA), 27 Caribbean Hispanic (CH) with a mean age of 15±1.8 years, BMI 39±7.5 kg/m², BMI z-score 5.2±2.3 with the diagnosis of PCOS (defined by chronic anovulation and clinical and biochemical signs of hyperandrogenism) referred for evaluation of PCOS and obesity were enrolled in the study. 61 girls without PCOS (20 AA, 41 CH) with a mean age of 13±2.5 years, BMI 26±6.7 kg/m², BMI z-score 4.6±0.9 who were referred for evaluation of obesity were also recruited. Weight, height and blood pressure was obtained on each subject. All girls underwent a standard 2 hour glucose tolerance test.
RESULTS: The prevalence of IGT was 19% in those subjects with PCOS compared to 6.6% in the obese girls without PCOS. In our cohort, fasting plasma blood glucose (FBS) measurements at baseline and 2 h, respectively. Mean ages were similar (14.7±2.1 and 13.3±1.7 years, respectively). All had standard OGTT (75 g of glucose). Plasma glucose and serum adiponectin levels were measured at 0, ½, 1, 1½, and 2 h.
RESULTS: All had normal glucose at 0 and 2 h according to ADA criteria. Adolescents with morbid obesity had significant higher glucose levels at 1 and 2 h when compared to nonobese adolescents (119.4±25.9 vs. 95.3±20.3 mg/dl; p < 0.02 and 106.0±18.7 vs. 86.3±20.0 mg/dl; p < 0.03, respectively). These higher glucose levels, however, were not clinically significant. Unexpectedly, adiponectin levels at all time points were not significantly different between the 2 groups. The adiponectin levels in the adolescents with morbid obesity were 10.5±4.0, 10.2±4.1, 9.6±4.5, 5.2±3.9, and 10.0±4.3 mcg/ml at 0, 1, 1½, and 2 h, respectively. The girls in the morbid obesity group were also more likely to be insulin resistant (HOMA: 3.8±2.3 vs. 2.2±1.0, p<0.01) and had lower adiponectin levels at 0 (108±43.5 vs. 108±43.5, p<0.05).
CONCLUSIONS: As in adult patients, our obese minority adolescent girls who carry the diagnosis of PCOS have a greater incidence of IGT, despite no differences in HOMA, lipids, and HbA1C. This emphasizes the importance of screening these youth with a glucose tolerance test to identify IGT.
53 8:15am
Human Milk Feeding by Gestational Age and Neonatal Intensive Care Status in a Nationally Representative Population of US Infants
Cynthia R. Howard, Kathleen A. Marinelli, Peggy Auerjung, Nirupama Larioa, Ruth A. Lawrence. Pediatrics and Neonatology, University of Rochester, Rochester, NY; Neonatology, University of Connecticut, Hartford, CT.
OBJECTIVE: To describe initiation and duration of human milk (HM) feeding in a US birth cohort by gestational age (GA) and neonatal intensive care (NICU) and to evaluate associated sociodemographic factors.
DESIGN/METHODS: Data were from the Early Childhood Longitudinal Study Birth Cohort. Analyses used SPSS and SUDAAN software, chi-square for bivariate and logistic regression for multivariable analyses.
RESULTS: NICU infants were less likely than well infants (WI) to ever be fed HM (60.5% vs. 67.4%, p<0.01). HM feeding in the NICU did not differ by GA; in WI it increased with greater GA, and only differed between NICU(55.5%) and WI(68.3%) at >37wks (p=0.02). In multivariable analyses HM feeding in the NICU was not associated with GA, mom’s smoking, parity, age, region of US, race, WIC, poverty or plurality but varied significantly with mom’s education. In contrast, mom’s smoking, marital status, parity, education, region, and WIC status all were independently associated with HM feeding in WI.
CONCLUSIONS: Breastfeeding is less common in NICU than well infants, but is unaffected by many of the usual sociodemographic predictors of HM feeding in the US. HM feeding increases with GA in well infants, but does not vary in the NICU, suggesting that NICUs support HM feeding even in the tiniest babies.

54 8:30am
Are Hospitals Too Neutral About Breastfeeding? A Qualitative Study of New Mothers’ Feeding Choices for Their Infants
Daryl Wisler-Scher, Matilde Iriyoven. General Pediatrics, Columbia Presbyterian Medical Center, New York, NY.
BACKGROUND: Many laboring mothers express the intent to breastfeed, yet proportionately fewer are exclusively breastfeeding upon hospital discharge. Studies that evaluate the factors influencing breastfeeding fail to evaluate the postpartum hospitalization period, despite the fact that breastfeeding is most successful when initiated prior to discharge. The role the postpartum hospitalization plays in feeding decisions must be better understood to enhance breastfeeding in well infants. The role the postpartum hospitalization period, despite the fact that breastfeeding is most successful when initiated prior to discharge. The role the postpartum hospitalization period, despite the fact that breastfeeding is most successful when initiated prior to discharge.
OBJECTIVE: To evaluate the impact of the postpartum hospital environment on a mother’s feeding choice for her newborn.
DESIGN/METHODS: We interviewed women over 18 years old who delivered a healthy, term baby in a hospital. We developed a 2 x 3 sticker listing the NAEPP criteria for ASC & highlighting criteria for inhaled steroids. Using the interview classification as the gold standard, we defined two dichotomous variables, one to code whether the physician-documented ASC was correct, and one to code whether the subject’s medication use was appropriate. Appropriate therapy=use of inhaled steroids for persistent asthma.
RESULTS: Food costs are highly correlated with folate density (r^2 = 0.78; p<0.0001). Spending 17¢/100cal obtains 45% of RDA when unguided, 75% following the Thrifty Plan, and 100% spending 34¢/100cal as allowed by the Liberal Plan. These data verify the profound impact of income on likelihood of reaching RDA for low-income families. Guidance improves folate intake at low income but does not achieve the RDA. Combinations of higher income, supplementation, and food support are required to achieve micronutrient adequacy for poor families.

55 8:45am
Relative Impact of Cost and Knowledge on Intake of Folate and Other Micronutrients
Ashish S. Chogle, Willeatha Taylor, Robert J. Karp, Pediatrics, SUNY Downstate Medical Center, Brooklyn, NY.
BACKGROUND: Parents and children from poorer families are less likely than the affluent to achieve adequate intake of folate, and deficient women are at greater risk of giving birth to prematurely, growth retarded or infants with neural tube defects.
OBJECTIVE: To determine the relative impact of food cost and nutrition education on folate content of foods consumed at the cost of the USDA Thrifty Food Plan, with and without guidance from USDA Thrifty Food Plan sample menu, when compared to folate intake achieved at the cost of the USDA Liberal Plan.
DESIGN/METHODS: Food items drawn from the USDA Thrifty and Liberal Plans were used to establish baseline data showing the relation between folate content/100 calories and cost/100 calories of food. Folate content in one day’s Thrifty Plan sample menu (“guided”) was calculated for a family of 4 and compared with the folate content of “unguided” intakes at the cost of the Thrifty (17¢/100cal) and Liberal (34¢/100cal) Plans.

56 9:00am
Improving Appropriate Therapy for Children with Asthma
Sandra F. Braggins, Inman Sharif, Philip O. Onuah. Pediatrics, Children’s Hospital at Montefiore/Albert Einstein College of Medicine, New York, NY.
OBJECTIVE: To test whether a simple intervention can improve appropriate therapy for children with asthma.
DESIGN/METHODS: Randomized controlled trial at an academic health center. We developed a 2 x 3 sticker listing the NAEPP criteria for ASC & highlighting criteria for inhaled steroids. Using alternate week randomization, we placed stickers on clinic visit forms during “intervention” periods, but not during “control” periods.
RESULTS: The use of an asthma sticker on visit forms resulted in increased documentation of asthma severity classification (ASC) (64% vs 50%, p=.017). Using alternate week randomization, we placed stickers on clinic visit forms during “intervention” periods, but not during “control” periods.
CONCLUSIONS: The use of an asthma sticker on visit forms resulted in increased documentation of asthma severity classification (ASC) (64% vs 50%, p=.017).

57 9:15am
Prenatal Lead Exposure in New York City Immigrant Communities
Nathan Graher, Tatyana Gabinskaya, Joel Forman, Melvin Gertner. Pediatrics and Community and Preventive Medicine, Mount Sinai School of Medicine, New York, NY; Pediatrics, Elmhurst Hospital Medical Center, Queens, NY.
BACKGROUND: Prenatal lead exposure has been associated with neurodevelopmental deficits in children. Lead crosses the placenta freely. Sources of lead for pregnant women include imported goods, cultural practices, occupational hazards, pica and bone lead stores from distant exposures. Immigrants are thought to be of particularly high-risk.
OBJECTIVE: To describe the distribution of blood lead levels (BLLs) among pregnant women and examine determinants that influence those levels.
**Objective:** To determine whether sleep position affects AOP in symptomatic preterm infants. **Design/Methods:** This was a prospective randomized crossover trial of sleep position and frequency of AOP. Twenty-nine preterm infants of AOP were randomized to either supine or prone sleep positions for 2-3 hours each day for 14 days. Categorical variables were analyzed by chi-square test (p<0.05 was considered significant). **Results:** No significant differences were seen in the incidence of AOP between the two groups. However, a trend towards a decrease in the number of events was observed in the prone group. **Conclusions:** Supine sleep is associated with an increased risk of AOP in preterm infants. Further studies are needed to confirm these findings.
Neonates receiving ranitidine were at 7.6 times greater risk of late-onset sepsis (OR=7.6; 95% CI: 4.2 - 13.7; p<0.0001). Coagulase negative organisms caused 67.5% (50/74) infections, other gram positive organisms 13.5% (10/74), gram-negative bacilli 33.8% (25/74) and 9.4% (7/74) were fungal. There were 25.7% (19/74) neonates with multiple episodes of sepsis. The birth weights and gestational ages of the neonates with sepsis receiving ranitidine and those not receiving ranitidine were comparable (BW: 1246.7±1031.5 g; p=0.20; GA: 28.3±0.28 wks; p=0.77). CONCLUSIONS: The use of ranitidine in infants admitted to the NICU elevates the risk of late-onset sepsis. The pathological mechanisms need to be studied further. The wide spread use of ranitidine as an accepted and safe drug in neonates is controversial.

65 9:45am  Fellow in Training
Is the Pro-Inflammatory Pulmonary Response of Preterm Infants Influenced by the Type of Surfactant?
Venessa V. Mercado, Joanna Cristina, Sonya Strassberger, Elizabeth Buescher, Jean Yang, Lance A. Parton, Neonatology, Maria Fareri Children’s Hospital at Westchester/New York Medical College, Valhalla, NY; Pediatrics, S.U.N.Y. at Stony Brook, Stony Brook, NY.
BACKGROUND: A differential pro-inflammatory response can be demonstrated as early as d1 for <1kg infants who progress to BPD, even when maternal chorionicamnionitis and histologic evidence of placental inflammation are excluded. The etiology of this pro-inflammatory response is unknown. The delivered volume of surfactant may contribute to inflammation, while surfactant apoproteins (SP) may abrogate this inflammatory response. Survanta and Curosurf differ in volume/dose and in SP concentrations. We sought to quantitate the pulmonary inflammatory effects of these surfactant variables in preterm infants. OBJECTIVE: We tested the hypothesis that the type of surfactant would play a role in the magnitude of the pro-inflammatory pulmonary response.
METHODS: Infants <30 weeks gest. age (GA) and <1 kg birthwt. were randomly stratified to receive either Curosurf (N=9) or Survanta (N=10) following consent. Clinical chorionicamnionitis, rupture of membranes greater than 6h, neonatal sepsis, Apgars <3 (5 min), the need for epinephrine in the DR, or multiple congenital anomalies are exclusion criteria. Serial tracheal aspirates (TA) were collected on d1, 3, 5 and 7 of life. Interleukin (IL)-6 and IL-8 were measured in the TA with the ELISA. Survanta and ANOVA were used for comparisons within and between groups, respectively. A P value <0.05 was considered to be statistically significant.
RESULTS: There were no significant differences in birth wt (Curosurf: 773±164; Survanta: 681±191g; mean± SD) or GA (Curosurf: 25.7±1.8; Survanta: 25.1±1.7 wks). No differences were seen between or within the 2 groups when levels of TA IL-6 and IL-8 were compared.
CONCLUSIONS: This pilot data showed no differences in the pro-inflammatory pulmonary responses within the first week of life in neonates <1kg with RDS given either Curosurf or Survanta.

66 10:00am  Fellow in Training
Special Health Care Needs of Infants at the Threshold of Viability
Bonnie E. Stephens, Richard Tucker, Betty R. Vohr, Pediatrics, Women and Infants Hospital, Providence, RI.
BACKGROUND: As neonatal survival at the limits of viability (22-24w EGA) has increased, so has the % of infants discharged from the NICU with special health care needs (SHCN). SHCN add complexity to the care of these infants, placing a burden on families. Few studies have reported serial rates of SHCN in these infants.
OBJECTIVE: The purpose of this study is to compare rates of survival and SHCN at discharge, 3, 7 & 18m follow-up, between infants born 22-24w and 25-27w. We hypothesized that SHCN would be sig higher in 22-24w infants.
METHODS: This is a retrospective cohort review of data collected in follow-up clinic to all 504 infants born 22-27w EGA from 1/1998 to 12/2001. Chi-square analysis compared rates of survival and outcomes between groups. SHCN was defined as need for home O2, meds, monitors, tube feeds, or rehospitalizations.
RESULTS: 84 (54%) of 157 infants born 22-24w survived vs 311 (90%) of 347 infants born 25-27w (p<0.001). There were no survivors at 22w. 41% of 23-24w survivors went home on O2 vs 21% of infants born 25-27w (p=0.001). 15% of 23-24w infants were discharged on a monitor vs 7% of infants born 25-27w (p=0.110), 7% vs 3% at 18m CA (p=0.079). 47% vs 30% were discharged on a monitor (p=0.006). 57% vs 36% went home on meds (p=0.005). 26% vs 16% remained on meds at 3m. No difference was seen in med use at 7 or 18m. No difference in tube feeds or rehospitalizations was seen. All infants were referred to EI at discharge but 99% vs 74% remained in EI at 18m CA (p=0.010)

Mortality and Special Needs of 22-27 week infants

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68 9:00am  Fellow in Training
Volume Guarantee Accelerates Recovery from Endotracheal Tube Suctioning in Ventilated Preterm Infants
Kabir M. Abubakar, Sepideh Montazami, Martin Keszler, Pediatrics/Neonatology, Georgetown University, Washington, DC.
BACKGROUND: Endotracheal tube (ET) suctioning is necessary to remove secretions and maintain a clear airway in ventilated infants. This is commonly associated with decreased oxygen saturation (SpO2), due to loss of lung volume resulting from interruption of distending airway pressure. Volume guarantee (VG) is an option that can be combined with any synchronized ventilation mode with the ventilator automatically adjusting work pressure (PIP) in response to changing compliance and patient effort to maintain a target tidal volume (Vt).
OBJECTIVE: To test the hypothesis that VG accelerates recovery from ET suctioning and restores SpO2 more rapidly because of its ability to transiently increase peak pressure and re-recruit lung volume.
METHODS: Ventilated infants requiring ET suctioning were studied with and without VG for up to 6 alternating periods, beginning in a random order. Infants were ventilated with Dräger Babylog ventilators (Dräger, Lübeck, Germany) in Assist/Control or Pressure Support mode with VG. During suction without VG, the peak pressure limit was set at the observed working pressure limit during VG. The pressure limit was set 5 cmH2O above working pressure while on VG. All infants had the closed-suction Ballard apparatus and were suctioned using a standardized procedure. Saline instillation was not routinely used. Inspired oxygen concentration was increased by 0.1 prior to suction. SpO2 was continuously recorded 5 minutes prior to and 10 minutes after each suctioning using a bedside pulse oximeter (Ohmeda Bios/Traus, GE Medical) and exported to a spreadsheet for analysis. Time for SpO2 to return to baseline was calculated and data were analyzed by paired t-test using SPSS statistical software.
RESULTS: Forty-six suctioning events were recorded from 10 infants (23 with and 23 without VG). Mean gestational age (range) was 25wk (24-27), weight at study 1187g (1040-1610g) and age at study was 33d (23-56d). Mean time to recovery of SpO2 to baseline on VG was 208 sec vs 386 sec without VG (p<0.001). Nadir SpO2, values post suction were significantly lower without VG (p<0.001).
CONCLUSIONS: ET suction is associated with significant oxygen desaturation. The VG mode leads to more rapid recovery of SpO2, to baseline, presumably because it responds appropriately to decreased lung compliance by increasing working pressure to restore lung volume following ET suction.

69 9:15am  House Officer
Ranitidine Use and Late-Onset Sepsis in the Neonatal Intensive Care Unit
Simona Bianconi, Madhu Gudavalli, Vesna C Sutija, Anna L. Lopez, Lilliana Barrillas-Arias, Nitin Ron, Department of Pediatrics, New York Methodist Hospital, Brooklyn, NY; Department of Pediatrics, NY Presbyterian Weill Cornell Medical Center, New York, NY; International Vaccine Institute, SNU Research Park San 4-8 Bongcheon 7-dong, Gwanak-gu, Seoul 151-818, Korea.
BACKGROUND: Late-onset sepsis in the NICU remains a major cause of morbidity and mortality. Some risk factors such as gestational age (GA) and birth weight (BW) are widely recognized, but others still need to be determined. Histamine-2 receptor antagonists have been used in the NICU for prevention of stress ulcers. With the use of ranitidine gastric pH increases, which causes alteration of the normal gastric flora and bacterial translocation. OBJECTIVE: The objective of the study was to examine the effect of ranitidine on the incidence of late-onset sepsis.
METHODS: This retrospective study was based on the information extracted from the charts of 574 infants admitted to NICU from July 2003 - July 2005. All infants admitted for more than 2 months were treated with ranitidine. There were 74 episodes of late-onset sepsis. Twenty seven occurred in neonates receiving ranitidine and 47 occurred in neonates who did not receive ranitidine.

Eastern Society for Pediatric Research 2006 Annual Meeting
Role of Inhaled Nitric Oxide in Evolution of Brain Lesions in the Premature Infant

Heather Kanuk, Scott A. Lorincz, Xianqun Luan, Sandra Waldfinger, Sabah Servaes, Richard J. Martin, William E. Truog, Avital Cnaan, Roberta A. Ballard, the NO-CLD Trial Group, Neonatology, Radiology, & Biostatistics, Children’s Hosp of Phila, Phila, PA; Neonatology, Rainbow Babies & Children’s Hosp, Cleveland, OH; Neonatology, Children’s Mercy Hosp, Kansas City, MO.

BACKGROUND: Premature infants in the extremely low birthweight (ELBW) group are susceptible to brain injury that is not detected by head ultrasound (HUS). Inhaled nitric oxide (iNO) has been identified as a potential risk factor for injury.

OBJECTIVE: To evaluate the possible contribution of iNO to evolution of brain injury in a multi-center randomized controlled trial with infant enrollment between 21 and 7 days of life, to prevent chronic lung disease (NO-CLD trial NIH U01-HL62514).

RESULTS: Preliminary results suggest a three-fold increase in incidence of PBPP in our population, with a significant increase in both term and preterm infants after 1mo of age. Comparison of iNO use with controls reveals an increase with increasing iNO use.

CONCLUSIONS: These data suggest a three-fold increase in incidence of PBPP in an inner city population, which is primarily African American and Hispanic. Close attention to risk factors usually associated with pre-natal care (maternal weight gain) and other factors associated with labor (prolonged second stage) may reduce the incidence of PBPP.

Neurology Platform Session
Saturday, March 18, 2006
9:45am-10:45am

67 8:15am House Officer
Risk Factors for Perinatal Brachial Plexus Palsy; a 6 Year Study
Malgorzata D. Bulanowski, Rosario P. Trifiletti, David H. Rubin, Syed A. Hosain, Pediatrics, St. Barnabas Hospital, Bronx, NY; Neurology, University of Medicine and Dentistry, Newark, NJ; Pediatrics, Weill Medical College of Cornell University, New York, NY.

BACKGROUND: Perinatal Brachial Plexus Palsy (PBPP) is a potentially serious form of neonatal peripheral nerve injury with an incidence of 1/1000 live births. Despite improvement in obstetric techniques and identification of risk factors the incidence PBPP remains high. There are no studies of risk factors associated with PBPP in an inner city population.

OBJECTIVE: To determine the risk factors and outcome of PBPP in an inner city community hospital.

RESULTS: These data suggest a three-fold increase in incidence of PBPP in our population, which is primarily African American and Hispanic. Close attention to risk factors usually associated with pre-natal care (maternal weight gain) and other factors associated with labor (prolonged second stage) may reduce the incidence of PBPP.

68 8:30am Using Auditory Brainstem Responses (ABRs) To Assess Central Nervous System (CNS) Integrity in the Neonatal Intensive Care Unit (NICU)

Abhishek K. Madan, Ruchi Varma, Nancy Malhotra, Anamika Harin, Ha T.T. Phan, Brij Kapadia, Marina Korneeva, Poornam Rauniyar, Simon S. Rubinowitz, Infant Development, NYS Inst for Basic Research in Devel Disabilities, Staten Island, NY; Pediatrics, St. Vincent Catholic Medical Centers of NY, St. Vincent’s Hospital, Staten Island, NY.

BACKGROUND: ABRs, the gold standard for assessing auditory functioning at all ages, have been employed to assess neurological integrity compromised by brain stem trauma, tumors, or peripheral nerve injury with an incidence of 1/1000 live births. Despite improvement in obstetric techniques and identification of risk factors the incidence PBPP remains high. There are no studies of risk factors associated with PBPP in an inner city population.

OBJECTIVE: To determine the risk factors and outcome of PBPP in an inner city community hospital.

RESULTS: These data suggest a three-fold increase in incidence of PBPP in our population, which is primarily African American and Hispanic. Close attention to risk factors usually associated with pre-natal care (maternal weight gain) and other factors associated with labor (prolonged second stage) may reduce the incidence of PBPP.
RESULTS: Non-neuronal cells accounted for >90% of Aop cells in CC. Fetuses of PL treated ewes had 20% lower cellular density, but 45% fewer non-neuronal Aop cells/mm², and 72% lower Csp3 activity in CC at 90% than at 70% gest. Fetuses of Dex treated ewes had 32% less non-neuronal Aop cells/mm² and 38% less Csp3 activity in CC than PL treated ewes at 70%, but not at 90% gest. The number of Aop cells/mm² did not differ between the groups. (Fig. P<0.05 vs PL).

CONCLUSIONS: The majority of apoptotic cells in the preterm ovine cerebral cortex were non-neuronal in origin. Maturation, and maternal treatment with corticosteroids at 70% but not 90% of gestation results in non-neuronal apoptosis and caspase-3 enzyme activity in the ovine fetal cerebral cortex.

2:45pm

Caspases 3 and 7 Are Important for Cardiac Development and Are Key Mediators of Mitochondrial Events of Apoptosis

Saqib A. Lakhani, Ali Masud, Keisuke Kuida, George A. Porter, Carmen J. Booth, Waqifat Z. Mehal, Iretiwa Inayat, Richard A. Flavell, Pediatrics, Yale University, New Haven, CT; Vertex Pharmaceuticals, Cambridge, MA; Comparative Medicine, Yale University, New Haven, CT; Internal Medicine, Yale University, New Haven, CT; Immunobiology and Howard Hughes Medical Institute, Yale University, New Haven, CT.

BACKGROUND: Apoptosis, or programmed cell death, is a highly regulated route to cellular demise that is critical for a variety of biologic processes, ranging from development and homeostasis to disease. The caspase family of proteases has been well described as crucial mediators of apoptosis. In our current understanding, certain death signals lead to changes in mitochondria, including the loss of mitochondrial membrane potential and the release of pro-apoptotic factors from mitochondria. This results in activation of downstream effector caspases, which in turn cleave a variety of substrates leading to cell death. So-called “death receptors” can also induce mitochondrial changes or, alternatively, can directly activate caspases.

OBJECTIVE: To further clarify the role of the two effectors, caspase 3 and 7, in apoptosis.

DESIGN/METHODS: We generated mice individually deficient in caspase 3 or caspase 7, then bred them to obtain double knockout (DKO) mice. We also generated mouse embryonic fibroblasts (MEFs) from these mice, and studied apoptosis pathways by exposing these cells to a variety of death-inducing stimuli.

RESULTS: DKO mice died within the first day of life. Histologic analysis revealed a defect in cardiac development, ventricular noncompaction. DKO MEFs were highly resistant to death via the mitochondrial and death receptor-mediated pathways, the two canonical routes to apoptosis. Furthermore, in contrast to wild type cells, DKO MEFs displayed preservation of mitochondrial membrane potential and had defective nuclear translocation of Apoptosis Inducing Factor in response to UV irradiation. Surprisingly, the early apoptotic events of Bax translocation from cytosol to mitochondria and cytochrome c release from mitochondria to cytosol were also delayed. The caspase-3 knockout failed to cleave PARP and other caspase substrates, whereas caspase-7−/− MEFs cleaved these substrates normally.

CONCLUSIONS: Caspases 3 and 7 are important for normal cardiac development. In addition to their known importance in clearing downstream substrates, they are also critical mediators of mitochondrial events of apoptosis.
inhibition of secondary septation, simplification of the distal lung architecture and increased expression of Transforming Growth Factor-Beta (TGFB).

OBJECTIVE: To test the hypothesis that TGFB is causally related to hypoxia-induced inhibition of alveolar development.

DESIGN/METHODS: Transgenic mice expressing a TGFB-responsive promoter driving GFP as a reporter were placed either in room air or in 12% oxygen for 20 hours a day from birth to 15 days. Somatic growth was evaluated by measuring weights at PN 1, 5, 10, and 15. Daily weight, gestational age, waist-hip ratio, and HOMA between those girls with and without htn.

OBJECTIVE: To compare the incidence of elevated office blood pressure (BP) in girls referred for evaluation of PCOS and obesity to those referred for evaluation of obesity alone.

RESULTS: The prevalence of hypertension (htn) in girls with PCOS was 19% compared to 34% in girls with obesity. No significant differences were observed with respect to birth weight, gestational age, waist-hip ratio, and HOMA between those girls with and without htn. The girls with PCOS were significantly older.

CONCLUSIONS: VEGF blockade slows tumor growth but does not ablate vasculature in experimental neuroblastoma. In this model, bevacizumab treatment results in distinct changes in vascular architecture, concurrent with increased expression of Notch1 and its ligands Jagged1 and DLL4. These data suggest that Notch signaling in neuroblastoma vessels is influenced by VEGF blockade, and may be implicated in the survival of tumor vasculature during this therapy.

Zinc Protoporphyrin IX Represses Cyclin D1 Gene Expression Through Disruption of Sp-1/ERG1 Site in the Cyclin D1 Gene Promoter

Zhu Wang, Andrew Gow, Guan Yang, Qin Lin, Polivia A. Demers, Neonatology, Children’s Hospital of Philadelphia, Philadelphia, PA.

BACKGROUND: We have recently shown that zinc protoporphyrin IX (ZnP) suppresses tumor cell proliferation and decreases cyclin D1 gene expression in the HepG2 Cells. Further preliminary evidence suggests that cyclin D1 gene promoter activity is suppressed with ZnP inhibition, suggesting that this is one of the mechanisms by which ZnP suppresses tumor growth in vivo. The cyclin D1 gene promoter is prone to DNA structural change in guanine rich regions such as Sp-1 binding sites. In addition, metalloporphyrins can result in DNA structural changes, such as G-tetrad formation in guanine rich regions. Therefore we hypothesized that ZnP can alter Sp-1 DNA conformation, thereby resulting in reduced cyclin D1 gene transcription.

OBJECTIVE: To elucidate the mechanisms by which ZnP suppresses cyclin D1 gene transcription.

DESIGN/METHODS: A 3’-linked double stranded oligonucleotide probe with the consensus sequence of the Sp-1/ERG1 (S/E) site was incubated with 12.5-200 μM ZnP. Thereafter the ZnP-labeled probe complex was incubated with or without Sp-1 protein and resolved on a polyacrylamide gel. The gel was dried and exposed to X-ray film and developed. In other experiments, a double stranded S/E oligonucleotide was incubated with 0-250 μM ZnP. A circular dichroism spectrum was recorded on a J-180 spectrometer at a wavelength range of 200-700nm using a 1mm path length cell at 24°C. The scan of buffer was subtracted from the scan of each sample.

RESULTS: In the polycyclacrylamide gel, ZnP incubation was associated with retardation of the S/E probe in a concentration-dependent manner. Interaction with ZnP also blocked Sp-1 protein binding to the S/E site. Spectrophotometric evaluation revealed that the double stranded S/E oligonucleotide adopts a Z-DNA conformation in its native state. Upon addition of 125-250 μM ZnP, this conformation was disrupted.

CONCLUSIONS: These data indicate that ZnP can disrupt DNA conformation in the cyclin D1 gene promoter at the S/E site. We speculate that this DNA disruption leads to suppression of cyclin D1 gene expression, resulting in arrest of cell cycle progression.

VEGF Blockade and the Notch Signaling Cascade in Neuroblastoma


BACKGROUND: Blockage of vascular endothelial growth factor (VEGF), a key mediator of angiogenesis, is a validated therapy for human cancers. However, virtually all patients treated with VEGF blocking agents eventually develop progressive disease. Recent data suggests that tumors may evade VEGF blockade by activation of alternative proangiogenic pathways. One candidate to test is the Notch signaling cascade, implicated in both vascular and angiogenic pathways. Using a model of pediatric neuroblastoma, we tested the hypothesis that VEGF blockade would alter Notch signaling in tumor vasculature.

OBJECTIVE: To determine if VEGF blockade alters Notch signaling in tumor vasculature.

DESIGN/METHODS: Xenografts were induced by intrarectal injection of 10^6 cultured human neuroblastoma cells (SH-SY5Y) in NCR nude mice. After 1 week, mice received intraperitoneal injections of human VEGF antibody bevacizumab (100 mcg; N = 10) or vehicle (N = 11) biweekly for 5 weeks. Tumors were harvested and analyzed by immunohistochemistry for Notch receptors (Notch1, Notch4) and ligands (Jagged1, Delta-like [DLL4]).

RESULTS: Jagged1 expression was strikingly increased in vascular cells of treated tumors. Whereas control tumor vasculature was erratically dilated, bevacizumab-treated tumors developed relatively uniform vessels. DLL4 was also increased, although less markedly. Notch1 was detected more frequently in treated tumor vessels. Notch4 was minimally present.

CONCLUSIONS: VEGF blockade slows tumor growth but does not ablate vasculature in experimental neuroblastoma. In this model, bevacizumab treatment results in distinct changes in vascular architecture, concurrent with increased expression of Notch1 and its ligands Jagged1 and DLL4. These data suggest that Notch signaling in neuroblastoma vessels is influenced by VEGF blockade, and may be implicated in the survival of tumor vasculature during this therapy.

A Novel Anti-Inflammatory Pathway for SP-A Involving TLR2, TGFb, RHAMM and Hyaluronan (HA)

Hengliang Zhao, Joseph P. Foley, Stephen J. Butler, Hyvan Zhang, Jo Rae Wright, Rashmiini G. Savani. Div. of Neumatology, Dept. of Pediatrics, CHOP-University of Pennsylvania, Philadelphia, PA; Cell Biology, Duke University, Durham, NC.

BACKGROUND: Surfactant Protein-A (SP-A) stimulates macrophage chemotaxis and binds to Toll-Like Receptor 2 (TLR2), Hyaluronan (HA) and RHAMM. Hyaluronan (HA) binds to the receptors RHAMM and CD44, and also promotes macrophage chemotaxis. Using macrophages obtained from transgenic mice expressing a TGFß-responsive promoter driving GFP as a reporter we determined changes in active TGFß in alveolar and bronchiolar airways of distal lung development.

OBJECTIVE: To test the hypothesis that TGFß is causally related to hypoxia-induced inhibition of secondary septation, simplification of the distal lung architecture and increased expression of alveolar morphogenesis.

RESULTS: SP-A stimulated a 6-fold increase in chemotaxis in WT BMDM, a response that was completely blocked by anti-TLR2, anti-TGFß, and anti-RHAMM (R36) antibodies. The absence of CD44 (BMDM from CD44-/- mice) had no effect on SP-A, TGFß or HA stimulated chemotaxis. Macrophages from TLR2-/- mice failed to respond to SP-A, but had normal chemotactic responses to TGFß and HA that were also inhibited by R36. Macrophages from TGFß-responsive macrophages showed that active TGFß was increased in both the alveolar and bronchiolar airways of distal lung development.

CONCLUSIONS: The inhibition of alveolar development due to hypoxia is, at least in part, mediated by TGFß. We speculate that strategies to block TGFß may enhance alveolar septation in conditions such as Bronchopulmonary Dysplasia that are associated with episodes of hypoxia and an arrest of distal lung development.

The Prevalence of Hypertension in Obese Minority Adolescents with Polycystic Ovarian Syndrome

M. Puri, M. Garcia, H. Nussbaum, J. Flynn, K. Freeman, J. DiMartino-Nardi. Pediatric Endocrinology, Montefiore Medical Center, Bronx, NY; Pediatric Nephrology, Montefiore Medical Center, Bronx, NY.

BACKGROUND: Polycystic Ovarian Syndrome (PCOS) is associated with an increased incidence of the components of the metabolic syndrome (MS) such as insulin resistance (IR), and abnormal lipid profiles. However, there are few data on the incidence of hypertension (htn) in girls with PCOS.

OBJECTIVE: To compare the incidence of elevated office blood pressure (BP) in girls referred for evaluation of PCOS and obesity to those referred for evaluation of obesity alone.

DESIGN/METHODS: 31 obese minority girls [African American(AA), 27 Caribbean Hispanic(CH)] with a mean age of 15±1.8 years, BMI 39.7±5.5 kg/m², BMI z-score 5.64±2.6 without PCOS were recruited. Weight, height, and BP were measured at PN 1, 5, 10 and 15. Alveolar growth was evaluated by measuring weights at PN 1, 5, 10, and 10, and effects on morphology examined.

RESULTS: Mice exposed to hypoxia showed larger distal airspaces from PN5 with significantly lower RAC than persisted to PN15 as compared to room air controls (PN5 RAC: Normal 6.16 ± 0.24 vs. Hypoxia 5.24 ± 0.04, P = 0.025, n = 5/group). Alveolization was inhibited only up to PN15, the critical period for alveolar development. Somatic growth was delayed in the hypoxia group at PN5 and 10, but this difference had resolved by PN15. Immunofluorescence staining for GFP expression showed that active TGFß was increased in both the alveolar and bronchiolar airways of distal lung development.

CONCLUSIONS: The inhibition of alveolar development due to hypoxia is, at least in part, mediated by TGFß. We speculate that strategies to block TGFß may enhance alveolar septation in conditions such as Bronchopulmonary Dysplasia that are associated with episodes of hypoxia and an arrest of distal lung development.

VEGF Blockade and the Notch Signaling Cascade in Neuroblastoma
CONCLUSIONS: In this study, we demonstrate that although HIV occurs frequently in obese minority adolescent girls, there is not an increased incidence in those adolescent girls that carry the diagnosis of PCOS. This suggests that hyperandrogenism in these girls with PCOS does not confer an additional risk for the development of HIV.

81 4:15pm  
House Officer  
Managing Childhood Overweight: Relationship Between Parent and Child Self-Efficacy  
Katherine O’Connor, Inman Shari. Pediatrics, Children’s Hosp at Montefiore/ACOM, Bronx, NY.  
BACKGROUND: Self-efficacy is an important mediator of behavior change. Parental SE for supporting an overweight child’s exercise is positively correlated with the child’s activity. However, no studies have investigated the relationship between parental SE for managing their own exercise and eating behaviors and children’s SE for managing those behaviors. Since overweight children usually have overweight parents, this relationship may be important.  
OBJECTIVE: To test the hypothesis that parental SE for healthy eating and exercise behaviors predicts child SE for those behaviors.  
DESIGN/METHODS: Anonymous self-report survey at an inner-city health center. Participants referred families of children with BMI ≥85th percentile for enrollment in an obesity management program. Parents and children separately completed written validated questionnaires to measure SE: 19-item written “Eating Self-Efficacy Scale” (1-7), and 6-item written “Exercise Self-Efficacy Scale” (1-5). Anthropometric, 7-day exercise recall diary, and demographic data were collected. Episodic calculated age-sex adjusted BMI z-scores. We used linear regression to test predictors of child SE, adjusting for confounders.  
RESULTS: 106 children and 78 parents participated. Mean child BMI=30, mean child BMI Z-score=2.34; Mean parental BMI=31. Parental BMI and child BMI z-score were correlated(r=0.27, p<0.01). Of the 90 original subjects, we identified 44 of whom 20 were confirmed as deceased. Twenty-nine percent have had some problems with the law and 25% have spent time in prison, 29% with at least one psychiatric hospitalization.  
CONCLUSIONS: The average age of children with congenital HIV has increased. The data highlights the myriad of behavioral and psychosocial issues that need to be addressed. The focus of care needs to incorporate not just medical management, but early identification of behavioral and emotional problems and academic disabilities. This will allow for appropriate interventions to be implemented early.

84 5:15pm  
Seroprevalence of HIV-1 Infection in an Adolescent and Young Adult Population: An Anonymous Survey in a Community Hospital in the South Bronx  
Murti U. Purwarani, Stefan Hajnegg, Aida R. Matias, Caroline A. Nubel, Ram Kairam. Department of Pediatrics, Bronx-Lebanon Hospital Center, Bronx, NY.  
BACKGROUND: Centers for Disease Control estimates that adolescents (Ad) and young adults (YA) represent half of all new HIV-1 infections (HIV) in the US. Ad are at risk for acquiring HIV since many engage in high-risk behaviors. Many perinatally-infected children have grown into YA because of effective treatment. These factors contribute to the growing prevalence of HIV, impacting on a community’s health care needs. Previous estimates of seroprevalence of HIV (SP) in this population are obtained from national studies on Job Corps students and military applicants (0.08-0.19%), and may not accurately characterize SP of HIV within local communities.  
OBJECTIVE: To describe the SP of HIV among Ad and YA 12-24 years of age attending a community hospital in the South Bronx.  
DESIGN/METHODS: A structured interview was performed, eliciting information about school and other risk-taking behaviors in adolescents seen in a Pediatric Emergency Department (PED). Participants completed a demographic questionnaire and the Center for Epidemiologic Studies Depression Questionnaire (CES-D). Adolescents who screened positive for depression using a cutoff score of ≥8 were included in our study.  
RESULTS: 511 samples were collected from patients seen for a variety of acute/chronic conditions, cardiovascular and other risk-taking behaviors in adolescents seeking medical care in the PED. The mean age for females (F) was 19±2.9 yrs, and (M) 17.9±3.6 yrs. 59.1% were Latino (LA), 38.6% African American (AA) and 75.7% F. The Uni-Gold LH assay (ELISA) and confirmed by western blot (WB). The study was approved by the hospital’s Institutional Review Board.  
CONCLUSIONS: Child eating SE is associated with parental eating SE, implying that interventions targeting parental eating SE may be an important part of treating childhood overweight.

85 5:30pm  
Fellow in Training  
Risk-taking Behaviors and Depression in Adolescents Seeking Care in the Pediatric Emergency Department  
Mai S. Bateman, Thomas Chun, Bruce M. Becker. Emergency Medicine, Brown Medical School, Providence, RI.  
BACKGROUND: Adolescents who seek health care in emergency departments are more likely to report both mental health problems and substance use than those who utilize other sources of care.  
OBJECTIVE: To examine the correlation between depression and substance use, sexual activity, and other risk-taking behaviors in adolescents seen in a Pediatric Emergency Department (PED).  
DESIGN/METHODS: Cross-sectional study of a convenience sample of adolescents 12-17 years of age presenting to an urban PED with sub-critical illness or injury between 4/05 and 11/05. Participants completed a demographic questionnaire and the Center for Epidemiologic Studies Depression 20-question screen (CESD). Data was analyzed using SPSS® and STAT®.  
RESULTS: One hundred and eighty one patients were approached, of whom 130 (72%) agreed to be screened. Forty-six participants (35%) screened positive for depression using a cutoff score of ≥8 on the CESD. Participants who screened positive for depression were more likely to have substance use (alcohol or marijuana) or sexual activity in the 30 days prior to screening compared to those who were screened negative for depression (Table 1). No significant difference in the rates of tattoos or piercings (non-earlobe) were reported. Logistic regression analysis shows that all of these behaviors are highly associated. Cigarette smoking remains the only significant variable when the other risk-taking behaviors as well as age are taken into account (p-value 0.044, OR 4.99).

Table 1: Reported behaviors among screened adolescents

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Never (N=120)</th>
<th>(N=84)</th>
<th>p-value</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime cigarette smoking (N=125)</td>
<td>10 (22%)</td>
<td>3 (4%)</td>
<td>0.001*</td>
<td>7.98</td>
</tr>
<tr>
<td>Lifetime alcohol use (N=126)</td>
<td>28 (23%)</td>
<td>18 (23%)</td>
<td>0.004*</td>
<td>3.14</td>
</tr>
<tr>
<td>Lifetime marijuana use (N=127)</td>
<td>15 (33%)</td>
<td>14 (17%)</td>
<td>0.028*</td>
<td>2.55</td>
</tr>
<tr>
<td>History of sexual intercourse (N=126)</td>
<td>17 (37%)</td>
<td>15 (18%)</td>
<td>0.012*</td>
<td>2.81</td>
</tr>
<tr>
<td>History of piercing(s) (N=128)</td>
<td>11 (24%)</td>
<td>11 (13%)</td>
<td>0.069</td>
<td>2.45</td>
</tr>
</tbody>
</table>

p-value < 0.05

CONCLUSIONS: There is a significant correlation between positive screening for cigarette smoking and marijuana use, and sexual intercourse in adolescents seeking medical care in the PED. These risk-taking behaviors are all highly associated, but cigarette smoking and depression are significantly associated independent of the other behaviors.
Prevalence of Congenital Cardiovascular Malformations Varies Between Whites, Blacks, and Hispanics

Amiror S. Manhas, Paul Vissintainer, Cheryl Hunter-Grant, Heather L. Brumpton, New York Medical College, New York, NY; Pediatric Cardiology, Valhalla, NY.

BACKGROUND: The prevalence of congenital cardiovascular malformations (CCVMs) has been documented for many years, and studies have demonstrated how the risk of cardiovascular and neurodevelopmental illness is increased in newborns with these defects. It is also known that the risk of CCVMs varies according to race, but the reasons for this are not well understood. This study seeks to describe the variation in the prevalence of CCVMs in different racial groups.

OBJECTIVE: To determine the prevalence of CCVMs in the Hudson Valley Region of NY State by race.

DESIGN/METHODS: Data from the NY State Department of Health Congenital Malformations Registry were obtained from live births occurring in 2005 and 2006 in the seven counties that make up the Hudson Valley Region of NY State. The database includes information on live births and the presence of CCVMs, as well as information on maternal demographics and other relevant factors. Prevalence was calculated using race-specific births from Vital Statistics data. Poisson regression, adjusting for population size, was used to estimate prevalence rates.

RESULTS: Among all CCVMs there were 14.4 malformations/1000 live births in Non-Hispanic Whites (NHW), 12.8/1000 in Non-Hispanic Blacks (NHB), 8.8/1000 in Hispanics and 8.4/1000 in Others. The risk of all CCVMs was lower in NHB [RR=0.89, 95%CI 0.80-0.99], Hispanics [RR=0.61, 95%CI 0.52-0.70], and Others [RR=0.58, 95%CI 0.50-0.69] when compared with NHW. The risk of Tetralogy of Fallot in Hispanics [RR=0.31, 95%CI 0.14-0.67] was significantly lower than NHW, but not in Others. The risk of all CCVMs was lower in NHB 

CONCLUSIONS: In the Hudson Valley Region, all CCVMs and specific anomalies such as Tetralogy of Fallot have the highest prevalence in Whites with Hispanics consistently maintaining a lower risk. This data suggest a targeted approach for diagnosis and treatment.
Improvement in Mortality for Congenital Heart Surgery in Guatemala
Luiz A. Larramendi, Kathy J. Jenkins, Kimberlie Guarino, Guillermo A. Gaitan, Aldo R. Castaneda.
Cardiology, Childrens Hospital Boston, Boston, MA; Pediatric Cardiology and Cardiac Surgery, UNICAR, Guatemala, Guatemala.
BACKGROUND: In 1997 an effort was made to disseminate US and European Cardiac Surgical Practices to a developing program in Guatemala, a Central American emerging country with more than 12 million inhabitants.
OBJECTIVE: To describe the rate of improvement of risk adjusted in-hospital mortality in the only center for congenital heart surgery (CHS) in Guatemala, which has also become a referral center for Central America and the Caribbean.
DESIGN/METHODS: A population-based retrospective cohort study was done, including all patients that underwent CHS from February 1997 to July 2004. Data were divided in three groups for analysis (97-99, 00-02, 03-04). We used hospital data from the 2000 Kids’ Inpatient Database (27 states and 313 institutions) as a benchmark. The Risk Adjustment for Congenital Heart Surgery (RACHS-1) method was used to adjust for case mix. Standardized mortality ratios (SMR) and 95% CI were calculated.
RESULTS: There were 112 subjects (median age = 12 months) examined by 16 different clinicians. Measurements of rate of improvement in risk-adjusted mortality may be an important indicator for developing programs.

A Brief Screen for Adolescent Depression in the Pediatric Emergency Department
Maia S. Rutman, Edmond Shenassa, Thomas Chan, Bruce M. Becker.
Emergency Medicine, Brown Medical School, Providence, RI; Centers for Behavioral and Preventive Medicine, Brown Medical School, Providence, RI.
BACKGROUND: Depression is a common psychiatric problem for adolescents. Nevertheless, adolescents are rarely formally screened for depression when being treated in the Pediatric Emergency Department (PED).
OBJECTIVE: To examine the sensitivity and specificity of one- and two-question instruments to screen for depression in adolescents in the PED.
DESIGN/METHODS: Cross-sectional study of a convenience sample of adolescents 12-17 years of age presenting to an urban PED with sub-critical illness or injury between 4/05 and 11/05. Participants completed a demographic questionnaire and three depression screens: the Yale-Brown one-question instrument (Figure 1), a two-question case finding instrument for depression that has been validated in adults (Figure 1), and the Center for Epidemiologic Studies 20-question screen (CESD). Data was analyzed using SPSS®.

Table 1: Performance of brief screens compared with CESD

<table>
<thead>
<tr>
<th>Sensitivity, %</th>
<th>Specificity, %</th>
<th>Value, %</th>
<th>Predictive Value, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CESD)</td>
<td>(CESD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-question screen</td>
<td>54 (40-88)</td>
<td>94 (89-99)</td>
<td>83 (70-96)</td>
</tr>
<tr>
<td>Two-question screen</td>
<td>76 (64-88)</td>
<td>86 (68-100)</td>
<td>74 (54-94)</td>
</tr>
</tbody>
</table>

CONCLUSIONS: The two-question instrument is sensitive and specific for detecting depression in adolescents being treated in the PED. This screen takes less than one minute to administer, and is a practical addition to patient evaluation in the PED setting.

Ultrasound Measurement of the Inferior Vena Cava Diameter in the Assessment of Children with Dehydration
Lei Chen, Yunie Kim, Karen Santucci.
Pediatrics, Yale University School of Medicine, New Haven, CT; Yale University School of Medicine, New Haven, CT.
BACKGROUND: Dehydration is a common condition in children. Various physical exam findings and laboratory results are used by clinicians to evaluate the degree of dehydration in children. Accurate assessment of intravascular volume status, however, is fraught with difficulties. Bedside ultrasound measurement of the inferior vena cava (IVC) diameter may offer a more objective and noninvasive measure of intravascular volume in children.
OBJECTIVE: To compare the IVC diameter of dehydrated children with controls and to compare the IVC diameter before and after intravenous hydration in the subjects.
DESIGN/METHODS: A prospective case-control study was carried out in an urban pediatric emergency department. Children between birth and 16 years of age were eligible as subjects if they presented with clinical evidence of dehydration and were treated with intravenous (IV) fluids. Bedside ultrasound measurements of the IVC and aorta (Ao) were taken before, and immediately after, IV fluids were administered. An age, gender, and weight-matched control without dehydration was enrolled for each subject. The IVC/Ao ratios of subjects and controls were compared using the Wilcoxon signed rank test, as were the ratios pre- and post- IV hydration for each subject.
RESULTS: During the study period 25 pairs of subjects and matched controls were enrolled. The mean (SD) age of the subjects was 8 years (±5.6). Mean (SD) IVC/Ao ratio for subjects was 0.74 (±0.13), compared with 1.01 (±0.11) for the controls (p<0.001). After hydration the mean (SD) IVC/Ao ratio in the subjects was 1.10 (±0.18). This difference between pre- and post- hydration ratios was also significant (p<0.001).
CONCLUSIONS: The IVC/Ao ratio was smaller in children with dehydration as compared to controls, as measured by bedside ultrasound. In addition, increases in the ratios were measured after IV hydration. Bedside ultrasound measurement of the IVC is an objective method in evaluating children with dehydration.

Predicting Pertussis in a Pediatric Emergency Department (PED) Population
Jennifer E. Mackey, Woiicik Susan, Boyle Margaret, Long Ray, Callahan M. James, Grant D.
William, Emergency Medicine, Upstate Medical University, Syracuse, NY; Infection Control, Upstate Medical University, Syracuse, NY.
BACKGROUND: Cases of pertussis, a potentially life-threatening illness in infants less than 6 months of age, are at a 40-year high. In 2003, there were 11,647 cases of pertussis nationally and 1,217 cases in New York State alone. Because children frequently present to emergency departments for initial evaluation, quick recognition of this illness would allow rapid triage, isolation and prevention of transmission.
OBJECTIVE: The purpose of this study was to determine if a decision rule could be developed for the identification of pertussis positive children presenting to a Pediatric Emergency Department (PED).

POSTER SESSIONS FOR 2006 ESPR abstracts
CONCLUSIONS: This is the first study to describe an association between the incidence of ankle injuries and being overweight in children. These new findings have significant implications for prevention, diagnosis, and management of trauma.

96 5:15pm  House Officer

The Association of Body Mass Index and Ankle Injuries in Children
Mark R. Zonfrillo, Jeffrey A. Seiden, Ellen M. House, Eugene D. Shapiro, Robert Dubrow, Mark D. Baker, David M. Sprio, Department of Pediatrics; Department of Epidemiology and Public Health, Department of Pediatrics, Section of Emergency Medicine, Yale University School of Medicine, New Haven, CT.

BACKGROUND: Obesity is a worldwide epidemic. Children at risk for overweight (body mass index percentile [BMI-P] ≥85 and <95) or overweight (BMI-P ≥95) experience significant medical problems. Trauma is the leading etiology of childhood morbidity and mortality. No previous study has evaluated the association between BMI-P and acute ankle injuries in a pediatric population.

OBJECTIVE: To determine if an association exists between incidence and severity of ankle injuries and BMI-P.

DESIGN/METHODS: This ongoing study was conducted in an urban pediatric emergency department as a case-control analysis of children aged 5 to 19 years. Consecutive children with acute ankle trauma were prospectively identified and enrolled as cases. Children with a chief complaint of fever, headache, or sore throat were prospectively enrolled as controls. Demographic information, weight, height, and a validated physical activity score were obtained. BMI-Ps were calculated using pediatric norms. Injury severity was scored for cases. There were 105 cases and 125 controls enrolled (mean ages 14 and 11, respectively).

RESULTS: There was a significant association between ankle trauma and being overweight (age-adjusted OR=2.78; 95% CI=1.44-5.37) and a significant trend of increasing ankle injury risk with increasing BMI-P (p=0.002). These findings were unchanged after adjustment for additional baseline characteristics. There was no association between injury severity and BMI-P (p=0.52).

CONCLUSIONS: An increased BMI-P was associated with an increased incidence and severity of ankle injuries in children. This association was independent of age-adjusted physical activity score.

97 5:30pm  Fellow in Training

End Tidal Carbon Dioxide Changes with Bronchodilator Therapy During Acute Asthma Exacerbations in Children
Melissa L. Lamhan, Mark R. Zonfrillo, Alia Bazry-Asaad, James Dzirma, David M. Sprio, Department of Pediatrics, Section of Emergency Medicine; Department of Pediatrics; Department of Pediatrics, Section of Pulmonary Medicine, Yale-New Haven Children’s Hospital; General Clinical Research Center, Yale-New Haven Hospital, New Haven, CT.

BACKGROUND: Clinical scoring systems, such as the Pulmonary Score (PS), are used to predict asthma exacerbations; however they are subjective and imperfectly related to asthma severity. End-tidal carbon dioxide (ETCO2) is a noninvasive, objective marker of respiratory status. No previous studies have evaluated the effects of nebulized bronchodilator therapy on ETCO2.

OBJECTIVE: 1) To determine if quantitative ETCO2 changes with bronchodilator therapy in children during asthma exacerbations. 2) To determine if ETCO2 correlates with the PS.

DESIGN/METHODS: In this ongoing study, we enrolled children presenting to a pediatric ED with a known diagnosis of asthma during an acute asthma exacerbation (wheeze, cough, increased expiratory noise) and isolated and immediately tested and treated for pertussis. There are significant cost implications in the early identification of pertussis in the PED. For 2003 and 2004 we documented 31 PED staff who were placed on a prophylactic course of azithromycin. Drugs alone represented $1,116. Decreasing the transmission of pertussis to other patients and staff in the PED can potentially lead to reduced hospital costs for prophylactic medications and work hours lost.


CONCLUSIONS: An increase in ETCO2 with bronchodilator therapy during acute asthma exacerbations in children was noted. The ETCO2 changes were correlated with the PS. ETCO2 may be a useful objective outcome measure of bronchodilator therapy during acute asthma exacerbations in children.
103 5:30pm

MMP-2 and MMP-9 Activity in Lung Homogenates Following Resuscitation in Room Air or Oxygen in Term and Preterm Newborn Lambs

Vasanth H. Kumar, Daniel D. Szwart, Anupama Patel, Lori C. Nielsen, Huamei Wang, Karen A. Wynn, Rita M. Ryan. Department of Pediatrics (Neonatology), State University of New York, Buffalo, NY.

BACKGROUND: Hyperoxia contributes to oxidative stress and lung injury in infants. Matrix metalloproteinases (MMPs) degrade and remodel extracellular matrix (ECM) in lung injury. Relationships between resuscitation (RES) in room air or oxygen and MMP activities in the lung are not clear.

OBJECTIVE: To measure MMP-2 and MMP-9 activity in lung homogentates (LH) in term and preterm newborn lambs following RES in RA and O2.

DESIGN/METHODS: Term (139d) and preterm (126d) lambs were delivered by C-section, intubated and ventilated immediately after birth, randomized to 100% O2 (OXR) or 21% (RAR) [N=6 in each group] for 30 min. After 30 min, the FiO2 in both groups was altered to target PaO2 of 45-70 mm Hg. A third group of lambs was exposed to 100% O2 for 24 hrs (OX24). All lambs were killed at 24 hrs and MMP-2 and MMP-9 activity were measured by gelatin zymography in lung tissues. Results are expressed as mean (SEM) and were analyzed by ANOVA.

RESULTS: In term lambs, MMP-2 and MMP-9 activity was significantly higher in the OX24 group compared to RA and OXR group (see figure). In preterm lambs, MMP-2 activity was significantly higher in OX24 compared to RA group. Overall, MMP-2 and MMP-9 activities were significantly increased with lower gestational age (p<0.001) and with hyperoxia independent of the groups (p<0.002) (two-way ANOVA).

CONCLUSIONS: Prematurity and O2 exposure for 24 hours are independently associated with higher MMP-2 and MMP-9 activity. Higher MMP activities following O2 exposure in preterm infants presumably contributes to ECM remodeling, and may predispose to development of broncho-pulmonary dysplasia in these infants.

105 5:15pm

Resuscitation in 21% Versus 100% O2—Effects on Arterial Blood Gases (ABG) and Antioxidant Enzyme (AOE) Activities in Preterm Newborn Lambs


BACKGROUND: Current NRP guidelines propose the use of 100% O2 for resuscitation (RES) of newborns. A reduction in mortality has been seen in infants resuscitated with room air. No studies have been done in premature infants comparing room air and 100% O2 at RES.

OBJECTIVE: To study the effect of RES with 100% O2 versus 21% on ABG and AOE activity in lung homogenates (LH) in preterm lambs.

DESIGN/METHODS: Preterm lambs (128 days) were delivered via C-section, intubated, given surfactant & ventilated. Prior to delivery lambs were assigned to 100% O2 (OXR) or 21% O2 (RAR) for the initial 30 min. After 30 min FiO2 was changed to maintain a PaO2 of 45-70 mm Hg. A third group of lambs (OX24) was ventilated with 100% O2 for 24 hrs (n=5 in each group). ABGs were done every 5 min for 1st 30 min, then hourly. Blood was collected at prebirth and 24 hrs. At 24 hrs the lambs were killed & superoxide dismutase (SOD), catalase(CAT) and glutathione peroxidase(GPx) activity were measured in the LH and RBC lysate. Results are expressed as mean (SEM) and analyzed by ANOVA.

RESULTS: There was no significant difference in pH, PaCO2 or base deficit among the groups. SOD, CAT and GP activity were significantly decreased in LH in the OX24 group compared to the RAR group. In linear regression analysis lung SOD, CAT and GP activity were independently associated with alveolar oxygen content regardless of the group. There was no significant difference in RBC lysate AOE activity among groups.

CONCLUSIONS: Room air RES did not result in significant metabolic and respiratory acidosis in preterm lambs. Lung AOE activity was inversely related to alveolar oxygen exposure. We speculate that this lack of upregulation in enzyme activity after hyperoxic exposure may contribute to the development of BPD in preterm infants (Funded by AAP / NRP grant to VH).
**105**

**4:15pm**

**Single Nucleotide Polymorphisms of IL8 (-781) and Autistic Spectrum Disorders**


**BACKGROUND:** Autism is a neuro-developmental disorder of both genetic and non-genetic origin. Activation of the inflammatory response system-meditated through increased production of pro-inflammatory cytokines has been proposed to be associated with the manifestations of autism. Variable cytokine expression may be genetically controlled by single nucleotide polymorphisms (SNPs), which may trigger an exaggerated level of cytokine mediator expression.

**OBJECTIVE:** To determine the SNP frequency for a pro-inflammatory cytokine gene of IL8 (-781) in patients with autistic spectrum disorders (ASDs).

**DESIGN/METHODS:** A buccal swab was obtained on family cohorts of ASD patients over the age of two and (unaffected parents or unaffected sibling over the age of three). DNA was isolated followed by PCR SNP analysis. ASD was diagnosed by a developmental pediatrician utilizing the DSM-IV criteria and/or an autism screening test (CARS or ADOS). Each subject also completed a brief questionnaire that inquired about race, sex, age, ASD type, overall health, illnesses, hospitalizations, medications, and ethnicity.

**RESULTS:** 34 subjects and 34 controls were obtained for testing. Subjects represented 25 males and 9 females with a mean age of 6.7 years (range 2-16). 59% Caucasian, 24% Mixed, 9% Middle Eastern, 6% Central/South American, and 3% African American. ASD diagnosis were 12/34 with males and 9 females with a mean age of 6.7 years (range 2-16). 59% Caucasian, 24% Mixed, 9% Middle Eastern, 6% Central/South American, and 3% African American. ASD was diagnosed by a developmental pediatrician utilizing the DSM-IV criteria and/or an autism screening test (CARS or ADOS). Each subject also completed a brief questionnaire that inquired about race, sex, age, ASD type, overall health, illnesses, hospitalizations, medications, and ethnicity.

**CONCLUSIONS:** No association between ASD severity and the 5 TNFα SNPs was found. Joint analysis with other candidate genes as well as the use of family data may improve the power in association analysis between ASD severity and genetic foundations from the TNFα gene.

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**106**

**4:45pm**

**Shared Genetic Susceptibility to Retinopathy of Prematurity (ROP) and Bronchopulmonary Dysplasia (BPD)**

Matthew J. Bizzarro, Naveed Hussain, Rui Feng, Jefery R. Gruen, Heping Zhang, Vincent Bhandari, Pediatrics, Yale University School of Medicine; Pediatrics, University of Connecticut School of Medicine; Bioinformatics, University of Alabama at Birmingham; Epidemiology and Public Health, Yale University.

**BACKGROUND:** Besides immaturity of the target organs, ROP and BPD share environmental risk factors such as oxygen exposure. 

**OBJECTIVE:** We hypothesized that, in addition to the environmental factors, there is a genetic susceptibility to ROP and BPD. In addition, ROP and BPD are significant predictors of each other.

**DESIGN/METHODS:** A retrospective study was performed using premature twins born at ≤36 weeks gestational age (GA) (1994-2004) from 2 centers. Only infants who survived beyond 36 weeks postmenstrual age (PMA) were included. ROP was diagnosed by an experienced pediatric ophthalmologist while BPD was defined as the need for oxygen supplementation at 36 weeks postmenstrual age (GA). RDS, BPD, and BPD severity were considered as the primary outcomes. Analysis was performed using binary logistic regression analyses and latent variable probit modeling.

**RESULTS:** 61 monzygotic (MZ) and 127 dizygotic (DZ) twin pairs were identified and analyzed. Demographic data for birth weight (BW), GA, gender, respiratory distress syndrome (RDS), BPD, ROP, duration of ventilation and supplemental oxygen use, and length of stay were comparable between MZ and DZ twin pairs. While 51% of babies with BPD had ROP, 58% of infants with ROP had BPD. For ROP, GA (p=0.01, OR 0.59; 95% CI 0.41-0.85) was a significant independent variable. For BPD, BW (p=0.02, OR -0.998, 95% CI -0.996-1.0), RDS (p=0.001, OR 24.77, 95%CI 5.315-119.06), and institution (p=0.003, OR 4.86, 95% CI 12.12-11.13) were significant. After controlling for covariates, genetic factors accounted for 67% (p<0.0001, 95%CI 63.5%-70%) of the variance in liability for ROP and 75% (p<0.0001, 95% CI 49%-100%) for BPD. Furthermore, ROP and BPD were significant predictors of each other.

**CONCLUSIONS:** Besides shared environmental factors, there is a strong, shared genetic predisposition to ROP and BPD.

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**107**

**5:00pm**

**Urine Proteomic Biomarkers Distinguish Steroid-Sensitive (SSNS) and Steroid-Resistant (SRNS) Idiopathic Nephrotic Syndrome (INS) of Childhood**

Robert P. Woroniack, Ibrahim F. Shatat, Frederick J. Kaskel, Tatyana N. Orlova, Edmond O’Riordan, Michael S. Gelijns, Children’s Hospital at Montefiore, Albert Einstein College of Medicine, Bronx, NY; Renal Institute, New York Medical College, Valhalla, NY.

**BACKGROUND:** Unremitting proteinuria is associated with progression to chronic kidney disease. Response to steroid therapy, defined as disappearance of proteinuria, is the most accurate predictor of favorable outcome in children with nephrotic syndrome.

**OBJECTIVE:** Based on the known differences between SSNS and SRNS, we investigated if the application of a new technological platform to examine the urine proteome, surface enhanced laser desorption and ionisation mass spectrometry, would permit the non-invasive prediction of these syndromes.

**DESIGN/METHODS:** Twenty-five patients with INS and 17 control patients were enrolled in this cross sectional study. Albumin depleted, midstream urines were analysed using surface enhanced laser desorption and ionisation mass spectrometry (SELDI-MS). Data was analysed using multiple bioinformatic techniques. Patient classification was performed using Biomarker Pattern Software and a generalized form of Adaboost.

**RESULTS:** Urinary proteome data distinguished INS from control patients with a sensitivity of 92.3%, specificity of 93.7%, positive predictive value of 96% and negative predictive value of 88.8%.

**CONCLUSIONS:** A protein of mass 4144Da was identified as the most important classifier in distinguishing SSNS from SRNS. Two further peaks selected from the list of important variables characterized the SSNS group: 2802 and 8054, whereas a single peak of 5121 was also specific for the SRNS group.

**108**

**5:15pm**

**Expression Profiles as Predictors of Bronchopulmonary Dysplasia in Extremely Low Gestational Age Newborns**

Jennifer N. Cohen, Yao Sun, Linda Van Marter, Alan Leviton, Elizabeth Allison, Isaac Kohane, Neonatal/Perinatal Medicine, Children’s Hospital, Boston, MA; Neonatology, Kaiser Permanente Santa Clara, Santa Clara, CA; Neurology, Harvard Medical School, Boston, MA; Neuroepidemiology, Children’s Hospital, Boston, MA; Informatics, Children’s Hospital Boston, Boston, MA.

**BACKGROUND:** Approximately half of all infants born before the 28th week of gestation develop bronchopulmonary dysplasia (BPD). Inflammatory regulators appear to be involved in the development of BPD both antenatally and postnatally. Postnatal factors contributing to BPD include hyperoxia, hypoxia, infection, patent ductus arteriosus, oxygen toxicity and barotrauma from mechanical ventilation.

**OBJECTIVE:** To evaluate to what extent RNA expression profiles in umbilical cord tissue distinguish between infants who do and do not develop BPD.

**DESIGN/METHODS:** Flash frozen pieces of umbilical cord were available from 21 infants born before gestational age 28 weeks who developed BPD (defined as oxygen dependent at 36 weeks postmenstrual age), and from 34 of their peers who did not develop BPD. RNA extraction and microarray hybridization were performed at the core laboratory at Children’s Hospital Boston.

**RESULTS:** Infants who developed BPD had decreased umbilical cord expression of mitochondrial membrane, energy metabolism (oxidative phosphorylation, citric acid cycle), RNA synthesis, and DNA repair gene sets. These genes were also expressed at lower levels in those with the lowest gestational age. We are not yet able to distinguish gestational age correlates from insult/ response contributions to BPD pathogenesis.

**CONCLUSIONS:** Expression profiles evident at the time of birth provide a meaningful window into the physiologic development of extremely low gestational age newborns. Expression profiling is likely to help identify pathways that contribute to the evolution and development of BPD.

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**109**

**5:30pm**

**Fellow in Training**

**Is Proximity to a Nuclear Power Plant Associated with Increased Rates of Congenital Malformations?**

Tanya Marangos, Brea Veazieant, Cheryl Hunter-Grant, Heather L. Brumbaugh, Pediatrics, Division of Neonatology, Westchester Medical Center, Valhalla, NY; Epidemiology, New York Medical College, Valhalla, NY.

**BACKGROUND:** The recent revelations of radiation leaks at the Indian Point nuclear power plant have raised public concerns as to the safety of nuclear reactors and the potential consequences of exposure to ionizing radiation. Animal studies have shown increases in malformations with exposure to ionizing radiation, however, in humans the effects of chronic low dose ionizing radiation exposure are unclear.

**OBJECTIVE:** To determine whether residential proximity to a nuclear power plant is associated...
with increased prevalence of certain congenital cancers, congenital anomalies, genetic syndromes, low birth weight, and prematurity.

**DESIGN/METHODS:** NY State Department of Health Vital Statistics and Congenital Malformations Registry databases from 1992-2001 were collected for 5 Hudson Valley counties in a 20-mile radius from the Indian Point nuclear plant. Four zones of 5-mile increments based on zip codes were created to reflect proximity to the reactor. Data included congenital leukemia, CNS neoplasms, congenital hypothyroidism, neural tube defects, cleft lip, cleft palate, microcephaly, trisomies 13,18,21, low birth weight (<2500g) and prematurity (<37 wks). Standardized rate ratio (SRR) was used to compare prevalence of total anomalies between the Hudson Valley Region and NY State. Poisson regression, adjusting for population size, was used for analysis of birth defects in relation to nuclear plant proximity.

**RESULTS:** Over the 10 year period 633 malformations in 603 children were identified from a birth population of 322,528; yielding a rate of 1.96 malformations per 1,000 births in the Hudson Valley Region and NY State. Poisson regression, adjusting for population size, was used for analysis of birth defects in relation to nuclear plant proximity.

**CONCLUSIONS:** The congenital malformations identified in the areas surrounding the Indian Point nuclear power plant did not substantiate an association between proximity of the reactor and the occurrence of birth defects. This study provides baseline population data for comparison of the occurrence of malformations in the event of a nuclear plant accident.

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**112 4:30pm Medical Student Pediatric Healthcare Provider Beliefs Regarding Low-Level Lead Exposure and Adverse Effects in Children**

Rachel E. Outten, Vinay K. Askalu, Nathan Graber, Maida Galvez, Deborah Vasquez, Ray Cornhill

**Community and Preventive Medicine, Mount Sinai School of Medicine, New York, NY; Family, Community and Preventive Medicine, Wyckoff Heights Medical Center, Brooklyn, NY.**

**BACKGROUND:** Only 66% of NYC children have a blood lead level (BLL) measured at 1 or 2 years old. It is unclear if pediatric healthcare providers’ (HCPs) knowledge and beliefs about lead poisoning influence BLL screening practices.

**OBJECTIVE:** To investigate knowledge and beliefs that may influence BLL screening by inner-city HCPs in at-risk communities.

**DESIGN/METHODS:** A 30-question, self-administered, anonymous survey was delivered to HCPs in East Harlem and Bushwick, NY.

**RESULTS:** Of 99 HCPs surveyed, 88% (n=87) considered an “elevated BLL” to be < or =10 μg/dL, the CDC’s definition of a level of concern. However, 52% (n=51) of HCPs do not believe that adverse effects of lead poisoning are seen at this BLL. Chi square analysis shows this high threshold does not differ by neighborhood, practice type, specialty, number of patients/week or years in practice. HCPs with a high threshold to expect adverse effects are more likely to agree that “low level lead poisoning has few or no significant adverse health effects” and that this is a barrier to their BLL screening (p = .007). In a self-assessment, only HCPs from this group rated their knowledge of lead poisoning screening and treatment “comprehensive”.

**CONCLUSIONS:** Pediatric HCPs in inner-city practice are aware of the CDC’s BLL of concern yet many do not think this level is associated with adverse outcomes in children. This belief may create a barrier to screening. Targeted educational efforts stressing the adverse effects of low-level lead poisoning are needed to increase blood lead screening and ensure appropriate response to low-level lead poisoning. The self-estimation of comprehensive knowledge in some HCPs may pose a challenge to such efforts.

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**113 4:45pm Bright Futures Health Supervision Guidelines Encounter Forms for Families Did Not Increase Parental Participation in Well-Child Care**

Eugene Dinkevich, Pam Sass, Anne Skamai

Departments of Pediatrics, SUNY-Downstate College of Medicine, Brooklyn, NY; Department of Family Medicine, SUNY-Downstate College of Medicine, Brooklyn, NY.

**BACKGROUND:** Anticipatory guidance (AG) is recommended for health promotion during well child care (WCC). Previous research has shown that parents want information about psychosocial issues, while physicians prefer to talk about medical issues. Bright Futures Health Supervision Guidelines developed Encounter Forms for Families (EFF) to help increase parental participation in WCC and focus AG discussions on psychosocial issues.

**OBJECTIVE:** The objective of this study was to determine EFF's effectiveness in increasing parental participation in AG.

**DESIGN/METHODS:** We conducted a randomized, controlled study of WCC visits for children 2-30 months at an inner-city resident continuity clinic. Fifty residents were randomized to the intervention or control group. In the intervention group, EFFs were given and explained to parents prior to WCC visits. Control group received standard WCC and no EFFs. Residents were audiotaped 1 or 2 times. Roter Interaction Analysis System was used to quantify AG topics and EFFs. Interrater reliability for AG topics was 0.87. Thirty two residents per group were required to obtain 80% power to detect a moderate effect size. Group differences were tested with univariate parametric (t-tests) and non-parametric (Wilcoxon Mann-Whitney) statistics as appropriate.

**RESULTS:** Seventy six WCC visits were audiotaped and analyzed, 36 in the intervention group and 40 in the control group. For all visits, the mean visit length was 26.7 min with 7.5 min spent on AG. The mean number of AG topics discussed per visit was 5. Nutrition, development and immunizations were each discussed in 98% of visits. Safety was discussed in 79%, family issues in 72%, sleep in 52%, oral health in 19%, and discipline in 10%. Overall, parents initiated 18% of AG discussions. When EFFs were given to parents, there were no differences in the length of time spent on AG, the number of topics discussed, or the proportion of AG initiated by parents.
OBJECTIVE: Specific aims of this study were (1) to identify the proportion of parents/guardians of children who have actually performed this task is unknown. Such preparations may be even more frequent in the Hispanic immigrant inner-city populations. The use of CAM in these children is highly correlated to use of CAM by the mother. We hypothesized that there would be higher rates of CAM use in children whose caregivers had used CAM, had a child with a chronic illness, and were recent immigrants.

BACKGROUND: 12-21% pediatric patients use CAM. These samples have only 2-5% Hispanics. The Prevalence and Correlates of the Use of Over-the-Counter Cough and Cold (OTCC) Medicines in Asthmatic Children in South Bronx

RESULTS: Majority of respondents were Hispanics (70%), 81% on Medicaid, 58% of the children under age 8 years, and 40% of caregivers under 30 years. By caregiver or patient’s report, 46% of the children have well controlled and 58% poorly-fairly controlled asthma. Severity of asthma was directly related to the frequency of OTCC use. Further study is warranted to delineate in detail the correlates of inappropriate OTCC use.

CONCLUSIONS: Preliminary results indicate a linear correlation between measured percent fetal hemoglobin and percent carboxyhemoglobin.

RESULTS: 98 questionnaires were completed and analyzed. The age range of responders was 16-70 years with a mean of 31.6 (SD=9.2). 56% of responders identified themselves as a single parent and the most common ethnicity was Hispanic (72%). 5% of responders had completed a will or guardianship, while 26% of parents revealed they would not want their child going to the other parent in the event of their own death. Being unenrolled or unenrolled with wills decreased with greater parental age from a rate of 63% for 16-19 year olds, to 36% for 20-29 year olds, 21% for 30-39 year olds, 14% for 40-49 year olds, and 0% for 60 year olds and older (MH χ², p<0.01). 72% of responders would like free information about wills and guardianships. Being in a serious accident situation predicts being pre-contemplative to complete one in the next 30 days (Fisher’s Exact Test, p=0.02 and 0.03 respectively.

CONCLUSIONS: While only a small percentage of parents have a will, the majority of parents would like more information to be provided by their pediatrician. The importance of this is emphasized by the fact that a significant percentage of parents would not want their child going to the other parent in the event of their own death. Our data suggest that younger parents are less informed about wills, are pre-contemplative, and thus represent a potential target group for a simple information-based intervention. However, our data also suggest that parents who have been in a serious accident are more ready to complete a will and thus represent a target group for an action-based intervention such as providing them with a legal action kit.
Apnea Hypopnea Index (AHI) is a Marker of the Sleep Disturbance in Children with Obesity

Shalaka Indulkar, Radhika Purushothaman, Viral Gaba, Aamir Bhanguo, Sunil Sinha, Margarita Smotkin, Irina Kazachkova, Henry Anhalt, Michael Marcus, Svetlana Ten, Pediatrics, Manhattan Infants and Children's Hospital, Brooklyn, NY; Pediatric Endocrinology, Saint Barnabas Medical Center, Livingston, NJ.

BACKGROUND: The incidence of sleep apnea among obese children is reported to be around 30%. AHI is the average number of apneas and hypopneas per hour.

OBJECTIVE: The objective of our study was to determine the prevalence of sleep apnea among obese children and determine the relation between AHI, obesity and sleep.

DESIGN/METHODS: The records of 67 children referred for polysomnography based on obesity and history of snoring were analyzed. Children were divided into 3 groups: group 1 (n=20), with mild sleep apnea (AHI <15 events/hour), group 2 (n=29) with moderate sleep apnea (AHI 15-30 events/hour) and group 3 (n=18) with severe sleep apnea (AHI >30 events/hour).

RESULTS: 70% of children with obesity and snoring already had moderate to severe sleep apnea at 11.5 ± 3.8 yrs of age. Only 13% had mild sleep apnea with AHI <5. Group 3 had higher arousal index, awakening index, desaturation index, percentage of sleep time (% time) with oxygen saturation (SpO2) <90% compared to groups 1 and 2, Group 3 had higher vitamin D, mean O2SAT, %ST with O2SAT >89 %, than group 1 and 2. It had lower heart rate efficiency than group 2 and lower minimum O2 SAT than group 1. There were no differences in age, lipid profile, glucose, insulin, Hba1C, leptin, blood pressures, and liver function tests between the groups. There was a tendency to higher leptin level, HbA1c and diastolic BP in group 3.

CONCLUSIONS: 70% of obese children had to moderate severe sleep apnea by 11 years of age with decreased O2SAT during sleep and abnormal sleep architecture. Severe sleep apnea was seen in 27% of obese children and was associated with higher BMI, insulin resistance and low vitamin D levels.

120 Fellow in Training

Lamotrigine and Phenytoin, but Not Amiodarone, Impair Peripheral Chemoreceptor Responses to Hypoxia

E. Vincent S. Faustino, David F. Donnelly, Department of Pediatrics, Yale University School of Medicine, New Haven, CT.

BACKGROUND: Amiodarone (Amio), lamotrigine (LTG) and phenytoin (PHT) inhibit a persistent sodium current (INaP) in neurons caused by channel transitions from inactive to open states. Previously, we demonstrated that inhibition of INaP by riluzole impairs action potential (AP) generation in carotid body (CB) chemoreceptors and the ventilatory response to acute hypoxia.

OBJECTIVE: To determine the effect of therapeutic levels of Amio, LTG and PHT on the peripheral chemoreceptor response to hypoxia in vitro and hypoxic ventilatory response in vivo.

DESIGN/METHODS: APs of single aXonal fibers were recorded using suction electrodes advanced into the petrosal ganglion of an in vitro rat peripheral chemoreceptor complex (CB/carotid sinus nerve/glossopharyngeal nerve/petrosal ganglion). AP frequency (at pO2=150 and pCO2=90), conduction time, duration and amplitude were measured before and during perfusion with Amio, LTG, PHT or vehicle. Hypoxia-induced catecholamine secretion within the CB (an index of presynaptic glomus cell function) was measured using amperometry. Respiration at room air and at 12%, O2, or 5% CO2, before and after IP administration of Amio, LTG, PHT or vehicle was measured in rats using whole body plethysmography. Serum drug levels were measured via HPLC.

RESULTS: LTG (10 μM) and PHT (5 μM), but not Amio (5 μM), decreased AP frequency compared to vehicle-treated complexes without affecting the other AP parameters or magnitude of CB secretion. Likewise, LTG (5 mg/kg) and PHT (10 mg/kg) blunted the ventilatory response to hypoxia but not to hypercapnia. In contrast, Amio neither altered chemoreceptor activity in vitro nor ventilatory response to hypoxia or hypercapnia. Mean drug levels were therapeutic.

CONCLUSIONS: LTG and PHT impair peripheral chemoreceptor function and ventilatory response to acute hypoxia, probably through an action on the afferent nerve terminals. In contrast, Amio had no effect on hypoxia transduction. These results are consistent with INaP serving an essential function in chemoreceptor AP generation and that its inhibition leads to a diminished ability to sense low O2. Amio, in contrast, does not impair chemoreceptor function at therapeutic dosages, suggesting a reduced effect on INaP.

121 Postdoctoral Fellow

Fecal ASCA Measurements in the Assessment of Pediatric Patients with Known or Suspected Crohn’s Disease

V. Tang, T. R. Walker, T. M. Sadowsky, K. Ono, K. Turrett, J. H. Boone, P. A. Rafa, Center for Inflammatory Bowel Disease, Children’s Hospital Boston, Boston, MA; Teclib, Inc., Blackburg, VA.

BACKGROUND: Non-invasive tests are being used in the diagnosis and assessment of patients with Inflammatory Bowel Disease (IBD). Previous studies have shown that serum anti-Saccharomyces cerevisiae antibodies (ASCA) can be measured in 40-60% of adult and pediatric patients with Crohn’s disease (CD). Elevated sera ASCA titers are found in 5% of patients with ulcerative colitis (UC). Antibodies are secreted into the gastrointestinal tract via biliary excretion or receptor mediated transport. We hypothesize that measuring secreted ASCA in the stool of patients may help clinicians with a non-invasive method of screening for CD in patients with symptoms suspicious of IBD.

OBJECTIVE: To examine the utility of measuring fecal ASCA levels as a screening measure for CD in pediatric patients with known or suspected IBD.

DESIGN/METHODS: 60 patients aged ≤18 years (22 female, 38 male), including 38 patients with CD, 6 with UC, 2 with indeterminate colitis, and 14 healthy controls submitted specimens. Diagnosis of IBD was based on endoscopic, radiologic, and histologic findings. Fecal samples were diluted 1:10 and analyzed using a qualitative ASCA ELISA immunoassay. A spectrophotometer, using an optical density of 450 nm was employed and results ≥0.150 were considered positive. Samples were measured blinded of a subject’s diagnosis.

RESULTS: 58% (22/38) of patients with CD tested positive for ASCA, and 50% (3/6) patients with UC tested positive for fecal ASCA. No control subjects tested positive for fecal ASCA. Fecal ASCA displays sensitivity and specificity values of 58% and 85%, respectively, with a positive predictive value of 88% in identifying CD in pediatric patients with known or suspected IBD.

CONCLUSIONS: The prevalence of antibodies to ASCA appears to be comparable in stool or serum. The specificity of serum ASCA testing is superior to that measured in the feces. However, the positive predictive value of fecal ASCA testing in pediatric patients with CD is comparable to that reported in previous serum-based studies. Fecal ASCA testing offers the advantage of being inexpensive and noninvasive. Along with other diagnostic assays, such as those for fecal lactoferrin, fecal ASCA testing may prove useful for the assessment of pediatric patients suspected for having IBD.

122 Poster Board 6

Exploited HIV-Testing in the Labor and Delivery Setting: The Use of Rapid HIV-Testing in a South Bronx Community Hospital

Claudia J. Alvarado, Laura Duqulaitale, Carlos Barahona, Caroline A. Nubel, Kelly Monahan, Marilyn Crane, Stefan Hofmann, Murli U. Purwani, Department of Pediatrics, Bronx-Lebanon Hospital Center (BLHC), Bronx, NY; Department of Ob/Gyn, BLHC, Bronx, NY.

BACKGROUND: As of November 2003, New York State Department of Health (DOH) reduced its requirement for reporting back results of Expeditied HIV-testing (ExpHIV) to labor and delivery (L&D) from 48 to 12 hours. This led to the replacement of the HIV enzyme-linked immunosorbent assay (ELISA) with any of the current FDA-approved rapid HIV diagnostic tests (RapHIV).

Rapid testing of women and/or their infants in the peripartum period is viewed as a means to screen women with unknown HIV status providing increased opportunity to offer timely intervention to reduce perinatal HIV transmission.

OBJECTIVE: To describe the frequency and reasons for ExpHIV and to determine the positive-predictive value (PPV) of RapHIV in L&D.

DESIGN/METHODS: Data was abstracted retrospectively utilizing the L&D log book, the ExpHIV log book and the hospital’s computerized Laboratory reporting system from 11/1/2004 to 10/31/2005. Reactive RapHIV (OraQuick, OraSure Technologies) was confirmed by ELISA and western blot. The mother/infant pair were managed as HIV-infected/HIV-exposed respectively pending confirmation, according to DOH guidelines.

RESULTS: During the 12-month period, 2885 women delivered and 276 (9.6%) received ExpHIV, yielding an average number of 23 tests/month (range 9-35). The breakdown of reasons for ExpHIV yielded 11.6% due to pretest, 5.9% due to repeat test, 6.8% due to posttest, 16.8% due to lack of prenatal care, 1.7% due to need for repeat testing and 5.9% for no prior test. RapHIV was reactive in 8 instances and confirmed in 7, yielding a PPV of 87.5%. The prevalence of HIV in women delivering at this hospital for this period was 47 of 2885 (1.6%). The prevalence of HIV in women delivering at this hospital for this period was 47 of 2885 (1.6%).

CONCLUSIONS: Most women undergoing ExpHIV at this hospital had prior testing in other institutions. False-positives (FP), though unlikely, may occur. Implementing a universal system allowing immediate access to PR will reduce the number of ExpHIV performed, and consequently, FP. This is important because of stress to parents undergoing counselling and testing in a vulnerable situation, and the emotional trauma associated with preliminary management of a mother/infant pair with a FP result.
RESULTS: From 10/01/00 to 5/30/04, 1733 patients were diagnosed with RSV of which 98% (66) received PCU care and 737 (43%) received solely outpatient care. There were 37 eligible cases (38%) and 54 matched controls; 56% of all subjects were < 6 months-old. RSV subgroup A was identified in 25 cases (68%) and 37 control-patients (69%) (P=0.877). RSV A genotypes A2, A3 and A4 were identified from 10 (26%), 33 (15%) and 2 (5%) case and 24 (44%), 10 (19%) and 3 (6%) controls, respectively. RSV B genotypes B1, B2 and B3 were identified from 1 (3%), 4 (10%) and 7 (18%) case and 6 (11%) and 2 (4%) controls, respectively. There was a trend for genotypes A3 (OR 2.1, 95% CI 0.51-8.9) and B3 (OR 2.5, 95% CI 0.6-10.1) with RSV A and B, respectively. However, the differences in genotype frequency did not reach statistical significance, P=0.114 to be found more frequently in the case group and for genotype B1 (OR 17, 95% CI 0.097) to be more frequent in the control group.

CONCLUSIONS: No statistically significant association between either RSV subgroup or genotype was found. Additional studies of the association between genotype and severity of RSV disease may be warranted.

122  Poster Board 8  Fellow in Training
A Computer-Based, Multivariate, Economic Analysis of Neonatal-Intensive-Care Unit-Based Influenza Vaccine Administration to Parents in a Low-Socio-Economic, Urban Setting
Shetal I. Shah, Martha Caprio, Pradeep V. Mally, Karen Hendricks-Munoz. NICU, NYU School of Medicine, New York, NY.

BACKGROUND: Trivalent inactivated influenza (TIV) vaccine has been shown to reduce the number of influenza-related outpatient visits and hospitalizations in children up to 24 months of age. The AAP and CDC recommend TIV to first-person contact of infants less than 6 months of age. Yet, the economic implications of using the NICU to capture the parents of these infants has not been evaluated.

OBJECTIVE: To determine the direct and indirect costs of a program to administer influenza vaccine to parents of the NICU in a cohort of tertiary care units serving a primarily low socio-economic population.

DESIGN/METHODS: Probabilities of hospitalization and efficacy of prophylaxis were based on published results where possible with an estimated 10% reduction in hospitalization for parents of patients who received vaccine. Variables in the three and four-tiered analysis included presence of chronic lung disease, estimated presence of siblings, vaccination status of siblings, zero-conversion rate of vaccine and parental vaccination status. 2632 patients were analyzed using 2003 admission data from the New York City Regional Perinatal Center encompassing 11 Level III NICUs. Hospitalization costs, indirect costs, and outpatient costs were assessed using previously published standard calculations.

RESULTS: On the basis of this computer-model, costs were $188.05 per patient-per-influenza-season, including $68.05 per patient in outpatient costs. This increased to 191.30 per patient when parental medical savings were included. Administration of NICU-based influenza vaccine increased costs to $200.46 per patient-per-influenza-season, but decreased outpatient costs to $1.40 per patient. The cost rose to $201.14 per patient upon inclusion of parental medical savings. For cost-savings to equal costs of vaccine administration, either a 20% reduction in hospitalization for infant of vaccinated NICU patients must be achieved or the sample size per influenza season must increase to 3,215 patients.

CONCLUSIONS: The cost of influenza vaccine administration to NICU parents was higher than the financial burden of influenza in this population. Cost-savings do not occur until the treated cohort increases to 3,215 patients. Further studies will eliminate the estimates used in the study and more accurately assess financial savings.

125  Poster Board 9  Fellow in Training
Is Urinary Transforming Growth Factor beta-1 (TGF-b1) a Useful Biomarker in Idiopathic Nephrotic Syndrome (INS) of Childhood?
Ibrahim F. Shatat, Edmund O’Riordan, Frederick J. Kaskel, Robert P. Woroniecki. Pediatric Nephrology, Children’s Hospital at Montefiore of the Albert Einstein College of Medicine, Bronx, NY; Renal Institute, New York Medical College, Valhalla, NY.

BACKGROUND: The response to steroid therapy is used to characterize the INS of childhood as either steroid sensitive (SSNS) or steroid resistant (SRNS). Factors that can contribute to the differences between the two groups remain unknown.

OBJECTIVE: To determine the differences in urinary TGF-b1 levels between SSNS and SRNS controls, we attempted to quantify TGF-b1 levels by analyzing urinary samples from the same patient population.

CONCLUSIONS: The cost of influenza vaccine administration to NICU parents was higher than the financial burden of influenza in this population. Cost-savings do not occur until the treated cohort increases to 3,215 patients. Further studies will eliminate the estimates used in the study and more accurately assess financial savings.

126  Poster Board 10  Fellow in Training
Characteristics of Pulmonary Hypertension (PH) in Infants < 37 Week Gestation (GA)

BACKGROUND: Characteristics of premature infants who developed PH and their response to nitric oxide (NO) are not well described.

OBJECTIVE: To identify risk factors for PH in infants < 37 week GA and specifically to evaluate the response to NO.

DESIGN/METHODS: A retrospective chart review was conducted of all infants < 37 wks GA from 6/2000 to 10/2005 who had echocardiographic diagnosis of PH in the first 4 weeks of life & a comparison non-PH group matched generated for GA & birthdates. Data on prenatal & postnatal characteristics, response to NO, and mortality were defined by an increase in PaO2, by ≥ 20 mm Hg on NO. Univariate analysis was done by t test, chi square or Fisher exact test. Factors with p values <0.2 by univariate analysis were included in stepwise logistic regression.

RESULTS: There were 61 PH infants and 149 non-PH infants with an average GA of 32 wks. The proportion of PH infants who required NO and who responded to NO are presented in the figure, with the n noted for each GA group. Percent responders is significant by ANOVA. Variables that were significantly associated with PH were lower apgar1 & apgar5, less antenatal steroids, RDS, PDA, sepsis, hypotension, premature prolonged rupture of membranes (PPROM), oligohydramnios (oligo), pulmonary hypoplasia & higher birthweight (bw). On stepwise logistic regression, bw, apgar5, sepsis, hypotension, oligo & pulmonary hypoplasia were independently associated with PH (all <0.01). Mortality was 26% (16/61) in the PH group and 5.3% (8/149) in the non-PH group (P=0.000).

CONCLUSIONS: Low apgar score at 5 min, Oligohydramnios and pulmonary hypoplasia are associated with the development of PH in premature infants. Majority of premature infants who require NO respond to conventional therapy. Infants < 25 wk GA are refractory to NO, and the incidence of responders to NO decreases after 32 weeks GA.

127  Poster Board 11  Fellow in Training
Comparison of Pulmonary Outcomes in a Premature Cohort: O2 Requirement at 36 Weeks GA, Outpatient Diuretic Use, and Respiratory Readmissions

BACKGROUND: Pulmonary sequelae of prematurity include respiratory readmissions and diuretic dependence after NICU discharge. An O2 requirement at 36 wks adjusted GA is a standard surrogate endpoint for long-term pulmonary morbidity.

OBJECTIVE: We tested whether the same risk factors are associated with these 3 respiratory endpoints, as well as the associations between the endpoints themselves.

DESIGN/METHODS: We conducted a cohort study of infants ≤32 weeks GA and BW ≤1250g enrolled in the NO CLD multicenter randomized trial of inhaled nitric oxide who had presented to a 12-mo follow-up visit as of Oct. 05. We constructed logistic and Poisson regression models adjusting for BW.

RESULTS: 323 infants met criteria: 56% required O2 at 36 wks, 24% received outpatient diuretics, and 26% had at least 1 respiratory (wheezing or infection) readmission (range 0-10 readmissions/patient). O2 at 36 wks was associated with diuretic use (p<0.001, positive predictive value 34%, negative predictive value 90%), but not with respiratory readmission rate. Rate of readmission was increased in infants with a family history of asthma (p<0.001), black (p<0.001) or Hispanic (p=0.028) mothers, and a steroid course in the NICU (p=0.035), and decreased with prenatal care (p=0.035) and multiples (p=0.002). There was no association between readmission and sex or PRSS (peak respiratory severity score, MAP × FiO2, age 4-10 days). Diuretics were associated with higher PRSS (p=0.03) and steroids in the NICU (p=0.038), but not with the other risk factors. Odds of O2 at 36 wks increased with higher PRSS (p=0.001) and steroid exposure in the NICU (p<0.001), decreased in females (p=0.012) and Hispanics (p=0.022), and were not associated with the other risk factors.

CONCLUSIONS: O2 at 36 wks was a poor predictor of diuretic use and respiratory readmission in this cohort. The 3 endpoints tested had different risk factor profiles, suggesting overlapping but unique causal pathways. Respiratory outcomes should be studied directly and individually, as opposed to subsuming on O2 status at 36 wks or grouping outpatient morbidities into a composite pulmonary outcome measure.

128  Poster Board 12  Fellow in Training
Ventilator Associated Pneumonia in a High Risk NICU Population
Folsealde A. Kohinde, Naveed Hussain, Ted S. Rosenkrantz, Neonatology, University of Connecticut Health Center, Farmington, CT.

BACKGROUND: Very few studies exist on Ventilator Associated Pneumonia (VAP) in the newborn population. A previous study in our NICU identified infants ≤ 29 weeks GA at greatest risk.

OBJECTIVE: To describe the risk factors and outcomes associated with VAP in babies ≤29wks GA in NICU.

DESIGN/METHODS: All infants ≤29 weeks GA admitted to the NICU at John Dempsey Hospital between July 1 2002 and June 30, 2004 who required assisted ventilation for ≥48 hrs were identified using a patient database. Their medical records were reviewed for demographic data, signs and symptoms of VAP as defined by the National Nosocomial Infections Surveillance System (NNIS),

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prenatal and perinatal factors including: maternal PIH and chorioamnionitis; use of prenatal steroids and perinatal antibiotics; presence and treatment of RDS and PDA, total ventilator days and duration of ventilation before development of VAP. Outcomes reviewed were bronchopulmonary dysplasia (BPD), retinopathy of prematurity (ROP), necrotizing enterocolitis (NEC), periventricular leukomalacia (PVL), length of stay (LOS) and death. Infants with congenital anomalies, genetic syndromes, congenital pneumonia or who died before 28 days of life were excluded from the study. Statistical comparison was made between the infants who developed VAP and those that did not. RESULTS: 357 infants with GA≥29wks were admitted during the study period. 155 required mechanical ventilation for ≥24hrs. 27 infants met exclusion criteria. Results were analyzed for 128 infants. 24 infants met NINIS criteria for VAP. Rate of VAP was 19% or 4.25/1000 ventilator days. Mean GA and BW was lower for infants with VAP vs no VAP (25.6 ± 2.2 vs 27 ± 3.1 wk, p=0.01; 826 ± 153 vs 968 ± 257 g, p=0.01). Total ventilator days and LOS was longer in the VAP group (36 ± 17 vs 108 days ± 89 days, p=0.01). There was a linear increase in incidence of VAP after 7 days of mechanical ventilation and was significantly associated with VAP (83% vs 60% p<0.03). Mortality was 8% in the VAP group vs 2% in the no VAP group, p=0.13. After controlling for GA, total ventilator days was significantly increased by development of VAP (p<0.005). CONCLUSIONS: Risk factors for VAP in preterm are low GA and prolonged mechanical ventilation. VAP is associated with increased incidence of BPD. This underscores the need for increased efforts toward earlier extubation and the use of non invasive ventilation techniques in this high risk population.

129 Poster Board 13 House Officer
Prophylactic Fluconazole Therapy for Very Low Birth Weight Infants Colonized with Candida
Vaishali Jha, Monica Bajaj, Vinayak Govande, Myron Sokal, Dominique Jean-Baptiste, Nam-Elia Santharam, M. Roger Kim, Pediatric, Brooklyn College University Hospital & Medical Center, Brooklyn, NY.

BACKGROUND: There has been an increase in the incidence of invasive Fungal Infection in VLBW infants likely due to the increased survival of VLBW infants and the invasive nature of NICU care they need. Review of our internal database revealed increased incidence of candidiasis in VLBW during 2002-2003 compared to Vermont Oxford data. We decided to use fluconazole prophylaxis only in colonized VLBW infants to limit exposure to the drug. OBJECTIVE: To reduce the morbidity and mortality of the VLBW infant colonized with Candida by fluconazole prophylaxis.

DESIGN/METHODS: During 07/04 to 06/05 surveillance cultures were performed for fungal colonization in all infants weighing less than 1500g at birth and weekly thereafter. Prophylactic fluconazole was instituted at a dose of 3mg/kg every 48 hrs in colonized infants for 6 weeks or until wept reached 1500g. Fungal blood cultures were taken if infant showed signs of sepsis. We compared a baseline period (1/02-3/04) with intervention period (7/04-6/05) of fluconazole prophylaxis given to colonized VLBW infants. The two study groups were similar in demographic characteristics. RESULTS: During intervention period the incidence of invasive candidiasis decreased from 12.1% to 8.2% and cases per 1000 patient days decreased from 2.1 to 1.6. Multiple regression analysis showed the decrease in Candida sepsis was not significant. Significant changes of colonization with non-albicans candida was noted. No adverse effects of fluconazole therapy were noted.

CONCLUSIONS: Fluconazole prophylaxis for colonized VLBW infants may decrease invasive candida sepsis. Colonized ELBW infants is the subgroup identified by our study to benefit most by the prophylaxis. Multicenter randomized trial for further defining inclusion criteria is necessary.

130 Poster Board 14 Fellow in Training
Outbreak of Parainfluenza Virus Type 3 in a Neonatal Intensive Care Unit
Aryeh Simmonds, Barbara Clones, Jose Munoz, Marisa Montecalvo, Edmund F Ambroise, Jef T Gerber, Meghan Baer, Darrin Asudha, Barry Buss, Nazeef Hanna, Pediatrics, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ.

BACKGROUND: Infections induce increased levels of pro-inflammatory cytokines, which have been implicated in the pathogenesis of preterm labor. Conversely, anti-inflammatory cytokines, such as IL-10, may exert tocolytic effects. It is unclear whether the type of organism causing uteroplacental infections determines the relative expression of pro- and anti-inflammatory cytokines.

OBJECTIVE: In these studies, we compared the placental inflammatory response induced by bacterial lipopolysaccharide (LPS, endotoxin from gram-negative bacteria), lipoteichoic acid (LTA, a cell wall component of gram-positive bacteria) and heat-killed Gardnerella vaginalis (GV). We hypothesized that the responses to these agents are distinct and that they can be modulated by IL-10 treatment.

DESIGN/METHODS: Cultured placental explants from term samples collected before the onset of labor were treated with LPS, LTA, or GV, with or without IL-10, for 24 hrs. The treatment doses for LPS, LTA and GV were selected by determining the concentrations of each agent required to induce a 30% or greater decrease in total respiratory compromise, especially in the setting of a patient who is immune-compromised or with coexisting morbidities. A high index of suspicion for PIV-3 should be raised, cohorting implemented and cultures obtained.

131 Poster Board 15 Fellow in Training
Infection-Induced Placental Inflammatory Responses: Does the Type of Organism Matter?

BACKGROUND: Infections induce increased levels of pro-inflammatory cytokines, which have been implicated in the pathogenesis of preterm labor. Conversely, anti-inflammatory cytokines, such as IL-10, may exert tocolytic effects. It is unclear whether the type of organism causing uteroplacental infections determines the relative expression of pro- and anti-inflammatory cytokines.

OBJECTIVE: In these studies, we compared the placental inflammatory response induced by bacterial lipopolysaccharide (LPS, endotoxin from gram-negative bacteria), lipoteichoic acid (LTA, a cell wall component of gram-positive bacteria) and heat-killed Gardnerella vaginalis (GV). We hypothesized that the responses to these agents are distinct and that they can be modulated by IL-10 treatment.

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132 Poster Board 16
Placental Pathology in Asymptomatic Infants Screened for Early-Onset Sepsis
Shirley Y. Huang, Rebecca N. Baergen, Marie Ambrose, Jeffrey M. Perlman, Department of Pediatrics, Weill Cornell Medical College, New York, NY; Department of Pathology; Division of Newborn Medicine.

BACKGROUND: Group B streptococcus (GBS) is a significant cause of early-onset sepsis. Despite CDC guidelines and implementation of intrapartum antibiotic prophylaxis (IAP), cases of early-onset GBS (EOGBS) continue to occur. Efforts to evaluate asymptomatic infants with intrapartum clinical risk factors (RF) remain important but inconsistent, likely related to absence of universal guidelines for management. Reviewing placental pathology in these infants may contribute to refining guidelines.

OBJECTIVE: To determine the relationship between markers for sepsis in asymptomatic infants and placental histologic evidence of chorioamnionitis (CA) and fetal inflammatory response (FR).

DESIGN/METHODS: Retrospective chart review of asymptomatic infants ≥235 weeks GA screened for sepsis in our nursery between January-June 2005. Clinical history, lab data including infant CBC with immature to total (I/T) ratio and blood culture (Bx), and placental pathology grading CA and FR for severity were reviewed.

RESULTS: 124 infants with at least one clinical RF, mean GA 39.6 weeks, and mean BW 3340 g were included. Only infants infected GBS positive with IAP ≤48 hours prior to delivery (GBS+; N=19, 15%), maternal temperature ≥38°C (N=38, 31%), and clinical CA (N=36, 29%). 3 cases of EOGBS were identified from positive Bx (all screened GBS negative). Abnormal I/T ≥2 were noted in 12/124 infants (10%). Placental CA (PCA) was noted in 54/124 infants (44%) and was moderate to severe in 22/54 (41%). Placental FR was noted in 60/124 infants (48%) and occurred more often with maternal temperature ≥38°C prior onset of infection without (53% vs. 22%, p=0.01 and 70% vs. 30%, p=0.01), with clinical CA than without (61% vs. 36%, p=0.025 and 58% vs. 12%, p=0.001). There was no difference in PCA or FR with IAP ≤48 hours prior to delivery.

CONCLUSIONS: Screening asymptomatic infants with CBC and Bx identified all cases of EOGBS. Interestingly, all occurred in mothers screened GBS negative. Intrapartum maternal temperature ≥38.0°C, clinical CA, and abnormal I/T ratios were significantly more likely to correlate with PCA and severe FR. Evaluation of high risk asymptomatic infants for EOGBS is clinically indicated even with negative maternal GBS screening.
Is it Safe To Keep Umbilical Vein Catheters for Longer Than 7 Days?

Nadine El-Khoury, Sulaiman Sannah, Barbara Clones, Boriana Parvez, Pediatrics-Division of Newborn Medicine, Westchester Medical Center- Maria Fareri Children's Hospital, Valhalla, NY.

BACKGROUND: Umbilical vein catheters (UVC) provide secure, relatively safe, less painful and cost effective intravenous access in sick neonates. CDC guidelines (2002) recommend that UVC can be used up to 14 days if managed aseptically. These recommendations were supported by epidemiological studies and theoretical rationale and not by randomized controlled trials. However, complications such as infection, portal vein thrombosis and necrotizing enterocolitis continue to be a concern. Therefore, despite these recommendations, many clinicians remain reluctant to keep UVC for longer than 7 days.

OBJECTIVE: To determine whether extended use of UVC for more than 7 days and up to 14 days is associated with increased risk of infection or NEC.

DESIGN/METHODS: We conducted a prospective observational study of all UVC in our regional perinatal center from June 1st to November 30th, 2005. We compared the incidence of catheter related sepsis and NEC, with UVC in place, between 2 groups of patients: short use UVC group (≤7d) and extended use UVC group (>7d). We identified 73 patients with UVC. BW was 1925 ± 170g (Mean ± SEM) in the short use UVC group (38% <1000g) vs. 1535 ± 87g in the extended use UVC group (48% <1000g), p<0.001. GA was 31.4 ± 5.7 weeks (Mean ± SD) in the short use (40% ±28 weeks) vs. 30.7 ± 5.2 weeks in the extended use group (43% ±28 weeks), p<0.001. All UVC were radiologically confirmed to be in optimal position in IVC, just outside the right auricle. 50 catheters were removed at or before 7 days and 23 remained for longer than 7 days (10.6 ± 2.3 days; range 8-14 days). In the short use UVC group, UVC related sepsis rate (defined as positive blood culture with UVC in situ) was 2% (1/50) or 5.4/1000 catheter days. In the extended use UVC group, sepsis rate was 8.7% (2/23) or 8.2/1000 catheter days (p<0.001). Incidence of NEC was 4% in each group.

CONCLUSIONS: In this small series, the extended use of UVC was not associated with significantly increased risk of infection or NEC. Therefore, we suggest that optimally placed UVC may be used safely for up to 14 days. This practice, combined with aggressive advancement of enteral feeds may prevent the need for other central venous catheters and their attendant complications and cost.

The Effects of Low Dose Indocin (0.1mg) Treatment on PDA Closure in VLBW Neonates

Dalbir Singh, Pradeep Mally, Karen Hendricks-Munoz, Neonatology, NYU Medical Center, New York, NY.

BACKGROUND: Prophylactic dose (0.1mg/kg/dose) has been implicated in prevention of pulmonary hemorrhage and higher grades of intraventricular hemorrhage. However timing, associated morbidities and potential benefits of low dose compared to Indocin treatment dose in VLBW infants has not been fully characterized.

OBJECTIVE: 1) To determine the rate of PDA closure with different doses of indomethacin [0.1mg/kg compared to 0.2mg/kg], 2) To identify neonatal morbidity in the two groups including the risk of requiring ductal ligation.

DESIGN/METHODS: Retrospective chart review of all infants with a birth weight of ≤1500gms admitted to the Neonatal Intensive Care Unit (NICU) diagnosed with a PDA by cardiac ECHO from October 2003 to June 2005. Infants were divided into 2 groups: Group A, Infants with small PDA (≤5mm and Group B, Infants with large PDA (>~5mm).

RESULTS: There were 60 infants ≤1500gms admitted during this study period. Thirty-seven infants ≤33/47] were evaluated at <12 hours of life and diagnosed with PDA. Five infants received no intervention for the condition.

70% [21/30] of the neonates with ductus received low dose prophylactic indocin [0.1mg/kg] within 24hrs of life with a 90% [19/21] closure rate. No infant had increased NEC or intestinal perforation. 30% [9/30] of infants received a treatment dose [0.2mg/kg] within 24hrs of life with a 5% [5/97] closure rate. 26% [8/30] infants received a 2nd course of Indocin. All who required a second dose required surgical ligation of their ductus. This group of neonates had a smaller mean GA and BW with increased morbidity.

CONCLUSIONS: Infants ≤1500gms with symptomatic PDA requiring therapy achieved PDA closure in a majority of cases with a prophylactic dose schedule of Indocin treatment within the first 24hrs of life. All neonates requiring a second course of Indocin required surgical ligation and presented with increased morbidity. Low dose early indomethacin may be useful to effectively close most patent ductus arteriosis in this population. In addition, low dose indomethacin was not associated with increased morbidity including intraventricular hemorrhage, NEC or intestinal perforation.

Hydrolyzed Protein Formula for Gut Priming in VLBW Infants

R. Venbrken, M. Dehalla, M. Katzenstein, E. F. LaGamba, B. Parvez, Neonatology, Maria Fareri Children’s Hospital, Valhalla, NY. 

BACKGROUND: Pregestimil is a hydrolyzed casein formula used in term neonates with milk protein allergy or as postmenstrual support. However 3/20 infants in the Int group did not reach full feeds until 35d. ELBW vs. VLBW neonates showed similar results. Calcium, alk phos & albumin levels were similar weekly and at the end of the observation: [Ca: 9.7 ± 1 vs 9.5 ± 0.4; Alk phos: 306 ± 124 vs 315 ± 103; albumin: 2.6 ± 0.3 vs 2.5 ± 0.3]. The incidence of PDA, IVH, BPD & ROP was not statistically different. Pregestimil can be used as a substitute formula in the first 4 postnatal wks since adequate growth can be achieved. However, subsequently, a formula designed for preterm infants is recommended or Preg should be supplemented with breast milk fortifier to make it nutritionally appropriate.

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consisted of a specially trained RN & MD who are available 24/7. The parents are contacted by the IAP the day after d/c & then followed up weekly. These pts were divided into two groups (readmit [RA]& non-readmit [NR]). RA & NR were further subdivided into those d/c with & without hemangiomas. Abn clinical status was defined as any evidence of As or B’s 5 days prior to d/c.

RESULTS: 166 pts ≤5yrs at the time of the study were included in the study. Clinical Status Abn or D/C Clinical Status Nml or D/C.

- N
- GA [Mean±SD]
- BW [Mean±SD]
- 35.7±1.6
- 56.2±4.2
- 15.2±2.2
- 1522.8±425.3
- 4591.1±475.2
- 11.7±0.5
- 117±6.5
- 79±7[101]
- NS
- HC Savings NR*
- $1,398,264.00
- * Est.7days clinical assessment before d/c; bed cost $2,944/d & MD cost of $500/d.

CONCLUSIONS: The use of an IAP was associated with decrease LOS & HC. All pts d/c with abn clinical findings where in other centers might be retained for an additional 7 to 10 days were safely discharged home. There was no impact on an IAP with no mortality. This suggest that pts with mild symptoms of AOP may be safely discharged under the care of an IAP leading to significant HC saving. We speculate, nationally, a savings of $3 billion (499,008 preterm infants* > 30% x ) vs a year in HC if pts are d/c to IAP. The IAP provides a smooth transition from the NICU to the home.

*NYU Billing: March of Dimes

138 Poster Board 22
Hemangioma and Retinopathy of Prematurity: A Possible Association
Vijayakumar Praveen, Ramesh Vidavalapu, Ted S. Rosenkrantz, Naveed Hussain. Department of Neonatal Perinatal Medicine, University of Connecticut Health Center, Farmington, CT.

BACKGROUND: Since the speculation in the 1940s that ROP (retinopathy of prematurity) was a postnatally growing hemangioma of the retina, there have been many advances in its diagnosis, screening and treatment. Recent research in the role of oxygen regulated angiogenic factors like VEGF /IGF-1 in the neovascularization of ROP, lead us to speculate that elevated levels of VEGF in the retina may promote abnormal retinal neovascularization (Tawoney et al, 2005).

OBJECTIVE: To study the association between cutaneous hemangiomas and ROP.

METHODS: A retrospective cohort study of preterm neonates weighing <1500 gm at birth, during the 5 year period (11/01/00-10/31/05) at John Dempsey Hospital was done. A recent study concluded that large hemangiomas may be associated with early or persistent retinopathy of prematurity (ROP) in term infants (Silverman, 2004). A multiple logistic regression analysis controlling for birth weight, and antenatal steroids use of dexamethasone were the variables of interest. The goal of our conservative treatment approach was to sterilize the lesion by first 2 months of age and to monitor growth for 1 year. If growth was >0.5 cm/month it was pursued aggressively. If growth was <0.5 cm/month it was observed. The lesions were assessed for growth by exam, photography at 3 months intervals and ultrasound if indicated. A discharge ultrasound of the neonatal brain was performed in the first month of life. Abnormal findings were referred to pediatric neurologist until 1996, and subsequently followed by a pediatric development specialist. All of the PVL neonates received O2 during the first 28 days of life, while 78.68%, 29.73% and 6.89% of neonates without PVL within the 3 BW categories, respectively, required such intervention. The mean postnatal duration for discontinuation of O2 in PVL neonates was 32-33 weeks, comparable to non-PVL neonates (p>0.05). The proportion of neonates that required O2 supplementation beyond 36 weeks postnatally was comparable in PVL and non-PVL infants.

CONCLUSIONS: The incidence of PVL and IVH was low and compares favorably to nationally reported data.

140 Poster Board 24
Fellow in Training
Resuscitation Decisions (RD) in the Delivery Room (DR) at the Edge of Viability (EOV) and with Known Trisomy 18 (TR18). Is the Gender of the Provider Important?
Melanie P. McGraw, Jeffrey M. Perlman, Pediatrics, Weill Cornell Medical College, New York, NY.

BACKGROUND: Resuscitation decisions at the EOV are difficult and controversial. This is in part due to competing ethical interests in making interventions to situations where outcome is reliably expected to outweigh harm i.e. avoiding futile treatment while simultaneously trying to honor maternal preferences (MP) in decision-making. International neonatal guidelines state that initiating resuscitation (IR) is not indicated for GA < 23 weeks and lethal anomalies i.e. confirmed TR18, (Circulation 2005).

OBJECTIVE: To determine factors influencing IR, and to investigate the impact of gender on RD at the EOV and with TR18 in the DR.

METHODS: A multiple choice questionnaire listing clinical scenarios in which the provider (P) was asked whether he/she would consider IR at known GA of 22, 23 and 24 weeks, and confirmed TR18 with congenital heart disease (CHD) ≥ 36 weeks, was mailed to neonatologists and fellows staffing level III NICUs in NYC. Potential factors influencing IR included MP, neonatal condition (NC) at birth, OB care or legal concerns (LC), and consideration of futility in terms of intact neurologic outcome (range from <5 to ≥30%)

RESULTS: 54/(71%) surveys were completed, male n=29, female n= 25. At 22 weeks GA, 18 (53%) P would consider IR and were more likely to be male n=14(77%), p=0.01, as well practicing >5 years n=15(83%) p=0.006. The primary factor for IR was MP (50%) but 6 (33%) P favored NC over MP; 5 (83%) of these considered intact survival ≤20% as acceptable. At 23 and 24 weeks GA, 96% and 100% of P respectively would consider IR. For TR18, 24/54(44%) would consider IR with no difference in gender or length of practice. MP (70%) was the primary factor for IR but LC was a significant factor for IR for 45% vs 0% for 22 weeks (p<0.009)

CONCLUSIONS: At 22/23wks known GA and for confirmed TR18 with CHD, more P than anticipated 33% and 44% respectively would consider IR. At 22/23wks P were more likely to be females, have less intervention, and an elective Cesarean section, compared to males. Neonates with CHD ≥ 36 weeks P were more likely to be males, in contrast to 22/23wks where male or female did not differ. Neonates with CHD ≥ 36 weeks P were more likely to be of low сердечное притяжение (≤20%), compared to 22/23wks P who were more likely to be of higher сердечное притяжение (≥30%). The proportion of neonates that required O2 supplementation beyond 36 weeks postnatally was comparable in PVL and non-PVL infants.
OBJECTIVE: To collect data on our interactions with the referring hospital during the four stages of the transport process: initial call, response time, interaction during the patient’s transition to the transport team and overall satisfaction with the service.

DESIGN/METHODS: Questionnaires were developed by the “Transport leadership team” - a group of nurses (RN), physicians (MD) and respiratory therapists (RT) - all transport experts. 

Patients were randomized into three groups from poor (1) to excellent (5) for each question. A score of 4-5 was regarded as a high level of satisfaction with the service. The forms were given to referring hospital’s medical personnel prior to the transport team’s departure along with a stamped envelope addressed to our transport coordinator.

RESULTS: The total number of questionnaires were collected from a total of 144 transports (22%). 

Initial call: 14 calls were accepted initially by RN and 28 by a MD with 93% satisfaction from both. 

- 87.5% of responders were highly satisfied with the initial interaction and 55% thought the fellow’s call from the road was very helpful (although 29% would have preferred more active communication with the team en route).

- Response time: Only 19% of the responders were satisfied with our arrival time. (This corresponded to a departure time greater than 60 min. in average of 35% of cases.)

- Teams’ Interaction: In 83% of the cases, the transport team’s personnel were readily recognizable. 93% of the referring teams thought highly favorably of the cooperation between teams, and 90% felt similarly about the team’s interactions with the patient’s family.

Overall: The satisfaction with Emergency Medical Team (EMT) personnel, RN, RT and MD team members were 78%, 89%, 97% and 83% respectively. Overall satisfaction level was high in 87% of the cases. 

CONCLUSIONS: Customer survey methodology was used to assess satisfaction with a dedicated pediatric transport team’s performances. This approach provides a valuable means of gathering information that will be applied to improving the transport service and enhancing patient care.

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142 Poster Board 26
Fellow in Training
Referring Hospitals Survey for Pediatric Transport Team—Quality of Service Assessment Tool
Michael F. Canare and Heather A. Schwenk, Isaac Lazag, Pediatrics, Yale University School of Medicine; Pediatric Intensive Care Unit, Yale New Haven Hospital, New Haven, CT.

BACKGROUND: A dedicated pediatric transport team is the standard of care for the interhospital transfer of critically ill children. Referring hospital’s evaluations can help improve the team’s services.

OBJECTIVE: To collect data on our interactions with the referring hospital during the four stages of the transport process: initial call, response time, interaction during the patient’s transition to the transport team and overall satisfaction with the service.

DESIGN/METHODS: Questionnaires were developed by the “Transport leadership team” - a group of nurses (RN), physicians (MD) and respiratory therapists (RT) - all transport experts. 

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143 Poster Board 27
Sitting in the Front Seat of a Passenger Vehicle: Real-Time Usage and Possible Risk Factors at One Elementary School
John W. Harrington, Department of Pediatrics, New York Medical College, Valhalla, NY.

BACKGROUND: Motor vehicle crashes are the leading cause of death in children ages 5 to 14. Children seated in the front seats of vehicles are at increased risk of death and injury in crashes due mostly to air bag deployment. However, when parents are asked if their school-age child is allowed to sit in the front seat, their answer may not reflect actual practices. Parents are more likely to be satisfied with our arrival time. (This corresponded to a departure time greater than 60 min. in average of 35% of cases.)

Teams’ Interaction: In 83% of the cases, the transport team’s personnel were readily recognizable. 93% of the referring teams thought highly favorably of the cooperation between teams, and 90% felt similarly about the team’s interactions with the patient’s family.

Overall: The satisfaction with Emergency Medical Team (EMT) personnel, RN, RT and MD team members were 78%, 89%, 97% and 83% respectively. Overall satisfaction level was high in 87% of the cases. 

CONCLUSIONS: Customer survey methodology was used to assess satisfaction with a dedicated pediatric transport team’s performances. This approach provides a valuable means of gathering information that will be applied to improving the transport service and enhancing patient care.

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144 Poster Board 28
House Officer
Hospital Admissions for Children with Autistic Spectrum Disorder in a Tertiary Care Setting: Diagnostic Etiology and Length of Stay
John W. Harrington, Ana Garnecho, Pediatrics, New York Medical College, Valhalla, NY.

BACKGROUND: Autistic Spectrum Disorder (ASD) affects 1 in 166 children and classic autism affects 1/1000. National databases for hospitalization rates for autism appear to reflect the latter group. No studies have concentrated on their medical admissions and length of stay (LOS).

OBJECTIVE: To delineate what medical diagnoses children with ASD are admitted with at a tertiary care center Children’s Hospital. To calculate average LOS for children with a medical diagnosis and a concurrent ASD and compare this with the hospital average.

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145 Poster Board 29
House Officer
Prevalence of Parent Reported ADHD in 6-12 Year Old Inner City, Primary Care Patients
Daniela I. Sima, Margarita Fermin, Candace Erickson, Pediatrics, St Barnabas Hospital, Bronx, NY; Pediatrics, Columbia University College of Physicians and Surgeons, NY, NY.

BACKGROUND: Studies of ADHD using DSM-IV diagnostic criteria show prevalences of 3-6%. Studies using only parent reported ADHD symptoms without the DSM criteria show higher prevalences of 7.5-8.1%. A survey of pediatricians at 3 Bronx, inner city, primary pediatric clinics estimated a 15% prevalence ADHD. A parent survey done at an affiliated dental clinic found a 25% prevalence. These higher estimates may be due to the population’s low socioeconomic status, urban crowding and high rate of immigrants.

OBJECTIVE: To obtain the prevalence of parent reported ADHD symptoms in 6-12 year old children from a largely Hispanic, inner city population who are seen by primary care pediatricians.

DESIGN/METHODS: A convenience sample of parents of 6-12 year olds presenting at three primary pediatric clinics in Bronx in July-August 2005, were approached by bilingual research assistants to complete English or Spanish versions of a demographic form and the Vanderbilt Parent ADHD Form (VPF). The VPF assesses the symptoms that are DSM-IV diagnostic criteria for ADHD, Oppositional Defiant Disorder (ODD), Conduct Disorder (CD) and screening items for Anxiety/Depression (Anx/Dep). It also queries re impairment in various domains. Statistical analyses were done using SPSS version 11.

RESULTS: 140 of 200 approached subjects (70%) completed the VPF. 73% were Hispanic. Mean age of child was 9.5 yrs and 51% were female. 36% were on medication for behavior problems.

The prevalence of ADHD SYMPTOMS was 20.9%, with 5.2% inattentive type (INATT), 7.5% inattentive + hyperactive/impulsive type (HI) and 8.2% combined type (COMB). When impairment criteria were included, the prevalence of ADHD DIAGNOSIS was 14.9%, with 4.5% INATT, 3.7% HI and 6.7% COMB. %male for the subtypes were: INATT = 50%, HI = 80%, and COMB: 60%. Morbidities of COMB included 82% with ODD, 35% with CD and 35% with Anx/Dep. The mean age of children with INATT, HI, and COMB were not significantly different, likely due to the small sized age range of the sample.

CONCLUSIONS: The prevalence of all ADHD subtypes and ODD in our inner city sample is higher than in the general population. ADHD symptom rates are similar to those of a similar population in the dental clinic survey. This raises concern regarding the pediatric and behavioral resources needed to serve this population effectively.

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146 Poster Board 30
House Officer
Monocanalicular Silastic Tube Intubation for the Initial Correction of Nasolacrimal Duct Obstruction: A Novel Approach
Amy Yua, J Mark Engel, Barbara M. Ostfeld, Pediatrics, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ.

BACKGROUND: The use of silastic tubing in nasolacrimal duct obstruction is associated with a very high success rate (Lemo and Van Gernert, Ophthalmic Surgery). However, it is rarely used in the initial procedure due to its relatively high complication rate compared to a simple probing and the fact that a second general anesthetic is usually needed to remove the silastic tube. More recently, a technique has been described using a different type of silastic tubing, the Rittel Monoka, which doesn’t need a second general anesthetic for removal. The use of the Rittel Monoka tube for the initial probing has not been reported in the pediatric or ophthalmologic literature.

OBJECTIVE: To assess success and complication rates of the Rittel Monoka as the initial procedure for treatment of children 12 months and older for nasolacrimal duct obstructions.

DESIGN/METHODS: We conducted a retrospective chart review (2002-2005) of all children 12 months and older on which we used the Rittel Monoka as the initial procedure for nasolacrimal duct obstructions. Success was defined as good clearance of fluorescein dye or the absence of tearing. Failure was defined as persistent tearing or no clearance of fluorescein dye leading to the performance of a subsequent surgery. Complications were defined as corneal abrasion, punctal stretching, retained tube after removal, sinusitis, granuloma formation, epistaxis, all of which are observed in the standard bicanalicular silastic tubing.

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Old Greenwich, CT – March 17-19
45
RESULTS: We identified 182 children between 12 and 24 months (17.1±3.7 months) and 22 children older than 24 months (30.1±4.2 months). The success rate for ages 12 months to 24 months was 97%; for those over 24 months, it was 77.3%. This compares favorably to the literature, with typical success rates of 69% for the first group and 33% over age 24 months (Kibbey and Welch, Ophthalmology 1987). The only complication was corneal abrasion in 2% of the younger group which healed in all cases in 24 hours without further sequelae. No complications were noted in the older group.

CONCLUSIONS: The use of the Ritleng Monoka procedure for the initial probing compares favorably to previous studies, based on the typical success rates reported in the literature for probing alone. The complication rate for the Ritleng Monoka procedure was low and transient in the younger group and absent in the older one.

**Poster Board 31**

Precepting in a Pediatric Resident Continuity Clinic
Laura Dattner, Children’s Hospital at Downstate, SUNY Downstate College of Medicine, Brooklyn, NY.

BACKGROUND: Precepting encounters with faculty supervisors, and the feedback provided, are integral to the educational experience of continuity clinic.

OBJECTIVE: To determine faculty and residents’ perceptions of feedback given in a continuity clinic.

DESIGN/METHODS: We conducted a cross-sectional study in one pediatric resident continuity clinic. Using anonymous surveys, we asked faculty and residents about feedback given/received in clinic. Faculty preceptors were asked how frequently they gave residents feedback overall, and what specific topics were usually included. Residents were asked how frequently they received feedback overall, what specific topics were usually included, and how satisfied they were with it (a 5 point scale from 1=“very satisfied” to 4=“very dissatisfied”). Specific topics included history taking, the physical exam, medical knowledge, decision-making, counseling, and sensitivity/respect for patients/families. We used univariate analyses where appropriate and logistic regression analyses to identify variables associated with overall satisfaction.

RESULTS: Participants included 12 of 12 preceptors and 44 of 46 pediatric residents (96%) in one continuity clinic. Faculty and resident reports on the overall frequency of feedback were similar. However, for each specific precepting topic, residents reported receiving feedback less often than faculty reported giving it (see Table). According to residents and faculty, topics least likely to be included were exam skills and sensitivity/respect. Fifty seven percent of residents felt “very satisfied” with the feedback they received about medical knowledge were more likely than others to be “very satisfied” (80% vs. 20%, p=0.001). Multiple logistic regression analyses confirmed that no other specific precepting topics correlated with resident satisfaction.

CONCLUSIONS: Discussions of physical exam skills and sensitivity/respect were least often included in feedback. Residents who usually received feedback were more satisfied with medical knowledge feedback. This highlights the need to focus efforts to improve precepting.

**Poster Board 32**

Body Size and Neighborhood Characteristics: Does Food Store Availability Make a Difference?
Maida G. Galvez, Jodi Siskind, Cherita Raines, Jessica Kobil, Kim Morland, Julie A. Britton, Barbara Brenner, James Godbold, Department of Community and Preventive Medicine, Department of Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: Prior studies have shown an association between fast food restaurants and body size. Less is known about the influence of inner city neighborhood food stores on a child’s body size.

OBJECTIVE: We hypothesized that in the inner city, minority community of East Harlem, New York an increased number of food stores with a predominance of high fat, high sugar foods such as convenience stores, is associated with an increase in a child’s body size as measured by waist/hip ratio. We hypothesized that this relationship is not true for supermarkets, grocery stores or specialty stores.

DESIGN/METHODS: A cross sectional study utilizing a comprehensive walking survey of East Harlem, New York was used. Timed pregnant Sprague-Dawley rats underwent transient in utero knockout of CFTR results in a disruption of organogenesis and lethal intestinal obstruction, suggesting that CFTR plays a role in the development of the intestinal epithelium. Maturation of intestinal epithelium in fetal rats can be measured by the presence of CFTR. We hypothesized that decreased intestinal epithelial development in Sprague-Dawley rats with CFTR deficiency may be used as a model to investigate the development of congenital intestinal obstruction in human infants.

CONCLUSIONS: The use of the Ritleng Monoka procedure for the initial probing compares favorably to previous studies, based on the typical success rates reported in the literature for probing alone. The complication rate for the Ritleng Monoka procedure was low and transient in the younger group and absent in the older one.

**Developmental Biology Platform Session**

Sunday, March 19, 2006
9:45am–12:00pm

**149 9:45am**

Fellow in Training

Gap Junctions in Mouse and Zebrafish Left-Right Development
Phoebe Sun, Roseanne Wiscombe, Martina Bruckner, Pediatrics/Critical Care, Yale University School of Medicine, New Haven, CT; Genetics, Yale University School of Medicine in New Haven, CT.

BACKGROUND: Left-right asymmetry during mouse and zebrafish embryogenesis is initiated by an asymmetric calcium signal at the left border of the node. The asymmetry is maintained by a left-right barrier. Perturbation of gap junctional communication (GJC) in chick or Xenopus embryos disrupts expression of normally unilaterally expressed genes and altered organ situs.

Mutations in connexin 43 have been reported in human heterotaxia.

OBJECTIVE: To investigate the role of GJC in mouse and Zebrafish Kupffer’s vesicle.

DESIGN/METHODS: Immunocytochemistry studies were performed in mouse embryos harvested at four time points during mid gastrulation and zebrafish embryos harvested at four time points during mid gastrulation. We also performed time course studies in which we harvested zebrafish at four time points during mid gastrulation. We used real time PCR to investigate gene expression of GJC and GJIs at the node functions as the midline barrier with respect to asymmetric perinodal calcium signals.

**150 10:00am**

Multiple Signal Transduction Pathways Interact Genetically with a Noonan Syndrome-Related PTPN11 Gain-of-Function Mutation
In-Kyung Kim, Kimihiko Oishi, Huiwen Ying, Fittip Topbas, Michael Kaplan, Marek Mlodzik, Leslie Pick, Bruce D. Gelb, Pediatrics, Human Genetics, and Molecular, Cell and Developmental Biology, Mount Sinai School of Medicine, New York, NY; Entomology, University of Maryland, College Park, MD.

BACKGROUND: Gain-of-function (GOF) mutations in PTEN11, encoding the protein tyrosine phosphatase SHP-2, cause Noonan syndrome (NS), a developmental disorder with cardiac defects, short stature and dysregulated hematopoiesis. We previously generated a NS transgenic fly model with inducible expression of the commonest mutation, N308D, in CORKSCREW (CSW), the Drosophila SHP-2 homologue. Ubiquitously transgene expression caused ectopic wing veins due to increased EGFR/Ras/MEK signaling. Epistatic studies showed genetic interactions with the Notch, BMP/DPP, and JAK/STAT pathways.

OBJECTIVE: To identify novel genes involved in NS disease pathogenesis using the Drosophila model.

DESIGN/METHODS: A stable fly stock expressing the N308D transgene ubiquitously (UAS-N308D) was crossed to flies with loss-of-function (LOF) alleles of genes involved in cardiac development, growth or hematopoiesis. Ectopic wing vein status was scored and compared to the baseline N308D phenotype using χ2 testing. Significance threshold was p < 0.05.

RESULTS: LOF alleles of Wnt/J-catenin signaling genes, including the ligand wingless, the receptor frizzled, and positive regulators disheveled and armadillo significantly suppressed N308D’s ectopic veins. Haploinsufficiency of insulin-like receptor also suppressed the phenotype. Rap1 is a Ras-like GTPase with antagonistic effects on Ras signaling. Consistent with that, Rap1 LOF enhanced the phenotype.

CONCLUSIONS: The GOF mutation, N308D, showed novel genetic interactions during development with positive regulators of the Wnt/J-catenin signaling pathway, a pathway relevant for cardiac valvulogenesis. The novel interaction with the insulin-like receptor pathway may prove relevant for the altered somatic growth in NS. The interaction with Rap1 was relevant for CAMP signaling in NS pathogenesis. Taken together with our previous epistatic analyses, there appears to be crosstalk between EGFR and several other signal transduction pathways that is relevant to the pathogenesis of NS. Future work will be directed to confirming these observations in a mouse model of disease.

**151 10:15am**

Fellow in Training

Transit In Utero Knockout of CFTR Results in a Disruption of Organogenesis and Intestinal Epithelial Differentiation in Sprague-Dawley Rats
Leslie Pick, Bruce D. Gelb, Pediatrics, Human Genetics, and Molecular, Cell and Developmental Biology, Mount Sinai School of Medicine, New York, NY; Entomology, University of Maryland, College Park, MD.

BACKGROUND: Gain-of-function (GOF) mutations in PTPTN11, encoding the protein tyrosine phosphatase SHP-2, cause Noonan syndrome (NS), a developmental disorder with cardiac defects, short stature and dysregulated hematopoiesis. Ectopic wing vein status was scored and compared to the baseline N308D phenotype using χ2 testing. Significance threshold was p < 0.05.

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CONCLUSIONS: The GOF mutation, N308D, showed novel genetic interactions during development with positive regulators of the Wnt/J-catenin signaling pathway, a pathway relevant for cardiac valvulogenesis. The novel interaction with the insulin-like receptor pathway may prove relevant for the altered somatic growth in NS. The interaction with Rap1 was relevant for CAMP signaling in NS pathogenesis. Taken together with our previous epistatic analyses, there appears to be crosstalk between EGFR and several other signal transduction pathways that is relevant to the pathogenesis of NS. Future work will be directed to confirming these observations in a mouse model of disease.
Valproic Acid, A Structural Homologue of Diet-Derived Butyrate, Regulates Tyrosine Hydroxylase Gene Expression (TH): A Possible Gut-Brain Link to Behavior

Travis Patil, Bistra Nankova, Edmund F. LaGamma, Pediatrics, Mariana Fairer’s Children’s Hospital-New York Medical College, Valhalla, NY.

BACKGROUND: Valproic acid (VPA) is a widely used anti-seizure and mood stabilizing drug. The mechanism of action of this well known teratogen as a histone deacetylase inhibitor (HDACi) is complex. The primary HDACi effects on gene expression are to remove acetyl groups from histones thus changing chromatin configuration. VPA has shown effects on the TH promoter directing the expression of TH, the rate limiting enzyme in catecholamine synthesis. However, the mechanism of VPA action in neuronal TH expression is unknown. We sought to determine whether butyrate and VPA mediate gene expression via similar molecular mechanisms.

OBJECTIVE: To determine if overexpression of RHAMM in macrophages enhances macrophage accumulation after bleomycin-induced injury.

METHODS: A full-length mouse RHAMM cDNA was cloned into pcDNA4/HisMax for strain-induced fetal type II cell differentiation. Four TG founders were generated. TG bone marrow-derived macrophages (BMDM) showed a 2.5-fold increase in cell numbers, increased chemotaxis and proliferation compared to wild-type BMDM. To define the role of the Rho family GTPases in actin cytoskeleton remodeling and gene expression by integrating mechanical cues with transcription factor activity, we used a transgenic construct using the 15kb HO-1 promoter driven expression of a luciferase reporter gene. Results are identical to butyrate effects (DeCastro, Molec Br Res, 2005).

RESULTS: Cell lines stably expressing full length RHAMM cDNA had a 2.5-fold increase in chemotaxis and proliferation were measured. A transgenic construct using the macrophage-specific scavenger receptor A promoter to drive a myc-tagged mouse RHAMM cDNA was used to generate transgenic (TG) lines. Bone marrow-derived macrophages (BMDM) were examined for their chemotaxis and proliferation. The effects on inflammatory responses in intraperitoneal (IP) thioglycollate and intratracheal (IT) bleomycin were examined in TG mice. Conclusions: Cell lines stably expressing full length RHAMM cDNA had a 2.5-fold increase in chemotaxis to HA and proliferation as compared to the parental cell line. A significant increase in chemotaxis to HA and proliferation was observed in the parental cell line at day 1, but significantly higher macrophage accumulation by day 3 as compared to controls. Intratracheal bleomycin in TG mice resulted in increased macrophage accumulation, increased respiratory distress and more destruction of lung architecture as compared to WT mice. CONCLUSIONS: We conclude that RHAMM promotes macrophage chemotaxis and proliferation, and contributes to the accumulation of macrophages in areas of inflammation. We speculate that strategies to target RHAMM may be useful therapeutic tools to limit lung inflammation after injury.

Funded by HL42672 and HL073896 to RCS.
3) Evaluate the usefulness of this program to trainees.

**DESIGN/METHODS:** A 24-item close-ended multiple choice pretest was administered to a successive sample of 48 residents to assess knowledge in 3 categories of OTC products: 1) Respiratory; 2) GI/Nutrition; and 3) Dermatology. Included were questions on items such as Difflam®, Children’s Tennis® (both in an outpatient setting, small groups of residents went with a General Pediatrics Attending to the pharmacy section of a major retailer where they examined products such as antipyretics, decongestants, anti-diarrheals and lice treatments. Medications were discussed with attention to ingredients, efficacy, adverse effects, marketing and pricing. Relevant clinical topics reviewed included management of URI, constipation and acne. Residents completed a year-end program evaluation.

**RESULTS:** The pretest was completed by 48 PL-2s and PL-3s. Of these, 55% reported that they personally rarely or never use OTC medicines for URIs. Total scores on the pretest ranged from 21%-58% correct with a mean of 42% (±9%). For specific domains of Respiratory, GI/Nutrition and Dermatology, the mean scores were 36%, 50% and 54% respectively. 35% of residents knew the concentration of Motrin Drops®, 52% knew that Alka Seltzer® and Pepto-Bismol® contain salicylates and 9% knew the active ingredients in TYLENOL®. Residents rated this curricular module at a mean score of 4.7 on a 5 point scale of educational usefulness.

**CONCLUSIONS:** Considerable gaps exist in pediatric residents’ knowledge of OTC preparations.

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**157**

**10:00am**

**Have Pediatric Resident Call Schedules Changed in Response to ACGME Work Hour Limits?**

**Jodi K. Wenger, Stuart N. Koren. Pediatrics, Darmouth-Hitchcock Medical Center, Lebanon, NH.**

**BACKGROUND:** The Accreditation Council for Graduate Medical Education (ACGME) mandated restrictions on resident work hours in 2003 because long work hours were linked with serious adverse events for patients and residents.

**OBJECTIVE:** To quantify whether pediatric resident call schedules have changed in response to ACGME work hour regulations.

**DESIGN/METHODS:** The number of nights “on call” and days of “night float” were measured in pediatric residency training programs with a minimum of 50 residents during one academic year before and one year after ACGME work hour regulations went into effect. On each date of the resident call schedule, “on call” was defined as any name that appeared; “night float” was defined as the number of times the same name appeared at least 4 days in a row. A secondary dataset analysis of a commercial web-based call management system database, with 24% (60%) having adequate data posted for our two study years for call tattles and 13 (33%) having adequate data posted for our two study years for night float. The total number of residents per program did not change. The mean number of nights “on call” for all programs increased by 13, representing an overall significant 7.6% rise (p<0.007), highest among third year residents (39%; p=0.04). The mean number of days of “night float” for all programs increased by 16, representing an overall significant 25% rise (p=0.007), highest among third year residents (39%; p=0.04).

**CONCLUSIONS:** This study suggests that ACGME work hour regulations have increased the number of nighttime calls and patients being managed by housestaff. Further exposure to interventions that may reduce the on-call interactive program may address these gaps and is valuable in preparing residents to counsel families.

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**158**

**10:15am**

**Fellow in Training**

**Differences in Factors Attending and Residents Use to Evaluate Third Year Medical Students on Their Pediatric Clerkship Rotation**

**Steve Paik, Brianna Moore, Mark Graham. Division of Pediatrics, Columbia University, New York, NY; Center for Education Research and Evaluation, Columbia University, New York, NY.**

**BACKGROUND:** Variations in how attendings physicians and housestaff physicians evaluate medical students during the clinical clerkships are informally well-known yet formally under-researched.

**OBJECTIVE:** To systematically explore the differences in how attendings and housestaff use a clinical evaluation form (CEF) to rate the clinical performance of medical students in their third year of training in any teaching hospital.

**DESIGN/METHODS:** We analyzed 187 CEFs (attending n=90; housestaff n=97) completed for 52 third year medical students on their pediatric clerkship during the 2004-2005 academic year. The assessment was performed at the end of the clerkship rotation at a major teaching hospital. The CEFs were analyzed using factor analysis and linear regression.

**RESULTS:** There were significant differences in the scoring of items on the CEF by the attendings and housestaff. Attendings had a tendency towards considering the items of professionalism and team relationships as factors in their evaluation; housestaff considered patient care related skills of history taking and physical exam. Regression analysis of the three global subdomains also showed significant group differences. For the attendings, the knowledge items (p<0.001) and the professionalism items (p=0.05) were significant variables for predicting overall summative scores. In contrast, for the housestaff, the items for global clinical skills were the most significant variables in predicting overall summative score (p=0.001). CONCLUSIONS: Attendings used the items of knowledge and professionalism as factors in evaluating the students whereas the housestaff used clinical skills. These differences are possibly due to the different types of daily interactions that occur between the medical students and the attendings and housestaff. This is of interest because both groups use the same CEF and they may be using different CEFs in the practice, thus they may have the validity of the CEF as an accurate measure of performance. Future research should focus on systematically developing separate forms for different evaluatees.

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**159**

**10:45am**

**House Officer**

**The Incidence of Iron Deficiency Anemia in Female Residents**

**Asmi F. Alam, Clarice Staves, Phillips Sprinz. Pediatrics, Baystate Medical Center, Springfield, MA.**

**BACKGROUND:** “ Iron lacks the glitter of gold, or the sparkle of silver, but it outshines both in biological importance.” Iron deficiency is the most common cause of anemia not only in the U.S., but worldwide. The etiology can be related to blood loss and diet. Residence, in particular, has a disruptive effect on lifestyle routine and eating habits that may affect general nutritional status and anemia risk. Female residents have the added variables of parity and menstruation.

**OBJECTIVE:** To determine if there is an increase in the incidence of iron deficiency anemia in female residents throughout their training.

**DESIGN/METHODS:** Baseline CBC, ferritin, TIBC and iron levels were obtained from each subject upon entering residency, and then at yearly intervals. A questionnaire to a Colorectal copied and call schedule distribution was paired with each blood draw. A total of 26 female residents were enrolled, 11 were followed over the course of 3 years, 5 were followed for 2 years and 10 were followed for 1 year.

**RESULTS:** Overall, there was no significant increase in the incidence of iron deficiency anemia in female residents throughout their training. Of the 11 subjects followed over 3 years, 1 subject was noted to have a transient Fe deficiency anemia which resolved spontaneously during residency, 1 subject was noted to have both sickle cell trait and thalassemia trait with baseline anemia and was therefore excluded from the study, while the remaining 9 failed to develop anemia. CBC and iron studies for 5 subjects followed over 2 years were essentially unchanged. The results of the 10 subjects followed over one year are pending. There were 13 Caucasian subjects, 1 African, 1 Haitian, 4 South Asian, 2 East Asian, 1 Persian, 3 Hispanic, and 1 Greek. The results from the questionnaire indicated nulliparity for all 26 subjects and decreased consumption of iron rich foods during call months.

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**160**

**11:00am**

**Fellow in Training**

**Perceptions of Expected Proficiency in Neonatal Resuscitation: A Resident Survey**

**Dabilir Singh, Karen Hendricks-Munoz, Pradeep Mally. Neonatology, NYU Medical Center, New York, NY.**

**BACKGROUND:** Guidelines of the Neonatal Resuscitation Program (NRP) developed by the American Academy of Pediatrics recommend that individuals specifically trained in neonatal resuscitation be available at every delivery. In many settings, the general pediatrician is responsible for managing delivery room resuscitation and stabilizing infants in distress. Gaining knowledge and experience in neonatal resuscitation and acquiring proficiency are important expectations for the pediatric resident in training. As such, it is important to identify in which year of training a pediatric resident expects to become proficient in acquiring these skills and how likely they are able to achieve these goals during their training.

**OBJECTIVE:** To determine the expectation for acquiring resuscitation proficiency for all years of pediatric residents.

**DESIGN/METHODS:** A cross-sectional survey from 5 US academic residency programs in New York City, of all three years of pediatric residency training. June - Aug 2005. 118 pediatric residents were surveyed of 180.

**RESULTS:** 100% of residents, years R1-R3, indicated that they believed it was important for them to gain proficiency in neonatal resuscitation. 65% of R1’s, 68% of R2’s and 80% of R3 believed that they could obtain proficiency with the current curriculum of training. The percent results of responses when they expected to be proficient in each procedure compared to their perception of proficiency for various procedures are listed.

**CONCLUSIONS:** Pediatric residents from the 5 academic programs expect to become proficient in neonatal resuscitation before their third year of training. In some cases, first year residents appear to attain this proficiency in their first year but are not achieving this expectation. This data is used to assist in structuring resuscitation education and proficiency in the NICU.

**Expected/Attained Proficiency For R3 through R1 (%)**

<table>
<thead>
<tr>
<th>Question</th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drying &amp; Bag Mask</td>
<td>95/75</td>
<td>90/96</td>
<td>2/98</td>
</tr>
<tr>
<td>Intubation</td>
<td>35/25</td>
<td>50/40</td>
<td>15/65</td>
</tr>
<tr>
<td>Medications</td>
<td>38/15</td>
<td>54/10</td>
<td>10/79</td>
</tr>
<tr>
<td>Fluids</td>
<td>66/15</td>
<td>35/75</td>
<td>4/99</td>
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<tr>
<td>Line Placement</td>
<td>50/10</td>
<td>38/40</td>
<td>15/75</td>
</tr>
<tr>
<td>Leader</td>
<td>15/15</td>
<td>70/40</td>
<td>15/85</td>
</tr>
</tbody>
</table>

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**161**

**11:15am**

**Fellow in Training**

**Empirical Analysis of the Third Year Pediatric Clerkship Evaluation Forms**

**Steve Paik, Brianna Moore, Tim Zhang, Mark Graham, Division of Pediatrics, Columbia University, New York, NY; Center for Education Research and Evaluation, Columbia University, New York, NY.**

**BACKGROUND:** Most medical institutions use the clinical evaluation form (CEF) to assess the clinical performance of third year medical students on clerkship rotations. CEFS are often shared among a group of faculty, rarely studied for reliability and validity.

**OBJECTIVE:** To empirically analyze the CEF used for evaluating clinical performance of medical students in their third year on their pediatric rotation at a major teaching hospital.

**DESIGN/METHODS:** We analyzed 187 CEFs completed for 52 third year medical students on
their pediatric clerkship during the 2004-2005 academic year. The CEF consists of three sections: eleven performance assessment items (9-point Likert scale) related to three subdomains of knowledge, clinical skills and professionalism; three global measures for these subdomains (9-point Likert scale); and a summative evaluation (6-point Likert scale). The final grade (Honors, Pass, Fail) was included in the analysis. We compared items for each of the three subdomains, along with the global and summative scores, for internal consistency and validity. In addition, the National Board of Medical Examiners (NBME) pediatric shelf exam scores were used for further validation of the knowledge items.

RESULTS: There was correlation between the performance and global sections in all the respective validating examinations along with the global and summative scores, for internal consistency and validity. In addition, the results of the shelf exam were included in the analysis. We compared items for each of the three subdomains, along with the global and summative scores, for internal consistency and validity. In addition, the National Board of Medical Examiners (NBME) pediatric shelf exam scores were used for further validation of the knowledge items.

CONCLUSIONS: We found a low to moderate correlation between the performance and the summative evaluation sections. Nevertheless, the correlations may be artificially elevated by the rater’s tendency to use the highest third of scale on the CEF. Because there was little correlation between the performance and global sections, we conclude that there is little evidence that the CEF is measuring knowledge differently than the NBME. There is a need to assess all CEF items and the constructs against standardized measures as a tool for validation.

162 11:30am
Educational Goals of Incoming Pediatric Residents
Laura Dattner, Stephen J. Wadowski, Pediatrics, SUNY Downstate College of Medicine, Brooklyn, NY.

BACKGROUND: The RRC’s educational goal for residency training in pediatrics is the preparation of “competent general pediatricians.” The ACGME has defined six core competencies. Little is known, however, about the educational goals of incoming pediatric residents and how they compare to the core competencies.

OBJECTIVE: To determine the expectations and goals incoming pediatric residents.

METHODS: We conducted a cross-sectional study in one large urban pediatric residency program. In 2004 and 2005, we surveyed incoming pediatric residents about their general expectations and goals for residency. The survey included three questions which were open-ended. For each question, “Overall, what are your expectations from/during residency training?”

RESULTS: Forty-three surveys were returned (65% response rate). Of the respondents, 21 residents (49%) were International Medical Graduates (IMGs), 12 (28%) were US Medical Graduates (USMGs), and 10 (23%) were US citizens who were International Medical Graduates (USIMGs). The most frequently mentioned expectations and goals related to patient care (see Table). While patient care and medical knowledge issues were frequently included, systems-based practice (SBP) and professionalism were rarely mentioned. USMGs and USIMGs were more likely than IMGs to include practice-based learning and improvement (PBL/I) as a goal (67% and 60% vs 24%).

CONCLUSIONS: Educational goals of incoming pediatric residents in our study usually included only some of those specified by the ACGME. Although patient care and medical knowledge were often included among the educational goals of incoming residents, the other competencies, especially professionalism and SBP, were infrequently mentioned. These findings suggest that an orientation to all of the core competencies at the onset of residency is indicated, with an emphasis on the importance of interpersonal and communication skills, professionalism and system-based practice.

Comparisons of Goals of Incoming Residents

<table>
<thead>
<tr>
<th>Competency</th>
<th>IMGs (N=21)</th>
<th>USMGs (N=12)</th>
<th>USIMGs (N=10)</th>
<th>All Residents (N=43)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Care</td>
<td>95%</td>
<td>100%</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>Medical Knowledge</td>
<td>57%</td>
<td>83%</td>
<td>80%</td>
<td>70%</td>
</tr>
<tr>
<td>Interpersonal and Communication Skills</td>
<td>43%</td>
<td>33%</td>
<td>20%</td>
<td>35%</td>
</tr>
<tr>
<td>Practice-Based</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning and Improvement</td>
<td>24%</td>
<td>67%</td>
<td>60%</td>
<td>44%</td>
</tr>
<tr>
<td>Systems-Based Practice</td>
<td>14%</td>
<td>17%</td>
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163 9:45am
Association Between Bell’s Palsy and Herpes Simplex Virus Infection in Children
Hsin Khine, Jeffrey R. Ayner, Marguerie Mavers, Amy Fox, Betsy Herold, David L. Goldman, Pediatric Emergency Medicine, Children’s Hospital at Montefiore, Bronx, NY; Pediatric Infectious Diseases, Children’s Hospital at Montefiore, Bronx, NY; Department of Pediatrics, Albert Einstein College of Medicine, Bronx, NY; Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: Bell’s palsy and Herpes Simplex virus type 1 (HSV-1) infection has been implicated as a cause of idiopathic peripheral 7th nerve palsy (Bells palsy) in adults but this association has not been studied in children.

OBJECTIVE: To determine if an association exists between HSV-1 infection and Bells palsy (BP) in children.

METHODS: We performed a prospective, case control study of children, less than 21 years old, with BP who presented to an urban pediatric emergency department over 2 years. Control patients were matched for age, sex, and insurance status. Patients with BP and controls had blood tested for both Lyme disease and the presence of specific antibodies to HSV-1 by ELISA. A swab containing saliva and a swab of tears from the affected side of the facial palsy (any side in controls) were tested for the presence of HSV-1 by PCR. Patients with serologic evidence of Lyme disease were later excluded from the study.

RESULTS: To date, 51 BP patients and 48 controls are enrolled, of which data from 44 BP patients and 28 controls are available for analysis. Median age for BP patients was 9.5 years (range 1-20 yrs), 48% were male. There was no seasonal variation in presentation of BP. Mean duration of symptoms at the time of presentation was 60 hours. 30/38 (79%, 95%CI: 65, 90) of BP patients had a positive HSV-1 ELISA (ELISA cutoff was 15/27 (50%, 95%CI: 37, 73) of control patients (p=0.04), 10/44 (23%) of HSV-1 ELISA positive BP patients had a positive HSV-1 PCR compared to 2/28 (7%, 95%CI: 1, 21) of controls (p<0.07). There were no differences in age, sex, duration of symptoms, or history of recent HSV infection between BP children with a positive HSV-1 PCR and those with a negative HSV-1 PCR. Cold sores were present in 8 of the 10 BP children with a positive PCR and none (0%) of the 34 BP children with negative PCR.

CONCLUSIONS: The higher rate of positive HSV-1 PCR among children with BP as compared with controls suggests a role of HSV-1 infection in the pathogenesis of BP in children. Given the high prevalence of antibodies to HSV-1 in this cohort, we hypothesize that BP is likely to be associated with HSV reactivation.

164 10:00am
Fellow in Training
Human Bovine Infection in Young Children
Deniz Kesebir, Marietta Vazquez, Eugene D. Shanior, Carla Weibel, David Ferguson, Marlene I. Landry, Jeffrey S. Kahn, Pediatrics, Yale University School of Medicine, New Haven, CT; Epidemiology and Public Health, Yale University School of Medicine, New Haven, CT.

BACKGROUND: Respiratory tract infections are a leading cause of morbidity and mortality in children worldwide. The etiology of a substantial proportion of these infections remains unknown suggesting the possibility they may be caused by previously unknown pathogens. Recently, a novel human parvovirus, designated the human bocavirus (HBoV), was identified in Swedish children with respiratory tract disease. The clinical epidemiology of HBoV remains to be defined.

OBJECTIVE: To determine whether HBoV was circulating in children in the New Haven, CT area and the clinical features associated with HBoV infection.

METHODS: Two groups of children < 5 years old were screened for the presence of HBoV: children with symptoms of respiratory tract disease and asymptomatic controls. HBoV detection was performed by PCR for HBoV-NP-1 gene. Each HBoV positive amplification product was confirmed with DNA sequencing and phylogenetic analysis. The frequency of HBoV infection in the 2 groups was compared with the Fishers exact test. Clinical features associated with HBoV infection were determined by medical record review.

RESULTS: Overall, specimens from 367 children collected from 2001-2004 were screened for HBoV. Nineteen of 211 (9.0%) of symptomatic children and 0 of 96 (0.0%) controls tested positive for HBoV by PCR (p=0.001). A majority of HBoV isolates (17 of 19, 89.5%) were identified in specimens collected from October to December. Sequence analysis and comparison of HBoV isolates with HBoV sequence from Sweden revealed rare (<1%) polymorphisms. Clinical features associated with HBoV infection included manifestations of both upper and lower respiratory tract infection.

CONCLUSIONS: HBoV is circulating in New Haven, CT, and is associated with both upper and lower respiratory tract disease. Sequence and phylogenetic analysis of HBoV isolates suggests a single viral genotype. Further studies are needed to define the epidemiology of this newly discovered pathogen.

165 10:15am
Fellow in Training
Administration of Inactivated Trivalent Influenza Vaccine (TIV) to Parents of High-Risk Infants in the Neonatal Intensive Care Unit (NICU): Effect on Vaccination Rates
Sheital I. Shah, Martha Caprio, Pradeen Mally, Karen Hendricks-Munoz, NICU, NYU School of Medicine, New York, NY.

BACKGROUND: Infants less than 23 months of age with influenza — particularly those discharged from the NICU — demonstrate significant morbidity. TIV is indicated for parents and household contacts of these infants. However the influenza vaccination rate in this population is estimated at 30%; with access and convenience of immunization cited as major obstacles toward higher compliance. To eliminate these barriers, we implemented NICU-based administration of TIV.

OBJECTIVE: To determine if administration of TIV in the NICU increases vaccination rates among parents of this high risk population.

METHODS: For a four-week period at the beginning of influenza season, all parents of admitted infants were informed of the risks and benefits of TIV by placing an information letter at their infant’s bedside. All staff were educated about the dangers of influenza and instructed to reinforce the need to obtain vaccination. Immunization was available 20 hrs/day.

RESULTS: Over the study period, 31 children (60% parents) were admitted to the NICU with gestation ages ranging from 24 to 41 weeks. Five parents received the vaccine from their obstetrician. Vaccination rate was 95% (57/59) of 28 infants. 27% of the parent population had never received TIV, despite having previous indications for immunization (smoking, asthma, or other illnesses). Rates reflecting this new recommendation.

166 10:30am
Fellow in Training
Influenza Vaccine Coverage Among Children Aged 6-23 Months: 2000–2005
Veronica R. Venza, Marielle Brinkin, Division of General Pediatrics, Columbia University Medical Center, New York, NY.

BACKGROUND: Influenza is a significant cause of morbidity for young children and infants. In 2002 ACP/AAP expanded influenza vaccine recommendations to encourage when feasible the immunization of healthy children aged 6-23 months. Little is known about changes in coverage rates reflecting this new recommendation.

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OBJECTIVE: To assess the influenza vaccine coverage rates among children aged 6-23 months within an inner city practice network before and after the change in recommendation for influenza immunization in this age group. DESIGN/METHODS: We conducted a retrospective review of influenza vaccine coverage among children aged 6-23 months for the 2000-2005 influenza seasons at a practice network in New York City serving a minority, Medicaid population. The study population included five annual cohorts of children aged 6-29 months as of 3/31 of each year with at least one visit to the network in the last 12 months. The source for immunization, demographic and visit data was the hospital immunization registry and the linked billing/registration system. For each cohort, we determined influenza vaccine coverage rates for any dose, two doses (two in same season or one dose in season and another in prior season) and one only. RESULTS: Five annual cohorts yielded a total n=7,063 (50% male) Coverage rates increased significantly throughout the five year period (see Table). The relationship between year and coverage was linear (R² = 0.9208). There was also an increase in the proportion of children who should have received two doses but received only one dose.

167 11:00am
Inflammatory Factors in Synovial Fluid from Patients with Acute and Chronic Lyme Arthritis
Paul T. Fawcett, Carlos D. Rose, Victoria L. Maduukike, Jennifer J. Sanderson, Anne-Marie C. Brescia, Phillip A. Stacek, Research Immunology, Alfred I. duPont Hospital for Children, Wilmington, DE; Thomas Jefferson Medical College, Philadelphia, PA.
BACKGROUND: Despite treatment with antibiotics, arthritis persists in 10 to 20 percent of children diagnosed with Lyme arthritis (LA).
OBJECTIVE: To determine if inflammatory factors differ between acute and chronic (LA) synovial fluids (SF) obtained from pediatric patients.
DESIGN/METHODS: SF from patients with either acute (resolution <6 months) or chronic LA (persistent >6 months) were screened for inflammatory factors by proton array (Ray Biotech, Inc.) and 23 LA SF’s were tested for ELISA of TNF-α, IL-2, IL-12, MMP-3, and TNF-α by quantitative ELISA (R&D Systems, Inc.). Serum or PCR testing gave no indication of persistent infection. RESULTS: SF from patients with acute LA had detectable levels of 22 of the inflammatory factors tested while SF from chronic LA patients had detectable levels of 33. One chronic Lyme patient had detectable MIG and IL-3, while a second had detectable levels of IL-2 and EOTAXIN.

Diagnosis Total Factor NameNumber
Category Detected of Factors
Acute LA 22 14.25
Factors Detected
EOTAXIN-2, ICAM-1, IL-1β, IL-6, IL-8, IL-7, IL-8, IL-10, IL-12p40, IL-12p70, IL-13, IL-16, IL-17, IL-20, MCP-1, MIP-1β, MIP-1α, RANTES, TNF-α, TNF-β, sTNFR-I, sTNFR-II, TIMP-2
EOTAXIN-2, ICAM-1, IL-1β, IL-6, IL-8, IL-7, IL-8, IL-10, IL-12p40, IL-12p70, IL-13, IL-16, IL-17, IL-20, MCP-1, MIP-1β, MIP-1α, RANTES, TNF-α, TNF-β, sTNFR-I, sTNFR-II, TIMP-2
EOTAXIN, GCSF, GM-CSF, INF-g, IL-309, IL-1a, IL-3, IL-15, PDGFB-BI, MIG

Quantitative assessment indicated differences in levels of IL-6, IL-8, IL-10 and TIMP-2 between chronic and acute LA patients. Levels of IL-6 and TIMP-2 appear higher in chronic LA, while IL-8 and IL-10 appear higher in acute LA. ELISA tests indicated TNF-α levels were significantly higher (p=0.0125) in SF from chronic LA patients (43.1 pg/ml ± 10.8 S.E.) than SF from acute LA patients (14.5 pg/ml ± 4.5 S.E.). However, our findings suggest these were 41L/210W/215Y (pathway 1) and 67N/70R/219Q (pathway 2) that confer high-level resistance to zidovudine (thymidine analogue mutations, TAMs), as well as 103N and 181C that confer resistance to zidovudine (thymidine analogue mutations, TAMs), as well as 103N and 181C that confer high-level resistance to nevirapine. The concentrations of inhibitor used in these studies preserved cell structure and improved clinical outcome in both in vitro and in vivo models. Actin is a vital cytoskeletal protein that is susceptible to oxidative damage. CONCLUSIONS: Findings indicate that protein array analysis of inflammatory factors may have utility in predicting outcomes in pediatric Lyme arthritis. In addition, our findings suggest that measurement of TNF-α may discriminate between these populations and that anti-TNF-α biologics may be effective in patients with chronic LA.

168 11:15am
The Contribution of Replication Capacity to Evolution of HIV Reverse Transcriptase Inhibitor Resistance
Elijah Paintsil, Asia Margolis, Jennifer A. Collins, Louis Alexander, Pediatrics, Yale University School of Medicine, New Haven, CT; Epidemiology & Public Health, Yale University School of Medicine, New Haven, CT.
BACKGROUND: All currently recommended anti-retroviral therapy protocols employ reverse transcriptase inhibitor resistance has not been elucidated despite its potential implications for therapeutic strategies.
OBJECTIVE: To study the contribution of replicative capacity of mutants to viral fitness and the evolution of drug resistance.
DESIGN/METHODS: In this study we utilized a competitive fitness assay to assess the relative fitness of thirteen drug-resistant HIV mutants in the presence and absence of inhibitor. Among these were 41L/210W/215Y (pathway 1) and 67N/70R/219Q (pathway 2) that confer high-level resistance to zidovudine (thymidine analogue mutations, TAMs), as well as 103N and 181C that confer high-level resistance to nevirapine. The concentrations of inhibitor used in these studies included the IC50, (10mg/ml of nevirapine), or a typical serum concentration observed for individuals receiving daily nevirapine (150mg/ml) or zidovudine (1.2 mg/ml) treatment.

RESULTS: Our experiments reveal that in the absence of zidovudine the pathway 2 TAMs 67N/70R and 67N/70R/219Q are fitter than their 70R progenitor species, and the acquisition of 41L by the pathway 1 TAM 215Y substantially increases its fitness. In the presence of zidovudine, 215Y is more fit than 70R and 67N/70R, and the pathway 1 TAMs 41L/215Y and 41L/210W/215Y are the most-fit, consistent with their prevalence in clinical samples. In competitions between 103N and 181C without nevirapine, 103N is the fitter species, which is reversed in the presence of 100mg/ml nevirapine. Moreover, the fitness advantage of 181C increased in the presence of 150mg/ml nevirapine.

CONCLUSIONS: From these studies we conclude that viral replicative capacity contributes substantially to the evolutionary pattern of TAMs and that, as for protease inhibitor resistance, mutations act in primary (increasing resistance) and secondary (increasing fitness) capacities. We also surmise that drug resistance and fitness are competing forces underlying the emergence of nevirapine resistant species 103N and 181C, consistent with the resistance pattern observed in mothers and their infants treated with this inhibitor.

170 9:45am–12:00pm
Fellow in Training
B-Type Natriuretic Peptide (BNP) System in an Ovine Model of Persistent Pulmonary Hypertension of the Newborn (PPHN)
Bobbi Mathew, James A. Russell, Robin H. Steinhorn, Sylvia F. Giugino, Lori C. Nielsen, Rita M. Ryan, Satyan Lakshminrusimha, Pediatrics, SUNY, Buffalo; Physiology & Biophysics, SUNY, Buffalo; Pediatrics, Northwestern University, Chicago.
BACKGROUND: BNP is an important stimulant of cGMP production in vascular smooth muscle. It stimulates membrane bound particulate guanylyl cyclase by binding to c-type natriuretic peptide receptor-A (NPR-A). Recently, BNP levels were reported as diagnostically markers in PPHN. BNP (Nesitade) is an FDA approved drug for treatment of heart failure in adults.
OBJECTIVE: We studied the changes in function (isolated vessel studies) and expression (RT-PCR) of NPR-A receptors in fifth generation pulmonary arteries (PA) and veins (PV) isolated from late gestation fetal lambs with PPHN induced by ductal ligation.
DESIGN/METHODS: Standard tissue bath techniques were used to study fifth generation PA and PV isolated from PPHN (n = 6) and age matched control lambs (n = 5). All vessels were sub-maximally preconstricted with norepinephrine and concentration-response curves for the relaxations to 100 to 3x10-5 M were obtained. RT-PCR analysis of NPR-A receptor and 18s mRNA were performed.
RESULTS: BNP relaxed PA and PV from both control and PPHN lambs. BNP was a more potent PA. PA isolated from PPHN lambs relaxed well to BNP but the responses were significantly lower than controls (fig). RT-PCR analysis of isolated PA and PV segments demonstrated that NPR-A mRNA content (corrected to 18s) from PPHN lambs was similar to ductal ligation. CONCLUSIONS: NPR-A receptor expression is unaltered in the ovine ductal ligation model of PPHN. Functional response to BNP is diminished but still present in PAs isolated from PPHN lambs. We speculate that BNP (either intravenous or inhaled), either alone or in combination with phosphodiesterase 5 inhibitors may offer a therapeutic alternative in babies with PPHN unresponsive to inhaled nitric oxide.

171 10:00am
The Effects of Superoxide Dismutase (SOD) on Actin Dynamics and Endothelial Cell Structure in Response to Hyperoxia
Robert M. Angert, Yuchi Li, Robin H. Steinhorn, Svetla Harkness, Jeffery A. Kazzaz, Jonathan M. Taylor, Pediatrics, CPR, Washington University Hospital, St. Louis, MO; Pediatrics, Northwestern University, Chicago, IL.
BACKGROUND: Damage by reactive oxygen species (ROS) has been implicated in the pathogenesis bronchopulmonary dysplasia (BPD). BPD is characterized by significant injury to both epithelial and endothelial cells. Recombinant human SOD prevents ROS-induced cell injury, preserves cell structure and improves clinical outcome in both in vitro and in vivo models. Actin is a vital cytoskeletal protein that is susceptible to oxidative damage.
OBJECTIVE: To test whether overexpression of SOD can prevent oxidative damage to endothelial cells and preserve actin structure and dynamics.
DESIGN/METHODS: Human umbilical vein endothelial cells (HUVEC) were exposed to adenosine deaminase-deficient human MnSOD or LacZ control cDNA. Transduced cells were grown on cover slips under 95% O2, 5% CO2 at 20°C for 4-5 days. Samples were analyzed with SOD and actin antibodies or by fluorescently conjugated dyes to simultaneously detect polymerized and monomeric actin. Metamorphic analysis and quantification were performed. Cell survival was assessed using dye exclusion.
RESULTS: HUVEC exposed to hyperoxia showed disorganized actin and had a swollen, amorphous appearance. There was minimal MnSOD staining in untransduced cells, while MnSOD transduced cells had strong staining, indicating successful gene transfer and expression. These cells also had...
more organized, linear actin bundles and were similar to room air controls. Staining for polymerized/monomeric actin revealed organized actin bundles in the MnSOD transduced cells and an increased amount of monomeric actin in the O2- exposed controls. Polymerized/monomeric actin ratios for Lac Z transduced cells exposed to 4 days of O2 were 0.060±0.023 versus 0.110±0.011 (p<0.05) for MnSOD transduced cells. While MnSOD expression was significantly improved in MnSOD overexpressors, there were no significant differences in cell survival.

CONCLUSIONS: HUVEC exposed to hyperoxia become swollen, have disorganized (monomeric) actin filaments and abnormal structure. In sharp contrast, cells overexpressing MnSOD had normal cell morphology (polymerized) actin. Protecting cytoskeletal integrity may facilitate normal vascular development and therefore play a role in the prevention of ROS-induced lung injury.

Supported by: 5R01HL054705-09

172 10:15am
Cardioembryonic Antigen Cell Adhesion Protein: A Novel Type II Cell Marker of Infant Lung Injury
Nicola A. Bailey, Linda K. Gonzales, Venkatadri Kolla, Roberta A. Ballard, Philip L. Ballard
Pediatrics/Neonatology, Children’s Hospital of Philadelphia/Univ of PA, Philadelphia, PA.
BACKGROUND: Cardioembryonic antigen cell adhesion molecules (CEACAM) are a family of GPI-linked membrane proteins with roles in differentiation, apoptosis and bacterial uptake. CEACAM5/6 are up-regulated during hormone-induced differentiation of cultured human lung type II cells, with some protein localized to lamellar bodies.

OBJECTIVE: We hypothesized that CEACAMs would be present in lung tissue and endothelial cell lining fluid of premature infants with lung disease.

DESIGN/METHODS: CEACAM was assessed by immunostaining in lung tissue (n=12) and by production of serial arterial blood samples from 4 premature infants with lung disease and 9 term infants intubated for surgery.

RESULTS: By immunostaining, CEACAM5 was detected in alveolar type II cells of normal infant lung and was observed at higher intensity in hyperplastic type II cells of infants dying of chronic lung disease. In tracheal aspirates of premature infants, both CEACAM 5 and 6 were detected by ELISA in tracheal aspirate samples from infants dying of chronic lung disease. In tracheal aspirates of premature infants, both CEACAM 5 and 6 were detected by ELISA in tracheal aspirate samples from infants dying of chronic lung disease.

CONCLUSIONS: CEACAM 5 and 6 are coordinately regulated in developing lung epithelium, as well as in tracheal aspirates in infants dying with necrotizing enterocolitis. The expression of CEACAM5/6 was increased in infants with chronic lung disease. Alveolar CEACAM may be a marker of type II cell hyperplasia in injured lung.

173 10:30am
Fellow in Training
Angiotensin II Stimulates Endothelial Superoxide Generation Via Src Kinase in Bovine Pulmonary Artery Endothelial Cells
Ximme Li, Lance A. Parton, Susan C. Olson, NICU, Westchester Medical Center, Valhalla, NY.

Biochemistry, New York Medical College, Valhalla, NY.

BACKGROUND: Most recently, it has become clear that superoxide anion (O2- ) has several potentially important effects on endothelial cells. Endothelial dysfunction is known to contribute to the pathogenesis of Persistent Pulmonary Hy pertension of the newborn. Griendling et al. were the first to demonstrate that Angiotensin II (Ang II) activation of the NADPH oxidase leads to the production of O2- in VSMCs.

Angiotensin II Stimulates Endothelial Superoxide Generation Via Src Kinase in Bovine Pulmonary Artery Endothelial Cells

174 10:45am
Fellow in Training
Hyperoxia Translocates eNOS and Caveolin-1 from Endothelial Cell Surface to Cytoplasm
Antoni D’Souza, Jing Huang, Xuanmin Zhao, Susan Olsen, Lance A. Parton, Rejamia Mathew
Department of Pediatrics, Maria Fareri Children’s Hospital/New York Medical College, Valhalla, NY.

BACKGROUND: Premature infants requiring oxygen treatment for RDS often develop Pulmonary Hypertension (PH). Our studies in an experimental model of PH show eNOS dysfunction, reduction in nitric oxide (NO), and increased vascular protein and activation of PY-STAT3, a proproliferative transcription factor. Caveolin-1 has an inverse relationship with PY-STAT3 and it negatively regulates eNOS. Signaling molecules involved in eNOS activation reside in or are recruited to caveolae, and eNOS is targeted to caveolae for optimum activation. Hyperoxia perturbs endothelial cell membrane integrity. Based on these results we hypothesize that hyperoxia disturbs caveolin-1/eNOS relationship resulting in dysregulated NO production.

OBJECTIVE: To test whether hyperoxia altered eNOS/caveolin-1 relationship in bovine pulmonary artery endothelial cells (BPAECs).

DESIGN/METHODS: We exposed BPAECs to 85% oxygen/room air for 24 hrs; protein was extracted and analyzed for eNOS, NO synthase activity and caveolin-1 expression.

RESULTS: 1. The expression level of eNOS and caveolin-1 in the hyperoxia-exposed cells was not altered as compared with the controls. 2. Immunofluorescence studies in the controls revealed caveolin-1 and eNOS to be localized on the cell surface. In cells exposed to hyperoxia, caveolin-1 and eNOS were translocated intracellularly due to formation of caveolar complex. 3. PNCA was present in the nuclei of control cells as well as the cells exposed to hyperoxia, indicative of replicating cells. 4. Activated PY-STAT3 was found only in the nuclei of hyperoxic cells.

CONCLUSIONS: The hyperoxic translocation of caveolin-1 and eNOS from the cell membrane to intracellular region. The caveolin-1/eNOS complex and/or the eNOS translocation in caveolae may make eNOS inaccessible to activating molecules present in caveolae, leading to impaired NO production.

175 11:15am
Fellow in Training
Hypoxia Induces Lung Heme Oxygenase-1 in Neonatal Mice
Karen A. Szczepanski, Qiang Lin, Guang Yang, Phyllis A. Dennehy, Neonatology, Children’s Hospital of Philadelphia, Philadelphia, PA.

BACKGROUND: Perinatal hypoxia leads to persistent pulmonary hypertension (PPHN) in neonates. Heme oxygenase-1 (HO-1), an inducible enzyme that degrades heme to biliverdin, is increased in both hypoxia exposed and adult rats. Also, lung tissue from hypoxic neonates with PPHN have increased HO-1 immunoreactive signal as compared to controls. Lastly, HO-1 is developmentally regulated and neonatal rats have higher baseline HO-1 expression than adults.

OBJECTIVE: We wanted to understand whether hypoxia resulted in HO-1 induction in the neonates and whether this induction serves to protect against PPHN.

DESIGN/METHODS: Transgenic neonatal mice, which systemically over express the 15 kb mouse HO-1 promoter driving the luciferase gene were subjected to hypoxia (15% FiO2) for 7 days. Control animals were kept at 21% FiO2. At 24 hours, 48 hours, and 7 days, the HO-1 promoter activation was determined by evaluating photon emission after injection of intraperitoneal luciferase substrate (sodium l-luciferin) into mice. The photon images were recorded for light intensity and compared to basal photon emission in the same animal. At each time point animals were sacrificed for lung histology and immunohistochemistry

RESULTS: The fold increase in HO-1 promoter activation in the presence of HO-1 protein was significantly greater compared to HO-1 mRNA expression. On the contrary, HO-1 mRNA expression decreased by 10% compared to HO-1 promoter activity. On the contrary, HO-1 mRNA expression decreased by 10% compared to HO-1 promoter activity in the presence of HO-1 protein.

CONCLUSIONS: We conclude that CEACAM5 and 6 are coordinately regulated in developing endothelial cells. This expression is upregulated at the transcription level and is decreased in hyperoxia exposed cells.

176 11:30am
Fellow in Training
Differential Effects of Antenatal Corticosteroids and Brain Ischemia on Tight Junction Protein Expression in the Cerebral Cortex of Ovine Fetuses
Shadi N. Malek, Graevyn B. Salcedo, Edward G. fiore, Haiti Brown, Barbara S. Stonestreet
Pediatrics, Women & Infants’ Hospital of Rhode Island, Providence, RI; Pathology, Women & Infants’ Hospital of Rhode Island, Providence, RI; Pathology & Cytopathology, Rhode Island Hospital, Providence, RI.

BACKGROUND: Steroids may act on intercellular tight junctions (TJ) of endothelial cells in the blood brain barrier (BBB). Antenatal steroids reduce BBB permeability, but do not attenuate pathological ischemic brain injury in the ovine fetus. The effects of antenatal steroids and ischemia on TJ proteins have not been examined in the fetal brain.

OBJECTIVE: To study the effects of antenatal steroids on TJ proteins in cerebral cortex of ovine fetuses with and without exposure to in utero brain ischemia (ICh).

DESIGN/METHODS: Catherized ovine fetuses at 80% of gestation were studied 12 h after the last of four 4 mg demethasone (Dex) or placebo (PL) injections were given over 48 h to ewes. Groups (g) were PL-Control (PL-C), Dex-C, PL-ICh, and Dex-ICh (n=5-8). ICh ischemia consisted...
of 30 min of fetal bilateral carotid artery occlusion and 72 h of reperfusion. Cerebral cortex was snap frozen and scored for lesions. Ischemia scores did not differ between PL-Ishc and Dex-Ishc gzs. ZO-1, Occludin, Claudin-5 and Claudin-1 protein expression were examined by Western blot. RESULTS: ZO-1 protein expression was lower in Dex-C than PL-C gp, and lower in Ishc gzs than C gzs. Dex-Ishc gp had the lowest expression (p<0.01, Fig). Occludin protein expression was higher in Dex-Ishc than the PL-C gp (p<0.02). Claudin-5 protein expression was higher in Ishc gzs than C gzs (p<0.01). Patterns of Claudin-1 were similar among groups (NS). CONCLUSIONS: Maternal corticosteroid pretreatment differentially modulates tight junction protein expression in the cerebral cortex of ovine fetuses after ischemia-reperfusion injury. NIH R01-HD34618

RESULTS: Sixty seven patients were enrolled in the study. The mean age (SD) was 11.1 (2.8) years, 39% were female, 94% were African-American. 68% were on inhaled corticosteroids and 7% were oral steroid dependent. The QOL scores showed significant correlation with total asthma severity score (r=0.287, p=0.04), symptom scores including day-time symptoms (r=0.431, p<0.002), nighttime symptoms (r=0.407, p=0.008), and activity limitation (r=0.379, p<0.005). There were no significant correlations between the QOL scores and any component of the PFTs. CONCLUSIONS: The QOL score correlates significantly with objective measures of asthma severity based on NIH guidelines but not with PFTs. Future research needs to focus on long term relationship between asthma severity and PFTs and effect of QOL on compliance with visits and medications.

177 9:45am Childhood Asthma and Extreme Values of Body Mass Index: The Harlem Children’s Zone Asthma Initiative


BACKGROUND: Asthma and overweight are chronic conditions that have increased substantially among U.S. children during the past several decades. In Central Harlem, nearly one-third of children < 12 years old have asthma and nearly half are overweight or at risk of obesity. The inter-relationship between asthma and obesity has not been well-defined.

OBJECTIVE: Assess the association between body mass index (BMI) percentile and parent-guardian-reported diagnosis of asthma and asthma-related symptoms or emergency care in the previous 12 months.

DESIGN/METHODS: A cross-sectional analysis was performed from a cohort of 853 children, 2-11 years old, whose heights and weights were measured, body mass index (BMI) calculated, and who had asthma, as screened by the HCZAI, a home-based asthma services program.

RESULTS: Asthma prevalence in girls increased linearly with increasing BMI percentile, from 12.0% in underweight girls (BMI ≤5th percentile) to 33.3% in girls at risk for overweight (BMI 85th – 94th percentile). Asthma prevalence in boys was 36.4% in underweight boys, 19.1% among normal weight boys (BMI 6th-84th percentile), and 34.8% among overweight boys (≥85th percentile), creating a U-shaped curve. Adjustment was made for age, race/ethnicity, and household smoking. In girls, having asthma was associated with being at risk for overweight (odds ratio [OR], 2.6; 95% confidence interval [CI], 1.4-5.0) and with overweight (OR, 2.1; 95% CI, 1.2-3.8) compared to being normal weight. In boys, having asthma was associated both with being overweight (OR, 2.4; 95% CI, 1.4-4.3) and with underweight (OR, 2.9; 95% CI, 1.1-7.7).

CONCLUSIONS: The relationship between weight and asthma was linear in girls but U-shaped in boys. Underweight boys are at increased risk of asthma; we were unable to test any possible relationship with birthweight. The high rates of asthma and obesity in Central Harlem must be addressed through multi-level community-based interventions that concurrently address asthma and weight gain in both pre-school and school-aged children.

178 10:00am Asthmatic Children’s Perception of Their Symptoms Is Related to Clinical Measures of Asthma Severity but Not to Pulmonary Function Testing

Jong Ho Park, Samuel Evans, Jessica Stewart, Elena Altzman, Eugene Dinklevich, Mado Ruo, Pediatrics, Children’s Hospital at Downstate/SUNY Downstate College of Medicine, Brooklyn, NY.

BACKGROUND: Patients’ and parents’ perception of asthma severity may be based on how it affects their daily activities and on how they feel. This perception may affect compliance with appointments and medications. Physicians tend to rely on symptom history as well as pulmonary function testing to determine asthma severity in accordance with the NIH guidelines. An objective measure of how asthma affects daily activities and quality of life may help physicians better tailor their treatment plan.

OBJECTIVE: To determine whether objective measure of quality of life (QOL) correlates with asthma severity and pulmonary function testing (PFT).

DESIGN/METHODS: We conducted a cross-sectional study in which a validated measure of QOL was administered to a convenience sample of patients 7-17 years of age attending our hospital’s asthma specialty center serving inner-city Brooklyn, NY. The questionnaire consisted of 23 questions measuring the physical, emotional, and social impact on the child’s well-being. Seven point Likert scale was used. PFTs were obtained from each patient, and included peak expiratory flow and forced vital capacity (FVC) as measure of large airway impairment, and FEF 25-75 as measure of small airway impairment. Asthma severity was obtained from clinical records based on the frequency of symptoms per week during the previous month. Pearson product moment was used to test for correlations between variables.
**181 11:00am**

**Effect of Short Course of Oral Steroids on Outcome of Premature Babies with Bronchopulmonary Dysplasia**

Anita Bhandari, Craig Schramm, Mariann Pompasella, Claudius Kimble, Neveed Hussain, Pediatric Pulmonology, Connecticut Children’s Medical Center, Hartford, CT; Division of Neonatology, University of Connecticut Health Center, Farmington, CT.

**BACKGROUND:** Inflammation is thought to play a prominent role in the etiopathogenesis of BPD. Dexamethasone has been found to be effective in weaning babies off mechanical ventilation but ineffective in reducing the duration of oxygen therapy or length hospitalization. Little is known about the effect of oral prednisone (OP) in infants with oxygen dependent BPD.

**OBJECTIVE:** The purpose of our study was to determine whether OP is effective in weaning premature babies with BPD greater than 36 weeks corrected age, off supplemental oxygen therapy (O2).

**RESULTS:** Data on 385 patients with BPD admitted to University of Connecticut Health Center NICU (2000–04) were analyzed. OP was administered to 131 patients for the purpose of weaning off O2. A comparison was done between babies that received OP and those that did not. There was no difference in GA at birth, birth weight, race and gender between the two groups. However, the group that received OP had longer length of stay (107 d ± 35 mean ± sd vs 80.6 d ± 28 p < .0001), higher prior use of dexamethasone for acute lung disease (52% vs 34%; p = 0.0008), longer duration of mechanical ventilation (mean ± sd, 18 d vs 13 d; p = 0.01) and a greater likelihood of discharge on O2 (37% vs 15%; p = 0.05) as compared to the group that did not receive OP. When multiple logistic regression incorporating GA at birth, birth weight, prior use of dexamethasone and duration of mechanical ventilation was applied the use of OP was significantly associated only with increased length of stay. The use of OP was not effective in weaning babies off O2, as only 73% of babies in the OP group went home without O2 vs. 85% in the group that was not treated (p = 0.01). In addition, use of multiple courses of OP was not effective in weaning off O2.

**CONCLUSIONS:** We conclude that the use of OP for weaning O2 in premature babies greater than 36 weeks corrected age, with oxygen dependent BPD is questionable. There may be other clinical markers which may help identify a subset of babies that are likely to respond to this therapy.

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**182 11:15am**

**Fellow in Training**

**Effect of Bias Flow on Work of Breathing (WOB) During Bubble Nasal Continuous Positive Airway Pressure (BNCPAP): A Pilot Study**

Doron J. Kahn, Robert H. Habib, Michael D. Weisner, Andrew M. Steele, Rachana Singh, Sherry E. Courtney, Neonatal Perinatal Medicine, Schneider Children’s Hospital, New Hyde Park, NY; Mercy Children’s Hospital, Medical University of Ohio, Toledo, OH; Equilibrated Biosystems Inc., Smithtown, NY.

**BACKGROUND:** BNCPAP is a popular mode of respiratory support for preterm infants. However, flow settings for provision of BNCPAP are not standardized. We have shown in a lung model that the flow of gas through a BNCPAP system will affect delivered NCPAP. The effects of changes in gas flow on WOB and respiratory mechanics are not known.

**OBJECTIVE:** To compare inspiratory WOB and lung compliance (CL) in preterm infants at increasing bias flow rates during BNCPAP.

**METHODS:** We studied 10 preterm infants, birth weight 979 ± 251g, gestational age 26.7 ± 1.7wks, age at study 19 ± 10d (means ± SD), who required CPAP for mild respiratory distress (FiO2 0.21–0.35). Infants were studied at BNCPAP of 4 and 6 cmH2O, at increasing flows (26.7 mL/kg/min). Tidal volumes (VT) were obtained by calibrated respiratory inductance plethysmography. Pleural pressure was estimated via an esophageal balloon catheter. WOB was calculated from pressure volume data.

**RESULTS:** Breathing pattern (respiratory rate [RR] and VT), WOB, and CL at all BNCPAP and bias flows were measured. Pleural pressure was estimated via an esophageal balloon catheter. WOB was calculated from pressure volume data. WOB and CL increased with increasing bias flow rates during BNCPAP.

**CONCLUSIONS:** Both WOB and its elastic component were increased at higher bias flow rates. The increase in WOB with increasing age (P = 0.04) is consistent with the fact that neonates are more compliant than adults. Flow settings for provision of BNCPAP are not standardized. We have shown in a lung model that the flow of gas through a BNCPAP system will affect delivered NCPAP. The effects of changes in gas flow on WOB and respiratory mechanics are not known.

**183 11:30am**

**Effect of Nitric Oxide Synthase (NOS) Inhibition on Ovine Bronchial Derived Relaxing Factor (BrDRF): Changes with Development and Hypoxic Ventilation**


**BACKGROUND:** Recent studies have suggested that a bronchial derived relaxing factor (BrDRF) decreases the contractility of newborn, but not fetal, rat pulmonary arteries (PA) by a nitric oxide (NO)-mediated mechanism.

**OBJECTIVE:** We studied the effect of an adjacent bronchus on PA contractility to norepinephrine (NE) in late gestation fetal (n=5), spontaneously room air breathing neonatal (1day old, n=4), ventilated hyperoxic neonatal (24h ventilation with 100% oxygen, n=5), and 6 week old juvenile lambs (n=7) in the presence and absence of the NO synthase inhibitor, LNA.

**METHODS:** Sheep were anesthetized, sacrificed and 5th generation PA rings with and without an attached adjacent bronchus (PA+Br) were contracted in standard tissue baths using NE (10-4 M) with and without 10-3 M LNA. At the end of the experiment, all PAs were washed and contracted by 118 mM KCl. NE contractions were expressed as a fraction of KCl contraction.

**RESULTS:** Contraction generated by NE was significantly impaired by an attached bronchus in the neonatal, ventilated neonatal and juvenile but not fetal lambs. Hyperoxic ventilation markedly increased contractions to NE in PA but not in PA+Br. LNA enhanced the contractile response to NE in PA+Br in postnatal lambs but not in fetal lambs. LNA also enhanced the contractile response in PA from spontaneously room air breathing neonatal lambs but not from fetal lambs or ventilated hyperoxic lambs.

**CONCLUSIONS:** We conclude that BrDRF is produced by the bronchus, is developmentally regulated, dependent on NO production and is effective postnatally and following exposure to hyperoxia. We speculate that this factor may have an important role in postnatal reduction of pulmonary vascular resistance.
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