Program Guide

March 28–30, 2008 • Crowne Plaza Philadelphia • Philadelphia, PA

20th Annual Meeting

In cooperation with:
The Center for Continuing Education,
Tulane University Health Sciences Center
Eastern SPR
Officers & Council

President 2005-2008
Bruce D. Gelb, MD
Department of Pediatrics
Mount Sinai School of Medicine
One Gustave Levy Pl, Box 1040
New York, NY 10029
Email: bruce.gelb@mssm.edu
Phone: (212) 241-3303

Secretary 2006-2011
Edmund F. La Gamma, MD, FAAP
Chair, Division of Newborn Medicine
Director, Neonatal-Perinatal Fellowship Program
Professor of Pediatrics, Biochemistry & Molecular Biology
The Regional Neonatal Center
The Maria Fareri Children’s Hospital at Westchester Medical Center
New York Medical College
Valhalla, NY 10595
Email: edmund_lagamma@nymc.edu
Phone: (914) 493-8558

Treasurer 2006-2011
Michael Posencheg, MD
Division of Neonatology and Newborn Services
Hospital of the University of Pennsylvania
3400 Spruce Street, Radvin Building, 8th floor
Philadelphia, PA 19104
Email: posencheg@email.chop.edu
Phone: (215) 615-4376

Chairperson, Planning Committee
Vineet Bhandari, MD
Yale University School of Medicine
333 Cedar Street
New Haven, CT 06510
Email: vineet.bhandari@yale.edu
Phone: (203) 688-4661

Director of Sponsorship 2004-2008
Ian R. Holzman, MD
Professor of Pediatrics, Obstetrics and Reproductive Science
Mount Sinai School of Medicine
One Gustave Levy Place, Box 1508
New York, NY 10029
Email: ian.holzman@mssm.edu
Phone: (212) 241-6186

Planning Committee
Vineet Bhandari, MD (Chair)
Lawrence M. Nogee, MD
Clifford W. Bogue, MD
Heber Nielsen, MD
Iman Shariff, MD

Councilors
Vineet Bhandari, MD, 2005-2009
Clifford W. Bogue, MD, 2004-2008
Ian R. Holzman, MD, 2004-2008
Heber Nielsen, MD, 2005-2009
Lawrence M. Nogee, MD, 2004-2008
Lance Parton, MD, 2005-2009
Iman Shariff, MD, 2005-2009
Barbara Stonestreet, MD, 2005-2009

Past Presidents
2002–2005 Luc P. Brion, MD
1999–2002 Mitchell J. Kresch, MD
1996–1999 Ira H. Gewolb, MD
1993–1996 Alan R. Fleischman, MD
1991–1993 Marc Yudkoff, MD
1989–1991 Joseph B. Warshaw, MD
1988–1989 Laurence Finberg, MD

Contents

Sponsorship Honor Roll 3
Faculty 4
Meeting Services & CME Accreditation 5
Schedule-at-a-Glance 6-7
Friday Programming 7-11
Saturday Programming 11-13
Sunday Programming 14-60
Abstracts 61-62
Author Index 63-64
Note Pages 65
Crowne Plaza Philadelphia Center Map
Dear Colleagues,

Welcome to the 20th Annual Meeting of the Eastern Society for Pediatric Research (Eastern SPR) and to our host city of Philadelphia, the Cradle of Liberty!

The Eastern SPR Council and Planning Committee are confident that you will enjoy our exciting offerings of State-of-the-Art Plenary Talks plus Subspecialty Sessions featuring leading clinical and scientific authorities moderating the many high-quality original research abstracts as well as the highly popular Lunch with the Professor educational program for trainees.

The goals of the Eastern SPR Annual Meeting are to create a forum: i) in which young investigators can present their research in a structured yet relaxed atmosphere, ii) where regional clinicians can be exposed to cutting edge clinical and basic science, iii), to enable timely educational programs addressing important topics in Pediatrics and iv) providing opportunities for trainees to network with senior investigators/researchers in an informal setting.

The continued successes of our previous meetings has enabled an entirely web-based system for membership, registration and payments, in making timely announcements, in enhanced room booking services, and for the improvement in the overall ease of running the meeting. In addition, we will again have centralized informatics enabling presenters to load their slide-show in advance at a speaker-ready station.

ACKNOWLEDGEMENTS: The organization of this meeting would not have been possible without the help of the administrative offices of the American Pediatric Society (APS) and the Society for Pediatric Research (SPR). We are especially grateful to: Debbie Anagnostelis, Executive Director, Kathy Cannon, Belinda Thomas, Jesse Osman and Lisa Thompson. We also recognize the energetic efforts of the Eastern SPR Planning Committee and Council Members for their guidance and vision in selecting this new venue and the efforts of Tulane University in New Orleans as our 2008 sponsor for CME program. Lastly, our corporate and leading academic sponsors were instrumental in making this meeting possible.

Most of all, we want to thank you for attending and for contributing your wisdom in the pursuit of excellence. We look forward to seeing you in Philadelphia!
Meeting Services & CME Accreditation

Designation Statement
Tulane University Health Sciences Center designates this educational activity for a maximum of 11.5 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Tulane University Health Sciences Center presents this activity for educational purposes only and does not endorse any product, content of presentation, or exhibit. Participants are expected to utilize their own expertise and judgment while engaged in the practice of medicine. The content of the presentations is provided solely by presenters who have been selected because of their recognized expertise.

Disclosure Policy
It is the policy of the Center for Continuing Education at Tulane University Health Sciences Center to plan and implement all of its educational activities in accordance with the ACCME’s Essential Areas and Policies to ensure balance, independence, objectivity and scientific rigor. In accordance with the ACCME’s 2004 Standards for Commercial Support, everyone who is in a position to control the content of an educational activity certifies that all relevant financial relationships within the past 12 months that creates a real or apparent conflict of interest. Individuals who do not disclose are disqualified from participating in a CME activity. Individuals with potential for influence or control of CME content include planners and planning committee members, authors, teachers, educational activity directors, educational partners, and others who participate, e.g. facilitators and moderators. This disclosure pertains to educational partners, and others who participate, e.g. facilitators and moderators. This disclosure pertains to educational partners, and others who participate, e.g. facilitators and moderators. This disclosure pertains to educational partners, and others who participate, e.g. facilitators and moderators. This disclosure pertains to educational partners, and others who participate, e.g. facilitators and moderators. This disclosure pertains to educational partners, and others who participate, e.g. facilitators and moderators.

Procedures for CME Credit
To receive the appropriate number of CME credits, it is important to do the following:

- Locate your verification form included with your registration packet or pick one up at the Registration Desk.
- Complete your verification form as you attend each activity.
- On your departure date, turn in your completed verification form at the Registration desk.

Registration and CME Desk Hours
Registration will be held in the Liberty Ballroom Foyer. Registration hours are as follows:
- Friday, March 28: 4:00pm – 7:00pm
- Saturday, March 29: 7:30am – 7:30pm
- Sunday, March 30: 7:30am – 1:00pm

Abstract Publication
All abstracts being presented at the 2008 Eastern SPR Annual Meeting are printed in this Program Guide, beginning on page 14.

Audio/Visual Information
All oral presentations must be made using PowerPoint. Computers and LCD projectors will be provided. Slide projectors will not be provided. Presenters should have submitted their presentations in advance, but still are required to check in at Speaker Ready.

Speaker Ready (Board Room-2nd floor)
Presentations will be 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 also bring your CD-ROM, ZIP drive or flash memory.

Business Center
The Business Center at the Crowne Plaza Philadelphia Center is located on the 2nd floor, adjacent to the Constitution Room.

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 Tulane University Health Sciences Center and the Eastern Society for Pediatric Research. Tulane University Health Sciences Center is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Faculty
Maida Galvez
Mount Sinai School of Medicine
New York, NY

Jonathan D. Gitlin
Washington University
St. Louis, MO

Sandra Hassink
AlDupont Hospital for Children
Wilmington, DE

Matilde Irigoyen
Albert Einstein Medical Center
Philadelphia, PA

Haresh Kirpalani
The Children's Hospital of Philadelphia
Philadelphia, PA

Ian D. Krantz
The Children's Hospital of Philadelphia
Philadelphia, PA

Satyan Lakshminrusimha
Women & Children’s Hospital of Buffalo
Buffalo, NY

Raemmma P. Luck
Temple University School of Medicine
Philadelphia, PA

Jane McGowan
St. Christopher’s Hospital for Children;
Drexel University, Philadelphia, PA

Sharon McGrath-Morrow
The Johns Hopkins Medical Institution
Baltimore, MD

Jane W. Newburger
Children’s Hospital Boston, MA

Suzette Oyeku
Children’s Hospital at Montefiore/Family Care Center, Bronx, NY

Jim F. Padbury
Women and Infants Hospital
Providence, RI

Richard A. Polin
Babies and Children’s Hospital of NY
New York, NY

Andrew D. Racine
AECON/Montefiore Children’s Bronx, NY

Frederick J. Suchy
Mt. Sinai Medical Center, New York, NY

Marietta Vasquez
Yale University School of Medicine
New Haven, CT

Steven M. Willi
The Children’s Hospital of Philadelphia
Philadelphia, PA

Photo Credits:
Liberty Bell by R. Kennedy
Penn’s Landing by K. Giappa
Grand Carousel Pedd, Philadelphia Zoo, The Thinker, & Ben Franklin Memorial by B. Krist
### Eastern SPR Schedule-at-a Glance

#### Crowne Plaza Philadelphia
**March 28-30, 2008**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Friday, March 28</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6:00pm–7:30pm</td>
<td><strong>Poster Session I &amp; Reception</strong></td>
<td>Independence Ballroom</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Independence Ballroom)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Saturday, March 29</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7:00am–8:15am</td>
<td><strong>Continental Breakfast</strong></td>
<td>Liberty Foyer</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Foyer)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:15am–10:30am</td>
<td><strong>Cardiopulmonary</strong></td>
<td>Constitution Room</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Constitution Room)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Emergency Medicine</strong></td>
<td>Declaration Room</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Declaration Room)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>General Pediatrics I</strong></td>
<td>Liberty Ballroom A</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom A)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>GI/Nutrition/Growth</strong></td>
<td>Liberty Ballroom B</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom B)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Infectious Diseases</strong></td>
<td>Freedom Room</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Freedom Room)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Neonatology I: Neonatal Pulmonology</strong></td>
<td>Liberty Ballroom C</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom C)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10:30am–10:45am</td>
<td><strong>Coffee Break</strong></td>
<td>Liberty Foyer</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Foyer)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10:45am–11:45am</td>
<td><strong>Plenary Session I</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>MENTOR OF THE YEAR PRESENTATION</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Jane Newburger, MD, Children’s Hospital Boston</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom C)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00pm–1:00pm</td>
<td><strong>Meet the Professor Lunch</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Iman Sharif, MD, Children’s Hospital of Montefiore</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Nuts and Bolts of Writing an IRB Proposal</strong></td>
<td>Congress Room</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Congress Room)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Eastern SPR Business Meeting</strong></td>
<td>Liberty Ballroom A</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom A)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:10pm–4:00pm</td>
<td><strong>Plenary Session II</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PLENARY LECTURE</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Frederick J. Suchy, MD, Mount Sinai School of Medicine</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Recent Advances in Inherited Cholestatic Liver Disease</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom C)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>YOUNG INVESTIGATOR PRESENTATIONS:</strong> (2:00pm–4:00pm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4:00pm–4:15pm</td>
<td><strong>Coffee Break</strong></td>
<td>Liberty Foyer</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Foyer)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sunday, March 30</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7:00am–8:30am</td>
<td><strong>Continental Breakfast</strong></td>
<td>Liberty Foyer</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Foyer)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8:30am–9:30am</td>
<td><strong>Plenary Session III</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PRESENTATION OF THE YOUNG INVESTIGATOR AWARDS</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>PLENARY LECTURE</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Jonathan D. Gitlin, MD, Washington University School of Medicine</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>The Inorganic Chemistry of Life: Lessons from Genetics</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom C)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:30am–9:45am</td>
<td><strong>Coffee Break</strong></td>
<td>Liberty Foyer</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Foyer)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9:45am–12:00pm</td>
<td><strong>Endocrinology/Metabolism</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Declaration Room)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>General Pediatrics III</strong></td>
<td>Liberty Ballroom A</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom A)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Genetic Basis of Disease</strong></td>
<td>Freedom Room</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Freedom Room)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Neonatology III: Clinical Studies</strong></td>
<td>Liberty Ballroom C</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom C)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Neurobiology</strong></td>
<td>Liberty Ballroom B</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Liberty Ballroom B)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Pulmonary Development &amp; Injury</strong></td>
<td>Constitution Room</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>(Constitution Room)</strong></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Authors</td>
<td>Abstract No.</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>1</td>
<td>Maternal Satisfaction with Prenatal Care: Are We Educating Enough?</td>
<td>Vivien Carrion, Karola Long, James Shelton</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Nursing Staff Education Can Improve Adherence with Central Line Hub Care Protocol</td>
<td>Sulaiman Sannah, Hassan Khan, Maria Khan, Barbara Clones, Boriana Parvez.</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Educating Neonatal Intensive Care Unit (NICU) Parents About Sudden Infant Death Syndrome (SIDS) Risk Reduction: Promoting a Consistent Message by NICU Nurses</td>
<td>Nilay Baxi, Barbara M. Ostfeld, Thomas Hegyi.</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Animal Origins of Surfactant: Physician Practice and Parental Information Sharing</td>
<td>Sean M. Bailey, George E. Fryer, Karen Hendricks-Munoz, Pradeep Mally.</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Incidence of Late Preterm Birth and Associated Respiratory Morbidities</td>
<td>Sean M. Bailey, Shaveta Malik, Nicholas Paik, Annika Brown, George E. Fryer, Karen Hendricks-Munoz, Pradeep Mally.</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Effect of Surfactant Type on the Pro-Inflammatory Response of ELBW Infants</td>
<td>Vanessa V. Mercado, Mitsashi Singh, Hima Maramreddy, Joie Fisher, Lance A. Parton.</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Epidemiology of Neonatal Bacteremia in a South Bronx Hospital</td>
<td>Deepthi Alapati, Dinabel Peralta-Reich, Ginaida Cirilo, Benamanallahi K. Rajegowda, Robert J. Leggiadro.</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>G6PD Deficiency – A Risk Factor for Increased Mortality in Septic Newborns?</td>
<td>Anja Mowes, David L. Schutzman, Lisa Duffy, Rachel Porat.</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Utilization of a Rapid Detection Blood Culture System To Decrease Length of Stay in the Neonatal Intensive Care Unit</td>
<td>Karen D. Lidoshore-Fuld, Rishuha Maharaj, Monica Zarate, Karen Hendricks-Munoz, Yang Kim.</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Blood Lactate as a Marker for Late-Onset Neonatal Sepsis</td>
<td>Rebecca J. Eick, Kabir M. Abubakar, Martin Keszler.</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Temporal Administration of Antibiotics for Infants at Risk for Sepsis in the Neonatal ICU</td>
<td>Misha Bhat, Susan Southee, Rebecca Q. Beck, Claire Pagano, Ann Cherry, Jason Corcoran, Jefferson Pickard, John M. North.</td>
<td>11</td>
</tr>
<tr>
<td>13</td>
<td>Surveillance Cultures in Babies Less 1500 Grams May Decrease Incidence of Fungemia</td>
<td>Sujana Reddy, Santosh Parah, Anthony Barone, Anantham Harin.</td>
<td>13</td>
</tr>
<tr>
<td>14</td>
<td>Single Cell Sorting To Decipher the Checkpoints for B Cell Selection in Neonatal Cord Blood</td>
<td>Kavita Kasat, Jie Xu, Karen Hendricks-Munoz, Amy Reichlin.</td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>Effects of Prenatal Tobacco Exposure on Gene Expression Profiling in Umbilical Cord Tissue</td>
<td>Naveed Hussain, Winfried Krueger, Steve Walsh, Jonathan Covault, Henry Kranzler, Cheryl Osucken.</td>
<td>15</td>
</tr>
</tbody>
</table>
Saturday, March 29, 2008 • •

Cardiopulmonary Platform Session

8:15 AM-10:30 AM Constitution

Moderators: Jane Newburger and Heber Nielsen

8:15 AM Myocardial Hypoxia with Intermittent Hypoxia on Neonatal Lung PECAM-1 Expression and Endothelial Cell Function
Han Zhang, Bo Han, Horace M. DeLisser. – Abstract 40

8:30 AM Sildenafil Augments Early Protective Transcriptional Changes After Ischemia in Mouse Myocardium – cDNA Microarray Analysis
Ramesh Vidyavath, Srikant Koneru, Suresh Varma Penumathsa, Maulik Nilanjana, Wimfried Kruger. – Abstract 37

8:45 AM Echocardiographic Predictors of Mortality in Congenital Diaphragmatic Hernia (CDH)
Monisha Bahri, Matthew Eig, Robin Doroshow, Stephen Baumgart, Martin Keszler. – Abstract 38

9:00 AM Heme Oxygenase-1 Is Required for Lung Vascular and Alveolar Development
Sara Q. Lin, Tiangang Zhuang, Guang Yang, Phyllis A. Denmery. – Abstract 39

9:15 AM Effects of Moderate Hyperoxia on Neural Histology in Prenatal Sheep
Mercedes Alonso, Juan Carlos Sainz, Alejandro Gonzalez, Heber C. Nielsen. – Abstract 41

9:30 AM BMP2 Prevents Hypoxia Induced PY-STAT3 Activation in Pulmonary Artery Endothelial Cells

9:45 AM ErbB Ligand-Specific Induction of Proliferation and Differentiation in MEK-Inhibited Fetal Mouse Lung Type II Cells
Sujatha M. Ramadurai, Lucia Pham, Karen T. Wang, Heber C. Nielsen. – Abstract 42

10:00 AM Pigment Epithelium Derived Factor (PEDF) in a Mouse Model of BPD
Anne Chetty, Cao Gong-jee, Heber C. Nielsen. – Abstract 43

10:15 AM Effect of NADPH Oxidase Inhibition in Lambs with Persistent Pulmonary Hypertension of the Newborn (PPHN)
Fernando A. Soares, Satyan Lakshminrusimha, Kathryn N. Farrow, Stephen Wedgwood, Sylvia F. Gugino, Lyuba Czech, James A. Russell, Robin H. Steinhorn. – Abstract 44

Emergency Medicine Platform Session

8:00 AM-10:30 AM Declaration

Moderator: Raemma Luck

8:00 AM Ketamine versus Etomidate: Procedural Sedation for Pediatric Orthopedic Reductions
Janet J. Lee-Jayaram, Adam Green, Joshua Siembieda, Edward J. Gracely, Colette C. Mull, Eileen Quintana, Terry Adirim. – Abstract 44A

8:15 AM Accuracy of Point-of-Care Ultrasound for the Diagnosis of Fractures in the Pediatric Emergency Department
E.R. Weinberg, J.W. Tsung, M.G. Tunik. – Abstract 45

8:30 AM First Responder Performance in Pediatric Versus Adult Trauma
Sunday Bankole, Arsenia Asuncion, Gary Stahl, Zuhair Aghai, Shonola Da-Silva. – Abstract 46

8:45 AM Utility of Bedside Ultrasound vs CT Scan in Detecting Neck Abscesses: A Case Series
Raemma P. Luck, Michael Cohen, Thomas Costantino. – Abstract 47

9:00 AM What Do Pediatric Residents Know About Medical Malpractice?
Amy D. Roy, Karen A. Santucci, Lei Chen. – Abstract 48

Saturday, March 29 continued

9:15 AM Improving Emergency Department Efficiency: An Integrated Patient-Centered System
Johnathon C. LeBaron, James F. Wiley II, Marvin C. Culbertson III, Sharon R. Smith. – Abstract 48

9:30 AM Communication About Interfacility Patient Transfers to Pediatric Emergency Departments
Amy D. Roy, Karen A. Santucci. – Abstract 50

9:45 AM Abdominal Trauma in Children as a Result of Snowboarding
Alison B. McCrone, Kathleen Lillis, Steven Shaha. – Abstract 51

10:00 AM Emergency Preparedness in the Outpatient Setting
Thuy L. Ngo, Kathleen Donnelly. – Abstract 52

10:15 AM Optimal Empiric Antimicrobial Therapy for Non-Drained Skin and Soft-Tissue Infections (SSTI) in the Era of Methillin-Resistant Staphylococcus aureus (MRSA)
Daniel J. Elliott, Theoklis E. Zaoutis, Andrea B. Troxel, Andrew J. Loh, Ron Keran. – Abstract 53

General Pediatrics I Platform Session

8:15 AM-10:30 AM Liberty A

Moderator: Maida Galvez

8:15 AM Effect of Massage for Methadone Exposed Infants
Yun J. Lee, Jing Liu, Barry M. Lester, Joseph M. McNamara, Pauline Wright. – Abstract 54

8:30 AM Communication Between Pediatric Hospitalists and Referring Physicians
Riva Kamat, John Jones, Michael Sheridan. – Abstract 55

8:45 AM Factors Affecting the Age of Diagnosis of Autism Spectrum Disorders at a New York City Early Intervention Center
Ginger L. Janow, Leonard Trasande. – Abstract 56

9:00 AM Clinical Vignette Tool To Assess Resident Needs in Communication and Interpersonal Skills
Alexis S. Lieberman, Krista George, Yolande Bell-Cheddar, Mario Cruz, Cindy DeLago, Matilde Irigoyen. – Abstract 57

9:15 AM Performance in Digit Span Test for Short Term Memory in Children with Attention Deficit Hyperactivity Disorder (ADHD) as Compared to Control Group
Lysettie Iglesias, Kanchana Roychoudhury, Barbara Cicero, Salimah Wala. – Abstract 58

9:30 AM Predictors of Maternal Subjective Socioeconomic Status (SSES) Rankings
Erika F. Dennis, Scott Lorch, Leny Mathew, Jennifer Culliane. – Abstract 59

9:45 AM An Education Program To Increase Knowledge of and Immunization with Adult Pertussis Vaccine Among Parents of Newborns
Pui-Ying Iroh Tam, Benjamin Smith, Donna Fisher. – Abstract 60

10:00 AM Girls Who Disclose Sexual Abuse: What Do They Tell Us?
Cindy W. DeLago, Martin A. Finkel. – Abstract 61

10:15 AM Prenatal Consultation for Congenital Anomalies: Parental Expectations and Perceptions
Francesca Mequel-Verges, S. Lee Woods, Susan W. Aucott, Renee D. Boss, Leslie J. Sulpar, Pamela K. Donohue. – Abstract 62

GI/Nutrition/Growth Platform Session

8:15 AM-10:30 AM Liberty B

Moderator: Fred Suchy

8:15 AM In Utero High Fat Diet and Maternal Genotype Program Fetal Growth
Harpreet Kaur, Kirsten Hartli, Michael Kruse, Ariana Fiallo, Maureen J. Charron, Patricia Yuguin. – Abstract 63

8:30 AM Periconceptional Multivitamin Use and Its Association with Infant Birth Weight Disparities
Heather H. Burrell, Martha M. Werler, Allen A. Mitchell. – Abstract 64
8:45 AM Circulating Levels of Hepatocyte Growth Factor Activator Inhibitor-1 (HAI-1) May Predict Fetal Intrauterine Growth Restriction
Alicia Wang, Alejandro Rauch-Ihain, Hector Tamez, Ananth Karumanchi, Ravi Thadani. – Abstract 65

9:00 AM Maternal Intrapartum Antibiotic Prophylaxis and Gut Microbiotic Composition in Newborns
GianVincento Zacchetti, Laura Pogliani, Dario Dilillo, Elena Bassi, Belinda Benenati, Lorenzo Morelli, Marcello Giovannini, Giacomo Biasucci. – Abstract 66

9:15 AM Niospheric Tissue Oxygenation Changes of the Splanchnic Region in Preterm Neonates After Feeds
Viral Dave, Luc P. Brion, Deborah E. Campbell, Melissa Scheiner, Carolyn Raab, Suhas M. Nafday. – Abstract 67

9:30 AM Nutritional Practices in Extremely Low Birth Weight Infants (ELBW, <1000g): 2002 vs. 2006
Rita M. Ryan, Jennifer A. Clark, Nancy Garrison, Alyssa Hermann, Anne Marie Reynolds. – Abstract 68

9:45 AM Growth Velocity in the Extremely Low Gestational Age Newborn

10:00 AM Home Environment Independently Influences Growth of Very Low Birth Weight (VLBW < 1500g) Former Preterm Infants
Vincent C. Smith, Gareth Parry, Marie C. McCormick. – Abstract 70

10:15 AM Changing Epidemiology of Cholecystitis and Cholelithiasis in the Pediatric Population
Fadel Balawi, Robert Lee, Warren Rosenfeld. – Abstract 71

Infectious Disease Platform Session

8:15 AM-10:30 AM Freedom
Moderator: Marietta Vazquez

8:15 AM Rhinovirus Epidemiology, Disease Spectrum, and Association with Serious Bacterial Infections in Febrile Young Infants
Mark X. Cicerone, Lei Chen, Carla Weibel, Caleb Korngold, Jeffrey Kahn. – Abstract 72

8:30 AM Individual Differences in the Concentration of Intracellular Metabolites of Anti-HIV Nucleoside Analogues
Elijah Parentisil, Rong Hu, Yung-Chi Cheng. – Abstract 73

8:45 AM Variability in the Presence of CSF Pleocytosis Among Young Infants with Enterovirus Infections of the Central Nervous System
Jeffrey A. Seiden, Joseph J. Zorc, Richard L. Hodinka, Samir S. Shah. – Abstract 74

9:00 AM Sequential Evidence-Based Central Line Care Interventions Can Decrease Line Associated Sepsis
Sulaiman Sannoh, Barbara Clones, Jose Munoz, Boriana Parvez. – Abstract 75

9:15 AM Prevalence and Characterization of HIV-Associated Nephropathy and Other Renal Disorders in a Cohort of Perinatally HIV-1 Infected Children

9:30 AM Human Papillomavirus Antibodies from Natural Infection Are Protective Against Subsequent HPV Species-Related Infections
Zainab A. Malik, Susan M. Hailpern, Robert D. Burk. – Abstract 77

9:45 AM Phagocytosis and Oxidative Burst of Neonatal Neutrophils Confronted with Candida albicans and Candida parapsilosis
Kihwa G. Destin, Matthew A. Maccuni, Sonia S. Laforce-Nesbitt, Joseph M. Bliss. – Abstract 78

10:00 AM Pro- and Anti-Inflammatory Cytokine Release by Circulating Monocytes in the Newborn: Control by Endogenous Interleukin-10 and Effects of Exogenous Interleukin-10 Versus Dexamethasone
Lina Elbash, Lucy Pereira-Argenziano, Veronika Miskolci, Ivana Vancurova, Dennis Davidson. – Abstract 79

10:15 AM Use of Umbilical Cord Blood Cultures for the Diagnosis of Early-Onset Sepsis
Scicela Malecela, Judith Palafoutas, Michelle Peterson, Zacharia Cherian, Jayashree Ramasethu. – Abstract 80

Plenary Session I

10:45 PM-11:45 PM Liberty C

Moderator: Satyan Lakshminrusimha

8:15 AM Cardiomebryonic Cell Adhesion Molecule 6: A New Human Surfactant Associated Protein
Philip L. Ballard, Cheryl J. Chapin, Linda W. Gonzales, Nicole Bailey, Jeffrey D. Merrill, Marye Godinecz, Roberta A. Ballad. – Abstract 81

8:30 AM Simulated Medical Transport Is Associated with Decreased mRNA Expression of Surfactant Proteins A, B, C and Higher Active Phospholipid Content in Neonatal Sprague-Dawley Rats
Aashef Gad, J. Craig Cohen, Avinash Chander, Shotal Shah. – Abstract 82

8:45 AM ErbB4 Regulation of Type II Cell Maturation in Murine Lung
Lucia D. Pham, Sujatha M. Ramadurai, Washa Liu, Christiane E.L. Dammann, Heber C. Nielsen. – Abstract 83

9:00 AM Nitrolinoleate Acids as a Signaling Molecule in Pulmonary Cells Via Modification of Membrane Proteins
Jayshree Savla, ChangJiang Guo, Bruce Freeman, Andrew Gow. – Abstract 84

9:15 AM The Role of Reactive Oxygen Species (ROS) in A549 Respiratory Epithelial Cell Infection by Adenovirus Type 21 (ADV-21) and Parainfluenza Virus Type 3 (PIV-3)
Khialul S. Ahmad, Anamnna Joseph, Melodi B. Pirzada, Byung-Min Choi, Jeffrey A. Kazzaz, Leonard K. Krilov. – Abstract 85

9:30 AM Angiopoietin 2 Release by Tracheal Aspirate Cells from Ventilated Premature Infants Is Not Regulated by Nuclear Factor-KappaB
Zubair H. Aghai, Judy G. Salslow, Tarek A. Nakhlia, Gary Stahl, Riva Eydelman, Louise Strande, Vincet Bharduri. – Abstract 86

9:45 AM Nasal Continuous Positive Airway Pressure (NCPAP) vs Bi-Level NCPAP (SiPAP) in Preterm Infants: A Comparison of Work of Breathing (WOB) and Respiratory Function
Vita M. Boyar, Sherry E. Courtney, Jennifer Beck, Christre Sinderby, Robert H. Habib. – Abstract 87

10:00 AM High Flow Nasal Cannula in Preterm Infants: Effects of High Flow Rates on Work of Breathing
Kee H. Pyun, Zubair H. Aghai, Tarek A. Nakhlia, Gary E. Stahl, Judy G. Salslow. – Abstract 88

10:15 AM Is There a Relationship Between the Initial (I) FiO2 in the Delivery Room (DR) and Bronchopulmonary Dysplasia (BPD)?
Anita Stola, Jeffrey Perlman, Joseph Schulman. – Abstract 89

Meet the Professor Lunch

12:00 PM-1:00PM Congress

10:15 AM Nuts and Bolts of Writing an IRB Proposal
Iman Sharif, Children’s Hospital of Montefiore, Bronx, NY

Eastern ESPR Business Meeting

12:00 PM-1:00PM Liberty A
1:10 PM Plenary Lecture - Recent Advances in Inherited Cholestatic Liver Disease
Frederick J. Suchy, Mount Sinai School of Medicine

2:00 PM Resuscitation of Neonatal Lambs with Pulmonary Hypertension with 21% and 100% Oxygen – Effect on Pulmonary Hemodynamics
Saiyan Lakshminrusimha, Daniel D. Swartz, Sylvia F. Gugino, Karen Wynn, Robin H. Steinhorn, James A. Russell. – Abstract 90

2:15 PM Missense LEOPARD Syndrome Mutations in PTPN11 Have Gain of Function Effects During Development
Kimihiko Oishi, Cindy J. Wang, Tabassum Rahman, Natalie Pica, Bruce D. Gelb. – Abstract 91

2:30 PM Hospital Stays for Ambulatory Care Sensitive Conditions in Children with Sickle Cell Disease: 1997 to 2003
Suzette O. Oyeka, Ryan Conrad, Andrew D. Racine. – Abstract 92

3:00 PM Oxidative Stress Disrupts Oligodendrocyte Maturation
Heather M. French, Polina Mamontov, Mary Reid, Judith Grinspan, Rebecca A. Simmons. – Abstract 93

3:15 PM Enhanced Lung Maturation Using Intratrue Gene Therapy
Gabriela I. Mihalache, Erin C. Killeen, Delon Callender, Janet E. Larson, J.C. Cohen, Manoj A. Binowale. – Abstract 94

3:30 PM Oligodendrocyte Maturation in a Rabbit Model of Intraventricular Hemorrhage
Caroline O. Chua, Furong Hu, Hongmin Xu, Praveen Ballabh. – Abstract 95

3:45 PM Transcription Factor Ap2δ Associates with Ash2l and ALR, a Histone Methyltransferase, To Activate Hoxc8 Transcription During Development
Cheryl C. Tan, K.V. Sindhu, SiDe Li, Hitomi Nishio, Jason Z. Stoller, Kimihiko Oishi, Sahitya Puthreddy, Tamara J. Lee, Jonathan A. Epstein, Martin J. Walsh, Bruce D. Gelb. – Abstract 96

4:45 PM A Novel Cre Reporter Mouse Reveals New Derivatives of Pax3-Expressing Precursors
Jason Z. Stoller, Karl R. Degenhardt, Li Huang, Min Min Lu, Jonathan A. Epstein. – Abstract 104

5:00 PM Identification of Progenitor Cell Characteristics in Naive Human Fetal Lung Epithelium
Kristen Glass, Linda Varghese, Linda Gonzales, Michael Beers, Cherie Foster. – Abstract 106

5:15 PM Hypoxia Inducible Factor-1α Activity Is Increased in Neonatal Neutrophils
Anna Vetrano, Faith Archer, William Hoffman, Barry Weinberger. – Abstract 107

5:30 PM Static Stretch of Differentiated Human Fetal Type II Cells Promotes Transition to a Type I Phenotype
Cherie Foster, Linda Varghese, Linda Gonzales, Susan Margulies. – Abstract 108

14:15 PM The Cardiac L-Type Calcium Channel Is Required for Normal Cardiogenesis and Embryonic Survival
George A. Porter. – Abstract 103

14:30 PM Neonatal Ex4 Administration Normalizes Epigenetic Modifications at the Proximal Promoter of Pdx-1
Sara E. Pinney, HongShun Niu, Fenglen Li, Rebecca A. Simmons. – Abstract 104

14:45 PM A Novel Cre Reporter Mouse Reveals New Derivatives of Pax3-Expressing Precursors
Jason Z. Stoller, Karl R. Degenhardt, Li Huang, Min Min Lu, Jonathan A. Epstein. – Abstract 105

15:00 PM Identification of Progenitor Cell Characteristics in Naive Human Fetal Lung Epithelium
Kristen Glass, Linda Varghese, Linda Gonzales, Michael Beers, Cherie Foster. – Abstract 106

15:15 PM Hypoxia Inducible Factor-1α Activity Is Increased in Neonatal Neutrophils
Anna Vetrano, Faith Archer, William Hoffman, Barry Weinberger. – Abstract 107

15:30 PM Static Stretch of Differentiated Human Fetal Type II Cells Promotes Transition to a Type I Phenotype
Cherie Foster, Linda Varghese, Linda Gonzales, Susan Margulies. – Abstract 108

General Pediatrics II Platform Session

4:15 PM-5:45 PM Liberty A
Moderator: Andrew Racine

4:15 PM The Efficacy of EMLA Versus Synera for Venipuncture in Children
Ting A. Lee, C. Anthoney E. Lim, Kathy Freeman, Catherine C. Skae. – Abstract 109

4:30 PM Nutritional Status of Children After a Food Supplementation Program Integrated with Routine Health Care in Migrant Communities of the Dominican Republic
Kavita Parikh, Gabriela Marein-Efron, Shirley Huang, Samir S. Shah, Geraldine O’Hare, Rodney Finalle. – Abstract 110

4:45 PM Maternal Ethnicity, Education and Observation of Infant Sleeping Position in the Hospital Nursery as Correlates of Back-to-Sleep Practices
Irfan Ali, Gracia Marte, Gawin Tsai, Ram Kairam, Richard Neugebauer, Gerrad Augustine, Anantha Harijith, Ronald Bainbridge, Ayoade Adeniyi. – Abstract 111

5:00 PM Under-Representation of Minority Children in Pediatric Statin Trials
Brook Belay, Andrew Racine, Peter F. Belamarich. – Abstract 112

5:15 PM Acute HIV Syndrome in a General Pediatric Practice: Missed Opportunities
Andres F. Camacho-Gonzalez, Natasa Milosavljevic, Barbara Kelly. – Abstract 113

5:30 PM Improving Tuberculosis Case-Finding in an Inner City Pediatric Clinic
Gina Montealegre, Guadalupe Lopez-Marti, Krissa George, Erika Mendoza, Ryan Kotton, Barbara Black, Alan Schindler, Barbara Kelly. – Abstract 114
Neonatology II - Epidemiology and F/U Platform Session

Moderator: Hareesh Kirpalani

4:15 PM Correlation of Weight Gain in First Ten Days of Life and Childhood Obesity
Riti S. Dayal, Fernanda E. Kupferman, Fernando Llopiz, Salimah Walani, Kanchana Roychowdhury. – Abstract 115

4:30 PM The Effect of an Intervention Program on Overweight Second and Third Grade Students in an Inner City Elementary School: A Pilot Study
Sister Melinda Lando, K. Nicole Jalandoni, Haydee Larralde, Nicholas Obiri, Ronald Bainbridge, Ayoade O. Adeniyi, Richard Neugebauer. – Abstract 116

4:45 PM Effect of Caloric Information on Menu Selection by Caregivers in an Inner City, Minority Population
Wipancee Phupakdi, Jeremy Aiss, Stanley Cho. – Abstract 117

5:00 PM Acceptance of Referrals to an Obesity Management Program at an Inner-City Health Center
Maya Ilowite, Iman Sharif. – Abstract 118

5:15 PM The Relationship Between the Density of Food Sources in the Built Environment and Obesity Among Inner City School Children
James J. Burns, Jane Garb, Coleen Walsh, Thomas Yarsley. – Abstract 119

5:30 PM Effects of a Lifestyle Plus Exercise Intervention on Metabolic Parameters in 7th Grade School Children: A Randomized Controlled Trial
Radhika Purushothaman, Amrit Bhangoo, Sunil Sinha, Viral Gula, Margarita Smoktin-Tangorra, Irina Kazachkova, Jessica Hileman, Neesha Ramchandani, Joyce Mungo, Debbie Perez, Kate Pavlovich, Michael Rosenbaum, Svetlana Ten, Deborah DeSantis, Lisa Altshuler, Steven Sholov. – Abstract 120

Poster Session II

6:00 PM-7:30 PM Independence Ballroom

1 Comparative Readability of Spanish and English Patient Education Materials
Maya Ilowite, Iman Sharif. – Abstract 133

2 Communication and the Pediatric Residency Match
Catherine C. Skae, Marina Reznik, Philip O. Ozuah. – Abstract 134

3 The Effectiveness of Web-Based Learning During Pediatric Residency Training
Honey E. Sward, Carol P. Carraccio, Alison Falck. – Abstract 135

4 Documenting Resident Education in Systems-Based Practice
Sandra F. Braganza, Iman Sharif. – Abstract 136

5 Resident as Teacher: Evaluation of a Teaching Curriculum for Pediatric Housestaff
Czer Anthony E. Lim, Cristina E. Farrell, Catherine C. Skae. – Abstract 137

6 An Intervention To Improve Neonatal Endotracheal Intubation Skills of Pediatric Residents
Colleen A. Hughes, Rose M. Viscardi, Alison J. Falck. – Abstract 138

7 Education and Monitoring of Residents' Proficiency in Neonatal Resuscitation
Matthew A. Rainaldi, Yang S. Kim, Karen D. Hendricks-Munoz. – Abstract 139

8 Neonatal Resuscitation Simulation Measurement Tool Development
Jesse Bender, Karen Kennally, Sheree Lindgard, Jean Salera, Richard Tucker. – Abstract 140

9 Antenatal Corticosteroids Are Associated with Decreased Odds of Death in Neonates Born at 23 Weeks
Edward J. Hayes, David A. Paul, Gary E. Stahl, Jolene Seibel-Seaon, Kevin Dysart, Benjamin E. Leiby, Amy B. Mackley, Vincenzo Berghella. – Abstract 141

10 Antenatal Smoking Does Not Affect the Severity of Apnea in Premature Infants
Zlatka Jeliazkova, Nosrat Razi, Judy G. Saslow, Barbara Amendolga, Gary Stahl, Kee Pyon, Nicole Kemble, Zabair H. Aghai. – Abstract 142

11 Analysis of Cesarean Section Trends in Very Low Birth Weight Infants (VLBW) over Time and Impact on Birth Outcome (1994-2006)
Hashini R. Seneviratne, Charlan Kroelinger, David A. Paul. – Abstract 143
11:15 AM Ascorbic Acid Combined with Ibuprofen in Hypoxic Ischemic Encephalopathy: A Randomized Controlled Trial
Harry Aly, Mohamed El-Dib, Laila Abd-Rabboh, Fathy Nawwar, Hassan Hassan, Mohamed Aaref, Ahmad Elsayed. – Abstract 192

11:30 AM Vinyl Bag vs. Thermal Mattress To Prevent Hypothermia in Extremely Low Birth Weight (ELBW) Infants
Bobby Mathew, Satyan Lakshminrusimha, Vivien Carrion. – Abstract 193

11:45 AM Use of Chemical Warming Packs During Delivery Room Resuscitation and Admission Temperatures in Very Low Birth Weight Neonates
Joaquim M. Pinheiro, Susan Boynton, Susan A. Fardon, Robin Dugan, Sharon Jensen, Christine Reu-Dolonon, Mary A. Miller, Andrea Degnan. – Abstract 194

Neurobiology Platform Session
9:45 AM-12:00 PM Liberty B

Moderator: Jane McGowan

9:45 AM Cardiac Troponin I (cTnl) Levels in Asphyxiated Infants Undergoing Selective Head Cooling Correlate With Mortality and Neurodevelopmental Outcome
Constance G. Andrejko, Vidula Damle, Susan C. Adeniyi-Jones. – Abstract 195

10:00 AM Altered Fractional Anisotropy Caused by Neonatal Hypoxia Ischemia Is a Result of Increased Radial Diffusivity in Injured White Matter
Brian S. Stone, Jiangyang Zhang, Susumu Mori, Frances J. Northington. – Abstract 196

10:15 AM A Randomized Controlled Trial To Determine the Lowest Effective Dose for Adequate Mydriasis in Premature Infants
Monisha Bahri, Gonzalez C. Vicente, Judith J. Palafoutas, Nitin R. Mehta. – Abstract 197

10:30 AM A Comprehensive Analysis of Protein Secretion by Neonatal Murine Receptors and BPD in ELBW Infants
Sridevi Dutt Gunturu, Radhika Purushothaman, Oksana Lazareva, Munazza Basit, Svetlana Ten. – Abstract 198

10:45 AM Regional Tissue Oxygenation in Association with Alterations in the Physiologic Parameters in Preterm Infants
Anna Petrova, John Chuo, Uday Nadgir, Mayoor Bhati, Rajeev Mehta. – Abstract 199

11:00 AM Blood Glucose Levels and ROP in ELBW Infants
Raul Chavez-Valdez, Christoph U. Lehmann, Elizabeth A. Cristofalo, Jane E. McGowan. – Abstract 200

11:15 AM Childhood Syncope
Cristina S. Wheeler Castillo, Francis J. DiMario. – Abstract 201

11:30 AM Peak-To-Peak Amplitude in Neonatal Brain Monitoring of Premature Infants
Deirdre O’Reilly, Michael Navakatikyan, Marcia Filip, Deirdre Greene, Linda J. Van Marter. – Abstract 202

11:45 AM Effect of Relative Intraperinatal Growth Restriction (RIUG) and Relative Discordancy (RDIS) on Auditory Brainstem Evoked Responses (ABRs) in Newborn Twins
Sunday, March 30 continued

Pulmonary Development and Injury
Platform Session

9:45 AM – 12:00 PM Constitution

Moderator: James Padbury

9:45 AM Role of the NF-κB Subunit p50 in Postnatal Lung Development
Guang Yang, Maurice Hinson, Jessica Bordner, Tiangang Zhuang, Clyde Wright, Phyllis A. Dennery. – Abstract 204

10:00 AM Inhibition of NF-κB Activation by Preventing IκBα Degradation Improves Neonatal Survival by Hypoxia and Preserves Lung Architecture
Clyde J. Wright, Guang Yang, Phyllis A. Dennery. – Abstract 205

10:15 AM ErbB Signaling in Hypoxia- and Hyperoxia-Induced Lung Epithelial Cell Injury
Washa Liu, Hshi-chi Koo, Jonathan M. Davis, Heber C. Nielsen, Christiane E.L. Danmann. – Abstract 206

10:30 AM Bach-1 Modulates Heme Oxygenase-1 (HO-1) Transcription in the Newborn in Hyperoxia
Sacha Kassovska-Bratinova, Guang Yang, Kazuhiko Igarashi, Phyllis A. Dennery. – Abstract 207

10:45 AM Heparin-Binding VEGF Isoforms Attenuate Hyperoxic Lung Injury in Explanted Mouse Embryonic Lung
Americo E. Esquible, Alia Bazzz-Aasald, Lloyd G. Cantley. – Abstract 208

11:00 AM Lung Contusion Alters Pulmonary Vasoreactivity in Rats
Satyan Lakshminrusimha, Bruce A. Davidson, Rita M. Ryan, Jadwiga D. Helinski, Krishnan Raghavendran. – Abstract 209

11:15 AM Surfactant Administration Does Not Normalize Respiratory Function Changes Associated with Transient In Utero Knockout (TIUKO) of the CFTR Gene in Sprague-Dawley Rats
Andrew Dylag, Joseph Hudak, Shetali Shah, J. Craig Cohen. – Abstract 210

11:30 AM Transient In-Utero Exposure to Nicotine Directly Stimulates Expression of Proteins Necessary for Mechanico-Sensory Dependent Lung Development
Sriru Gupta, Shanthy Sridhar, Craig J. Cohen, Janet E. Larson. – Abstract 211

11:45 AM Airway Injury Resulting from Repeated Endotracheal Intubation: Possible Prevention Strategies
Adeyemo A. Oshodi, Kevin Dysart, Alison Cook, Elena Rodriguez, Yan Zhu, Thomas H. Shaffer, Thomas L. Miller. – Abstract 212

Endocrinology/Metabolism
Platform Session

9:45 AM – 12:00 PM Declaration

Moderator: Steven Willi

9:45 AM A Short Version GHRH Stimulation Test as a Novel and Effective Tool in Children with Idiopathic Short Stature
Amrit Bhangoo, Nauman Basit, Vijay Chickajaju, Svetlana Ten. – Abstract 213

10:00 AM Markers of Insulin Reserve in Pediatric Type 2 Diabetes (T2DM)
Lorraine E. Levitt Katz, Marcia Hernandez, Heather M. McKnight, Paul R. Gallagher, Kathryn M. Murphy. – Abstract 214

10:15 AM HbA1c as a Screening Tool for Pediatric Type 2 Diabetes
Alisa B. Schiffman, Kristen T. Sonnek-Schmelz, Sarah J. Ratcliff, Lorraine Levitt-Katz, Steven M. Willi. – Abstract 215

10:30 AM Hypoglycemia in Critically Ill Children
E. Vincent Faustino, Clifford Bogue. – Abstract 216

10:45 AM Hypoglycemia Associated Autonomic Failure: Are Free Fatty Acids (FFA) Responsible?
A.S. Nayak, B.B. Nankova, E.F. LaGamma. – Abstract 217

11:00 AM Does One Enteral Feeding Correct Asymptomatic Hypoglycemia in the Newborn?
Yesenia Morales, Debra Potak, Richard J. Schanler. – Abstract 218

11:15 AM Disruption of Late Rat Intestinal Organogenesis Leads to Adult Onset Obesity and Insulin Resistance
Malgosia Skowron, Janet E. Larson, Haihong Zong, Jeffery E. Pessin, J. Craig Cohen. – Abstract 219

11:30 AM Effects of Maternal Depression or SSRI Use on Placental NET and SERT Gene Expression
Kathryn L. Ponder, Bethany McGonnigal, Jennifer Bauer, Alyse Laliberte, Amy Salisbury, James Padbury. – Abstract 220

11:45 AM Vitamin D Responsiveness Is Impaired in Neonatal Neutrophils
Daniel Hirsch, Faith Archer, Barry Weinberger, Anna Vetrano. – Abstract 221
1 Maternal Satisfaction with Prenatal Care: Are We Educating Enough?  
Vivien Carrion, Karola Long, James Shelton, Neonatology/Pediatrics, Women and Children’s Hosp. of Buffalo, Buffalo, NY.

BACKGROUND: Maternal satisfaction with prenatal care has been associated with patient education, quality of prenatal visits, and availability of services. OBJECTIVE: To evaluate the education provided to pregnant patients during their prenatal visits as well as patient satisfaction with their prenatal care. DESIGN/METHODS: A cross-sectional, self-administered survey was given to post-partum mothers ≥18 years of age after delivering a live birth in the 8 county region of western New York. Respondents completed an anonymous survey of 23 questions including: insurance type, infant birth weight, gestational age (GA), site of prenatal care, number of prenatal visits, education provided at visits, and patient satisfaction. Statistical analysis was conducted using the chi-square test. RESULTS: Study population included 470 women age 18 - 44 (mean of 27 years), who received prenatal care during pregnancy. Mean birth weight of infants was 3343 g with 7.2% < 2500g and mean GA was 39 weeks with 7.7% < 37 weeks. Women received prenatal care at private offices (89%), in-hospital clinics (12%) and out of hospital clinics (18%). Medicaid (MA) was the primary insurance for 48% of the women, private insurance for 50% and other/no insurance for 2%. The majority of women had 10 or more prenatal visits (88%). Patient education during prenatal visits varied by topic (Table1). Education regarding folate acid use was more often discussed in the private setting (p<.05). MA patients were less likely to be educated regarding folate acid use and diet and more often received questions on family concerns/domestic violence. They were also significantly less likely to be satisfied with quality of prenatal visit. CONCLUSIONS: Important factors that providers need to address during prenatal visits were not always discussed. Discussion of folate acid use, diet, safety/domestic violence or family concerns may be in need of more education. Percent factor discussed

<table>
<thead>
<tr>
<th>Topic</th>
<th>All women (n=470)</th>
<th>Private (n=323)</th>
<th>Medicaid (n=122)</th>
<th>Other/No (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signs of preterm labor</td>
<td>98%</td>
<td>98%</td>
<td>98%</td>
<td>96%</td>
</tr>
<tr>
<td>Medical history or drugs</td>
<td>82%</td>
<td>84%</td>
<td>76%</td>
<td>74%</td>
</tr>
<tr>
<td>Exercise</td>
<td>71%</td>
<td>70%</td>
<td>76%</td>
<td>74%</td>
</tr>
<tr>
<td>Stress</td>
<td>70%</td>
<td>75%</td>
<td>76%</td>
<td>73%</td>
</tr>
<tr>
<td>Birth control</td>
<td>75%</td>
<td>74%</td>
<td>78%</td>
<td>78%</td>
</tr>
<tr>
<td>Folic acid</td>
<td>81%</td>
<td>81%</td>
<td>86%</td>
<td>60%</td>
</tr>
<tr>
<td>Safety/domestic violence</td>
<td>55%</td>
<td>56%</td>
<td>62%</td>
<td>50%</td>
</tr>
</tbody>
</table>

2 Fellow in Training  
Nursing Staff Education Can Improve Adherence with Central Line Hub Care Protocol
Sulaiman Sannoh, Hassan Khan, Maria Khan, Barbara Clones, Boriana Parvez, RNICU, MFCH WMC, Valhalla, NY; SUNY, Binghamton, NY.

BACKGROUND: Central Line-associated bloodstream infections (CLABSI) increase morbidity, mortality, LOS and healthcare costs. Educational programs to promote best practices for central line (CL) care can reduce sepsis. Adherence to healthcare protocols declines over time, which may increase infections. We have previously shown sustained decrease in CLABSI 9 months after introduction of new CL hub care protocol (2/06). But infection rates increased after the 9 months. We hypothesized that there was a decline in adherence with CL hub care protocol. OBJECTIVE: To assess adherence with CL hub care protocol and effectiveness of education. DESIGN/METHODS: CL hub care protocol has 9 distinct steps which focus on establishing sterile fields and disinfection with chlorhexidine. Nursing adherence with CL hub care protocol was observed by blinded observers three days/week and scored using Observer Check List. Education was conducted with DVD presentation. Adherence with each of the 9 steps of protocol was marked as Yes or No and given a score of 1 or 0 respectively. Observations for each step were expressed as % Yes of total observations. Overall total adherence score was generated, summing all Yes scores. Adherence differences before and after education were analyzed using X^2 for each protocol step and unpaired t-test for the total score (p<0.05). RESULTS: 24 and 26 nurses were randomly observed during CL hub care before and after education respectively. Significant improvement in adherence was noted post-education in 6 out of the 9 protocol steps (p<0.05). The total adherence score was significantly improved. 142% vs 232% (Mean±SD=[p<0.05]). CLABSI rate decreased after education by 55% from 8 to 3.6/1000. CONCLUSIONS: DVD education had significant impact on nurses’ adherence with CL hub care protocol, but periodic re-education campaigns may be necessary to maintain adherence and to promote improvement. In order to achieve complete compliance with each step of protocol, the reasons for non-compliance should be investigated.

3 Educating Neonatal Intensive Care Unit (NICU) Parents About Sudden Infant Death Syndrome (SIDS) Risk Reduction: Promoting a Consistent Message by NICU Nurses  
Nilay Baxi, Barbara M. Ostfeld, Thomas Heygi, Pediatrics, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ.

BACKGROUND: Since 1990 there has been a 16% rise in the US in the rate of premature births, a risk factor for SIDS. In New Jersey, 27% of SIDS cases compared to 9% of all births are premature. The greater vulnerability of this growing population underscores the need for effective NICU parent education on risk reduction. The American Academy of Pediatrics’ (AAP) Task Force on SIDS has encouraged greater participation by NICU nurses in parent education, yet, compared to physicians, there appear to be fewer opportunities for nurses to receive relevant information (Esposito, Ostfeld, Heygi, Journal of Perinatal & Neonatal Nursing, 2007). OBJECTIVE: To determine a baseline for spontaneous bedside education on SIDS risk reduction by nurses practicing in NICUs, in anticipation of regional educational interventions. DESIGN/METHODS: Anonymous surveys were distributed to NICU nurses in an urban community and returned by direct mail or by placement in sealed drop boxes distributed for that purpose. The study met standards for exempt review. RESULTS: Of 90 surveys distributed, 46 (51%) were completed; 70% had 10 or more years of experience. Examples of NICU nurse bedside guidance to parents concerning SIDS risk reduction initiatives are presented in Table 1. Supine sleep was the topic most frequently observed, and 22% of respondents noted in qualitative comments that they also addressed related parental concerns regarding aspiration. Least likely to be discussed were pacifier use, avoidance of bed sharing and benefits of room sharing.

4 Fellow in Training  
Animal Origins of Surfactant: Physician Practice and Parental Information Sharing
Sean M. Bailey, George E. Fryer, Karen Hendricks-Munoz, Pradeep Mally, Pediatrics, New York University School of Medicine, New York, NY.

BACKGROUND: There is no consensus amongst US physicians regarding natural surfactants.Clinicians care for increasingly diverse parents.Many practice Islam, Judaism,teachings of the Seventh Day Adventist Church in which pork is forbidden.Others practice religions in which cow is sacred.or where vegetarianism is a sign of spirituality, Hinduism and Buddhism. OBJECTIVE: To determine if neonatologists discuss the animal origins of surfactant with parents. METHOD: We contacted all members of the American Academy of Pediatrics section on perinatal pediatrics. Practicing US neonatologists with active e-mail accounts were eligible and allowed to answer once. RESULTS: 1000 surveys were returned, a response rate of 46% ,978 were eligible.Surfactant use 63% bovine,15% porcine,22% combination.67% have access to one type.

Table1 Opinions Regarding Surfactant

<table>
<thead>
<tr>
<th>Topic Discussed</th>
<th>Always</th>
<th>Sometimes(M)/Maybe(S)</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you discuss surfactant in NICU consults?</td>
<td>74%(695/936)</td>
<td>20%(S)(188/936)</td>
<td>6%(15/936)</td>
</tr>
<tr>
<td>Do you discuss animal origins with parents?</td>
<td>2%(22/936)</td>
<td>98%(M)(914/936)</td>
<td>0%(0/936)</td>
</tr>
<tr>
<td>Do you personally feel this information should be discussed?</td>
<td>12%(112/928)</td>
<td>81%(M)(744/928)</td>
<td>5%(44/928)</td>
</tr>
<tr>
<td>Do you personally feel this information should be discussed?</td>
<td>21%(193/937)</td>
<td>68%(M)(630/937)</td>
<td>11%(104/937)</td>
</tr>
</tbody>
</table>
5 Fellow in Training

Incidence of Late Preterm Birth and Associated Respiratory Morbidities

Sean M. Bailey, Shaveta Malik, Nicholas Paik, Annika Brown, George E. Fryer, Karen Hendrickcs-Munoz, Pradeep Mally, Pediatrics, New York University School of Medicine, New York, NY.

BACKGROUND: Late preterm (LPT) neonates are often admitted to the Newborn Nursery. The perception is that these infants are low-risk, requiring little evaluation and monitoring.

OBJECTIVE: To determine if the incidence of LPT births are related to etiology and treatment of respiratory distress associated with LPT neonates.

DESIGN/METHODS: Retrospective chart review of infants born between 34 0/7 - 36 6/7 weeks GA admitted to NICU at NYU from Jan 2006 to June 2007. Neonates with CHD, surgical conditions, genetic disorders, birth asphyxia and birth weight <1500g were excluded.

RESULTS: Data were analyzed using student t-test, chi-square test, one-way ANOVA. P-value <.05 was significant.

OBJECTIVE: We hypothesize that a differential surfactant-mediated suppression of airway inflammation may be appreciated from preterm infants <30 wks weighing <1 kg requiring mechanical ventilation for RDS.

RESULTS: All 1186 admissions to the NICU from this period were studied. 137 infants met inclusion criteria.

CONCLUSIONS: Most of 34wk GA neonates were admitted to the NICU, those not directly admitted had increased need of respiratory intervention. 36 wk GA neonates with respiratory symptoms had significantly increased rates of pneumothorax and decreased exposure to antenatal steroids.

6 Effect of Surfactant Type on the Pro-Inflammatory Response of ELBW Infants

Vanessa V. Mercado, Mitashi Singh, Hima Maramreddy, Joie Fisher, Lance A. Parton, Division of Newborn Medicine, Maria Fareri Children's Hospital, Westchester Med, Valhalla, NY; New York Medical College, Valhalla, NY.

BACKGROUND: While in vivo and in vitro studies have identified surfactant apoproteins (SP-A) and -D as important immune mediators, natural surfactant preparations such as Survanta® and Curosurf® have variable concentrations of SP-A and SP-D. The role of these SPs in inflammatory or infectious lung disease has not been extensively investigated in preterm newborns. In vitro studies have shown that Curosurf® suppresses secretion of inflammatory cytokines in a dose-dependent manner. In our pilot study, there was no difference in the expression of pro-inflammatory mediators between preterm infants who received either of 2 surfactants, perhaps because we excluded patients at risk for a perinatal inflammatory exposure (e.g., PPMR, chorioamnionitis). In this subsequent phase of the study, we include patients who may have been perinatally exposed to inflammation and/or infection.

OBJECTIVE: We hypothesize that a differential surfactant-mediated suppression of airway inflammation may be appreciated from preterm infants <30 weeks weighing <1 kg requiring mechanical ventilation for RDS.

RESULTS: Infants <30 weeks gestational age (GA) and weighing <1 kg at birth were randomly assigned to receive either Curosurf® (N=7) or Survanta® (N=8) following parental consent. Airway secretions (TA) were collected and analyzed for IL8 and IL6 on days 1.35, and 7. We excluded patients with multiple congenital anomalies and those exposed to maternal anti-inflammatory medications.

RESULTS: There were no significant differences in birth wt (Curosurf® 715±52g; Survanta® 787±137g; mean±SD) or GA (Curosurf® 28±6; Survanta® 28±1 weeks). No differences were seen between the 2 groups when levels of TA-L8 and IL-6 were compared.

7 House Officer

Epideimology of Neonatal Bacteria in a South Bronx Hospital

Deepthi Alapati, Dinabell Peralta-Reich, Gaina Cirilo, Benamanahalli K. Rajegowda, Robert J. Leggiadro, Pediatrics, Lincoln Medical and Mental Health Center, Bronx, NY;

BACKGROUND: Bacteria in neonates increases risk for morbidity and mortality. It occurs in two forms, early onset (perinatally acquired) and late onset (hospital acquired, late manifestation of perinatally acquired or community acquired).

OBJECTIVE: To evaluate the incidence of neonatal bacteria and identify any trends between early vs late onset.

RESULTS: Bacteria due to GBS in our population is 2-3 times higher than nationally reported rate. Differential differences continue to exist. The population served by our hospital is primarily Hispanic and Black of low socioeconomic status. Most episodes of neonatal bacteremia occurred in very-low-birth-weight premature infants with prolonged NICU stay with or without invasive procedures. Close monitoring of maternal infection and treatment, strict hand washing, aseptic precautions for all invasive procedures and avoidance of overcrowding are essential preventive measures.

CONCLUSIONS: There were no differences in the pulmonary pro-inflammatory responses within the first week of life in neonates <1kg with RDS given either Curosurf® or Survanta®, even when stratified for indication of increased inflammation (maternal chorioamnionitis, need for DR resuscitation).

8 House Officer

G6PD Deficiency – A Risk Factor for Increased Mortality in Septic Newborns?

Anja Mowes, David L. Schultzman, Lisa Duffy, Rachel Porat, Pediatrics, Albert Einstein Medical Center, Philadelphia, PA.

BACKGROUND: Known risk factors for neonatal sepsis include prematurity, low birth weight, perinatal asphyxia and PROM. Whether G6PD deficiency is a risk factor for sepsis in term babies remains controversial and is not well studied in preterm babies. To our knowledge late onset sepsis was mainly described among those with the more severe Mediterranean mutation.

OBJECTIVE: To assess whether G6PD deficiency is an additional risk factor for sepsis in term and preterm infants.

RESULTS: All 1186 admissions to the NICU from this period were studied. 137 infants met inclusion criteria. Of them 8 (5.8%) were G6PD deficient, a prevalence similar to our delivery population as a whole. All 8 patients had the G02aA-R376G mutation, the most common mutation among African-Americans. Septic babies with G6PD deficiency were more likely to weigh less and to be more premature (BW 1.4 ± 0.9 kg; GA 30 ± 6.5 wks) than those without G6PD deficiency (BW 2.2 ± 1.2 kg; p=0.14; OR 4.3; p=0.01), but this was not significant. There was no significant difference among the groups regarding maternal fever or length of ROM. In addition levels of CRP, WBC, IT ratio, incidence of hypoxia, incidence of NEC and ventilatory requirements did not differ between the groups.

CONCLUSIONS: More significantly babies with G6PD deficient had late-onset sepsis compared to the group with normal G6PD levels (62.5% vs. 27.9%; p=0.04; OR 4.3). Incidence of death was significantly higher among septic infants with G6PD deficiency. 3 of 8 compared to 5 of 30 septic infants with normal G6PD status died (p=0.006; OR 14.8).

9 Fellow in Training

Utilization of a Rapid Detection Blood Culture System To Decrease Length of Stay in the Neonatal Intensive Care Unit

Karen D. Lindow-Fuhr, Rishara Maharaj, Monica Zarate, Karen Hendrickcs-Munoz, Yang Kim, Pediatrics, Division of Neonatology, New York University Medical Center, New York, NY.

BACKGROUND: In the US, neonatal sepsis remains a major cause of infant morbidity. Traditional sepsis evaluations utilize a 72 hour assessment. We hypothesized that implementation of a multidisciplinary rapid microbiology detection system would be associated with 1) a return of positive cultures prior to 48 hours at Bellevue Hospital Regional Perinatal Center (RPC) and 2) a reduction in length of Neonatal Intensive Care Unit (NICU) stay and NICU hospitalization cost.

OBJECTIVE: To review charts of infants with blood cultures as part of their sepsis evaluation; number of positive cultures, rapidity of reporting positive cultures, and bacteria present in positive cultures. To compare the length of NICU stay and cost associated with a 48 versus 72 hour protocol.

RESULTS: A retrospective chart review was performed from June 1, 2004 through May 31, 2007 to identify all neonates who underwent sepsis evaluations at Bellevue Hospital RPC.
**CONCLUSIONS:** A multidisciplinary rapid detection system was associated with positive blood culture reports within 48 hours. Utilization of this system was associated with a decrease in NICU hospitalization days and overall cost within the cohort of vaginal deliveries.

**10**

**Blood Lactate as a Marker for Late-Onset Neonatal Sepsis**  
Rebecca J. Eick, Kabir M. Abubakar, Martin Keszler, Neonatology, Georgetown University Hospital, Washington, DC.

**BACKGROUND:** Late-onset neonatal sepsis is associated with high morbidity and mortality. In pediatric and adult studies blood lactate is a marker of the degree of circulatory disturbance due to sepsis and an indicator of tissue oxygen debt. Elevated lactate has been shown to be an early marker of neonatal sepsis in the first 48 hours of life, but studies to date have not reported a correlation between lactate and late-onset sepsis.

**OBJECTIVE:** To determine if blood lactate level may be a useful indicator of late-onset neonatal sepsis.

**DESIGN/METHODS:** From existing medical records, we collected blood gas, lactate, blood count and culture results in infants who were evaluated for late-onset sepsis in our NICU. Lactate levels were available as part of routine blood gas analysis. Mean lactate levels from 24 hours before to the time of sepsis evaluation were correlated with culture results. Lactate levels 72 to 48 hours before sepsis evaluation served as baseline. Cases were categorized as suspected sepsis (culture negative), coagulase negative staph (CoNS), other organism culture positive, presumed sepsis (culture negative but fully treated), urinary tract infection (UTI), necrotizing enterocolitis (NEC) and spontaneous intestinal perforation (SIP). Data were analyzed using one-way ANOVA with post-hoc analysis using Scheffe contrasts among pairs of means.

**RESULTS:** A total of 173 sepsis evaluations were examined from 86 infants. Mean lactate levels in infants with negative cultures, positive cultures, or presumed sepsis were similar, but lactate values in infants with NEC were significantly higher, compared to all other groups (p<0.05).

There was no correlation between blood lactate and pH or base deficit. Only infants with UTI (108%) and NEC (27%) had a significant increase in lactate levels within 24 hours of sepsis evaluation, compared to baseline.

**CONCLUSIONS:** Blood lactate measurements in the 24 hours preceding and during sepsis evaluation are not a reliable predictor of blood culture results but may differentiate infants with NEC from those with SIP and other infections.

**11**

**Timely Administration of Antibiotics for Infants at Risk for Sepsis in the Neonatal ICU**  
Misha Bhat, Susan Southee, Rebecca Q. Beck, Claire Pagano, Ann Cherry, Jason Corcoran, Jefferson Pickard, John M. North, Neonatal ICU, Inova Fairfax Hospital for Children, Falls Church, VA; Department of Pediatrics, Inova Fairfax Hospital for Children, Falls Church, VA; Quality Improvement, Inova Fairfax Hospital, Falls Church, VA; Pharmacy, Inova Fairfax Hospital, Falls Church, VA.

**BACKGROUND:** It has been shown in adult studies that timeliness of antibiotics can improve survival rates in community acquired pneumonia as well as sepsis in the ICU.

**OBJECTIVE:** To identify and manage barriers to achieve a 95% compliance rate of administering antibiotics within one hour of ordering in a high volume level three ICU.

**DESIGN/METHODS:** FAST PDCA was used to flow process and identify barriers in the process from order to administration of gentamicin and ampicillin in the NICU at Inova Fairfax Hospital for Children. These were subsequently targeted and measures instituted to overcome these barriers were instituted.

**RESULTS:** The major barriers that were targeted for further intervention were line access (50%), pharmacy deliver (15%) and order writing practice (10%). Compliance for the one hour to antibiotics policy improved from 31.3% and 54.7% at baseline to greater than 90% in Q3 07. These results can be viewed in figures 1 and 2.

**CONCLUSIONS:** It is possible to achieve timeliness of antibiotic administration in the setting of a high volume level three ICU.

**12**

**Are the Trends in Incidence of Fungal Sepsis in VLBW Neonates Related to Postnatal Steroids?**  
Oluwatoyin A. Abiodun, Joaquim M.B. Pinheiro, Martha Lepow, Department of Pediatrics, Albany Medical Center, Albany, NY.

**BACKGROUND:** We have noted a recent and unexpected decline in the frequency of systemic fungal infection (SFI) in our NICU and postulate that this is related to changes in use of postnatal steroids for bronchopulmonary dysplasia (BPD).

**OBJECTIVE:** To describe temporal trends in the incidence of SFI in VLBW neonates and to evaluate the hypothesis that postnatal systemic steroids are an independent risk factor for SFI.

**DESIGN/METHODS:** A logistic regression model was used to identify factors associated with SFI in VLBW infants during a 7 year period (1999-2005) at Albany Medical Center between January 1, 1993 and December 31, 2006. The main outcome measure was SFI in neonates 501-1500 grams. Incidence (number of SFIs per 100 patients) was plotted on a p-control chart against 4 prospectively identified eras using 2-sigma control limits. Characteristics and outcomes of infected and non-infected patients were compared using unpaired t-test, chi-square statistics and logistic regression.

**RESULTS:** 77 fungal infections were identified in 1706 VLBW babies surviving >3 days in NICU. Incidence of SFI increased progressively between 1993 and 2002, then declined abruptly. SFI had strong independent associations with antibiotic treatment (OR 3.0, [95%CI 2.0-4.9]), era of birth (Era 3, OR 3.4, [2.5-4.4]), birth weight, gestational age, male sex and vaginal delivery. Steroids for BPD were associated with SFI on univariate analysis, but not independently (OR from logistic regression 1.5, [0.75-2.84]). However, an interaction between era of birth and steroids was observed (Era 3*SterBPD, OR 0.25, [0.18-0.35]).

**CONCLUSIONS:** Measures of immaturity, male sex, full courses of antibiotics, and era of birth was associated with SFI in this cohort of VLBW neonates. Steroids for BPD were not independently associated with SFI except for an interaction with era of birth, wherein steroids appear to decrease the risk of SFI. This likely indicates an unmeasured change in the mode of usage of steroids in different eras (timing, dose, route), or other unobserved obstetrical or neonatal factors.

**13**

**Surveillance Cultures in Babies Less 1500 Grams May Decrease Incidence of Fungemia**  
Sujana Reddy, Santosh Parab, Anthony Barone, Ananthan Harin, Pediatrics, Richmond University Medical Center, Staten Island, NY.

**BACKGROUND:** Systemic fungemia is a known cause of mortality and morbidity in the VLBW neonatal population. Risk factors for fungal infection include multiple courses of IV antibiotics, central lines and extensive areas of skin breakdown.

**OBJECTIVE:** The purpose of this study was to determine if weekly urine mycology cultures and treating positive cultures would prevent systemic fungal infection.

**DESIGN/METHODS:** Retrospective chart review of babies <1500 g from 1/1/99-12/31/06. From 1/1/99-12/31/02 diagnosis of systemic fungemia was based on clinical and positive blood cultures for fungus. From 1/1/03-12/31/06 we increased our surveillance of infections by obtaining blood for bacterial/fungal and urine specimens for fungus, from two weeks of age irrespective of clinical status and at weekly intervals there after (or if suspected sepsis was entertained after the initial antibiotic course.) Urine was sent in a sterile container to the microbiology lab. Blood cultures were sent in standard aerobic bottles. Any positive urine cultures were repeated with a catheterized sample along with a blood culture.

**RESULTS:** From 1/1/03-12/31/06 there were 3 cases (1.53 per 100) of fungemia in babies <1500 grams. In the 4 years prior (N=242) we had 12 cases (4.96 per 100) of fungemia. The >3 fold decrease in odds ratio was statistically significant (Chi sq=28, p<.05). For babies <1500 g born 1/1/03-12/31/06 increased surveillance consisted of blood and urine mycology cultures weekly starting second week of life unless sepsis was suspected. Of 196 babies <1500 g 27 (13.7 %) had positive urine surveillance cultures for fungus. Of these 27 positive culture 94% C albicans 23% C parapsilosis 5.8% C tropicis 5.8% saccharomyces cerevisiae. Mean chronological age at the time of positive urine cultures was 22.8 days with a range of 5 days being earliest, 46 days latest and mean weight 823 g. Central line (UA/UV/PICC) were present in 85 % of the babies and 95 % had ventilator support at the time of positive cultures. 3 out of 196 had positive blood cultures for fungus that grew C albicans and parapsilosis (two organisms found in blood). These risk factors were also present for the time period 1/1/99-12/31/02.

**CONCLUSIONS:** Treatment of asymptomatic/symptomatic positive urine mycology cultures from babies <= to 1500 g has decreased the incidence of systemic fungal infection over 3 fold in our unit. Close surveillance by all health care workers to minimize fungal infection is the key.
Conclusions: No difference in NO production between 2 groups in our study can be secondary to the fact that PBMC were extracted and washed out before experiment that could eliminate the influence of pubertal sex steroids on NO production in these cells. Risk factors for attherosclerosis like obesity and visceral obesity are associated with endothelial dysfunction in adults. In our study we are for the first time found significant negative correlation between index of NO production in PBMC and risk factors for endothelial dysfunction, as obesity and specifically visceral obesity, measured by WC.

17 Oral Glyburide for the Treatment of Gestational Diabetes and Its Effects on the Fetus
Sara D. Sibley, Randi Wasserman, Pradeep Mally, Karen Hendricks-Munoz. Pediatrics, New York University School of Medicine, New York, NY.

Background: The use of oral sulfonylureas (SU) for treatment of gestational diabetes mellitus (GDM) is currently increasing, although it was previously thought to increase the risk of fetal adverse effects, such as hypoglycemia and congenital anomalies. Glyburide is a SU thought to offer clinical benefit without additional fetal risk.

Objectives: To assess the morbidity of infants whose mothers were treated with glyburide for GDM, and compare them to infants whose mothers were treated with insulin.

Methods: We conducted a retrospective chart review of all mothers and their infants at Bellevue Hospital with abnormal glucose tolerance tests who delivered between 1/1/05 and 3/26/06. There were 202 mother/baby pairs. 128 (63%) were treated with diet alone, and excluded from the study. Infants were divided into 2 groups: Infants of mothers who were treated with glyburide, and infants of mothers who were treated with insulin. Groups were then divided into well-controlled and poorly-controlled based on compliance and glucose levels. Outcomes compared included hypoglycemia, congenital anomalies, clinical sepsis, macrosomia, RDS, and hyperbilirubinemia requiring phototherapy.

Results: The study included 74 mother/baby pairs. 36 (49%) of the mothers were treated with glyburide and 38 (51%) were treated with insulin. Infants in the glyburide group fared better with regards to gestational age at birth, congenital anomalies, RDS, IV glucose and phototherapy requirement. Glyburide infants were also larger than the insulin infants (see table). There was no significant difference in length of stay (5±2.5 days for glyburide vs 6.1±7.5 days, p=0.67). On comparison of infants of poorly-controlled to well-controlled/GDM, there was an increased IV glucose requirement in the poorly controlled insulin group [50% (7/24) vs 0% (p=0.03)].

Table: Comparison of Newborn Outcomes

<table>
<thead>
<tr>
<th>Infant Outcomes</th>
<th>Glyburide (n=36)</th>
<th>Insulin (n=38)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cong Anomalies</td>
<td>0%</td>
<td>21%</td>
<td>0.04*</td>
</tr>
<tr>
<td>Birth Weight (grams)</td>
<td>3335±589</td>
<td>3840±514</td>
<td>0.05*</td>
</tr>
<tr>
<td>IV (grams)</td>
<td>20%</td>
<td>10%</td>
<td>0.02*</td>
</tr>
<tr>
<td>Phototherapy</td>
<td>17%</td>
<td>7%</td>
<td>0.03*</td>
</tr>
<tr>
<td>Mean GA (wks)</td>
<td>38 (51%)</td>
<td>38 (51%)</td>
<td>0.67</td>
</tr>
<tr>
<td>Pathology</td>
<td>0%</td>
<td>0%</td>
<td>0.67</td>
</tr>
<tr>
<td>Phototherapy</td>
<td>0%</td>
<td>0%</td>
<td>0.67</td>
</tr>
<tr>
<td>Mean BW (grams)</td>
<td>3600±500</td>
<td>3200±800</td>
<td>0.06*</td>
</tr>
</tbody>
</table>

Conclusions: Maternal treatment with glyburide for GDM results in larger infants, later births, and fewer short term morbidity when compared to infants of insulin treated mothers. Glyburide treatment was not associated with greater fetal anomalies or hypoglycemia and may be a therapeutic choice in selected diabetic mothers.
OBJECTIVE: To examine the evolution of the aEEG background and seizures in infants with HIE during treatment with HC.

DESIGN/METHODS: Continuous aEEG monitoring was performed during HC in 56 infants with HIE. After skin cleansing, needle electrodes were inserted at the hairline and directed posteriorly. A lead was placed in the midline and at each temple, 7 cm apart (3.75 cm from the midline). The leads were secured with clear bio-adhesive dressing. After placing the CoolCap™ infants were cooled to a target rectal temperature of 34.5ºC (± 5ºC) for 72 hours and then rewarmed at 0.3 ºC/hr to 36.5 ºC. Skin integrity at the electrode sites was checked 8 hourly. Changes in the aEEG were analyzed. An EEG was performed 0 to 4 days after HC.

CONCLUSIONS: Continuous aEEG monitoring during HC is feasible and safe. aEEG changes including seizures occur during HC. Recovery is least likely to occur when the initial background is severely abnormal.

OBJECTIVE: To study the incidence of IVH and evaluate the need for screening HUS in preterm infants with GA of 30-34 weeks.

DESIGN/METHODS: Preterm infants (GA, 30-34 w) admitted to the neonatal intensive care unit (NICU) between January 1997 and September 2007 were included in this study. Grades of IVH were defined as per the Papile classification. Relevant clinical data were collected from the infants’ medical records.

RESULTS: Screening HUS were performed on 463 infants with GA of 30-34 weeks. Twentyseven infants (5.8 %) had abnormal cranial US (IVH or PVL). The incidence of IVH ranges between 3.3% to 6.3% at various GA. There was no significant decrease in the incidence of IVH with increasing GA. Seven (1.5%) infants had severe abnormality on HUS (Grades III/IV or PVL).

CONCLUSIONS: A significant number of infants born between 30 to 34 weeks of gestation have abnormalities on screening cranial US. Additional studies are needed to examine the adverse neurodevelopmental outcomes in this group of preterm infants with mild abnormality (IVH Grades I or II) on cranial US before recommending routine screenings for IVH.

21

Endogenous Cannabinoid System Activation in Neonatal Focal Cerebral Ischemic Injury in Rat Pups

OBJECTIVE: To study the expression of cannabinoid receptors CB1 and CB2 and the enzyme Fatty Acid Amide Hydrolase (FAAH) of the cannabinoid system in a model of perinatal stroke.

DESIGN/METHODS: P7 Wistar rat pups were subjected to permanent focal cerebral ischemia (FCI) as previously described (Wen, 2003). This procedure results in a highly reproducible ipsilateral stroke. Pups were sacrificed at 1, 3 or 7 days after FCI. The brains were fixed and cryoprotected. We performed Nissl staining for neurons and immunohistochemistry for astrocytes (GFAP), CB1, CB2 and FAAH expression were determined using a polyclonal rabbit antibody and an anti-rabbit goat antibody and Alexa 488 or 546. Statistical analysis was performed using Student’s t-test and significance level was defined as p<0.01.

RESULTS: We included 4 pups for each time point. FCI caused a well defined ipsilateral injury with an almost complete absence of neurons and an intense glial reaction. We also observed an increase in neuronal population in the penumbra starting on day 3 post FCI. The expression of CB1 in neurons increased significantly very early, starting 24 hours post FCI. The reactive astrocytes showed an increase in the expression of FAAH, and this occurred 7 days after FCI. The expression of CB2 was also significantly increased in the reactive astrocytes in the penumbra at that time.

CONCLUSIONS: An ischemic episode to the developing brain causes early and sustained increase in the expression of CB1 and a later increase in the expression of CB2 and FAAH associated with the glial response. These findings suggest a relevant role of the endogenous cannabinoid system in general and of the CB2 receptors in particular, in the natural response to an ischemic lesion. Modulation of the cannabinoid system needs to be explored as a neuroprotective strategy for the developing brain.

22

House Officer

Maternal Methadone Dose Does Not Predict Frequency of Treatment for Neonatal Abstinence Syndrome

Neil Seligman, Kevin Dysart, Nicole Salva, Edward Hayes, Marie O’Neill, Benjamin Leiby, Jennifer Kern, Jason Baxter, Obstetrics and Gynecology, Thomas Jefferson University Hospital, Philadelphia, PA; Pediatrics, Thomas Jefferson University Hospital, Philadelphia, PA; Division of Biostatistics, Thomas Jefferson University Hospital, Philadelphia, PA.

BACKGROUND: Treatment of opioid dependence in pregnancy is recommended to decrease iIlicit opioid use, criminal activity, and mortality but the appropriate daily methadone dose is controversial.

OBJECTIVE: Our objective was to determine whether the daily maternal methadone dose is related to the incidence of neonatal abstinence syndrome.

DESIGN/METHODS: Retrospective cohort study of neonates born to mothers treated with methadone for opiate addiction between 2000-2006 (n=317). Inclusion criteria included urine drug screen positive for methadone within 2 weeks of delivery. Infants were scored by the Finnegan scoring system and treatment was initiated when the sum of the last 3 scores exceeded 24. Logistic regression was used to model the association between neonatal treatment and dose at delivery. Multivariate logistic regression was performed to adjust for confounding factors. The analysis was repeated for infants <32 weeks because prematurity is known to complicate NAS.

RESULTS: Overall, 180 (56%) infants received treatment for NAS. Dose at delivery was associated with trimester of initial exposure (p=0.002), length of exposure (p=0.005), and maternal race (p=0.003). Information was incomplete in 22 patients. After adjusting for these possible confounders (n=298), there was a non-significant trend toward increased frequency of treatment for NAS with higher maternal methadone doses at delivery (p=0.883). This non-significant trend was also present after excluding neonates born at less than 32 weeks gestational age (n=273; p=0.52).

CONCLUSIONS: Despite the appearance of a trend, there is no relationship between the maternal dosage of methadone at delivery and the incidence of NAS in a large inner city population. The findings are consistent with previously published data by V. Berghella (Am J Obstet Gynecol; 2003) in the same population. Our practice is titration of maternal methadone dosage in relation to symptoms of withdrawal.
23  Fellow in Training
High PaO2 Is Directly Proportional to SpO2 Levels 94%-100% in Newborns Receiving Oxygen in the Neonatal Intensive Care Unit
Armando R. Castillo, Hernando Baquero, Freddy Neira, Ramiro Alvis, Ann Critz, Richard Deouleuf, Augusto Sola, Neonatal-Perinatal Medicine, Emory University, Atlanta, GA; Neonatology, Universidad del Norte, Barranquilla, Atlantico, Colombia; Neonatology, Pediatric Medical Group, Dallas, TX; Neonatology, Atlanta Neonatal Research Institute and MANA, Morristown, NJ.

BACKGROUND: As described by our group and others, newborns (NB) breathing FiO2>0.21 with SpO2>93% are exposed to persistent or intermittent hyperoxemia, which is associated with a higher morbidity. No description in human infants exists of PaO2 values at varying SpO2 of 94% and above.

OBJECTIVE: To evaluate the PaO2 at different SpO2 levels above 93% in NB with arterial catheters.

DESIGN/METHODS: Prospective comparison of PaO2 and SpO2 in NB in 6 NICUs located at or near sea level in 2 countries. PaO2 obtained for clinical indications; simultaneous SpO2 was recorded at the time of the arterial gas. Comparisons were made if the SpO2 changed <1% before, during and after the collection of the sample. Statistics: Chi square, ANOVA.

RESULTS: A total of 530 SpO2 values were=93% in 122 NB; 80% of these samples where in NB with FiO2>0.21. GA and BW: 29±5.2w and 1338±871g. For NB in RA, mean (±SD) and median PaO2 at different SpO2 intervals were: A) 94–94.5%, 61.3±12.6 and 59.3-94.5%; B) SpO2, 96–97.5%, 68.9±14.6 and 68.6(5.4–108); & C) SpO2, 98–100%, 72±18 and 70.3(34–120). In NB breathing FiO2>0.21 the PaO2 were: 1) SpO2, 94–95%, PaO2 71±328.7 and 62(32–150); 2) SpO2, 96–97.5%, 92±38.1 and 84(34–256)[p≤0.05 vs 1] & 3) SpO2, 98–100%, 143±66.5 and 131(48–438)[p=0.05 vs 1 and 2]. At all these SpO2 intervals, the PaO2 of NB with FiO2>0.21 was significantly higher (p<0.001) than those in RA.

CONCLUSIONS: In NB breathing supplemental oxygen there is potential increase in risk for oxidative damage as the SpO2 increases between 94% and 100%, since in these ranges PaO2 values increase in a linear relation to SpO2. These findings add to the growing evidence that SpO2 must be kept at or below 93% in an effort to avoid potential morbidity associated with hyperoxemia.

24 T-Lymphocytes in Human Infants with Bronchopulmonary Dysplasia (BPD)
Rita M. Ryan, Qadeer Ahmed, Christopher A. D’Angelis, Vasanath K. Kumar, Satyan Lakshminrusimha, Leon A. Metlay, Huamei Wang, Gloria S. Pryhuber, Pediatrics (Neonatology) and Pathology, Univ Buffalo, Buffalo, NY; Pediatrics (Neonatology), Environmental Medicine and Pathology, Univ Rochester, Rochester, NY.

BACKGROUND: Previous studies have examined the roles of inflammatory cells such as macrophages and neutrophils in the early pathogenesis of bronchopulmonary dysplasia. In chronic lung diseases, for example idiopathic pulmonary fibrosis, it appears the T-lymphocyte is an important contributor to disease. The role of the lymphocyte in the development of bronchopulmonary dysplasia has not been studied.

OBJECTIVE: To examine human infant autopsy samples for the presence of T-lymphocytes.

DESIGN/METHODS: The right middle or lower lobe of human neonatal lung was preserved within 6 hours of birth. For NB in RA, mean (±SD) and median PaO2 at different levels of PaO2 were: 52.1±0.2 and 52; 28±1 and 28

25 Medical Student
Quantified Impulse of Helicopter Versus Ground Transport as Measured by Biophysical Accelerometry
Shetal Shah, Andrew Dyalas, Joseph Hudak, Department of Pediatrics, Division of Neonatology, Stony Brook University Medical Center, Stony Brook, NY.

BACKGROUND: Impulse (force per unit time) transmission to the neonate as a consequence of acceleration during transport has been implicated in the increased morbidity of this population. Currently, impulses experienced by infants compared to mode of transport (helicopter vs. ground) have not been well characterized.

OBJECTIVE: To mathematically model the magnitude & direction of impulses experienced by neonates during air & ground transport using biophysical accelerometry. We further examined the effect of airfoil on impulse measurements.

DESIGN/METHODS: Ten ground transport trials (randomized as to use of airfoil) were conducted using a common route (mean distance 4 miles) for a transferred neonate using a standard medical ambulance & transport isoelette. Two air transport trials were conducted on a military-outfitted Blackhawk helicopter transport helicopter. During the trials, acceleration measurements in the X (front-to-back), Y (side-to-side), & Z (up-down) planes were sampled at 5 Hz using a computerized accelerometer attached to a neonatal resuscitation mannequin.

We characterized impulse transmission by mathematically integrating acceleration measurements in each plane. Accelerometry data underwent curve-fitting analysis using a model sinusoidal pattern to determine the amplitude, frequency, phase, & offset of movements. Total trial impulse, defined as the vector sum of each integral, was subjected to 2x2 factorial ANOVA.

RESULTS: Overall, ambulance transport with airfoil resulted in significantly less total trial impulse compared with helicopter or ambulance without airfoil (p<0.0001, ANOVA).

Because the helicopter trials, use of the airfoil mattress resulted in less overall impulse (50.2±6.5 vs. 70.2±5.8 m/sec²/min; p=0.001) and frequency (261 ± 26 Hz vs. p=0.001) of acceleration changes during transport.

CONCLUSIONS: In this model, neonates transported via air experienced significantly greater impulse than those transported via ground. Ground transport with airfoil imparted the least overall impulse of all trials conducted & should be considered if practical. Attention must be paid to the biophysical stress created during transport, which may decrease transport-related morbidity for these infants.

26 Fellow in Training
Transport-Induced Biophysical Impulse Alters Respiratory Finction in Neonatal Sprague-Dawley Rats in a Dose-Dependent Manner
Joseph J. Hudak, Andrew Dyalas, Shetal I. Shah, Pediatrics, Stony Brook University Hospital, Stony Brook, NY.

BACKGROUND: Forces experienced by neonates due to accelerations during transport are associated with adverse neonatal outcomes. These accelerations measured per unit time (impulse) were shown previously to alter respiratory function in rats. Dose-response changes in respiratory function as a result of increasing transport time are not well characterized.

OBJECTIVE: To examine changes in respiratory function resulting from different cumulative impulse levels using a neonatal rat model.

DESIGN/METHODS: 4 groups of Sprague-Dawley rat pups underwent simulated transport on day of life 11 or 12. During the simulation each group was exposed to an average impulse of 27.4 m/sec²/min for 30, 60, or 180 minutes. Each group was subjected to 2x2 factorial ANOVA.

RESULTS: A total of 81,066 data points were analyzed in the trials. Increased transport time resulted in a step-wise increase in conduction airway resistance at all levels of PEEP (p<0.01). Static compliance decreased after 80 minutes of PEEP at 3 & 5 cm H2O (p<0.05). Tissue damping increased with duration of transport time across all PEEP levels, but only exhibited statistical significance at a PEEP of 0 cm H2O (p<0.05). No statistically significant differences were seen in hysteresis, PV curves were altered at all levels of pEEP in a dose-dependent manner, (p<0.0001).

CONCLUSIONS: In this model transported neonatal rats exhibited significant deterioration of respiratory function with increasing duration of simulated transport. Taken together, decreases in static compliance and increases in tissue damping are consistent with an injury to the lung. Post-travel, neonatal rats exhibited significant respiratory failure.

27 Fellow in Training
Desaturation (Desats) Events Are Related to Threshold Retinopathy of Prematurity (ROP) and Laser Therapy (LT) in Extremely Low Birth Weight Infants (ELBW) < 750g
Michelle Weissman, Tommy Rousseau, Jeffrey Perlman, Newborn Medicine, New York Presbyterian-Weill Cornell, New York, NY.

BACKGROUND ROP remains a major morbidty in the ELBW with threshold ROP extremely common in those <750g. Known risk factors include gestational age (GA), birthweight (BW), severity of illness and supplemental O2. Experimental evidence suggests that a paradigm of hypoxia/hyperoxia alone cannot be accounted for these cases.

OBJECTIVE: The study objectives were to determine weekly episodes of apnea (A), bradycardia (B) and Desats in ELBW and the relationship of these events to the development of ROP.

DESIGN/METHODS: A retrospective chart review 2003-2007 of ELBW < 750g (n= 44) who survived to discharge was done. Weekly events recorded for each incremental G in GA. Apnea was defined as absent
breathing for > 20 seconds, bradycardia as heart rate < 100 BPM, Desat as SaO2 < 85%. Saturation (SATS) are managed by \( T \) baseline FiO2 by 10% until the SATS are > 90%. The number of weekly events between those who developed TROP requiring LT (n = 9) vs with those with ROP ≤ stage 3 (n=35) was compared using student and paired t-tests.

RESULTS: Infants who developed TROP vs No threshold were a \( \sim \) GA > 411.4±2.6 vs 26±1.18 wks (P=0.01). No differences were noted between with ROP ≤ stage 3 (n = 35) and with ROP > stage 3 (n=30) infants with respect to gender, days requiring respiratory support, or days requiring apnea/breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP requiring LT (n= 9) vs with those with ROP ≤ stage 3 (n=35) infants with respect to days requiring breath holding for saturation <70 reduct in any quartile. In addition, no differences were noted between those who developed TROP require
MRSA. All patients had skin and soft tissue infections. The majority (56%) of patients infected with MRSA did not have a predisposing factor or underlying condition. Seventeen (94%) of eighteen CA-MRSA isolates were susceptible to trimethoprim-sulfamethoxazole (TMP-SMZ) and tetracycline, respectively, eleven (61%) were susceptible to levofloxacin, and three (17%) were susceptible to erythromycin and were also clindamycin resistant (Table 1). Only six (28%) of eighteen MRSA patients, and one (7%) of fifteen MSSA patients were treated empirically for MRSA on admission. One-third of MSSA and MRSA patients, respectively, had surgical intervention, and one patient with MRSA infection had a relapse.

CONCLUSIONS: Skin and soft tissue infections are the most common clinical manifestations of CA-MRSA in our pediatric population. The 55% prevalence of MRSA in our community-associated staphylococcal infections suggest a need to reconsider empirical antimicrobial choices in these cases. Surgical intervention is important in the management of these infections, and clindamycin resistance among CA-MRSA isolates should be monitored locally to determine if empiric therapy with this drug is appropriate.

### 33 House Officer

#### Variability in Clearances, Electrolytes and Anemia in Children Receiving Hemodialysis – When Should Labs Be Drawn?

Christina R. Nguyen, Dale Bednarz, Jim Flanagan, Abubakr Imam, Deepa Chand.

Pediatric Nephrology, Cleveland Clinic Childrens Hospital, Cleveland, OH; Pediatric Nephrology, Akron Childrens Hospital, Akron, OH.

BACKGROUND: The National Kidney Foundation guidelines recommend the delivered dose of hemodialysis (HD) be measured no less than monthly by checking clearances (Kt/V and urea reduction rates). Studies demonstrate correlation between delivered dose of HD and patient morbidity/mortality. Nephrologists vary in the clinical practice of determining Kt/V based on theory that the patient should be in a steady state and without variability. Pediatric patients have more metabolic variability and growth velocity than their adult counterparts. Furthermore, it is unknown whether other parameters evaluated during dialysis vary depending on the time of day. Dialysis prescriptions are based on clearances calculated monthly, but no guidelines exist as to when labs should be obtained.

OBJECTIVE: The purpose of this study is to determine variability of electrolytes, clearances, and hemoglobin levels in children based on samples obtained at two different times of the day.

METHODS: Prospective data collection was performed at 2 independent pediatric hemodialysis centers in a total of 17 patients under 21 years of age receiving HD-MW-F over six consecutive months. Data obtained at each timepoint (Mondays and Wednesdays) included age, race, gender, dialysis vintage, renal disorder, ultrafiltration volume, serum electrolytes, and hemoglobin. Dialysis prescriptions remained constant between the two timepoints. Clearances were calculated on each occasion. Data was analyzed using SPSS® software using analysis of variance.

RESULTS: Preliminary analysis shows mean difference in Kt/V of 0.21 between Monday and Wednesday. Hemoglobin levels varied between the two timepoints each month with a mean difference of 0.28. Serum potassium levels had a mean difference of 0.1. Results are illustrated in Table 1.

**CONCLUSIONS:** This study is the first to demonstrate variability in clearances, potassium levels, and hemoglobin levels in children receiving hemodialysis based on the day of laboratory collection. This factor is important in dialysis dosing in children who require precise monitoring to decrease morbidity and mortality.

### 34 Medical Student

#### Recurrent Focal Segmental Glomerulosclerosis (rFSGS) in Renal Allograft Recipients: Role of Donor-Specific Circulating Antibodies (PRA) and HLA Mismatching

Shimi Sharief, Shelia Moawad, Vivian Tellis, Marcela Del Rio, Fredrick J. Kaskel, Robert P. Woroniack, College of Medicine, Albert Einstein College of Medicine, Bronx, NY; Pediatric Nephrology, Montefiore Medical Center, Bronx, NY; Transplant Surgery, Montefiore Medical Center, Bronx, NY.

BACKGROUND: Incidence of pediatric rFSGS is 30-50%. The effectiveness of therapeutic plasma exchange (TPE) suggests that a humoral mechanism underlies rFSGS. We hypothesized that peak PRA levels (pPRA) and HLA mismatching could be used as surrogate markers of rFSGS.

OBJECTIVE: To examine a relationship between pPRA and HLA mismatching and rFSGS.

**DESIGN/METHODS:** In a cross-sectional study of primary FSGS patients transplanted from 1990-2007 at a single pediatric center, we analyzed the relationship between rFSGS and pPRA and HLA matches. Relationship between FSGS, low TPE, and number of HLA mismatches (A, B, DR) was analyzed by logistic regression.

**RESULTS:** 42 subjects received 52 allografts (9 had 2nd, 1 had 3rd allograft). 15 had rFSGS in 1st, 2 in the 2nd, and none in 3rd allograft. There were 18(43%) black, 15(36%) white, 6(13%) latino, and 3(7%) other race subjects. rFSGS and control (CT) groups were not different for: age at transplant, gender, donor source, number of acute rejection episodes (AR), chronic rejection episodes, HLA matches, and immunosuppressive regimens (R). pPRA; prednisone, calcineurin and purine inhibitors, and rapamycin. pPRA after adjusting for AR were not significantly different between the two groups. rFSGS was not associated with high pPRA and HLA mismatches, p = 0.41. Kaplan-Meier analysis showed rFSGS free survival time was similar in subjects with pPRA<30 and pPRA≥30, p=0.08. IR had no effect on FSGS, p=0.22. pPRA was associated with AR, p=0.008, 3(33%) subjects with rFSGS and 0/14 CT had humoral AR.

**CONCLUSIONS: PRA levels are associated with AR. We found no association between pPRA and HLA mismatching and rFSGS. In our experience rFSGS is associated with humoral AR.**

### 35 Fellow in Training

#### Obesity as a Risk Factor for Microalbuminuria in Hypertensive Children

Gunjeeta Kala, Sudha Garimella, James Springate, Pediatrics, SUNY at Buffalo, Buffalo, NY.

BACKGROUND: Microalbuminuria, defined as a urine albumin to creatinine ratio of 30-300mg/gm, is a well-known marker for kidney end-organ damage in diabetics. More recently adult studies have shown that microalbuminuria can serve as a strong indicator of renal damage and poor cardiovascular outcomes in hypertensive patient populations. There have not been many studies documenting microalbuminuria in hypertensive children. Garimella et al. (PAS2005:57:467) had completed a study which concluded that proteinuria was more prevalent amongst hypertensive children than in the general pediatric population. However it was found that obesity may be a confounding factor for the study and that a larger study group was required.

OBJECTIVE: Our objective in this study is to calculate and statistically analyze the prevalence of microalbuminuria in normal, hypertensive, and/or obese children in pediatric clinics.

**DESIGN/METHODS:** The study was approved by the Women and Childrens Hospital of Buffalo. Patients were excluded from the study if they had pre-existing renal disease, secondary hypertension, diabetes, blood pressure-altering medications, illness, fever or recent excessive exercise. Parameters and definitions for hypertension and BMI/obesity were based on current accepted guidelines by the AAP. Urine samples were collected with consent from children who met inclusion criteria between the ages of 3 to 18. The subjects were allotted into one of four groups: normotensive/normal BMI, hypertensive/normal BMI, normotensive/obese, and hypertensive/obese. The principle investigator collected samples and tested each sample using Immunodip®.

**RESULTS:** In total, 95 patients were enrolled in the study: 19 were hypertensive, 20 were obese, 39 were both hypertensive and obese, and 17 were normotensive/normal BMI. The prevalence of microalbuminuria in the hypertensive population was 52.6% (p<0.01); the obese population was 30% (p=0.17); the hypertensive and obese population was 20.5% (p<0.05); and the normal population was 11.8%.

**Study Results**

<table>
<thead>
<tr>
<th>MA</th>
<th>Obese</th>
<th>Hypertensive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA+ 10</td>
<td>6</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>MA- 24</td>
<td>14</td>
<td>18</td>
<td>46</td>
</tr>
<tr>
<td>P</td>
<td>0.0001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CONCLUSIONS:** From this study we can conclude that there is a statistically significant prevalence of microalbuminuria in the pediatric hypertensive population. We can also conclude that obesity alone is not a confounding variable when testing for microalbuminuria in children.
CONCLUSIONS: In failing diabetic hearts, targeted delivery of Tgfl-1 decreases infarct size, induces angiogenesis and improves hemodynamic function, as measured by echocardiography. Altogether, our results indicate dual effectiveness of Tgfl in diabetic animals in promoting neovascularization and augmenting protective as well as regenerative response in ischemic rat myocardium.

Parasternal Short-axis View

37 8:30 AM  House Officer

Sildenafil Augments Early Protective Transcriptional Changes After Ischemia in Mouse Myocardium – cDNA Microarray Analysis

Ramesh Vidalavul, Srikant Koneru, Suresh Varma Penumathsa, Maulik Nilanjana, Winfried Kruger, Pediatrics, Connecticut Children’s Medical Center, Hartford, CT; Surgery, Molecular Cardiology Laboratory, University of Connecticut Health Center, Farmington, CT; Microarray Laboratory, University of Connecticut Health Center, Farmington, CT.

BACKGROUND: Targeting cyclic-GMP specific phosphodiesterase-5 (PDE5) has attracted interest in several cardiopulmonary diseases, in particular low flow states associated with surgical repair of congenital heart disease in children. Although multiple mechanisms were postulated for benefit effects at cellular level, early transcriptional changes were unknown.

OBJECTIVE: To examine differential gene expression profiles in response to MI after 24 hours of ischemia in murine model and compare transcriptional modulation by sildenafil, a popular PDE5 inhibitor.

DESIGN/METHODS: Mice were divided into four groups. Control sham (C), Sildenafil sham (S), Control MI (CMI) and Sildenafil MI (SMI). Sildenafil was given at a dose of 0.7 mg/kg intraperitoneally 30 minutes before LAD occlusion. cDNA microarray analysis of peri-infarct tissue was done using a custom cDNA oligonucleotide microarray employing a looped dye swap design. Replica signals were median averaged and normalized using LOWESS algorithm. R/MANOVA analysis was used and false discovery rate corrected, permutation p-values <0.05 were employed as significance thresholds. RT-PCR was done to validate microarray results.

RESULTS: 156 genes were identified as significantly regulated demonstrating fold difference >1.5 in at least one of the four groups. 52 genes were differentially expressed in SMI compared to CMI. For a subset of 9 genes, microarray data were confirmed through QRT-PCR. Infant size mass reduction showed 48% reduction in SMI compared to CMI. The differentially expressed genes were grouped into following groups: Phosphorylation (e.g. rap35, TGFb), Apoptosis (e.g. bcl2, Gadd45a, Pycard), differentiation (e.g. gata2, fox1), ATP binding (Hsp1a, Tap 2).

CONCLUSIONS: These data suggest that sildenafil, within the peri-ischemic myocardium, may regulate early genetic reprogramming conferring cardioprotection which may represent the balance between the control and sildenafil-induced molecular mechanisms.

38 8:45 AM  Fellow in Training

Echocardiographic Predictors of Mortality in Congenital Diaphragmatic Hernia (CDH)

Monisha Bahri, Matthew Eig, Robin Doroshow, Stephen Baumgart, Martin Kesler, Neonatology, Georgetown University Hospital, Washington, DC; Neonatology, Children’s National Medical Center, Washington, DC; Cardiology, Children’s National Medical Center, Washington, DC.

BACKGROUND: Reliable prediction of outcome in patients with CDH is important to identify those who may benefit from maximal therapies and to counsel parents. A mathematical model based on measures of left heart hypoplasia (LV mass x fractional shortening) was previously shown to predict death in a small case series.

OBJECTIVE: To evaluate the ability of the left ventricular mass index to predict outcome in infants with CDH in a large multicenter series.

DESIGN/METHODS: We retrospectively reviewed echocardiograms, hospital course, need for ECMO and survival of CDH patients treated at our two institutions from Jan 1993 to Jun 2007. Infants with GA <36 weeks or major anomalies were excluded. Each infant’s first available echocardiogram was de-identified and independently reviewed by a cardiologist masked to the patient’s outcome. LV mass (LVM) using area-length method of Wyatt et al, fractional shortening (FS) and LVM index (LVM x FS)² were calculated. Descriptive statistics and t-test were used. Sensitivity, specificity and +/- predictive values were calculated.

RESULTS: 59 of 114 eligible patients had digital echocardiograms available for analysis. Eleven patients with poor echo quality. 1 with incomplete data and 2 who died acutely of other causes were excluded. 34 (75%) infants survived and 11 (25%) died with no difference in GA (38.3 ± 2.1 vs 38.2 ± 2.0 wks) and BW (3.11 ± 0.6 vs 3.0 ± 0.4 kg) between groups. LVM/kg and LVM index were significantly lower in the nonsurvivors. Data are mean±SD.

A modified index using LVM/kg instead of total LVM i.e (LVM/kg x FS)² resulted in the best separation of survivors/non-survivors (sensitivity 91%, specificity 76%, negative predictive value 96%) using a cutoff value of 0.95. Infants who needed ECMO (22/45) had lower LVM/kg (1.27 ± 0.35 g/kg) compared to those who survived without ECMO (1.58 ± 0.64 g/kg, p<0.001).

CONCLUSIONS: Infants who require ECMO have lower LVM/kg compared to infants surviving without ECMO. Indexes of LV mass are reduced significantly in nonsurvivors with CDH. The modified LV mass index predicts non survival with a high sensitivity and specificity.

39 9:00 AM  Heme Oxygenase-1 Is Required for Lung Vascular and Alveolar Development


BACKGROUND: Heme oxygenase (HO)-1 is a cytoprotective molecule that degrades cellular heme to CO, iron, and bilirubin. HO-1 can up-regulate VEGF and VEGF receptors, increase endothelial cell proliferation, and promote angiogenesis. Lung specific overexpression of HO-1 in transgenic mice protects the animals from hyperoxia-induced lung injury through induced endothelial cell proliferation and hypertension. HO-1 knockout mice show reduced viability, growth retardation and deficiency in iron metabolism.

OBJECTIVE: To determine the in vivo roles of HO-1 in mouse vascular and postnatal alveolar development with molecular and genetic approaches.

DESIGN/METHODS: Mouse embryos from heterozygous HO-1 breeding were harvested between E14.5 and E18.5, fixed and histology study, or homogenized for protein and mRNA analysis. To determine the HO-1 function in lung development, newborn pups from heterozygous HO-1 breeding were injected with Dexamethasone (Dex, 0.25ug/gip per day) for 14 days. Wildtype and HO-1 mutant lungs were inflated and fixed for histology study, or homogenized for gene expression analysis. Protein expressions were determined by Western blot analysis. mRNA levels were determined by real-time RT-PCR analysis.

RESULTS: HO-1 mutant embryos displayed general growth retardation and severe hemorrhage in the brain, lung, muscle and other organs, indicating disrupted vascular integrity. Histological analysis of E17.5 mutant embryos showed dilated blood vessels with rupture and thinning of the smooth muscle layers. Real time RT-PCR analysis demonstrated that in E14.5 HO-1 mutants, mRNA levels of two endothelial cell (EC) specific genes, KDR and Flk1, were decreased whereas HO-1 was increased. HO-1 mutants have reduced viability at birth. At postnatal day 10, HO-1 mutant lung displayed disorganized and simplified alveolar structure. In wildtype, Dex treatment inhibits postnatal alveolar development and causes reduction of EC markers (KDR/Flk-1 and Tie-1) expression. HO-1 expression was also decreased in DEX treated wildtype animals. Furthermore, postnatal treatment of the HO-1 mutants with Dex resulted in more severe atelectasis and reduced proliferation, apoptosis and migration were evaluated.

CONCLUSIONS: HO-1 is critical to vascular and postnatal alveolar development and it has a protective role against lung injury by its contribution to vascular function.

40 9:15 AM  Effects of Moderate Hyperoxia with Intermittent Hypoxia on Neonatal Lung PECAM-1 Expression and Endothelial Cell Function

Huayun Zhang, Bo Han, Horace M. DeLisser, Division of Neonatology, Dept. of Pediatrics, Children's Hospital of Philadelphia- University of Pennsylvania Medical School, Philadelphia, PA; Pulmonary, Allergy and Critical Care Division, University of Pennsylvania Medical School, Philadelphia, PA.

BACKGROUND: Bronchopulmonary dysplasia (BPD) is a chronic lung disease that occurs in very premature infants and is characterized by an arrest of lung vascular and alveolar development. Previous studies have suggested that inappropriate lung vascular development is crucial to normal lung development. Exposure to hypoxia or hypoxia causes similar changes in lung structure as seen in BPD. However, the effects of oxygen exposure on lung vascular development are not well understood.

OBJECTIVE: The objective of this study was to evaluate the effect of moderate hyperoxia with intermittent hypoxia on neonatal lung PECAM-1 expression and endothelial cell function in vivo and in vitro.

DESIGN/METHODS: Neonatal GFP-TGF alpha reporter mice were placed in room air or 60% O2 with 10 minutes of 12% O2 per day from postnatal day 3 for up to 21 days. Alveolar development, lung endothelial content and PECAM-1 expression were assessed at postnatal day 7, 14, and 21. Human Umbilical Vein Endothelial Cells (HUVEC) were cultured under room air or 60% O2, with 10 minutes of 12% O2 twice a day for up to 3 days. EC proliferation, apoptosis and migration were evaluated.

RESULTS: Mitochondrial oxygen showed increased proliferation of alveolarization as compared to room air controls at 14 and 21 days. Exposure to moderate hypoxia/intermittent hypoxia did not appear to induce increased apoptosis or inflammatory response in the lung. However, the expression of PECAM-1 was decreased at both postnatal day 7 and 14 in the oxygen-exposed animals without significant changes in endothelial content. Real-time RT-PCR analysis showed increased TGF alpha at E18.5 in the mutant series with molecular and genetic approaches.

CONCLUSIONS: This observation suggests that moderate hypoxia with intermittent hypoxia may directly affect the expression of PECAM-1 and induce endothelial dysfunction in the neonatal lung that might contribute to delayed alveolarization. The relationship between TGF alpha activation and PECAM-1 expression needs to be further investigated.
41 9:30 AM  
Fellow in Training  
BMP2 Prevents Hypoxia Induced PY-STAT3 Activation in Pulmonary Artery Endothelial Cells  

BACKGROUND: Pulmonary arterial hypertension (PAH), resulting from increased pulmonary pressure and narrowing of the arteries, leads to cardiac arrest. The pathology of PAH results from a combination of environmental and genetic hits, and the prognosis remains poor.

One of the key biologic events in the pathogenesis of PAH is dysfunction of endothelial cells. STATs are a family of proteins that mediate signals from the extracellular milieu of cells to the nucleus. Then they regulate differentiation.

OBJECTIVE: BMP2 prevents hypoxia-induced PY-STAT3 activation in PAE.

DESIGN/METHODS: PAE were subjected to hypoxia (5% O₂) for 0-8 hours with or without BMP2 treatment.

Cell lysates prepared and proteins separated by SDS gel. PY-STAT3 level determined by western blot analysis and immunofluorescence stain. Pooled data were from 3 independent experiments.

RESULTS:

Fig 1 showed hypoxia caused time dependent PY-STAT3 activation in PAE. Interestingly, BMP2 (100ng/ml) prevented this activation to 60% of base level vs. unchanged total STAT3 at 1 hour.

Fig 2 showed the prevention was maintained up to 8 hours. Anti Caveolin-1 data shown to rule out nonspecific effect of hypoxia.

CONCLUSIONS: Hypoxia, and bone morphogenic proteins (BMP2) regulate the activity of STAT3 in pulmonary artery endothelial cells.

42 9:45 AM  
ErbB Ligand-Specific Induction of Proliferation and Differentiation in MEK-Inhibited Fetal Mouse Lung Type II Cells  

BACKGROUND: Cell proliferation and differentiation are often in tension, a phenomenon we have reported in lung development. The ErbB ligands EGF and TGF-α, and the ErbB4 ligand neuropilin (NRG) are important in lung development. We recently reported that EGF, TGFα, and NRG have ligand- and gestation-specific effects on fetal lung type II cell proliferation and differentiation, with no apparent tension between proliferation and differentiation. Further, MAP kinase inhibition using the MEK inhibitor PD98059 inhibited ligand-stimulated proliferation.

OBJECTIVE: We hypothesized that inhibition of MAPK-controlled proliferation would enhance effects of EGF, TGFα, and NRG on type II cell differentiation.

DESIGN/METHODS: Primary cultures of d16, d17, and d18 gestation fetal mouse lung type II cells were grown in DMEM+20% stripped fetal calf serum to 80% confluence.

PD98059 increased SP-C but not SP-B gene expression. In d18 cells SP-B and SP-C were not stimulated by EGF, TGFα, or NRG. But after exposure to PD98059 NRG stimulated SP-C expression, suggesting a release in the tension between proliferation and differentiation. We speculate that ErbB ligands promote type II cell differentiation while other factors simultaneously reduce proliferation. (NIH 37580, Peabody and Gerber Foundations).

43 10:00 AM  
Fellow in Training  
Effect of NADPH Oxidase Inhibition in Lambs with Persistent Pulmonary Hypertension of the Newborn (PPHN)  
Fernando A. Soares, Satyan Lakshminrusimha, Kathryn N. Farrow, Stephen Wedgewood, Sylvia F. Gugino, Lyuba Czech, James A. Russell, Robin H. Steinhorn, Pediatrics, SUNY, Buffalo, NY; Pediatrics, Northwestern Univ, Chicago, IL.

BACKGROUND: Pulmonary arteries (PA) from PPHN lambs have low levels of endothelial nitric oxide synthase (eNOS) and relax poorly to exogenous NO. We previously reported that NADPH oxidase-derived reactive oxygen species (ROS) are elevated in PA from lambs with PPHN, which may explain these findings (Brennan et al, Circ Res 2003).

OBJECTIVE: To study the effect of inhibiting NADPH oxidase activity with intratracheal (IT) apocynin on lambs with PPHN.

DESIGN/METHODS: Fetal lambs had PPHN induced by ductal ligation 9d prior to delivery, followed by delivery and ventilation with 100% O₂ for 24h. At birth, 5 lambs received IT apocynin (3mg/kg) mixed with calf fat and 5 lambs received calf fat only. After sacrifice at 24h, ROS were assayed by DHE fluorescence; eNOS, PDE5, and NADPH oxidase expression were assayed by Western blot.

RESULTS: Three lambs in the 100% O₂ group died and survivors remained hypoxic throughout the 24 hour period (table). All lambs in the apocynin group survived and had oxygenation significantly higher than O₂-only lambs for the first 10h of life. However, by 24h, oxygenation in the apocynin group was similar to the survivors in the 100% O₂ alone group. PA eNOS levels were significantly higher in the apocynin group compared to O₂ alone. However, ROS increased similarly in both the apocynin and O₂ groups. Further, PDE5 expression was higher in apocynin-treated lambs relative to O₂-only treated lambs.

CONCLUSIONS: NADPH oxidase inhibition with apocynin at birth improved short-term oxygenation in lambs with PPHN.

44 10:15 AM  
Fellow in Training  
VEGF and MMP-9 are involved in hyperoxic lung injury, where it can degrade extracellular matrix. MMP-9 also regulates proangiogenic and angiostatic molecules. We speculate that VEGF activity and vascular remodeling participate mechanistically in the alveolarization process. PEDF, an angiostatic cytokine, is upregulated in developing lung following hypoxic exposure in association with decreased VEGF and abnormal alveolar unit development. Increased MMP-9 may increase PEDF activity, Altered PDE5 and VEGF may contribute to the arrested alveolarization seen in BPD by inhibiting normal vascular remodeling in the developing alveolar unit. (Support by NIH HL37930).
44A 8:00 AM  
**Ketamine Versus Etomidate: Procedural Sedation for Pediatric Orthopedic Reductions**  
Jannet J. Lee-Jayaram, Adam Green, Joshua Siembieda, Edward J. Gracely, Colette C. Mull, Eileen Quintana, Terry Adirim. Pediatric Emergency Medicine, St. Christopher's Hospital for Children, Philadelphia, PA; College of Medicine, Drexel University College of Medicine, Philadelphia, PA; Family, Community, and Preventive Medicine, Drexel University College of Medicine, Philadelphia, PA; Office of Health Affairs, Department of Homeland Security, Washington, DC.

**BACKGROUND:** Orthopedic reductions are commonly performed procedures requiring sedation in the pediatric emergency department (PED). Etomidate is a commonly used induction agent for rapid sequence intubation in the PED. Several retrospective studies support etomidate's safety and efficacy in pediatric procedural sedation.

**OBJECTIVE:** To compare etomidate/etansilix (E/F) with ketamine/midazolam (K/M), for procedural sedation during orthopedic reductions in the PED.

**DESIGN/METHODS:** Prospective, blinded, randomized-controlled study comparing IV K/M with IV E/F. A convenience sample of patients, ages 5 to 18 years, presenting to an urban PED with fracture requiring reduction were enrolled. The procedure was videotaped from initial medication administration until cast application. Outcome measures included: visual analog scale (VAS) of pain, Likert scales for satisfaction of sedation and OSBD-r (observational scale of behavioral distress-revised). Phone follow-up to the family was done to track late side effects and satisfaction with sedation medication. Descriptive tracking of side effects, adverse events and interventions were recorded at the sedation and during phone follow-up.

**RESULTS:** Twenty patients were enrolled, 10 in each group. The K/M group had significantly lower mean OSBD-r (observational scale of behavioral distress-revised) score compared to the E/F group (1.25 vs 2.9, p = .003). Spontaneous pain correlation was 0.789 showed good correlation between the two blinded scorers. Parents rated lower VAS scores with K/M than with E/F (12.75 vs 48.22, p = .006) and favored K/M on a 5-point satisfaction scale (p = .015). K/M had significantly shorter total sedation times (49.4 vs 79.7 minutes, p = .007) and recovery times (23.4 vs 61.5 minutes, p = .001). There were no significant differences with respect to procedural amnesia and orthopedist satisfaction. Side effects noted in the K/M group included dystrophic emergence reaction (10%) and vomiting (10%). Vomiting (10%), injection site pain (10%), myoclonus (20%), airway readjustment (20%) and supplemental oxygen use (10%) were observed in the E/F group.

**CONCLUSIONS:** For pediatric orthopedic reductions, K/M appears to be more effective at reducing observed distress than E/F, although both provide equal procedural amnesia and orthopedist satisfaction. K/M had significantly shorter sedation and recovery times. E/F may be more appropriate for procedural sedation for shorter painful procedures in the PED.

45 8:15 AM  
**Fellow in Training Accuracy of Point-of-Care Ultrasound for the Diagnosis of Fractures in the Pediatric Emergency Department**  
E.R. Weinberg, J.W. Tsung, M.G. Tunkel. Pediatric Emergency Medicine, NYU School of Medicine/Bellevue Hospital Center, NY, NY.

**BACKGROUND:** Point-of-Care Ultrasound (PoCUS) for fracture (Fx) diagnosis in adults, but studies in pediatrics are limited. PoCUS screening for Fx can facilitate decision-making in trauma patients, with its significantly shorter sedation and recovery times, Fx may be more appropriate for procedural sedation for shorter painful procedures in the PED.

**OBJECTIVE:** To compare the ability of BUS with that of a CTSC in detecting neck abscesses in children.

**METHODS:** This is a descriptive case series of 7 patients with neck masses undergoing both CTSC and BUS to compare their abilities to rule out an abscess. Demographic data such as age, race and sex was collected as well as WBC results, disposition and antibiotics used. BUS images were interpreted by one of the authors and findings compared to final CT reports.

**RESULTS:** The median age was 25 months and 85.7% were black and male. The median duration of neck swelling was 1 day with fever present in 57.1%. Of the 7 patients, 3 (42.9%) had CTSC and 4 (57.1%) had BUS findings consistent with an abscess. Compared to CTSC, BUS has a sensitivity of 67%, specificity of 54%, a positive predictive value of 50% and a negative predictive value 67% in detecting an abscess. In those 3 patients with a final diagnosis of an abscess, both CTSC and BUS have similar sensitivities of 66.7% although CTSC has a higher specificity (75% vs 50%), positive predictive value (67% vs 50%) and negative predictive value (75% vs 67%) than BUS. Patients with abscesses have higher WBC than those without (20.1 vs 17.4) but more likely to be admitted (33.3% vs 50%). Clindamycin is the drug of choice (71.4%) in neck masses needing antibiotics.

**CONCLUSIONS:** In this small case series, both CTSC and BUS have similar abilities in detecting a neck abscess. Large prospective studies are needed to confirm this preliminary finding.

48 9:00 AM  
**What Do Pediatric Residents Know About Medical Malpractice?**  
Amy D. Roy, Karen A. Santucci, Lei Chen. Pediatrics, Section of Pediatric Emergency Medicine, Yale-New Haven Children’s Hospital, New Haven, CT.

**BACKGROUND:** There is little literature about either pediatric residents’ attitudes towards or understanding of medical malpractice.

**OBJECTIVE:** To assess pediatric residents’ attitudes towards and knowledge about medical malpractice.

**METHODS:** Three pediatric chief residents were interviewed about their attitudes towards and experience with medical malpractice. These residents were also asked to develop a survey that was offered to all the pediatric, internal medicine/pediatric and psychiatry/residency students at our academic, tertiary care center.

**RESULTS:** Surveys were completed by 46 of 71 eligible residents (65%). Only 1 resident (2%) had been involved as a complainer. The respondents 87% thought medical malpractice was an important topic to learn about during residency, 67% reported one hour or less of malpractice education (30% reported none at all) and 63% felt uncomfortable with their knowledge of malpractice. Only 43% felt that fear of being involved in a claim affected their current practice, though an additional 9% thought it would affect their practice in the future. When asked to identify factors that prompt families to file lawsuits, 67% of the respondents selected the need to find out what happened to the child, followed by the need for financial compensation to support the injured child (56%) and the desire to prevent the same mistake in the future (48%). Most respondents

---

Eastern Society for Pediatric Research 2008 Annual Meeting
49
9:15 AM
Undergraduate Student
Improving Emergency Department Efficiency: An Integrated Patient-Centered System

Pediatrics, Connecticut Children’s Medical Center, Hartford, CT.

BACKGROUND: Families to the Emergency Department (ED) are often asked to accomplish several tasks prior to evaluation that increases the length of time before seeing a medical provider and the overall length of stay (LOS). Waiting for in-patient beds also increases LOS.

OBJECTIVE: To study the effects of an integrated system on time to medical provider, LOS, and left without being seen rates (LBWS).

DESIGN/METHODS: Small workgroups composed of ED staff evaluated areas for possible improvement in efficiency, and developed BEOK (Be Quick):

B: bedside registration-information entered at bedside
B: bed ahead program-inpatient beds designated and staff assigned before known ED admissions
E: electronic medical record-transition to “paperless” ED
Q: quick triage-the traditional system was replaced by a brief simple method
K: kids express-four bed, separate clinic-like area, staffed by a nurse and general pediatrician

All of these changes were implemented over a 6-month period. Medical charts were reviewed for patients presenting to the ED from June to November 2006, before changes were made (before BEOK). Electronic data was reviewed on all patients presenting to the ED from June to November 2006 (after BEOK).

RESULTS: A total of 18,696 children were evaluated before BEOK and 19,932 were evaluated after BEOK. Demographics were not similar, after BEOK children were often younger, African-American, publically insured, and admitted more frequently (Table 1). Significant decreases were found in LBWS, and improved parent satisfaction (Table 1).

Before and After BEOK

<table>
<thead>
<tr>
<th>Before BEOK</th>
<th>After BEOK</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>18,696</td>
<td>19,932</td>
</tr>
<tr>
<td>Age (mean MD)</td>
<td>7.175</td>
<td>7.175</td>
</tr>
<tr>
<td>Age (median)</td>
<td>5-6</td>
<td>5-6</td>
</tr>
<tr>
<td>Race (%)</td>
<td>45.6</td>
<td>45.6</td>
</tr>
<tr>
<td>Hispanic (%)</td>
<td>46.5</td>
<td>46.5</td>
</tr>
<tr>
<td>African-American (%)</td>
<td>18.6</td>
<td>18.6</td>
</tr>
<tr>
<td>Admitted (%)</td>
<td>45.2</td>
<td>45.2</td>
</tr>
<tr>
<td>Public insurance (%)</td>
<td>45.7</td>
<td>45.7</td>
</tr>
<tr>
<td>LBWS (numerator)</td>
<td>0.0006</td>
<td>0.0004</td>
</tr>
<tr>
<td>Press Ganey (Free standing rank)</td>
<td>2.05</td>
<td>2.05</td>
</tr>
<tr>
<td>Press Ganey (Overall mean, %)</td>
<td>85.8</td>
<td>85.8</td>
</tr>
<tr>
<td>Time to provider (min)</td>
<td>74.2</td>
<td>67.7</td>
</tr>
<tr>
<td>LOS (min)</td>
<td>192.7</td>
<td>155.2</td>
</tr>
</tbody>
</table>

CONCLUSIONS: BEOK appeared to decrease LBWS rates, time to medical provider, and LOS in the pediatric ED. We also found much improved Press Ganey scores implying improved parent satisfaction with ED visits.

50
9:30 AM
Fellow in Training
Communication About Interfacility Patient Transfers to Pediatric Emergency Departments
Amy D. Roy, Karen A. Santucci, Pediatrics, Section of Pediatric Emergency Medicine, Yale-New Haven Children's Hospital, New Haven, CT.

BACKGROUND: Despite considerable recent attention to inter-physician communication, particularly regarding patient handoffs, there is little information about what happens with patient transfers between facilities. This is an opportunity for information sharing and poor communication, factors frequently cited as contributing to medical errors and malpractice suits.

OBJECTIVE: To describe the practices Pediatric Emergency Medicine (PEM) physicians follow when accepting interfacility transfers.

DESIGN/METHODS: A self-administered survey was mailed to the directors of all accredited US and Canadian PEM fellowship training programs. Participants were asked to assess their practice patterns in a number of areas, including whether PEM physicians routinely clarify and record the goals of transfer with the transferring physician when accepting patients from another facility, whether accepted transfers were routinely signed out at change of shift and whether criteria were in place for activation of a formal transport team.

RESULTS: Responses were received from 51 of the 64 fellowship directors (79%). Of the respondents, 75% reported that their facility received more than 200 transfers from other facilities each year and 86% indicated that the attending physician was always notified of the transfer, regardless of who accepted the call from the transferring facility. Of the respondents, 80% reported that incoming transfers were routinely signed out at the change of shift, but only 66% reported that the transferring physician was asked to identify the goal of transfer. Of the 38 facilities with >200 transfers per year, 21 (55%) had explicit criteria for activation of a formal transport team while only 2 of the 12 facilities with <200 transfers per year (12%) had similar criteria (p = 0.02). 1 respondent did not indicate the number of transfers received.

CONCLUSIONS: A majority of PEM fellowship directors report that PEM physicians sign out transfers at change of shift, although substantially fewer report that they attempt to clarify the goals of transfer with the transferring physician. Many programs do not have explicit criteria for activation of a transport team. Additional research is needed to explore ways to improve physician communication at this important transition of patient care.

51
9:45 AM
Abdominal Trauma in Children as a Result of Snowboarding
Alison B. McClone, Kathleen Lilis, Steven Shaha, Pediatric Emergency Medicine, Women and Children’s Hospital of Buffalo, Buffalo, NY; Center for Policy and Public Administration, University of Utah, Salt Lake City, UT.

BACKGROUND: Snowboarding has become a popular winter sport among children and adolescents in recent years.

OBJECTIVE: Our aim was to identify the demographics, mechanism and patterns of injury in children presenting with snowboarding injuries.

DESIGN/METHODS: We conducted a retrospective chart review of children ages 6-21 years that presented to our Level I pediatric trauma center between January 2000 and March 2007 with injuries related to snowboarding. Ecodes for snowboarding injuries identified patients. Statistical analyses included Chi-squares and t-tests.

RESULTS: Our study identified 213 patients of whom 79% were male, 55% were in the 12-14 year age group, and 82% were injured during a fall. Presenting injuries included those to the head/neck (27%), trunk (19%), upper extremity (58%), or lower extremity (10%). Wrist and forearm fractures accounted for 56% of injuries, most of these (88%) requiring closed reduction. Males were more likely to have fractures (p < .01), less likely to have a head injury (p < .05) and more likely to wear a helmet (p < .01). Of 213 patients enrolled in our study, 36 (17%) was treated with wrist (chest, back, abdomen, or pelvic) injuries of which 19 involved the abdomen and 8 involved the pelvis. Of the 19 children with abdominal trauma, 14 (74%) involved lacerations or contaminations of abdominal organs. The most common organ injury was laceration of the spleen (n=11). Falls were associated with abdominal or pelvic trauma (p < .05) more than with back or chest trauma. Falls from a significant elevation >3ft were not significantly associated with organ injury. Females were more likely to have pelvic injury (p < .01) and males were more likely to have abdominal injury (p < .01). Younger children ages 6-14yrs were more likely to have abdominal injury (p < .05) whereas pelvic injury was significantly higher among older children ages 15yrs and older (p < .05). There is a significant relationship between fractures or dislocations of the upper extremity and associated abdominal or pelvic trauma (p < .003).

CONCLUSIONS: You may make snowboarders at Abdominal trauma at time of their falling, with careful consideration of their fractures or dislocations of other abdominal or organ injury. There is a high incidence of children presenting with both upper extremity and abdominal trauma following a fall while snowboarding. We must maintain a high level of suspicion for abdominal trauma in children presenting with distracting upper extremity injuries.

52
10:00 AM
House Officer
Emergency Preparedness in the Outpatient Setting
Thuy L. Ngo, Kathleen Donnelly, Pediatrics, Inova Fairfax Hospital for Children, Falls Church, VA.

BACKGROUND: Recent literature has shown that children with potentially life-threatening illnesses and injuries often present to primary care offices. Caregivers trust their primary care providers and are adverse to the atmosphere in the emergency department. Primary care physicians, however, encounter emergencies infrequently. In some study, 82% of surveyed pediatric offices encountered, on average, one injury per month. The AAP policy statement, Preparation for Emergencies in the Offices of Pediatricians and Pediatric Primary Care Providers, July 2007 recommends outpatient offices to self-assess their readiness from emergencies: organized plans, emergency equipment, medications, staff and patient education to recognize emergent situations, and practice mock codes. To date, there have been no reports of a GME initiative to assess the level of preparedness in the outpatient setting.

OBJECTIVE: To compare level of emergency preparedness at referral clinics based on 1) office location and proximity to an emergency department / urgent care facility and 2) general versus subspecialty pediatric offices.

DESIGN/METHODS: A questionnaire including an equipment checklist was distributed by residents to primary care offices to self-assess their readiness from emergencies: organized plans, emergency equipment, medications, staff and patient education to recognize emergent situations, and practice mock codes. To date, there have been no reports of a GME initiative to assess the level of preparedness in the outpatient setting.

RESULTS: Nineteen local practices (10 general pediatric and 9 subspecialty of pediatric practices) were surveyed. Data was received from 10 of 19 practices. Of the total number of hospitalizations or patients requiring urgent stabilizations, general pediatric offices reported 90% (190/210) and subspecialty offices reported 10% (20/210). Despite this, a significant difference was not found between practice type and equipment maintained. Overall, this referral base was compliant with AAP recommendations for equipment and supplies at 75% for general pediatric practices and 72% for subspecialty practices. Interestingly enough, when comparing practices based on distance from an emergency room / urgent care facility, practices located 1 mile or less were compliant at 90% and those located more than a mile away were at 65%.

CONCLUSIONS: All outpatient offices should develop and maintain an active plan for emergencies. In the next phase of this project, residents will participate in office site reviews to assess the adequacy of emergency plans and to perform simulated patient emergencies.

53
10:15 AM
Fellow in Training
Optimal Empiric Antimicrobial Therapy for Non-Drained Skin and Soft-Tissue Infections (SSTI) in the Era of Methicillin-Resistant Staphylococcus aureus (MRSA)
Raymond J. Elliott, Theoklis E. Zaoutis, Andrea B. Troxel, Andrew J. Loh, Ron Keren.
University of Pennsylvania School of Medicine, Philadelphia, PA; Children’s Hospital of Philadelphia, Philadelphia, PA.

BACKGROUND: MRSA has emerged as a major pathogen in community-onset SSTI. Primarily associated with localized abscesses, the role of MRSA in cellulitis and SSTIs that do not require drainage is less clear.

OBJECTIVE: To determine the most effective empiric antimicrobial mono-therapy for the outpatient management of non-drained SSTI in a MRSA-endemic region (community prevalence among drained SSTI = 45%).

DESIGN/METHODS: We used a retrospective, nested, case-control design to investigate the association of treatment failure and mono-therapy with a beta-lactam, clindamycin, or trimethoprim-sulfamethoxazole (TMP- SMX) for information on local antimicrobial susceptibility from January 2004 to March 2007 in five pediatric practices. Exclusion criteria included incision and drainage (I&D) or hospitalization on the day of the initial visit. The primary outcome was treatment failure defined by subsequent I&D or hospitalization, or a second antibiotic prescription due to inadequate response. We chose four controls matched on calendar quarter for each case and used conditional logistic regression to identify factors
General Pediatrics I  
Platform Session

Saturday, March 29, 2008  8:15 AM-10:30 AM

54  8:15 AM
Effect of Massage for Methadone Exposed Infants
Yun J. Lee, Jing Liu, Barry M. Lester, Joseph M. McNamara, Pauline Wright. Pediatrics, Women & Infants Hospital, Providence, RI.

BACKGROUND: Infant massage (M) relaxes infants using deep pressure strokes along the length of the muscles. Massage in term infants results in decreased agitated behavior and improved orientation and excitability. The effects of massage has not been studied in methadone exposed infants.

OBJECTIVE: To determine the effect of massage on methadone exposed neonates receiving pharmacological treatment for neonatal abstinence syndrome (NAS) on length of stay, weight gain, NAS scores, amount of morphpine and neurobehavior.

DESIGN/METHODS: Methadone exposed infants born at ≥35 weeks GA requiring drug treatment were randomized to the the SC or MSC group. Hospital staff was blinded to SC of MSC treatment. Treatments were given five days a week for 40-45 minutes per session. NNNS, a neurobehavioral exam, was given before randomization then, after 3, 5, 7, 10, 15, 21 and 28 treatments (or at discharge).

RESULTS: Demographics of infants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standard Care</th>
<th>Massage+SC</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methadone dose, mg/24h</td>
<td>97±50</td>
<td>97±50</td>
<td>.950</td>
</tr>
<tr>
<td>Birth weight, gm</td>
<td>2993±427</td>
<td>2872±546</td>
<td>.120</td>
</tr>
<tr>
<td>Head Circumference, cm</td>
<td>33±3</td>
<td>33±1</td>
<td>.102</td>
</tr>
<tr>
<td>Sex, male</td>
<td>5</td>
<td>6</td>
<td>.60</td>
</tr>
<tr>
<td>Sex, female</td>
<td>6</td>
<td>4</td>
<td>.102</td>
</tr>
</tbody>
</table>

Demographics were comparable at the 2 sites. Daily mean NS, weight gain and head growth and total amount of morphine/kg did not differ significantly. Morphpine dosing after treatment was initiated were 2.29±1.51 mg/kg for SC and 1.11±1.07 mg/kg for MSC group. Infants in the MSC group were discharged 4 days earlier than infants in the SC group. Infants in the MSC group showed less hyperactivity on the neurobehavioral exam than infants in the SC group. Infants in the MSC group showed better scores on quality of movements, regulation and excitability after 10 treatments.

CONCLUSIONS: Preliminary results suggest that massage could facilitate the methadone-exposed infant’s recovery from NAS.

55  8:30 AM
Communication Between Pediatric Hospitalists and Referring Physicians
Riva Kamat, John Jones, Michael Sheridan. Department of Pediatrics, Inova Fairfax Hospital for Children, Falls Church, VA.

BACKGROUND: As pediatric hospitalists assume greater responsibility for the in-hospital care of patients, it is vitally important that clear communication occurs between the hospitalist, emergency room physicians and the primary care physicians. Despite the belief that clear communication is important to patient care, no studies to date have confirmed a preferred method of communication between pediatric hospitalists and the doctors who refer to them.

OBJECTIVE: The objective of this study was to evaluate the content and the preferred method of receiving follow-up information by physicians referring patients to a large suburban tertiary pediatric hospital. We sought to answer this question by comparing the various methods of communication between pediatric hospitalists, emergency room physicians and primary care physicians.

DESIGN/METHODS: The study design was a cross-sectional survey available by internet, phone, email or fax to 37 pediatric practices and 10 emergency departments within a 50-mile radius, that refer patients to our hospital. Seventy-nine responses were returned, (44 primary care physicians and 21 emergency physicians and 13 did not provide identifying data) representing all of the pediatric practices and emergency departments. The survey queried the referral base for demographic, impact on clinical care, preferred method of communication and preferred content method.

RESULTS: Ninety-four percent of our respondents felt that follow-up, impacted clinical care and 65%

56  8:45 AM
House Officer Factors Affecting the Age of Diagnosis of Autism Spectrum Disorders at a New York City Early Intervention Center
Ginger L. Janow, Leonardo Trasande, Pediatrics, The Children’s Hospital at Montefiore, Bronx, NY, Mount Sinai School of Medicine.

BACKGROUND: Effectiveness of behavioral interventions in improving long-term outcomes for children with autism spectrum disorders (ASD) is directly related to the age at which the interventions are initiated. While early diagnosis is critical, it is often delayed until school age.

OBJECTIVE: The purpose of this study is to identify factors associated with age of diagnosis in New York City among children seen at the Mt. Sinai Early Intervention Center (MSEIC). The secondary purpose is to assess trends in diagnosis over time.

DESIGN/METHODS: A retrospective chart review of the charts of 116 children diagnosed with ASD at the MSEIC between 1995 and 2005 was conducted, and demographic and clinical data was abstracted. Frequencies and means with standard deviations were calculated for all variables of interest. Data were analyzed using independent sample two-tailed t-tests for binary categories (sex, diagnosis, initial vs. supplemental evaluation). Scatter plots and bivariate correlations were created to assess continuous variables (percent delay, year of diagnosis, time from referral to evaluation). Estimated income was imputed based on zip-code using census data. One-way ANOVAs were performed on variables with more than two categories.

RESULTS: The average age of diagnosis for the sample was 26.6 months (SD 4.9 months) with a range from sixteen months to forty months. Patients diagnosed at the initial evaluation were diagnosed 2.3 months younger than those diagnosed at supplemental evaluations (p<0.01). Decreased age at diagnosis correlated directly with decreased time from referral to the Early Intervention Program to evaluation (p<0.05, R=0.1) and increased severity of adaptive (p=0.001, R²=0.4) and fine motor (p=0.01, R²=0.3) delays. Estimated income and neighborhood failed to show an independent relationship with age of diagnosis (p=0.067 and p=0.691, respectively). Age of diagnosis did not change significantly over the ten year period (p=0.3), but prevalence increased significantly.

CONCLUSIONS: The most significant predictors of a younger age of diagnosis were diagnosis at initial evaluation (vs. supplemental), shorter interval from referral to evaluation, and increased fine-motor and adaptive delays. These data suggest the need for interventions to improve clinician identification of domain-specific developmental delays. Policy interventions could reduce delays in referral, reduce age of diagnosis, and improve long-term neurodevelopmental outcome for children with ASD.

57  9:00 AM
House Officer Clinical Vignette Tool To Assess Resident Needs in Communication and Interpersonal Skills
Alexis S. Lieberman, Krissea George, Yolande Bell-Cheddar, Mario Cruz, Cindy DeLago, Mattide Trigoyen. Department of Pediatrics, Albert Einstein Medical Center, Philadelphia, PA.

BACKGROUND: The ACGME requires programs to train residents in the competencies of interpersonal communication and preparedness in the area of communication skills.

OBJECTIVE: To pilot an assessment tool to measure residents’ level of confidence and preparedness and desire for further training in the area of communication skills.

DESIGN/METHODS: We developed on line anonymous survey consisting of challenging clinical vignettes requiring high-level communication and interpersonal skills. Topics included psychosocial issues (ie giving bad news, personal and family issues, mental illness, sexual issues and more) and more biomedical topics (refusal of care, chronic illness, non-compliance). Example: 1) You enter a room to do a well-check for a 4 month old, and see that the mother has a black eye. 2) You are interviewing a 15 year old boy at a well-check. He reveals to you that he has had sex. When you ask if his partners are male or female, he looks away and seems uncomfortable. 3) You are conducting a first well-check for a newborn baby. The mother has a flat affect, and does not look at or hold the baby.

Outcome measures were level of confidence and preparedness and desire for further training, each rated on a 5-point Likert scale (for example, 1-2-unprepared, 3-avimvalent, 4-5-prepared).

RESULTS: All residents (n=39) completed the survey. 58 % were female, 44% had post-medical school training prior to residency, 25% PL1. Only a third of residents felt prepared to communicate with parents around psychosocial issues, 19% indicated that they would be comfortable talking about mental illness, poverty, and sexual issues, each 39%. Conversely, most residents felt prepared to communicate with parents around biomedical topics: refusal of care 54%; chronic illness 59%; non-compliance 76%. Less than 5% of the residents felt unprepared to address each of the latter topics.

CONCLUSIONS: An assessment tool including challenging clinical vignettes was useful in measuring residents’ level of confidence and preparedness in the area of communication skills.
60 9:45 AM  House Officer  

An Education Program To Increase Knowledge of and Immunization with Adult Pertussis Vaccination Among Parents of Newborns
Pui-Ying Iroh Tamm, Benjamin Smith, Donna Fisher, Department of Pediatrics, Baystate Children's Hospital, Springfield, MA; Pediatric Infectious Diseases, Baystate Children's Hospital, Springfield, MA.

BACKGROUND: Pertussis is a cause of significant morbidity and mortality among children. The Advisory Committee on Immunization Practices (ACIP) recommends pertussis vaccine for adults having close contact with infants, Household members and parents are responsible for a large proportion of infants, thus vaccination of parents is of primary importance for the control of infant pertussis. OBJECTIVE: To increase awareness and knowledge of pertussis among parents of newborns, and to assess the effect of this program on parental acceptance and uptake of vaccination from their providers.

DESIGN/METHODS: The project involved a 111 Neonatal Intensive Care Unit (NICU) and Continuing Care Nursery (CCN) and newborn nursery (NN) units. From June - September 2007, parents and grandparents were invited to participate in our education program to learn about the risks and transmission of pertussis, as well as the benefits and side effects of pertussis vaccination. We evaluated their knowledge and feelings about vaccination before and after our intervention using chi-square testing. Callbacks were done at least 6 weeks later to document uptake.

RESULTS: Of 195 people approached, 183 parents/grandparents (77%) were surveyed. 63 participants were from the NICU/CCN and 87 from the NN. The Demographics between the 2 groups were similar. Only 25% of NICU/CCN parents and 40% of NN parents knew that pertussis immunization is subject to waning immunity (p<0.006). 52% knew pertussis is transmitted through air droplets and coughing. 85% of parents were not aware of ACIP recommendations. 76% felt the educational intervention was very helpful. Parental knowledge significantly increased over our education program (p<0.01). Parents of all newborns considered their baby significantly more at risk for infection, and were more willing to receive the vaccine after our education program (all p values<0.05). 21% were still unsure/unwilling to receive the vaccine afterwards. Of 138 parents who agreed to callbacks, 56% were successfully contacted and 8% were immunized.

CONCLUSIONS: Our educational program was effective in increasing parental knowledge of pertussis and willingness to receive the vaccine. Some parents were still unsure or unwilling to receive the vaccine even after our educational intervention, and immunization uptake was low. Further research needs to be done to identify and reduce barriers for parental vaccination.
**Maternal G4 genotype was associated with decreased fetal BW, CRL, PW and increased fetal glucose abnormalities and were present at the expected Mendelian frequencies (49 vs 51% WT vs G4, n=306).**

HF decreased GLUT4 (4.1±1.5 vs 1.9±0.46, WT-C vs WT-HF p<0.01) and triglyceride (TG) levels in WT compared to WT-C and G4 mothers (Table 1). G4 females had higher glucose levels compared to WT. HF increased GLUT4 (4.1±1.5 vs 1.9±0.46, WT vs WT-HF p<0.01) and HK expression (0.46±0.22 vs 0.18±0.06, WT-C vs WT-HF, p<0.05) in fetal WT mothers. HF did not alter GLUT4 and HK expression in G4 mothers. Fetuses did not have any macroscopic abnormalities and were present at the expected Mendelian frequencies (49 vs 51% WT vs G4, n=306).

Maternal G4 genotype was associated with decreased fetal BW, CRL, PW and increased fetal glucose levels compared to WT mothers. HF resulted in a decreased fetal BW, CRL, PW and independently of maternal genotype (Table 2). *p<0.05 vs WT-C, **p<0.05 vs G4-C, ***p<0.05 vs WT-HF.

**CONCLUSIONS:** HF causes fetal growth restriction independently of maternal genotype. Despite that G4 mothers do not exhibit alteration in protein expression; HF does impact fetal growth, suggesting that maternal GLUT4 is not the major determinant for fetal growth.

### Additional Excerpt

**Preterm Neonates After Feeds**

**BACKGROUND:** Several reports have shown that enteral feeding induces a significant increase in blood flow velocity in the superior mesenteric artery. Doppler ultrasonography is the method currently used for the clinical assessment of velocity of superior mesenteric artery blood flow. Near infrared spectroscopy (NIRS) is frequently used to monitor oxygenation of the brain in neonates by measuring the ratio of oxygenated to de-oxygenated hemoglobin (termed "tissue oxygenation index [TOI]"). Regional tissue oxygenation of other vascular beds such as the splanchic region can be followed compared with brain oxygenation as a reference since cerebral blood flow autoregulation minimizes changes in brain oxygenation during events affecting splanchic circulation. NIRS has been reported to be useful in detecting changes in splanchic oxygen delivery during apneic episodes and in predicting splanchic ischemia in neonates by measuring cerebro-splanchnic oxygenation ratio (CSOR). NIRS has also been utilized to measure known physiologic changes in tissue oxygenation of the liver in newborn infants during and after feeding via a nasogastric tube.

**OBJECTIVE:** To examine the relationship between the maternal intra-partum antibiotic prophylaxis (IAP) and gut microbiotic composition in newborns during the first days of life.

**DESIGN/METHODS:** Thirty term vaginally-delivered newborns, exclusively breastfed at birth were enrolled. Fifteen infants were born to mothers with IAP and fifteen infants to mothers without IAP. Stool samples were collected on day 3 and day 10 after birth. Fresh faecal samples were plated on Rogosa Agar, TPY Agar and VRBA plus MUG media to select and count the faecal amount of bifidobacteria and lactobacilli. **RESULTS:** In newborns to IAP vs non-IAP mothers, the prevalence of bifidobacteria was lower both at day 3 (13.3% vs 66.7% P=0.008) and 10 days (40.0% vs 86.7%, P=0.021) after birth, while the prevalence of lactobacilli was lower at 3 days (6.7 vs 66.7, P=0.002 but not at 10 days (46.7 vs 53.3%, P=1.00). The amount of bifidobacteria (10^6 cfu/g) did not change in IAP group (median [range], day 3, 0 [0-250] vs 0 [0-520], day 10, P=0.069) but increased in non-IAP group (day 3, 0 [0-250] vs 0 [0-520], day 10, P=0.018). The amount of lactobacilli did not change both in IAP (day 3, 0 [0-17] vs 0 [3-310], day 10, P=0.578) and non-IAP group (day 3, 0.7 [0-20] vs 0.2 [0-190], day 10, P=0.318).

**CONCLUSIONS:** In the early days of life, gut microbiotic composition may differ between newborns exclusively breastfed and born to IAP vs non-IAP mothers.
RESULTS: Among 32 infants with reliable (with out variation >15%) tracings, CSOR significantly increased by 0.05±0.24 units one hour after feeding (p=0.032), whereas pulse oximetry did not change (p=0.600). The change in CSOR with feeding was inversely related to baseline value (r=0.737, p < 0.001), thus CSOR increased most in those infants with a low baseline value.

CONCLUSIONS: This study indicates that tissue oxygenation of the splanchic region decreases relative to the cerebral circulation after feeding in preterm infants, thereby suggesting reduction in splancnic oxygenation after feeding.

68 9:30 AM
Nutritional Practices in Extremely Low Birth Weight Infants (ELBW, <1000g): 2002 vs. 2006
Rita M. Ryan, Jennifer A. Clark, Nancy Garrison, Alyssa Hermann, Anne Marie Reynolds; Pediatrics/Neonatology, Univ Buffalo - Women & Children's Hosp Buffalo, Buffalo, NY.
BACKGROUND: Severe under nutrition and postnatal growth failure are common in ELBW (<1000g). NICHDI data indicate that at 36 weeks 89% have growth failure, and at 18-22 months corrected GA 40% are still <10th percentile.

OBJECTIVE: Compare nutrition-related data for ELBW infants born in 2002 vs. 2006. We hypothesized that ELBW infants born in 2006 received quality nutrition earlier.

DESIGN/METHODS: This was a retrospective review of 100 ELBW patients, 50 each selected randomly from 2002 and 2006. Continuous data were analyzed by t-test, categorical data analyzed using chi-square or Fisher exact test.

RESULTS: Mean weight percent at birth was 35th in 2002 and 31st in 2006, with 14% and 30% of babies born at <10th percentile respectively (SGA). Parenteral nutrition, improved with significantly earlier initiation of TPN, time to 3gm/kg protein and lipid in the 2006 cohort. To reach target weights. Although we achieved earlier parenteral nutrition and higher weights at days 14 and 28 in 2006, the growth percentile for weight at discharge was 14th. Additional strategies to improve advancement of enteral nutrition are needed.

69 9:45 AM
Fellow in Training
Growth Velocity in the Extremely Low Gestational Age Newborn
Yolanda F. Brown, Camilla R. Martin, Elizabeth N. Allred, Richard A. Ehrenkranz, Michael O'Shea, Mandy B. Belfort, Marie C. McCormick, Alan Leviton, ELGAN Study Investigators; Division of Newborn Medicine, Children's Hospital, Boston, MA; Department of Neonatology, Beth Israel Deaconess Medical Center, Boston, MA; Neuroepidemiology Unit, Children's Hospital, Boston, MA; Pediatrics, Wake Forest University School of Medicine; Pediatrics, Yale University School of Medicine. BACKGROUND: Extremely low gestational age newborns (ELGANs, <28 weeks GA) are at risk for nutritional deficiencies and extracellular growth restriction (EUGR). Previous studies of growth velocity (GV) have shown that the youngest infants have the slowest GV and are more likely to demonstrate EUGR.

OBJECTIVE: To describe GV and nutritional intake in the ELGAN by gestational age (GA).

DESIGN/METHODS: We studied 1196 infants from the ELGAN study, a multi-center, prospective, observational study of 1506 infants born before 28 weeks GA. Detailed nutritional and growth data were available each day for the pediatric study population.

RESULTS: There were significant changes in time to attain enteral feeding goals. Human milk was the first feed for 50% of babies in 2002 and 44% in 2006. In 2002 vs. 7.8 in 2006; 100kcal/kg/d: 16.3 vs. 17.3 days. In 2002, it took 27d to reach 100 ml/kg/d enteral feedings. There were significant differences in time to reach target volumes in mL/kg/d; calories in kcal/kg/d

<table>
<thead>
<tr>
<th>GA (weeks)</th>
<th>Total volume</th>
<th>Total Calories</th>
<th>% calories from enteral intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>128</td>
<td>92</td>
<td>86</td>
</tr>
<tr>
<td>29</td>
<td>131</td>
<td>98</td>
<td>90</td>
</tr>
<tr>
<td>33</td>
<td>137</td>
<td>105</td>
<td>95</td>
</tr>
</tbody>
</table>

Table 1. Median growth velocity by GA

Table 2. Total volume and caloric intake at day 28

<table>
<thead>
<tr>
<th>GA (weeks)</th>
<th>Median Growth Velocity (gym/kg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>128</td>
</tr>
<tr>
<td>29</td>
<td>131</td>
</tr>
<tr>
<td>33</td>
<td>137</td>
</tr>
</tbody>
</table>

Infectious Disease Platform Session
Saturday, March 29, 2008
8:15 AM-10:30 AM

72 8:15 AM
Fellow in Training
Rhinovirus Epidemiology, Disease Spectrum, and Association with Serious Bacterial Infections in Febrile Young Infants
Mark X. Cicero, Lei Chen, Carla Weibel, Caleb Korngold, Jeffrey Kahn; Pediatrics, Yale University School of Medicine, New Haven, CT.
BACKGROUND: Rhinovirus (RV) is a common cause of cough, wheeze, and fever. Recent work suggests RV is associated with more serious disease than the common cold. The disease spectrum and epidemiology of RV in febrile young infants is unknown, as is the association between rhinovirus infection and serious bacterial infection (SBI). New technology makes rapid RV detection more feasible.

OBJECTIVE: 1) Determine the frequency and severity of illness associated with RV in febrile infants <61 days old.

2) Determine the incidence of SBI in febrile infants <61 days old with and without RV infections.

DESIGN/METHODS: A cross-sectional study of all febrile infants <61 days old was conducted in an urban academic pediatric emergency department. Demographic, symptomologic, and outcome data were recorded. Enrolled infants had evaluation of blood, urine, and cerebrospinal fluid (CSF), and naso-nasal mucus sampled via swab. Reverse transcription was performed on RNA extracted from the nasal samples. Polymerase chain reaction was performed using RV primers. DNA sequencing was done for RV positive samples; sequences were compared to the known RV genome. Enroll is ongoing.

RESULTS: Ninety-eight infants have been enrolled, of whom 14 (14.2%) had RV detected. The median ages of infants with and without RV detected were 34 and 39 days, respectively. For the 14 infants with RV, 8 (57%) were admitted to the hospital, one of whom had co-infection with respiratory syncytial virus. One infant (7%) had a urinary tract infection (UTI), the only SBI in the RV group. Among the 84 infants without RV, 8 (57%) were admitted to the hospital, one of whom had co-infection with respiratory syncytial virus. One infant (7%) had a urinary tract infection (UTI), the only SBI in the non-RV group. Ten (11.9%) had CSF pleocytosis (p=0.112, Fisher exact test).

CONCLUSIONS: Rhinovirus is associated with febrile illnesses and hospitalization in infants <61 days old. The data suggest that infection in the central nervous system (CNS) may occur in some infants <61 days old who are infected with RV. To date, febrile infants in our cohort with RV were as likely to have SBI as those without RV. Rapid testing for RV may guide management of febrile young infants with meningitis. There is a trend toward CSF pleocytosis in the RV positive group, and further studies are required to determine if RV infection extends to the CNS.
Individual Differences in the Concentration of Intracellular Metabolites of Anti-HIV Nucleoside Analogues
Elijah Paintsil, Ron Hong, Yung-Chi Cheng, Pediatrics and Pharmacology, Yale University School of Medicine, New Haven, CT.

BACKGROUND: Conventional antiviral therapy involves the administration of standard fixed doses. This approach does not take into consideration interindividual variability in pharmacokinetic processes that may result in substantial differences in target site concentration among patients. We observed differences in the accumulation of metabolites of 4'-Ed4T, a recently discovered HIV-1 reverse transcriptase inhibitor (RTI), in different T-cell lines.

OBJECTIVE: We tested the hypothesis that the intracellular accumulation of triphosphate metabolites of nucleoside analogues will differ among different individuals.

DESIGN/METHODS: PBMCs were used in vitro since they are the target cells for HIV-1 infection. PBMCs were isolated from 19 (9 females and 10 males) healthy HIV-seronegative individuals. 1 to 2 X 10⁷ PHA stimulated PBMCs were incubated with [3H]-4'-Ed4T, [3H]-AZT, or [3H]-3TC (1 μM [500 mCi/mmol]) for 24 hours. After acid extraction, the intracellular metabolites were analyzed by HPLC. The identity of the peaks of the radiolabeled-nucleotides of 4'-Ed4T, AZT and 3TC was determined by comparison with authentic aliquot standards of unlabelled nucleotides of the respective analogs.

RESULTS: There were differences in the formation of total, and triphosphate metabolites among the donors tested. For each donor, the amount of NRTI-monophosphate formed correlated well with the amount of the triphosphate. The amount of 3TC (cytidine analogue) metabolites formed were generally greater than that of the thymidine analogues (4'-Ed4T and AZT). AZT and 4'-Ed4T triphosphate concentrations demonstrated positive correlation (R² = 0.06) among the females, however, this was not statistically significant. Furthermore, there was a negative correlation between 3TC and AZT or 4'-Ed4T in the females. In the males, there was poor correlation between either AZT and 4'-Ed4T or a thymidine analog (AZT or 4'-Ed4T) and cytidine analog (3TC).

CONCLUSIONS: The individual differences in the intracellular accumulation of nucleoside analogue metabolites may partly account for the interpersonal variation in response to anti-HIV activity of nucleoside analogues, evolution of drug-resistance, and the development of drug toxicity. The use of concentration-controlled dosing regimens may be necessary especially in heavily HAART-experienced individuals.

Variability in the Presence of CSF Pleocytosis Among Young Infants with Enterovirus Infections of the Central Nervous System

BACKGROUND: Enteroviruses (EV) are the most common cause of aseptic meninigitis in young infants. In older children, the absence of cerebrospinal fluid (CSF) pleocytosis has a high predictive positive value for EV meningitis. However, many young infants with EV meningitis do not have CSF pleocytosis.

OBJECTIVE: To identify factors associated with CSF pleocytosis among infants <90 days of age with EV meningitis.

DESIGN/METHODS: This retrospective cohort study of young infants with EV meningitis was performed at an urban academic children's hospital. Patients ≤90 days of age with a positive CSF EV polymerase chain reaction test obtained during the 2000-2006 EV meningitis seasons were included. Patients with serious bacterial illness (SBI) or herpes simplex virus infection were excluded. CSF pleocytosis was defined as CSF white blood cell (WBC) count >22/mm³ for infants <1 month of age and >15/mm³ for patients ≥1 month of age. Multivariable logistic regression was used to identify factors independently associated with CSF pleocytosis.

RESULTS: A total of 159 patients had a positive CSF EV PCR test during the study period; five (3.1%) were excluded for concurrent SBI; urinary tract infection (n=2), bacteremia (n=2), and bacterial meningitis (n=1). Median age of eligible patients was 36 days; 60% were females. Median CSF WBC count was 110/mm³ (interquartile range, 11-311/mm³). CSF pleocytosis was present in 97 (11%) patients. The proportion of infants with CSF pleocytosis accompanying EV meningitis increased with age; CSF pleocytosis was present in 59%, 74%, and 90% of infants aged 0-28, 29-56, and 57-90 days, respectively (p=0.007). Age and peripheral WBC count were independently associated with CSF pleocytosis.

CONCLUSIONS: Among infants with EV meningitis, CSF pleocytosis is related to older age and higher peripheral white blood cell counts, perhaps reflecting the inability of younger infants to mount a robust inflammatory response to EV infection.

Sequential Evidence-Based Central Line Care Interventions Can Decrease Line Associated Sepsis
Sulaiman Sannoh, Barbara Clones, Jose Munoz, Boriana Parvez, RNICU, MFCH, WMC, Valhalla, NY.

BACKGROUND: Central lines (CL) are essential in critically ill neonates for providing TPN, medications and blood products but have increased risk of complications with high attributable mortality and cost. CL-associated bloodstream infection (CLABSI) are considered a marker for quality of healthcare. The annual CLABSI rate is higher in NICU (8.4/1000 vs 5.3/1000 catheter-days in all ICU). We hypothesized that the implementation of sequential evidence-based interventions for CL care would decrease CLABSI.

OBJECTIVE: To implement sequential evidence-based CL care interventions and observe CLABSI rates.

DESIGN/METHODS: This is a prospective interventional study from 08/05-11/07. Data of all neonates with CL were entered in the NICU CL database. In 6/05 NICU baseline CLABSI was 18/1000 catheter-days. We introduced series of sequential interventions for CL care: new CL dressing change protocol in 6/05, new CL hub care protocol using chlorhexidine and staff education using DVD in 2/06, Staff education on dressing change with DVD, DVD re-education on CL hub care protocol and bedside signs in 8/07. We are reporting the incidence of CLABSI before and after these sequential interventions and comparing it with 50% NNIS. X² was used to compare ratios and t-test for means, p<0.05 was significant.

RESULTS: 23% of all NICU patients had CL (497/2148 admissions). All CL sepsis rates decreased after sequential interventions by 55% (p<0.05) when device utilization remained the same. The percent of infected catheters decreased from 17% to 9% (p<0.05). The cumulative infection rates decreased after every sequential interventions to as low as 3.6/1000 catheter-days, below NNIS 50% percentile (Fig 1). Sepsis caused by gram negative bacteria was also decreased.

CONCLUSIONS: In this prospective study we were able to show significant decrease in CLABSI for all catheter types and BW categories.

Prevalence and Characterization of HIV-Associated Nephropathy and Other Renal Disorders in a Cohort of Perinatally HIV-Infected Children
Muriel U. Purswani, Charles Mitchell, James Oleske, Kathleen Kaiser, Miriam C. Chernoff, Hans Spiegel, Warren A. Andiman, George Seage, Bronx-Lebanon Hospital Center, Bronx, NY; University of Miami Medical School, Miami, FL; University of Medicine and Dentistry of New Jersey, Newark, NJ; Frontier Science Research Foundation, Buffalo, NY; Harvard School of Public Health, Boston, MA; Yale University School of Medicine, New Haven, CT. Children's National Medical Center, Washington, DC.

BACKGROUND: There is limited information describing the spectrum of non-urinary tract infection renal disease associated with perinatal HIV-1 infection (P-HIV). HIV-associated nephropathy (HIVAN) has been described in children, with a reported prevalence of 7-15%.

OBJECTIVE: 1. To describe types and prevalence of renal disease in a cohort of P-HIV children. 2. To determine risk factors associated with HIVAN.

DESIGN/METHODS: Pediatric AIDS Clinical Trials Group Study 219/219C was a large, prospective cohort study of P-HIV children (opened 9/93, closed 5/07) collecting information using standardized criteria and structured forms every 3-6 months. In 9/06, additional clinical data was abstracted on children followed at least 30 months and identified with renal laboratory abnormalities or clinical diagnoses through 12/04. HIVAN was defined as persistent proteinuria with euglobulin lysed a histologic evidence on biopsy (Bx).

CONCLUSIONS: Comparisons were made using Fisher's exact, Pearson's χ² and Kruskal-Wallis tests.

RESULTS: Of 2,102 children entered, 72 carried a renal diagnosis yielding a prevalence of 3.4%. HIVAN was associated with non-Hispanic African American (AA) race (p=0.042), nadir CD4% <15% to event (p=0.001), higher baseline Log HIV RNA (p=0.012) and higher AUC Log HIV RNA to event (p<0.0001).

There was a trend toward higher mean age (8.1 vs 6.3 yrs, p=0.065). Non-HIVAN renal diagnoses comprised the largest group (48/72, 67%). Indinavir (IND) toxicity occurred in 22 of 255 (8.6%) children receiving this drug. Bx-diagnosed immune-mediated etiology (HIV-1m) was noted in 8 children.

Human Papillomavirus Antibodies from Natural Infection Are Protective Against Subsequent HPV Species-Related Infections
Zainab A. Malik, Susan M. Hailpern, Robert D. Burk, Pediatric Infectious Diseases, Children's Hospital at Monte Fiore, Bronx, NY; Pediatric, Microbiology and Immunology, Albert Einstein College of Medicine, Bronx, NY.

BACKGROUND: HPV 16 is a member of the alpha papillomavirus species group 9 (α9) that is strongly associated with cervical cancer. Whether antibodies induced by natural infection with the α9 group are protective against subsequent infection is not known.

OBJECTIVE: This study examined whether immunoglobulin G (IgG) antibodies (Ab) to the α9 group (HPV16, 31, 33, 35 and 52) are protective against subsequent infection with phylogenetically-related types of HPV.

DESIGN/METHODS: In a longitudinal study of college women investigating the natural history of HPVAN was described, with lower prevalence for over disease than previously reported. Risk factors included advanced HIV infection and AA race. Renal dysfunction in P-HIV should prompt consideration of other etiologies including drug-related nephropathy and HIV-1m.
Phagocytosis and Oxidative Burst of Neonatal Neutrophils Confronted with Candida albicans and Candida parapsilosis Kisha G. Destin, Matthew A. Maccani, Sonia S. Laforese-Nesbit, Joseph M. Bliss, Pediatrics, Women's & Infants' Hospital of Rhode Island, Providence, RI; Graduate Program in Pathobiology, Brown University, Providence, RI.

BACKGROUND: Circulating monocytes (MONOs), in the fetus and newborn, migrate to tissues and play an unique feature of this population. The neutrophil represents a key element in the control of systemic Candida infections, yet the specific neutrophil mechanisms that make the premature neonate particularly susceptible to Candida infections are not well understood.

OBJECTIVE: To compare two neutrophil functions, phagocytosis and oxidative burst, of term and preterm neonatal neutrophils exposed to C. albicans and C. parapsilosis to that of adult neutrophils.

METHODS: MONOs were stimulated in vitro with LPS (10 ng/ml) up to 18 hrs. Cytokine release was measured by ELISA at 4 and 18 hrs, ranging from 89-97% of measured cytokine.

RESULTS: Phagocytosis of C. albicans yeast was low in both adult and neonatal neutrophils (10-15%), but was more efficient with C. parapsilosis as target (80-85%). Neutrophils from both term and preterm infants (25-30 weeks) were capable of phagocytosis equivalent to adults, with the exception of one infant at 22 weeks. This infant had 85% of adult phagocytic activity against C. parapsilosis. Oxidative burst activity of neutrophils from term neonates exposed to C. albicans hyphae was equivalent to that induced by PMA and was similar to adult neutrophils. Neutrophils from preterm neonates (25-30 weeks) also had burst activity similar to adults. Minimal burst was induced in either adult or neonatal neutrophils by exposure to C. parapsilosis yeast, and was attenuated in infant and adult neutrophils by exposure to C. albicans yeast.

CONCLUSIONS: Although the response to C. albicans and C. parapsilosis varied based on species and growth morphology, neutrophils from neonates and adults behaved similarly at most gestational ages. These findings suggest that a deficiency in phagocytosis or the ability to generate an oxidative burst are not responsible for the increased susceptibility of preterm neonates to infections with Candida, although infants as young as 22 weeks may be an exception.

Neonatology I - Neonatal Pulmonology Platform Session

Saturday, March 29, 2008 8:15 AM-10:30 AM
82  8:30 AM  Fellow in Training
Simulated Medical Transport Is Associated With Decreased mRNA Expression of Surfactant Proteins A, B & C and Higher Active Phospholipid Content in Neonatal Neurapraxia-Dawley Rats
Ashraf Gad, J. Craig Cohen, Avinash Chandler, Shetal Shah, Neonatology, Stony Brook University Medical Center, Stony Brook, NY.
BACKGROUND: Forces transmitted to the neonate as a consequence of accelerations during transport have been epidemiologically associated with adverse neonatal outcomes including bronchopulmonary dysplasia. These accelerations measured per unit time (impulse) have been shown to adversely impact respiratory function in a dose-dependent manner. The mechanism for these changes in lung compliance after transport has not been well described. OBJECTIVE: To examine if transport was associated with decreased levels of surfactant proteins and altered total phospholipid content.

DESIGN/METHODS: Seven Sprague-Dawley rat pups underwent a simulated medical transport on postnatal day 10 for one hour on a modified vehicle transport simulator oscillating at a frequency of 2.8 Hz & an average impulse of 27.4 msec/min – a level associated with ambulance transport based on real-world studies. Eight control animals were placed in the transported for one hour but not moved. Post intervention, rat lungs were harvested & processed for mRNA extraction & bronchoalveolar lavage (BAL). Total phospholipid content was examined in both BAL fluid supernatant & Pellet fraction. RT-PCR was performed on the supernatant of each animal to examine mRNA levels of surfactant proteins. Data was analyzed using unpaired t test.

RESULTS: Messenger RNA expression for all surfactant proteins in transported rat lungs were 48.6 ± 13.9, 42.9 ± 10 % and 43.8 ± 12.8% of control levels for surfactant proteins A, B and C respectively (p < 0.05). Active phospholipid content in the pellet fraction of BAL fluid increased from 33.6 ± 5.13 mg/lung in control to 57.45 ± 6.97 mg/lung in transported animals (p=0.05). Total phospholipid content, a measure of the phospholipid pool including inactive surfactant, was not significantly altered between the two groups (227.07 ± 20.07 mg/lung vs. 236.16 ± 39.33 mg/lung respectively). CONCLUSIONS: In this model, transported neonatal rats experienced significant decreases in mRNA expression of three major surfactants proteins, potentially explaining the phenomenon of decreased lung compliance observed. Increases in the amount of active phospholipid, unaccompanied by a decrease in the inactive pool, suggest transport is associated with altered phospholipid homeostasis. Further studies are needed to more fully understand the mechanism of transport-mediated lung injury.

83  8:45 AM  Fellow in Training
ErbB4 Regulation of Type II Cell Maturation in Murine Lung
Lucia D. Pham, Sujatha M. Ramadurai, Washa Liu, Christians E.L. Dammann, Heber C. Nielsen, Pediatrics, Tufts-New England Medical Center, Boston, MA.
BACKGROUND: The development of cell-cell communication is crucial for lung maturation. ErbB4, a member of the ErbB receptor family and its ligand Neuregulin (NRG) play an important role in this process. We have shown that ErbB4 is the preferred dimer partner for the other ErbB receptors in late gestation fetal rat lung. In cardiac rescued ErbB4 knockout animals are embryonic lethal due to heart and neural defects. In cardiac rescued ErbB4 shown that ErbB4 is the preferred dimer partner for the other ErbB receptors in late gestation fetal rat lung.

OBJECTIVE: To examine if transport was associated with decreased levels of surfactant proteins and altered total phospholipid content.

DESIGN/METHODS: We prepared FCM from d17 ErbB4 –/-heart fetuses, ErbB4 deletion produced altered alveolar structure, decreased DSPC synthesis and altered surfactant composition. However the

CONCLUSIONS: FCM from d17 ErbB4 -/-heart fetuses, ErbB4 deletion produced altered alveolar structure, decreased DSPC synthesis and altered surfactant composition. However the

CONCLUSIONS: FCM from d17 ErbB4 -/-heart fetuses, ErbB4 deletion produced altered alveolar structure, decreased DSPC synthesis and altered surfactant composition. However the

ErbB4 knockout animals are embryonic lethal due to heart and neural defects. In cardiac rescued ErbB4 knockout animals are embryonic lethal due to heart and neural defects. In cardiac rescued ErbB4 shown that ErbB4 is the preferred dimer partner for the other ErbB receptors in late gestation fetal rat lung. In cardiac rescued ErbB4 shown that ErbB4 is the preferred dimer partner for the other ErbB receptors in late gestation fetal rat lung. In cardiac rescued ErbB4 shown that ErbB4 is the preferred dimer partner for the other ErbB receptors in late gestation fetal rat lung.

ErbB4-/-heart FCM or d17 +/+ FCM as compared to control. D18 FCM produced a 40% decrease in thymidine incorporation.

85  9:15 AM  Fellow in Training
The Role of Reactive Oxygen Species (ROS) in A549 Respiratory Epithelial Cell Infection by Adenovirus Type 21 (ADV-21) and Parainfluenza Virus Type 3 (PIV-3)
Khalid S. Ahmad, Ansumama Joseph, Melodi B. Pirzada, Byung-Min Choi, Jeffrey A. Kazar, Leonard R. Krilow, Cardiopulmonary Research Institute, Departments of Pediatrics and Medicine, Winthrop University Hospital, Mineola, NY.
BACKGROUND: ADV-21 infection has been implicated in severe pediatric lower respiratory disease and death. Neutrophils have been particularly susceptible to severe pulmonary disease, extrapulmonary dissemination, and significant mortality. Gray et al demonstrated an increasing trend for ADV-21 detection amongst both civilian and military populations (CID 2007;45:1120-31). PIV-3 is the second most common cause of bronchiolitis in children. It is also associated with pneumonia. Although primary adenoviral infection pathologies include epithelial cell necrosis, the role of oxidant stress in viral infection is largely undefined.

OBJECTIVE: To compare the effects of ADV-21 and PIV-3 on their ability to induce oxidative stress in A549, a human alveolar type II cell line.

DESIGN/METHODS: A549 cells were infected for 4 hours with a range of multiplicity of infection (MOI) of ADV-21 (0.05 – 0.15) and of PIV-3 (8 – 80). At 2 days post infection, ROS production was assayed with superoxide-sensitive chemiluminescent dye MCLA and cell counts were determined by counter value. Results were compared to uninfected controls.

RESULTS: In the ADV-21 infected cells ROS production was significantly elevated (P values < 0.05) at each MOI of ADV-21 analysis (0.05-0.15). A dose-dependent relationship was not noted. Mean cell viability was also markedly reduced at each MOI. The cell count for controls ranged from 4.2-5.4 x 10^5 cells/ml and 1 to 2.4-4.4 x 10^5 cells/ml in the ADV-21 infected cells (P <0.003). In PIV-3 infected cells, ROS production was not significantly elevated compared to control at each MOI of PIV-3 tested. The reduction in cell viability was more modest compared to ADV-21 (controls 4.5-5.2 x 10^5; PIV-3 expressed 2.8-4.1 x 10^5 cells/ml).

CONCLUSIONS: ADV-21 resulted in markedly elevated oxidative stress and cell death compared to PIV-3 in human respiratory epithelial cells. These results may help explain the acute nature and severity of clinical disease induced by ADV-21. Since oxidative stress correlated with cell death, antioxidant therapy may help reduce the severity of disease induced by these viruses. Further studies correlating these findings with clinical disease are warranted.

86  9:30 AM  Fellow in Training
Angiopoietin 2 Release by Tracheal Aspirate Cells from Ventilated Premature Infants Is Not Regulated by Nuclear Factor-KappaB
Zubair H. Agha, Judy G. Salsow, Tarek Nakha, Gary Stahl, Riva Evefimal, Louise Strange, Vinete Bhandari, Pediatrics/Surgery, Cooper University Hospital-Robert Wood Johnson Medical School, Camden, NJ; Division of Perinatal Medicine, Yale University School of Medicine, New Haven, CT.
BACKGROUND: Angiopoietin-2 (Ang2) plays an important role in inflammation. Recently, we have shown that Ang2 is increased in tracheal aspirates (TA) of ventilated premature infants (VPI) who had an adverse outcome (bronchopulmonary dysplasia and/or death). Nuclear factor-κB (NF-κB) is a key regulator of inflammatory mediators. The role of NF-κB on Ang2 release in premature infants is not known.

OBJECTIVE: To study the effect of NF-κB activation on Ang2 release by TA cells obtained from VPI. DESIGN/METHODS: Cells obtained from 10 VPI (birth weight (mean±SE) 707±133 g, gestational age, 25.4±1.8 w) were incubated in 4 groups (Control, TNF-α+NFκBΔ– (Azithromycin) ≈TNF–α+NFκBΔ+ (Azithromycin) ≈TNF–α+Azithromycin+AzBMIg). TNF-α was used to suppress NF-κB activation. After 18 hours of incubation, activation of NF-κB in nuclear protein was measured by electrophoretic mobility shift assay (EMSA) and Ang2 levels in cell culture media by ELISA.

RESULTS: The predominant cells in TA samples were polymorphonuclear leukocytes (48%) and alveolar macrophages (43%). Baseline Ang2 levels (mean±SE) in the TA cell culture medium was 428±82 pg/ml, approximately three times higher than TA (supernatant) Ang2 concentrations of 162±13 pg/ml. Stimulation of TA cells by TNF-α increased the activation of NF-κB (Table, p<0.001) without a significant increase in Ang2 levels. Addition of 8 ug/ml of AzBMIg suppressed the TNF–α stimulated activation of NF-κB (p<0.001) with significant decrease in Ang2 levels.

Table 1:

<table>
<thead>
<tr>
<th>Ang2 (pg/ml)</th>
<th>Control</th>
<th>TNF-α+AzB</th>
<th>AZM4</th>
<th>AZM8</th>
</tr>
</thead>
<tbody>
<tr>
<td>428±82</td>
<td>425±82</td>
<td>452±82</td>
<td>562±80</td>
<td>424±80</td>
</tr>
</tbody>
</table>

Values are mean ± SE, *p<0.001 compared with control group, **p<0.001 compared with TNF

CONCLUSIONS: Ang2 is secreted by TA cells (mostly inflammatory) obtained from VPI. Ang2 release by TA cells was not increased by TNF–α stimulation. In our in vitro study, Ang2 release by TA cells from VPI appears not to be regulated by NF-κB activation.
Nasal Continuous Positive Airway Pressure (NCPAP) vs Bi-Level NCPAP (SiPAP) in Preterm Infants: A Comparison of Work of Breathing (WOB) and Respiratory Function

Vita M. Boyar, Sherry E. Courtney, Jennifer Beck, Christi Sinderby, Robert H. Habib, Neonatal-Perinatal Medicine, Schneider Children’s Hospital, New Hyde Park, NY; Pediatrics, Stony Brook University Medical Center, Stony Brook, NY; Pediatrics, Sunnybrook Health Sciences Centre, Toronto, ON, Canada; Pediatrics, Mercy Children’s Hospital at St.Vincent’s Mercy Medical Center/University of Toledo - College of Medicine, Toledo, OH; Critical Care, Keenan Research Center at the Li Ka Shing Knowledge Institute of St. Michael’s Hospital, Toronto, ON, Canada.

BACKGROUND: Bi-level NCPAP (SiPAP) is now an option for non-invasive respiratory support in infants. Little data are available comparing SiPAP with NCPAP.

OBJECTIVE: To compare work of breathing (WOB) and other respiratory parameters during NCPAP and SiPAP, using matched mean airway pressures (MAP) in premature infants.

METHODS: 10 preterm infants on NCPAP or SiPAP for mild respiratory distress were studied. Study weight was 981±169g, gestational age 26±5.9 wks, study age 8±4 days, FiO2, at study 0.26±0.06 (mean±SD). Each infant was studied on both modes, applied in random order. There were 5 males and 5 females; 5 infants randomized first to NCPAP. SiPAP was provided at a sig 0.23, time of 1.0sec. Matched MAPs between NCPAP and SiPAP were ensured via continuous intra-prong monitoring. Tidal Volumes (Vt) were obtained by calibrated respiratory inductance plethysmography. Intrapleural pressures were estimated by esophageal pressure monitoring. Breath-to-breath work of breathing was calculated from approximately 1 minute of pressure-volume data taken at the end of a 15 min period of CPAP or SiPAP support.

RESULTS: As seen in the Table, there were no differences in inspiratory or expiratory WOB, or in resistive WOB (RWB) between NCPAP and SiPAP. Similarly, no differences were found in respiratory rate (RL), Vt, phase angle, heart rate, or transcutaneous O2 and CO2 (TcO2, TcCO2).

CONCLUSIONS: The data show that SiPAP in the DR does not increase subsequent vasodilation to inhaled NO (iNO) and reduces the likelihood of BPD. SiPAP may hold promise as a new treatment strategy for respiratory support in preterm infants.

High Flow Nasal Cannula in Preterm Infants: Effects of High Flow Rates on Work of Breathing

Kee H. Pyon, Zubair A. Agbahi, Tarek A. Nakhla, Gary E. Stahl, Judy G. Saslow, Pediatrics, Cooper University Hospital, Camden, NJ; Pediatrics, Our Lady of Lourdes Medical Center, Camden, NJ.

BACKGROUND: High flow nasal cannula (HFNC) has gained increased popularity as noninvasive respiratory support in the neonatal population. Our recent study on neonates has shown that at lower flow rates (3-5 L/min) of HFNC (Vapotherm 2000i©), there was no significant difference in the work of breathing (WOB) when compared to normal continuous nasal positive airway pressure (NCPAP). However, higher flow rates of HFNC have been used on preterm infants without much available pulmonary mechanics data.

OBJECTIVE: Compare WOB and changes in end distending pressure (ΔP) in neonates on high flow rates using HFNC versus NCPAP.

METHODS: In this pilot study, 8 preterm neonates < 2000 gms were studied randomly on HFNC at 6, 7, 8 L/min (HFNC6, HFNC7, and HFNC8, respectively) and NCPAP at 6 cmH2O (NCPAP6). The mean (± SD) birth weight was 873 ± 273 grams and gestational age 26.6 ± 2.1 weeks. At the time of study, weight was 1695 ± 458 grams, age 45.8 ± 19.3 days, and FIO2 0.33 ± 0.10. Calibrated DC-coupled respiratory inductance plethysmography was used to measure tidal ventilation. An esophageal balloons estimated pleural pressure from which ΔP was calculated at each device setting. Using standard methods, inspiratory, elastic, resistive WOB (IWOB, EWOB, and RWOB, respectively) and lung compliance (CL) were calculated.

RESULTS: The WOB parameters and ΔP at all HFNC flow rates were lower but not significantly different when compared to NCPAP (Table: mean ± SD). CLl was also similar for all the device settings.

CONCLUSIONS: This pilot study shows that at high flow rates (> 5 L/min) on HFNC, the WOB, ΔP, and CL were not significantly different than NCPAP. The low ΔP values reflect no significant lung overdistension with increasing HFNC flow rates. Additional infants will need to be enrolled and evaluated to determine conclusively whether higher flow rates on HFNC can be effectively and safely used in the preterm population.
130 2:15 PM Fellow in Training
Enhanced Lung Maturation Using Intrauterine Gene Therapy
Gabriela I. Mihalache, Erin C. Killeen, Deion Callander, Janet E. Larson, J.C. Cohen, Mano A. Bimivale. Pediatrics, Stony Brook University Medical Center, Stony Brook, NY.

OBJECTIVES: In utero gene therapy was performed in timed pregnant Yucatan pigs at canalicular stage (gestational age 9, 12 and 13 weeks). Cystic fibrosis transmembrane conductance regulator (CFTR) with luciferase and Enhanced Green Fluorescent Protein with beta-galactosidase (controls) were injected using adenosine as a vector for gene transfer. At 48-96 hours after gene transfer, fetuses were delivered. Respiratory function tests were performed to assess the compliance of the premature lungs. Lung tissues were harvested for analysis of reporter gene expression using immunohistochemistry and gene assays. H and E staining was done to assess maturation stages.

RESULTS: Respiratory function tests showed improved compliance of fetal lung tissue in CFTR treated animals as demonstrated by Pressure volume curves. The maturation of lung tissue was confirmed on H and E staining. Immunohistochemistry confirmed the presence of reporter genes differentiating CFTR treated animals from controls.

CONCLUSIONS: CFTR treated animals showed acceleration of lung maturation after in utero gene therapy performed at canalricular stage of lung development.

95 3:30 PM Fellow in Training
Oligodendrocyte Maturation in a Rabbit Model of Intraventricular Hemorrhage
Caroline O. Chua, Furong Hu, Hongmin Xu, Praveen Ballabh. Department of Pediatrics, Division of Newborn Medicine, RNICU, Maria Fareri Children's Hospital @ Westchester Medical Center, New York Medical College, Valhalla, NY; Department of Anatomy and Cell Biology, New York Medical College, Valhalla, NY.

BACKGROUND: Premature infants with germinal matrix hemorrhage-intraventricular hemorrhage (GMH-IHV) are predisposed to persistent motor deficits and developmental disabilities. These neurologic sequelae might be secondary to disturbances in myelination resulting from injury to maturing oligodendrocytes (OL).

OBJECTIVE: To evaluate OL lineage, including pre-OL (O4+) and immature OL (O1+), as well as myelination (OL) in premature rabbit pups with IVH compared to controls.

DESIGN/METHODS: premature rabbit pups were exposed to C-section at 29 days (gestational age term=32d), and alternately assigned to receive either intraperitoneal glycerol to induce GMH-IVH or no treatment (control) at 2 hours (h) postnatal age. The development of IVH and its severity were diagnosed based on H and E staining. OL and myelin expression were assessed by immunohistochemistry. OL and myelin expression were assessed by immunohistochemistry.

RESULTS: OL lineage was reduced in all the three brain regions in pups with IVH compared to controls.

CONCLUSIONS: Myelination was measured by taking the ratio of myelinated (MBP) to unmyelinated fibers (panaxonal) using Metamorf software.

RESULTS: Pro-OL (O4+) and immune OL (O1+), as well as myelination in premature rabbit pups with IVH compared to controls.

CONCLUSIONS: Myelination was measured by taking the ratio of myelinated (MBP) to unmyelinated fibers (panaxonal) using Metamorf software.

RESULTS: OL and myelin expression were assessed by immunohistochemistry.

CONCLUSIONS: Myelination was measured by taking the ratio of myelinated (MBP) to unmyelinated fibers (panaxonal) using Metamorf software.

RESULTS: OL and myelin expression were assessed by immunohistochemistry. OL and myelin expression were assessed by immunohistochemistry. OL and myelin expression were assessed by immunohistochemistry.
CONCLUSIONS: We provide the first evidence of an association between a gene-specific transcription factor and Alr. Furthermore, our studies reveal a functional role for Ap2δ in recruiting HMTs to specific gene targets such as Hoxc8 that had not been previously documented for the Ap2 family. Taken as a whole, these findings provide a mechanism through which transcription factors can alter epigenetic marks in the histone code in order to achieve specific effects on gene regulation.

Are There Neurocognitive Correlates of Risk Behaviors in Preadolescents?


BACKGROUND: Numerous factors have been associated with risk behaviors. However, few data are available regarding the relation between neurocognitive functions (NCFs), especially frontal executive functions, and risk-taking behaviors. Furthermore, our studies reveal a potential role for Ap2δ in recruiting histone methyltransferases (HMTs) to specific gene targets such as Hoxc8 that had not been previously documented for the Ap2 family.

OBJECTIVE: To assess the efﬁcacy of a risk assessment and patient-centered counseling intervention for preadolescents presenting for walk-in visits.

DESIGN/METHODS: All walk-in patients seen 7/05-9/06 in an urban teen clinic completed a brief, written screening regarding contraception, substance use, violence, and depression. Patients who screened positive received immediate guidance and an invitation to on-going, on-site, patient-centered counseling, which included help setting personal behavior change goals. Progress in meeting goals was assessed using the Stages of Change model.

RESULTS: 1092 teens screened, 57% female. 74% had one or more risk factors, and were provided immediate guidance. 22% of those with risk factors agreed to on-going counseling; 32% of those who agreed to counseling actually participated in it. Males had a higher rate of risk factors, but female gender, past abuse and current depression were associated with accepting the intervention; younger age was associated with participating. The most common patient-chosen goals were increasing contraception and condom use, and help setting personal behavior change goals. Progress in meeting goals was assessed using the Stages of Change model.

CONCLUSIONS: An intervention of screening for risk behaviors, immediate guidance and on-site counseling was effective in assessing risk and providing intervention. Though a minority participated in counseling, those who did were likely to achieve personal goals.
101 5:15 PM - 5:30 PM  
**House Officer**  
**Internet Usage To Obtain Health Information Among Adolescents in an Urban Healthcare Network**  
Adelve Afalonay, Cesar Mella, Zarlasht Manzoor, Cynthia Lewis, Ayode Ariyekun, Ronald Bainbridge, Richard Neugebauer, Department of Pediatrics, Bronx Lebanon Hospital Center, New York, NY.

**BACKGROUND:** Limited data exists on the usage of the Internet to obtain health information by adolescents in an urban setting.

**OBJECTIVE:** The purpose of this study is to: 1) determine the frequency of Internet usage to obtain health information among adolescents in an urban health care network; 2) characterize how health information obtained is utilized; 3) identify which health topics are most commonly searched for.

**DESIGN/METHODS:** After obtaining informed consent, adolescents were recruited from an urban health care network in the South Bronx. Sites included 2 ambulatory health care centers and a hospital emergency department. Participants were 13-19 years old and English speaking. All participants completed an IRB approved, 19 item self-administered questionnaire. Questions assessed access to the Internet; Internet usage for health information; review of this information with the primary care provider; decision making based on information retrieved and view of its helpfulness. In addition, the questionnaire included demographic and general health items.

**RESULTS:** Among 100 respondents, mean age was 16 years, with 30% between 13-14 years and 40% over 16 years. Two thirds were girls; 80% Hispanic and the others were African-American. 80% were in grades 9 through 12. 92% reported that their household income was less than 40,000/year. All reported Internet use, of which 75% had used it for health information. 41% of which used the Internet "always, often, or sometimes" to obtain health information. Over 20% averaged 10 or more hours a week of Internet usage, 30% less than 1 hour/week. Females use the Internet significantly more than males (68.5% vs. 34.2% p< .001). 67% judged that Internet information improved their understanding of health problems; 58% thought that it improved their health. The six most commonly searched conditions in descending order were: STDs (44.2%); Alcohol (35.1%); Pregnancy (33.8%) and Diet (33.8%).

**CONCLUSIONS:** Adolescents in an urban setting should discuss and provide anticipatory guidance on health information from the Internet.

---

102 5:30 PM - 5:45 PM  
**Fellow in Training**  
**Outpatient (O) Directly Observed Therapy (DOT) for Children/Youth with Perinatally-Acquired HIV Infection (CYPAHV) with Antiretroviral (ARV) Treatment Failure (TF) Due to Chronic Non-Adherence (CNA)**  
Eberechi I. Nwabasi, Barry Dashedky, Pediatrics, UMDNJ-NJMS, Newark, NJ.

**BACKGROUND:** CNA to prescribed ARV due to many factors accounts for most ARV TF in CYPAHV. ODOT administered by professionals is standard management for tuberculosis. Coincidental DOT of ARV during hospitalization has been associated with short term reversal of TF due to CNA in CYPAHV. Impact of systematic long term ODOT in this group has not been previously reported.

**OBJECTIVE:** To determine the impact of ODOT on the viral load (VL) & CD4 of a cohort of CYPAHV with ARV TF due to CNA.

**DESIGN/METHODS:** Global and conditional deletion of the major cardiac LTCC isoform, CaV1.2, was performed in mice. Pax3 derivatives in the resulting embryos were visualized with X-gal staining, GFP fluorescence, cDNA microarray, and development of reporter mice. Pax3 derivatives were characterized at the single cell resolution.

**RESULTS:** The GNZ reporter mouse enabled the identification of Pax3 derivatives at a single cell resolution. 84% of USF at the site of the PDX-1 promoter. Glucose dependent immunoprecipitation assays with antibodies to acetylated histone H3, acetylated histone H4 and USF-1 in IUGR pups treated with vehicle, USF-1 binding was not detectable whereas IUGR animals treated with Ex-4 had measurable binding of USF at the site of the PDX-1 promoter.

**CONCLUSIONS:** Ex-4 treatment increases histone H3 and histone H4 acetylation at the proximal Pdx-1 promoter thereby increasing Pdx-1 expression and preventing the development of diabetes in the IUGR rat.

103 4:15 PM - 4:30 PM  
**The Cardiac L-Type Calcium Channel Is Required for Normal Cardiogenesis and Embryonic Survival**  
George A. Porter, Pediatrics, Yale University School of Medicine, New Haven, CT.

**BACKGROUND:** Cardiac function depends upon calcium transients which are initiated by the sarcoplasmic L-type calcium channel (LTCC). These cyclic changes in calcium levels also appear to regulate gene expression in the developing and mature heart. We have previously shown that blockade of LTCCs in cultured embryos causes abnormalities in cardiac morphogenesis, particularly in the right ventricle (RV) and outflow tract (OFT), structures derived from the anterior heart field (AHF).

**OBJECTIVE:** To determine whether LTCCs are required for normal cardiac morphogenesis and embryonic survival.

**RESULTS:** Among 100 respondents, mean age was 16 years, with 30% between 13-14 years and 40% over 16 years. Two thirds were girls; 80% Hispanic and the others were African-American. 80% were in grades 9 through 12. 92% reported that their household income was less than 40,000/year. All reported Internet use, of which 75% had used it for health information. 41% of which used the Internet "always, often, or sometimes" to obtain health information. Over 20% averaged 10 or more hours a week of Internet usage, 30% less than 1 hour/week. Females use the Internet significantly more than males (68.5% vs. 34.2% p< .001). 67% judged that Internet information improved their understanding of health problems; 58% thought that it improved their health. The six most commonly searched conditions in descending order were: STDs (44.2%); Alcohol (35.1%); Pregnancy (33.8%) and Diet (33.8%).

**CONCLUSIONS:** Adolescents in an urban setting should discuss and provide anticipatory guidance on health information from the Internet.

---

104 4:30 PM - 5:30 PM  
**Fellow in Training**  
**Neonatal Ex4 Administration Normalizes Epigenetic Modifications at the Proximal Promoter of Pdx-1**  
Sara E. Pinney, HongShun Niu, Fenglen Li, Rebecca A. Simmons, Division of Endocrinology/Diabetes, The Children's Hospital of Philadelphia, Philadelphia, PA; Division of Neonatology, The Children's Hospital of Philadelphia, Philadelphia, PA; University of Pennsylvania, School of Medicine, Philadelphia, PA.

**BACKGROUND:** Intrauterine growth retardation (IUGR) has been linked to the development of type 2 diabetes in adults. The abnormal metabolic intrauterine environment affects the development of the fetus by permanently modifying gene expression and function of susceptible cells, like the Beta cell. Pdx-1, a pancreatic homeobox transcription factor, is critical to beta-cell function and development and its expression is preserved in IUGR beta cells.

**OBJECTIVE:** To unequivocally identify novel and previously contentious Pax3 derivatives using a newly available reporter mice.

**RESULTS:** Ex-4 treatment of the IUGR pups significantly increased the acetylation of histone H3 and histone H4 at the PDX-1 proximal promoter compared to the IUGR vehicle group (p<0.05). In IUGR pups treated with vehicle, USF-1 binding was not detectable whereas IUGR animals treated with Ex-4 had measurable binding of USF at the site of the PDX-1 promoter.

**CONCLUSIONS:** Ex-4 treatment increases histone H3 and histone H4 acetylation at the proximal Pdx-1 promoter thereby increasing Pdx-1 expression and preventing the development of diabetes in the IUGR rat.

105 4:45 PM - 5:00 PM  
**A Novel Cre Reporter Mouse Reveals New Derivatives of Pax3-Expressing Precursors**  

**BACKGROUND:** Pax3 is a transcription factor that is mutated in Waardenburg syndrome and has been implicated in rhabdomyosarcoma tumors. Pax3 precursors differentiate into many neural crest and somite derived tissues. Controversial Pax3 derivatives have been described in fate mapping studies using currently available reporter mice.

**OBJECTIVE:** To unequivocally identify novel and previously contentious Pax3 derivatives using a newly available Cre reporter Cre mouse.

**RESULTS:** The GNZ reporter line allows for enhanced cation of Pax3 derivatives at a single cell resolution. The GNZ reporter mouse enabled the identification of Pax3 derivatives at a single cell resolution. The GNZ reporter mouse enabled the identification of Pax3 derivatives at a single cell resolution. Glucose dependent immunoprecipitation assays with antibodies to acetylated histone H3, acetylated histone H4 and USF-1 in IUGR pups treated with vehicle, USF-1 binding was not detectable whereas IUGR animals treated with Ex-4 had measurable binding of USF at the site of the PDX-1 promoter.

**CONCLUSIONS:** Ex-4 treatment increases histone H3 and histone H4 acetylation at the proximal Pdx-1 promoter thereby increasing Pdx-1 expression and preventing the development of diabetes in the IUGR rat.

---

**Developmental Biology Platform Session**

**Saturday, March 29, 2008**

4:15 PM-5:45 PM

103 4:15 PM  
**The Cardiac L-Type Calcium Channel Is Required for Normal Cardiogenesis and Embryonic Survival**  
George A. Porter, Pediatrics, Yale University School of Medicine, New Haven, CT.

**BACKGROUND:** Cardiac function depends upon calcium transients which are initiated by the sarcoplasmic L-type calcium channel (LTCC). These cyclic changes in calcium levels also appear to regulate gene expression in the developing and mature heart. We have previously shown that blockade of LTCCs in cultured embryos causes abnormalities in cardiac morphogenesis, particularly in the right ventricle (RV) and outflow tract (OFT), structures derived from the anterior heart field (AHF).

**OBJECTIVE:** To determine whether LTCCs are required for normal cardiac morphogenesis and embryonic survival.
Lung Epithelium

Kristen Glass, Linda Varghese, Linda Gonzales, Michael Beers, Cherie Foster, Pediatrics/Neonatology, Children's Hospital of Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, PA; Pulmonary and Critical Care Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA.

BACKGROUND: Lung progenitor cells are characterized by proliferative capacity and expression of markers of multiple cell types. Bronchoalveolar stem cells (BASC) have been characterized by co-expression of the Type 2 (T2) cell marker SP-C, and the Clara cell marker. CC10 (Kim et al. Cell, 2005) in both adult murine normal lung and lung cancer. Whether these characteristic markers identify BASC in human fetal lung (HFL) is unknown.

OBJECTIVE: To characterize potential progenitor cells in naive human fetal lung epithelium.

DESIGN/METHODS: We isolated naive fetal lung epithelial cells and cultured them for 5 days in Waymouth's media (Zerial et al. Keratinocyte Growth Factor (KGF), 1% Fetal Bovine Serum (FBS) or both. Proliferation was assessed by immunostaining for Ki67 and counting the number of proliferating cells/cell in 9 randomly selected high powered fields (HPF) at 6X (n=3 experiments). T2 (SP-B, PGC, SP-C), T1 (PAI-1) and Clara cell (CC10) marker expression was examined using real time RT-PCR. Results from three experiments were subjected to a 10% (42% total lung capacity [TLC]) or 37% of the prolyl hydroxylase inhibitor dimethyloxallyl glycine (DMOG; 500 μM). Apoptosis was measured by indirect immunostaining for cleaved caspase-3.

RESULTS: Together, KGF+FBS elicited marked proliferation in naive fetal lung epithelial cells at 4d (16.5±3.4%, proliferating cells, means±SE, p<0.01) and 7d (11.3±1.7%, p<0.05) vs the background rate of 2.3±0.4% proliferating cells in Wayvght alone. RT-PCR for pulmonary epithelial cell markers identified detectable expression of all T1, T2, and Clara cell markers surveyed. SP-C mRNA was present at 0.002±0.3 ng/μl and CC10 at 0.09±0.03 ng/μl (16.5±3.4% proliferating cells, mean±SE, p<0.01) and 7d (11.3±1.7%, p<0.05) vs. the background rate (1.8±0.29-fold, p<0.05) and PAI-1 (1.4±0.19-fold, p<0.05) at 37% TLC. T1 mRNAs (Claudin 7, PAI-1 and Caveolin-1) were induced with 10% TLC (p<0.05), with induction of Claudin 7 (1.7-fold) and PAI-1 (1.4±0.42-fold, respectively (p<0.05 vs unstretched control) at 37% TLC. ELISA revealed activation of Rho within 5 min for both stretch levels. Stress fibers increased with static stretch. At 37% TLC, there was a 27% increase in stress fiber fluorescence intensity (cell/0.05) with decreased detectable cells.

CONCLUSIONS: Static stretch of differentiated T2 cells promotes transition to a 1:1 phenotype. Rho GTPase activation in this model identifies an attractive candidate second messenger system by which stretch-induced cytostatic stimulation could elicit phenotype changes.

Hydroxycal Inhibitor Factor-1α Activity is Increased in Neonatal Neutrophils


BACKGROUND: Type 2 (T2) cell marker, SP-C, and the Clara cell marker, CC10 (Kim et al, Cell, 2005) in both adult murine normal lung and lung cancer. Whether these characteristic markers identify BASC in human fetal lung (HFL) is unknown.

OBJECTIVE: To characterize potential progenitor cells in naive human fetal lung epithelium.

DESIGN/METHODS: We isolated naive fetal lung epithelial cells and cultured them for 5 days in Waymouth’s media (W) keratinocyte growth factor (KGF). 1% Fetal Bovine Serum (FBS) or both. Proliferation was assessed by immunostaining for Ki67 and counting the number of proliferating cells/cell in 9 randomly selected high powered fields (HPF) at 6X (n=3 experiments). T2 (SP-B, PGC, SP-C), T1 (PAI-1) and Clara cell (CC10) marker expression was examined using real time RT-PCR. Results from three experiments were subjected to a 10% (42% total lung capacity [TLC]) or 37% TLC. ELISA revealed activation of Rho within 5 min for both stretch levels. Stress fibers increased with static stretch. At 37% TLC, there was a 27% increase in stress fiber fluorescence intensity (cell/0.05) vs. unstretched control.

CONCLUSIONS: Static stretch of differentiated T2 cells promotes transition to a 1:1 phenotype. Rho GTPase activation in this model identifies an attractive candidate second messenger system by which stretch-induced cytostatic stimulation could elicit phenotype changes.

Static Stretch of Differentiated Human Fetal Type II Cells Promotes Transition to a Type I Phenotype

Cherie Foster, Linda Varghese, Linda Gonzales, Susan Marquiles, Pediatrics, Division of Neonatology, Hospital of the University of Pennsylvania, Philadelphia, PA; School of Engineering and Applied Science, University of Pennsylvania, Philadelphia, PA.

BACKGROUND: Static stretch by fetal lung fluid is required for alveolar development. Animal models suggest that large static stretch, as with in utero tracheal obstruction or extreme ventilator PEEP, promotes upregulation of T1 and downregulation of T2 markers. Cellular pathways regulating this transition are not fully defined.

OBJECTIVE: To characterize effects of static stretch on phenotype modulation and activation of Rho A in differentiated T2 (HFL) cells.

DESIGN/METHODS: HFL T2 cells were cultured on elastic using established models of T2 cells (Gonzales, Poulsen, Best, et al, 2001) and equibiaxial stretch (Tsuchimapkin, AJP, Lung, 109) for 72h. Cells were subjected to a 10% (42% total lung capacity [TLC]) or 37% TLC in culture media (SA, 100% TLC) for 24hr. T2 (SP-B and Pepsinogen C [PGC, Foster, A'RMCB, 2004] and T1 (Claudin 7, PAI-1, and Caveolin-1) markers were analyzed by Western blotting (WB) and real time RT-PCR. Rho A activation was assessed by stress fiber quantification and ELISA assay. Stress fiber changes were assessed with fluorescent phalloidin staining and Image Pro-Plus 6.0 software. 3-6 experiments were analyzed by student's t-test.

RESULTS: No changes were seen in T2 proteins by WB. T2 mRNAs decreased at both levels of stretch: 10% TLC decreased 1.6-fold (p<0.05) and PGC (55%) of unstretched control, 37% TLC-SP-B (50%) and PGC (52%) of unstretched control, all p<0.05. T1 protein analysis revealed induction of Caveolin-1 at 10% [TLC] (430-fold, p<0.05 vs. 24% no stretch) and both Caveolin-1 (1,5 ±0.29-fold, p<0.05) and PAI-1(1.4 ±0.19-fold, p<0.05) at 37% TLC. T1 mRNAs (Claudin 7, PAI-1 and Caveolin-1) were induced with 10% TLC.A (p<0.05), with induction of Claudin 7 (1.7-fold) and PAI-1 (1.4±0.42-fold, respectively (p<0.05 vs unstretched control) at 37% TLC. ELISA revealed activation of Rho within 5 min for both stretch levels. Stress fibers increased with static stretch. At 37% TLC, there was a 27% increase in stress fiber fluorescence intensity (cell/0.05) vs. unstretched control.

CONCLUSIONS: Static stretch of differentiated T2 cells promotes transition to a 1:1 phenotype. Rho GTPase activation in this model identifies an attractive candidate second messenger system by which stretch-induced cytostatic stimulation could elicit phenotype changes.

Nutritional Status of Children After a Food Supplementation Program Integrated with Routine Health Care in Migrant Communities of the Dominican Republic

Kavita Parikh, Gabriela Marein-Efron, Shirley Huang, Samir S. Shah, Geraldine O’Hare, Rodney Fainelli, Division of General Pediatrics, Children’s Hospital of Philadelphia, Philadelphia, PA; School of Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA; Division of Gastroenterology, Hepatology and Nutrition, Children's Hospital of Philadelphia, Philadelphia, PA; Departments of Pediatrics and Epidemiology; University of Pennsylvania School of Medicine, Philadelphia, PA; Cobbs Creek Primary Care Center, Children’s Hospital of Philadelphia, Philadelphia, PA; Department of Pediatrics, University of Pennsylvania School of Medicine, Philadelphia, PA.

BACKGROUND: Malnutrition in children lowers resistance to infection and increases mortality from common illnesses such as diarrhea and respiratory infections.

OBJECTIVE: To compare baseline and 1-year post-intervention acute and chronic malnutrition rates in children of migrant workers in the Dominican Republic after initiation of a food supplementation program given in conjunction with routine health care visits.

DESIGN/METHODS: This cross-sectional study was conducted in 5 rural communities or barrios in the Dominican Republic. Children 0 to 18 years of age were eligible if they received routine care from local medical clinics. Height and weight measurements from 2005 were baseline data and measurements from 2006 were data after initiation of a food supplementation program. Acute malnutrition was defined using 2006 WHO Child Growth Standards for <70.4% and the Waterlow criteria with 2000 US CDC growth charts for >3.5 years. Chronic malnutrition was defined using the Kanawati and McLaaren criteria with 2006 WHO Child Growth Standards for <5 yrs or olds and the Waterlow criteria with 2000 US CDC growth charts for >3.5 years. Chronic malnutrition was defined using the Kanawati and McLaren criteria with 2000 US CDC growth charts. Chi-square or Fisher exact tests were used to compare rates of malnutrition.

RESULTS: Among 175 children in 2005, 52% were female, mean age was 5.3 years, and 57% were <5 years. Among 148 children in 2006, 49% were female, mean age was 5.8 years, and 57% were <5 years.
statin trials. We contacted the corresponding authors to obtain race/ethnicity and the presence of founder pediatric statin trials; (2) to explore the hypothesis that known founder effects among populations of Caucasian

OBJECTIVE: The purpose of this analysis was three fold: (1) to obtain and report the racial composition of minority children in clinical trials of HMG CoA reductase inhibitors (statins) in heterozygous familial hypercholesterolemia (heFH).

minority children in clinical trials of HMG CoA reductase inhibitors (statins) in heterozygous familial hypercholesterolemia (heFH).

Philadelphia, PA; Pediatrics, Children's Hospital at Monte Belay, Andrew Racine, Peter F. Belamarich. Pediatrics, Temple University, Columbia University Medical Center, Bronx, NY.

BACKGROUND: Sudden infant death syndrome (SIDS) is the leading cause of mortality in babies between one month and one year of age. Despite a substantial decline in the incidence of SIDS following “Back to Sleep” campaign, SIDS still results in about 2,500 deaths each year, a disproportionate number from low-income, ethnic minority neighborhoods.

OBJECTIVE: To examine whether maternal ethnicity, educational level, and observed sleeping position in the hospital nursery are associated with infants’ sleeping positions at home.

DESIGN/METHODS: Socio-demographic data, information on infant’s sleeping position observed in the hospital nursery and home sleeping position (current or planned), were obtained via interview from parents (n=541). Differences in proportions were tested using chi-square; maximum likelihood logistic regression was used for multivariate analyses. Statistical significance was set at p<0.05.

RESULTS: Among respondents 61% were Hispanic, 24% African American and 13% African. Overall, 37% of respondents always placed their infants to sleep on their back. Always placing the child to sleep on their back was most common among African (59%), than among African Americans (40%) or Hispanics (33%) (p<0.002). Higher education was associated with greater likelihood of correct practices, e.g., among women with 1-11 years of education, 32% place their infants to sleep on their back as compared with 42% among college graduates, (p<0.05). However, specific knowledge of SIDS, as distinct from higher education generally, was not associated with correct sleeping position. In controlled analyses, their higher level of education explained the higher proportion of Africans employing correct Back-to-Sleep practices. Observation of hospital nursery practice was unassociated with practices later adopted in the home.

CONCLUSIONS: Among the ethnic groups, Africans were more likely to employ correct back-to-sleep practices. The data also suggest that women with more years of education employed correct practices more often than less educated women, albeit independently of any specific knowledge about SIDS. Back-to-Sleep practices at home were not correlated with those employed in the hospital nursery. The Back-to-Sleep campaign should increase efforts to reach the Hispanic and the less well-educated members of the US population.

Under-representation of Minority Children in Pediatric Statin Trials

Brook Belay, Andrew Racine, Peter F. Belamarich, Pediatrics, Temple University, Philadelphia, PA; Pediatrics, Children's Hospital at Montefiore, Bronx, NY.

BACKGROUND: Among those studies that report race, there is a marked under-representation of minority children in clinical trials of HMG CoA reductase inhibitors (statins) in heterozygous familial hypercholesterolemia (heFH).

OBJECTIVE: The purpose of this analysis was three fold: (1) to obtain and report the racial composition of pediatric statin trials; (2) to explore the hypothesis that known founder effects among populations of Caucasian children may have facilitated or favored their inclusion in statin trials; and, (3) to determine whether there was any evidence that the extensive guidelines based on family history may inadvertently identify less minority children who would otherwise qualify for this type of study.

DESIGN/METHODS: We conducted a MEDLINE search using relevant terms to identify all pediatric heFH statin trials. We contacted the corresponding authors to obtain race/ethnicity and the presence of founder effects. Studies meeting entry criteria were retrieved and data retrieved for each of the objectives.

RESULTS: Ninety-four percent (94%) of the 589 children with heFH enrolled in statin trials from around the world for whom we were able to obtain race were Caucasian. This was true even in study sites where there was a large population of minority children and where founder-effects have not been described. Strong but indirect evidence from both the adult literature and the pediatric literature suggest that the Family history based screening guidelines disproportionately identify minority/disadvantaged children.

CONCLUSIONS: Intensive efforts will be required to arrive at a fair representation of minority children in studies of pediatric FH. Moving forward, it will also be important to ensure that screening guidelines do not inadvertently engender health care disparities in minority children.

Acute HIV Syndrome in a General Pediatric Practice: Missed Opportunities

Andres F. Camacho-Gonzalez, Natasa Miloslavsic, Barbara Kelly, Pediatrics, Albert Einstein Medical Center, Philadelphia, PA.

BACKGROUND: Despite prevention efforts, improvement in sexual behavior among adolescents, and superior retroviral therapy, HIV rates have increased among youth yet most adolescents are unaware of their HIV status. Higher level of suspicion and identification of Acute HIV Syndrome may help reduce the spread in this high-risk population.

OBJECTIVE: To determine provider level of suspicion and identification of Acute HIV Syndrome among teens presenting with an acute illness to an inner city clinic in Philadelphia.

DESIGN/METHODS: We conducted a retrospective survey of 54 adolescents aged 15-23 seen at an inner city clinic from 7/07-10/07 and diagnosed with IC9 codes of pharyngitis, viral syndrome, mononucleosis, or lymphadenopathy. Charts were reviewed for demographic, risk factors for HIV, clinical and laboratory data.

RESULTS: Patients’ mean age was 17; 72% female, 94% African American and 4% Hispanic. As per patient report all patients were heterosexual, 78% were sexually active with 61% with more than one partner; 52% used intermittent or no barrier contraception, 32% had a history of sexually transmitted infection (STI), 10% had a history of sexual assault and 24% had used illicit drugs (no IV drug use). Most (74%) had clinical symptoms compatible with Acute HIV Syndrome (2+ symptoms). Of these, 78% were sexually active and 35% had history of STI. Based on symptoms and sexual history 57% (31/54) were at risk for Acute HIV Syndrome. Most common diagnoses were pharyngitis (50%), viral URI (30%) mononucleosis (12%). Non-HIV diagnostic studies were sent on 84 % of patients diagnosed with pharyngitis (13% positive), 40% with URI (10% positive), 100% with mononucleosis (17% positive). Only 6.4% (23/31) of at risk patients were offered an HIV antibody test and none were offered RNA testing.

CONCLUSIONS: Missed opportunities for identification of Acute HIV Syndrome are common. Further studies need to explore provider knowledge and behavior, availability of HIV testing, and other barriers to implementing strategies to enhance acute HIV-1 recognition in inner city clinics serving high-risk youth.

Improving Tuberculosis Case-Finding in an Inner City Pediatric Clinic

Gina Montealegre, Guadalupe Lopez-Marti, Krissa George, Erika Mendoza, Ryan Kotton, Barbara Black, Alan Schindler, Barbara Kelly, Department of Pediatrics, Albert Einstein Medical Center, Philadelphia, PA.

BACKGROUND: The incidence of tuberculosis (TB) in Philadelphia is fifth highest in the US. The diagnosis of latent tuberculosis (LTBI) or TB disease in a child is a sentinel healthcare event representing recent TB transmission in the community. While screening is an important TB control measure, due to the low prevalence of TB among low-risk children the CDC recommends screening in high-risk children only.

OBJECTIVE: To evaluate the effect of a targeted TB screening program on identification of children with LTBI and TB disease in a pediatric practice serving a high-risk community.

DESIGN/METHODS: Prior to 4/07, screening PPDs were placed routinely on all children at age 9-12 months, when required for school physical exams, and on incidentally identified high-risk children. In 4/07, we redesigned our TB screening program to include: a brief screening questionnaire to identify high-risk patients at every well child visit; PPD placement only for children identified as high-risk and at least 12 months old; staff education; educational handouts and reminder wristbands; telephone recall for no shows. After 5/07, we discontinued wristbands and telephone recalls. We report on numbers of PPDs performed, show rates for PPD reading and number of cases of LTBI or TB disease identified.

RESULTS: From 8/1/06-12/31/06, 336 PPDs were placed (average 67/month): 137 (41%) patients were low risk; 76 (23%) high-risk; 121 (36%) unknown risk. Of these, 103 (31%) had their PPD read and 2 patients were identified with LTBI. From 4/2007-5/21/07, 68 high-risk patients had PPDs placed; 45 (68%) returned for PPD reading and 2 patients were identified with LTBI. From 2/09/07-11/29/07, 76 high-risk patients had PPDs placed; 33 (43%) had their PPD read (2 by a school nurse) and 3 patients were identified with LTBI. No cases of TB disease were identified during the study periods.

CONCLUSIONS: While targeted PPD testing did not lead to a reduction in the number of children tested, it did result in increased efficiency in identifying LTBI. Most patients placed before targeting, 51/42 after targeting. Initial improvement in PPD reading rates declined when reminder wristbands and recalls were discontinued. Continued efforts for improving PPD reading rates are needed.

Metabolism/Obesity Platform Session

Saturday, March 29, 2008

Correlation of Weight Gain in First Ten Days of Life and Childhood Obesity

Riti S. Daval, Fernanda E. Kuperman, Fernando Llopol, Salimah Walani, Kanchana Roychowdhury, Pediatrics, Flushing Hospital Medical Center, Flushing, NY.

BACKGROUND: Previous studies have shown that rapid weight gain in infancy is associated with the development of childhood obesity. Furthermore, possibly critical periods may exist for the development of childhood obesity and 5-7 years. These critical periods should serve to focus preventive efforts.

OBJECTIVE: To evaluate whether changes in weight in first ten days of life are associated with overweight status at 5 yrs of age.

DESIGN/METHODS: This is a descriptive, cross-sectional study. Medical records of 5 yr-old children were reviewed. Weight at birth, at 10 days of life, and Body Mass Index (BMI) at age 5 were recorded. Neonates were classified into those who gained weight during the first week of life, and those who did not. Five year-olds were classified by BMI into three groups: normal (BMI <85th perc.), at risk (85th-95th perc.), and overweight (>95th perc.). Weight change was compared with BMI percentile at 5 yrs of age. Parental weight and height, child’s nutrition during first week of life, physical activity, hours of TV viewing, and socioeconomic status were obtained by telephone interview. Parental BMI was calculated.

RESULTS: Fifty subjects participated in the study; 52% were males. Fifty-four percent gained weight in first week of life. At 5 yrs of age 48% had normal BMI, 10% were at risk, 42% were overweight. Thirty-four percent were breast-fed, and 66% were formula-fed. There was no significant association between weight change
from birth to ten days of life and BMI status at 5 yrs (Chi-square=0.34; p=0.58), between BMI of father and weight status at 5 yrs (T-statistic = -0.824; p = 0.268); or between mode of feeding and BMI status at 5 yrs (Chi-square=0.009; p=0.924). A significant association was found between gender and BMI status at 5 yrs (Chi-square = 3.88; p=0.049), between BMI of mother and BMI status at 5 yrs (T-statistic = 2.4; p=0.018), and between mode of feeding and weight change in first 10 days of life (Chi-square = 13; p=0.00).

CONCLUSIONS: We found no association between weight gain in first 10 days of life and overweight status at age 5. Formula-fed babies are prone to increased weight gain by ten days of life. Maternal BMI had an association with being overweight at 5 yrs. Formula vs breast feeding had no association with BMI status at 5 yrs of age. Females were found less likely to be overweight at 5 yrs.

116 4:30 PM House Officer

Effect of an Intervention Program on Overweight Second and Third Grade Students in an Inner City Elementary School: A Pilot Study
Sister Melinda Lando, K. Nicole Jalandoni, Heydee Larralde, Nicholas Obiri, Ronald Bainbridge, Ayode A. Adeniyi, Richard Neugebauer, Pediatrics, Bronx Lebanon Hospital Center, Bronx, NY.

BACKGROUND: Obesity is a growing epidemic in school-aged children. Effective intervention programs are lacking. In NYC city, Hispanic children have the highest obesity rate among ethnic groups.

OBJECTIVE: The objective of this pilot study was to examine the efficacy of a nutrition and exercise program for overweight second and third grade students in a public elementary school in South Bronx: ≥50% of school attendees are Hispanic.

DESIGN/METHODS: After obtaining informed consent from caregiver and assent from the child, 28 2nd or 3rd grade students with BMI ≥85th percentile were randomized to intervention or control group. The control condition comprised nutrition classes; intervention offered the same nutrition classes plus 40 minutes physical activity 3 times a week for 3 consecutive months. BMI was calculated at baseline, at the end of 3 months and 10 months post-baseline. Participants were administered a knowledge test on nutrition and exercise and the Piers-Harris Children's Self Concept scale at baseline and post-intervention.

The primary outcomes were mean within-subject change in BMI from baseline to the 3 and 10 month assessments. Secondary outcomes were mean within subject change in self-concept and knowledge regarding nutrition and exercise. Intention to treat analysis was performed using multiple regression. Statistical significance was p<0.05.

RESULTS: At 3 months, mean BMI in intervention group (N=14) decreased from 20.9 to 20.3 (-0.6); mean BMI increased in control group (N=14) from 20.5 to 22.2 (+1.7). At 10 months, the difference in change score was not significant. Mean change score in physical appearance was larger in intervention compared to control group (p=0.02). Mean change scores in knowledge test were not significantly different.

CONCLUSIONS: This short-term physical activity program was superior to the control condition in limiting compared to control group (p=0.02). Mean change scores in knowledge test were not significantly different. Enrollment data from the program were used to determine a referral completion rate for the same period.

RESULTS: Over the 6 month period, 339 surveys were collected. Mean age of children in families surveyed was 12 years (range 6-18); 42% were male. Mean BMI was 27.4 (range 17.7-62); 71% were obese. Overall, 223 (66.6%) accepted the referral to the obesity program. Those who accepted the referral were more likely to be obese (76% vs. 62%, p<0.005). There were no differences in the rate of acceptance by age or gender. For those who did not accept the referral, the following reasons were cited: "too busy/inconvenient class times" (42%), "don't feel weight is a problem" (27%), "don't think it will help" (23%). Six percent of families cited medical or social concerns impeding participation, and 2% were dissatisfied with the quality of the program.

Prospectively collected enrollment data from the obesity program indicated that 80 children were enrolled during the 6 month period. This figure represents 36% of those who purportedly accepted the referral, resulting in an overall acceptance rate of 24%.

CONCLUSIONS: About 1 in 4 families at this inner-city health center accepted a referral to an on-site obesity management program. This pilot study suggests that community programs can play a critical role in increasing referral acceptance. Outreach efforts to increase referral acceptance are needed.

117 4:45 PM

Effect of Caloric Information on Menu Selection by Caregivers in an Inner City, Minority Population
Wipanje Phupakki, Jeremy Aiss, Stanley Cho, Pediatrics, St. Barnabas Hospital, Bronx, NY; Weill Cornell Medical College, New York, NY.

BACKGROUND: Calorie labeling on menus has emerged as a major legislative priority in an effort to curb rising obesity rates. Adult caregivers have the greatest impact on children’s dietary routines. There is no data on the impact of caloric information on menu selection.

OBJECTIVE: To assess the impact of caloric information on menu selection and nutritional behaviors in an inner city community.

DESIGN/METHODS: A convenience sample of adult caregivers at 3 afterschool programs, 2 Head Start programs, and a public elementary school was surveyed. Participants were asked to select a lunch from a menu without calories, then select from a menu with calories posted. Analysis focused on univariate and bivariate associations between education level and responses to menu selections pre- and post- caloric information.

RESULTS: 183 adult caregivers were surveyed (43% Hispanic, 37% African-American; 45% high school education). When given calorie information, 46% changed a hypothetical lunch order to reduce their calorie intake, 46% did not change their order, and 8% changed their order to increase their calorie intake. There was no effect of years of education on outcome. 47% of respondents reported eating fast food at least once a week.

CONCLUSIONS: Caloric information on menus would decrease calories in nearly half of this high risk community. With almost half of families eating fast food at least once a week, this could lead to a significant impact with reduction in caloric intake. More public health interventions aimed at nutrition education could reduce obesity and its complications in this community.

118 5:00 PM

Acceptance of Referrals to an Obesity Management Program at an Inner-City Health Center
Maya Ilowite, Iman Sharifi, Pediatrics, Children's Hospital at Montefiore/Albert Einstein College of Medicine, Bronx, NY.

BACKGROUND: Lack of acceptance of the diagnosis of childhood obesity is frequently cited as a barrier to the usefulness of obesity management programs in inner-city settings. We sought to determine the extent to which such beliefs may impact the acceptability of an onsite obesity management program at an inner-city health center.

OBJECTIVE: To determine the proportion of families who accepted referral to an on-site obesity management program for their child.

DESIGN/METHODS: Over a 6 month period from February-July 2007, we flagged charts of all overweight (BMI>85th) children with a short survey prompting the provider to invite them to participate in an onsite obesity management program offered during evenings and Saturdays. Those who declined the referral were asked for a reason. Anonymized completed surveys were returned to a bin and collected by the investigators.

Descriptive statistics were performed, and bivariate analyses were used to determine whether BMI, age, gender were associated with acceptance. Enrollment data from the program were used to determine a referral completion rate for the same period.

RESULTS: Over the 6 month period, 339 surveys were collected. Mean age of children in families surveyed was 12 years (range 6-18); 42% were male. Mean BMI was 27.4 (range 17.7-62); 71% were obese. Overall, 223 (66.6%) accepted the referral to the obesity program. Those who accepted the referral were more likely to be obese (76% vs. 62%, p<0.005). There were no differences in the rate of acceptance by age or gender. For those who did not accept the referral, the following reasons were cited: "too busy/inconvenient class times" (42%), "don't feel weight is a problem" (27%), "don't think it will help" (23%). Six percent of families cited medical or social concerns impeding participation, and 2% were dissatisfied with the quality of the program.

Prospectively collected enrollment data from the obesity program indicated that 80 children were enrolled during the 6 month period. This figure represents 36% of those who purportedly accepted the referral, resulting in an overall acceptance rate of 24%.

CONCLUSIONS: About 1 in 4 families at this inner-city health center accepted a referral to an on-site obesity management program. This pilot study suggests that community programs can play a critical role in increasing referral acceptance. Outreach efforts to increase referral acceptance are needed.

119 5:15 PM

The Relationship Between the Density of Food Sources in the Built Environment and Obesity Among Inner City School Children
James J. Burns, Jane Garb, Coleen Walsh, Thomas Yarsley, Pediatrics, Baystate Children's Hospital, Springfield, MA.

BACKGROUND: There has been a startling increase in the rate of childhood obesity over the past 15 years. An increase in the availability of unhealthy food alternatives in the built environment is hypothesized to be a potential contributory factor.

OBJECTIVE: To determine if the density of regional food sources is related to obesity rates among inner-city school aged children.

DESIGN/METHODS: Body Mass Index (BMI) percentiles were generated for 10,513 students grades K-12 in an inner city school district (2005-2006). Each student's home address and regional food source locations were entered into a Geographic Information System (GIS). Rates of obesity (BMI ≥ 95thile) and density of food sources by block group were then mapped. Additionally, distance to nearest food source was calculated for all students. Spatial regression (controlling for age, gender, racial, socioeconomic and educational status) was performed using S+ and ArcView (GIS software) with food source as the predictor variable for obesity.

RESULTS: The prevalence of obesity in this inner city school age population was 23.8%. There was a positive relationship between the density of total food sources and obesity rates by block group (p < 0.001). This was also true for the fast food sub-category (p = 0.007). A linear regression analysis controlled for age, gender, and socioeconomic status and educational level. Additionally, obese students lived 57 feet closer to total food sources than those who were not obese (obese: 1105 feet vs. non-obese 1162 feet; p = 0.005).

CONCLUSIONS: This study demonstrates a statistically significant relationship between the density of total food sources (including fast food) and obesity. Further analysis is needed to evaluate how the built environment affects food choices in inner city children and their families. It is likely that the density of regional food sources has some influence.

Obesity Rates by Block Groups with Food Sources Mapped

Legend

Prospectively collected enrollment data from the obesity program indicated that 80 children were enrolled during the 6 month period. This figure represents 36% of those who purportedly accepted the referral, resulting in an overall acceptance rate of 24%.

CONCLUSIONS: About 1 in 4 families at this inner-city health center accepted a referral to an on-site obesity management program. This pilot study suggests that community programs can play a critical role in increasing referral acceptance. Outreach efforts to increase referral acceptance are needed.
Objectives: Among the LE subgroups, the lean subgroup showed a decrease in body fat can occur even before changes in BMI.

RESULTS: Associations among different Scales were consistent. BSID Mental Development Index (MDI) of <23 wks in the preterm group compared to the GLB norms, the preterm group performed worse in the Mental Developmental Scales (GMDS) from 2 to 3½ yrs, and Differential Abilities Scales (DAS) from 3 to 4 yrs. The mean and standard deviation of the PIQ and FIQ of the preterm group were 94±12 and 98±13, respectively; PDI scores were 96±18 and 101±20. Compared to the GLB norms, the preterm group performed worse in the Mental Developmental Scales (GMDS) from 2 to 3½ yrs, and Differential Abilities Scales (DAS) from 3 to 4 yrs.

CONCLUSIONS: Shifts in the relative contributions of major risk factors affecting outcomes. Investigating executive functions, such as those used in attentional control and organized exploration at preschool age, may help identify those children at greatest risk.

OBJECTIVE: To assess executive function in former preterm children at preschool age. To measure the effect of gender, race, perinatal morbidities and socioeconomic status on executive function.

METHODS: Longitudinal studies of >2600 infants born between 1994 and 2006 (54% boys, GA: 23-42 wks, BW: 400-5200g) were conducted using Bayley Scales of Infant Development (BSID-II) to 2 years. Data on socioeconomic status and perinatal data for the GLB. Neurodevelopmental outcome at 12 and 24 months was measured by the MDI and PDI scores of the Bayley Scales of Infant Development (BSID-II). Data on socioeconomic status and perinatal morbidities were collected.

RESULTS: So far, in this cross-sectional evaluation, 35 preterm children (GA 29±2.5 weeks and BW 1270±2470 gms) have been tested at mean age 38±25 months. Population demographics: 51% male; 49% African-American, 46% Caucasian and 5% other. MDI scores were 105±10 and 105±12 at 12 and 24 months, respectively. PDI scores were 96±18 and 101±20. Compared to the GLB norms, the preterm group performed worse in the Mental Developmental Scales (GMDS) from 2 to 3½ yrs, and Differential Abilities Scales (DAS) from 3 to 4 yrs.

CONCLUSIONS: Shifts in the relative contributions of major risk factors affecting outcomes. Investigating executive functions, such as those used in attentional control and organized exploration at preschool age, may help identify those children at greatest risk.
Neurodevelopmental (ND) Outcomes of Moderately Low Birth Weight (MLBW) Infants

Melissa A. Woythal, Marie C. McCormick, Vincent C. Smith, Division of Newborn Medicine, Harvard Medical School, Boston, MA; Division of Newborn Medicine, Beth Israel Deaconess Medical Center, Boston, MA; Division of Newborn Medicine, Harvard School of Public Health, Boston, MA.

BACKGROUND: Very low birth weight (VLBW) infants (<1500g) have poorer ND outcomes with lower ND scoring and more behavioral problems than normal birth weight (NBW) infants (>2500g). It has also been shown that ND outcomes of MLBW (1500-2499g) infants are worse compared to NBW infants, however there is limited data regarding their predictors of outcomes.

OBJECTIVE: We wanted to assess ND outcomes of MLBW infants and what modifiable predictors of outcome they have. We hypothesize that MLBW infants will have worse ND outcomes than NBW infants and that they will have some modifiable predictors of outcome.

DESIGN/METHODS: We studied 6183 infants (including 953 MLBW and 729 VLBW) from the National Maternal and Infant Health Survey (NMIMS) and its longitudinal follow-up. Over-sampling Black and low birth weight infants, the NMIMS provided early childhood morbidity and health data. We analyzed ND outcomes with non-parametric tests (Wilcoxon rank sum for continuous variables and Kruskal-Wallis for categorical variables). The outcome was the Denver Developmental Screening based Neurodevelopmental Score (DDDNS). The DDSNS ranged from 0-16 with higher scores being better. The DDSNS predictors were infant birth weight, gender, health insurance status, race, maternal depression, age, marital status, education, household income, and WIC status.

RESULTS: Mean DDSNS scores were higher as birth weight strata increased (VLBW 10.2; MLBW 11.7; and NBW 12.3 p<0.001). In MLBW infants, gender, maternal depression, age, education, and marital status were statistically significant predictors of DDSNS (p<0.05). For MLBW and VLBW infants, gender was the only statistically significant predictor of DDSNS (Females 12.3 Males 11.8 p<0.0003) and (Females 9.5 Males 9.0 p<0.0001) respectively.

CONCLUSIONS: MLBW infants have ND outcomes intermediate to NBW and VLBW infants. For MLBW infants, gender was the only significant predictor of ND outcome with no more modifiable risk factors identified. We conclude that being MLBW is such a strong risk factor for a worse ND outcome that other predictors become insignificant. More research needs to be done to identify modifiable predictors of outcome.

126 5:30 PM
Fellow in Training
Do Premature Females Really Do Better Than Their Male Counterparts?
Jody L. Kohut, Linda H. Green, Sharon Kirkby, David Webb, Kevin Dysart, Neonatology, The Children's Hospital of Philadelphia, Philadelphia, PA; ParadigmHealth, Upper Saddle River, NJ; Drexel University, Philadelphia, PA.

BACKGROUND: Premature male infants have been reported to have lower survival rates, increased chronic lung disease (CLD) and increased rate of intraventricular hemorrhage (IVH) when compared to female infants. It is not well understood whether male gender plays a role in other processes of care in the NICU.

OBJECTIVE: To compare survival rates and outcomes in process of care in female vs male infants born prematurely.

DESIGN/METHODS: Data was obtained from the ParadigmHealth database for all infants born premature from 1/03-6/07. Females were compared to males for demographics, complications, and care processes while in the NICU. Univariate and multivariate analysis was conducted using chi square analysis, analysis of variance or logistic regression.

RESULTS: 12,816 infants were included; 6,086 females and 6,721 males. Mean DDSNS scores were higher as birth weight strata increased (VLBW 10.2; MLBW 11.7; and NBW 12.3 p<0.001). In NBW infants, gender, maternal depression, age, education, and marital status were statistical significant predictors of outcome (Females 12.3 Males 11.6 p<0.0003) and (Females 10.8 Males 9.1 p<0.0001) respectively.

CONCLUSIONS: MLBW infants have ND outcomes intermediate to NBW and VLBW infants. For MLBW infants, gender was the only significant predictor of ND outcome with no more modifiable risk factors identified. We conclude that being MLBW is such a strong risk factor for a worse ND outcome that other predictors become insignificant. More research needs to be done to identify modifiable predictors of outcome.

Pulmonary and Asthma Platform Session
Discordance Between Reported Compliance and Knowledge Regarding Appropriate Home Management of Childhood Asthma in an Underserved Population

Cathleen Ballance, GianaCarla Montero, Anna Petrova, Pediatrics, Jersey Shore University Medical Center, Neptune, NJ; Pediatrics, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ.

BACKGROUND: Parental knowledge regarding home asthma management is critical for the proper control of childhood asthma. Identification of lacunae in asthma management knowledge and skills of the caregiver will help in the development and implementation of appropriate teaching strategies for healthcare providers.

OBJECTIVE: This study was designed to assess parental knowledge, attitudes and referral patterns regarding home asthma management in association with severity of asthma presentation in an underserved population of children.

DESIGN/METHODS: A survey questionnaire that was designed to assess parental knowledge, attitude and beliefs regarding asthma home management was mailed to all listed pediatric asthma patients (2-16 years) seen at the Family Health Center from 2004-2006. Follow-up phone calls were made to non-respondents. The medical record of the enrolled asthma patients was reviewed to collect demographic, clinical, and outcome data including asthma-related hospitalization and ED visits for the last 12 months.

RESULTS: Among the 159 listed asthma patients, 108 were unable to be reached because of change of address, asthma status is unknown, asthma status was not listed in the chart or patient refused participation. Of the 51 patients with complete data, 24 had mild (Group 1) and 27 with moderate/severe asthma (Group 2). A majority of parents from both groups preferred to bring their child to the clinic/ED without trying home treatment if the child began to have symptoms of an asthma attack. Moreover, 53% of parents in Group 2 reported using a controller medication as their first choice for treatment of an asthma attack. Approximately half of parents in both groups identified Albuterol as the medication they were giving their child to prevent asthma attacks and 30% of parents in Group 2 didn't know which medication was used to prevent attacks, despite reported compliance with prescribed home asthma management regimens. Hospitalizations/ED visits were identified in 37.5% vs. 76.3% of respective groups (p<0.02).

CONCLUSIONS: This is clear evidence of poor parental knowledge regarding appropriate home asthma management despite the reported compliance and understanding of the treatment regimens prescribed by primary care physicians. We speculate that these deficits in parental knowledge contribute to high rates of hospitalization/ED visits, especially for children with moderate/severe asthma.

Undergraduate Student

Improved Documentation of ED Asthma Severity

Michael A. Colon, John M. Corbi, James E. Wiley ll, Sharon R. Smith, Pediatrics, Connecticut Children's Medical Center, Hartford, CT; University of Connecticut, Storrs, CT.

BACKGROUND: It is important to document the severity of an asthma exacerbation in the Emergency Department (ED). Assessment allows the provider to determine degree of severity, treatment, and response to treatment. Although assessment is frequently done in the ED, documentation in the medical record is often scant.

OBJECTIVE: To evaluate the effectiveness of an intervention in the electronic medical record (EMR) on the documentation of asthma severity. Also, to assess the frequency of major and minor deviations from the asthma treatment algorithm after intervention.

DESIGN/METHODS: This was a chart audit study assessing an EMR intervention designed to improve documentation of asthma severity in the ED. The intervention was three fold: 1) addition of a specific “tab” (documentation section) for the hospital’s validated asthma severity score (Modified Pulmonary Index Score, MPIS), 2) addition of the evidence-based treatment algorithm into the EMR, and 3) addition of “remember algorithm” to title of asthma medication grouping. Major and minor deviations in following the treatment algorithm were presented and analyzed. All of these intervention categories were made to non-responsive and after intervention. Categorical data was evaluated using chi-squared tests, and continuous data using t tests.

RESULTS: There were 355 children enrolled, 193 before and 162 after the intervention. The children were 37% female, 21% white, 44% Latino, 25% black and 10% other, and the mean age was 6.8 ± 4.3 years. The gender, ethnicity, and age were similar in both groups. There was a significant improvement in MPIS documentation among physicians from 24% (46/193) to 87% (106/122, p<0.001) before and after intervention. Major and minor deviations to the evidence-based treatment algorithm were reduced from 13% (24/193) to 2.9% (3/106, p<0.001) after the intervention. The intervention significantly improved the documentation of asthma severity for children in the pediatric ED. Similar interventions for other critical documentation may be effective. Adding the algorithm to EMR did not change adherence to recommendations.

Fellow in Training

Association of Obesity and Asthma in Inner City Minority Children

Nita Vangeepuram, John Doucette, Julie A. Britton, Maida Galvez, Barbara Brenner, Susan L. Teitelbaum, Mary S. Wolff, Community and Preventive Medicine and Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: Asthma and obesity are more common in low-income minority communities such as East Harlem, New York City (NYC). Evidence for an association between body fat and asthma exists, and postulated mechanisms include inhaled inflammatory mediators, hormones, mechanics and genetics. Studies to date have only used body mass index (BMI) as a measure of obesity. BMI may not be ideal since actual body fat level varies by age, sex, maturity level, and ethnicity. Superior obesity measures include: 1) percent body fat and 2) waist circumference and waist-to-height ratio (indicators of fat distribution).

OBJECTIVE: To statistically evaluate the association between asthma diagnosis and obesity by BMI percentile, percent body fat, triglyceride level, and TIPP sheets.

RESULTS: 80% of all children and 67% of all non-respondents had BMI percentiles based on CDC normative values. Twenty-six percent of children had doctor-diagnosed asthma. Adiposity-asthma associations were estimated by multivariate logistic regression. Questionnaire-based physical activity information and pedometer measurements among asthmatics and non-asthmatics were compared using T-tests.

RESULTS: At baseline 39% of girls (155/398) and 53% of boys (56/105) had a BMI greater than the 85th percentile based on CDC normative values. Twenty-six percent of children had doctor-diagnosed asthma. In multivariate adjusted models, there were associations between each body fat measure and asthma diagnosis. The odds ratio (95% CI) for asthma for the highest quintile of body fat measure compared to the lowest was 3.01(1.79-5.06) for BMI percentile, 2.18(1.09-4.37) for percent body fat, 2.21(1.09-4.49) for waist circumference and 3.21(1.52-6.75) for waist-to-height ratio. There was no gender effect. Asthmatic children also had statistically significantly more sedentary activity and fewer metabolic hours per week from recreational activity.

CONCLUSIONS: This study found an association between different adiposity measure and physical activity with doctor-diagnosed asthma. Prospective observations will allow study of asthma severity in relation to body fat measures and activity levels. Enhanced understanding could improve outcomes for both health conditions.
We reviewed the log book and collected data for each referral made over 2 years. For each referral, an investigator recorded age of patient referred, level of training of the resident and coded the text of the "reason for referral" into referral themes (mental health, supplies, etc.) and comorbidity themes. Text in the "follow-up" section was coded into "possible outcomes: complete, incomplete, don't know. We used bivariate analyses to test whether types of referrals changed from year 1 to year 2, by level of training, or by age of patient.

RESULTS: Overall, 94 referrals were made by 14 residents over a 2-year period. (46-Year, 1, 46-Year). 43% were made by PL2s; 41% by PL3s. Mean age of children referred was 7.4 years. Major referral themes included mental health (56%), need for medical supplies (15%), and need for home nursing services (10%). Major comorbidities included mental health (41%), chronic illness (31%), school failure (6%), and domestic violence (7%). Overall, 49% of referrals had completed outcomes. Of mental health referrals, 51% had completed outcomes. Referrals for mental health concerns involved older children (mean age 10.0, 8.7, 11.4) vs. 4.9 (3.4, 6.4). Referral patterns did not vary over time, or by resident level of training. Each resident averaged 3 referrals over 2 years (range from 2 to 14).

CONCLUSIONS: The institution of SW rounds and a log book provided a feasible way to fulfill ACME requirements to document teaching of systems-based practice. The data obtained can inform curriculum planning for teaching around this competency. Education on mental health would be an important part of the curriculum in this underserved setting.

137

House Officer Resident as Teacher: Evaluation of a Teaching Curriculum for Pediatric Housestaff

Cser Anthony E. Lim, Cristina E. Farrell, Catherine C. Skae, Department of Pediatrics, Children’s Hospital at Montefiore, Bronx, NY.

BACKGROUND: Resident teaching workshops are an integral part of the housestaff curriculum. We propose a mechanism to measure their impact on educational interactions between members of the housestaff.

OBJECTIVE: To evaluate the efficacy of a curriculum for housestaff to increase the frequency of and confidence in teaching.

DESIGN/METHODS: Subjects completed pre-intervention surveys about their comfort with (1-5 Likert Scale) and number of teaching events per week, during daytime and night/weekend (NW) hours; number of NW shifts worked was collected to control for confounding effects of teaching opportunities. Over 4 weeks, subjects attended 4 interactive, power-point-based teaching workshops and to measure efficacy, notes were placed in resident work areas and presentations placed online. Subjects then completed post-intervention surveys. Primary outcomes were confidence in and frequency of teaching. Frequency of being taught was a secondary measure. Paired t-tests were used to compare the mean changes from pre to post intervention.

RESULTS: In this paired groups, pre/post intervention study, 26 subjects with 23% PGY1, 34% PGY2, and 34% PGY3 enrolled. Significant increases occurred in comfort with teaching procedural skills (0.35, p<0.0001) and giving didactic sessions (0.54, p=0.0092). Without a significant difference in number of NW shifts pre and post intervention (0.35, p=0.647), significant increases occurred in the number of teaching events during daytime precepting (0.36, p=0.0365), and bedside teaching (1.34, p=0.0051); significant increases occurred in number of precepting (1.85, p=0.0003), bedside teaching (2.27, p=0.0004), procedures (1.31, p=0.0066), and providing feedback (1.46, p=0.0004). There was no significant change in daytime teaching received but the increased NW frequency of being taught approached significance (1.0, p=0.0617)

CONCLUSIONS: This teaching curriculum resulted in increased confidence in teaching procedural skills and giving didactic sessions, and an overall increased frequency of precepting and bedside teaching. There were more dramatic increases in frequency of NW teaching compared to daytime teaching and a trend suggesting that housestaff were taught more frequently on nights and weekends. This results suggest an educational benefit of NW call and is a unique finding in the literature. Medical student evaluations are being used to objectively evaluate teaching skills and 3 and 6 month surveys will assess the longevity of these effects.

138

House Officer An Intervention To Improve Neonatal Endotracheal Intubation Skills of Pediatric Residents

Colleen A. Hughes, Rose M. Viscardi, Alison J. Falck, Department of Pediatrics, University of Maryland Medical Center, Baltimore, MD.

BACKGROUND: Following delivery, 5-10% of infants require some degree of resuscitation and 1% need significant intervention to survive. Since pediatricians are often responsible for resuscitating newborns, endotracheal intubation (EI) is an important skill to acquire. Development of proficiency should be emphasized during residency training. Over the last decade, opportunity to perform EI during residency training has decreased. Recent published studies and data from our institution have shown that pediatric residents do not achieve competency in performing EI. A curriculum that maximizes EI opportunities while providing an optimal learning environment is necessary. The effect of this type of intervention to improve EI skills of pediatric residents has not been described.

OBJECTIVE: Implementation of a curriculum designed to improve exposure to neonatal EI with a formalized process of mentoring and feedback will improve EI success rates of pediatric residents at the University of Maryland Medical Center (UMMC).

DESIGN/METHODS: Pediatric residents at UMMC completed a web-based learning module on ROP as a requirement for NICU rotation. The module consisted of a pre-test, a Powerpoint presentation, a post-test, and a satisfaction survey. The same 10 questions based on AAP PREP content specifications were found on the pre-test and post-test, and were presented in random order. Residents completed a satisfaction survey after finishing the module, and participated in a discussion of the module. Mean pre-test and post-test scores were compared using a paired student t-test, and subjective data was obtained from the satisfaction surveys.

RESULTS: 17 residents completed the module between 7:07 and 12:07. There was an improvement between mean pre-test scores of 3.5 +/- 1.2 and mean post-test scores of 7.0 +/- 1.8 (p=0.001). There was no statistically significant difference in mean pre-test and post-test scores when stratified by level of training. The majority of residents who completed the survey reported that this exercise was more beneficial than reading an article on ROP. All residents reported that their knowledge about ROP was enhanced by performing the module, and that they would find self-directed learning exercises like this one beneficial in other rotations.

CONCLUSIONS: A web-based module on ROP is an effective learning tool for pediatric residents. Web-based education will promote self-directed learning skills and provide an alternative to traditional teaching methods in a context of busy residency training programs. Future directions should include the assessment of long-term knowledge retention, and the incorporation of similar self-directed learning modules into other pediatric rotations.

134

Communication and the Pediatric Residency Match

Catherine C. Skae, Marina Reznik, Philip D. Ouzah, Department of Pediatrics, Children's Hospital at Montefiore, Bronx, NY.

BACKGROUND: The National Resident Match Program (NRMP) has established guidelines regarding residency program and applicant communication during the Residency Match process. NRMP guidelines specifically state that participants “must not make statements implying commitment”. We wondered how often medical students adhered to this regulation.

OBJECTIVE: To determine the frequency of applicant statements of commitment in violation of NRMP guidelines.

DESIGN/METHODS: We conducted a prospective study of thank you notes received over five recruitment seasons from 2002-2007 at a pediatric residency in a large academic Children’s Hospital. We collected all notes sent by applicants to the Program Director (PD), faculty interviewer, and department Chair. We dichotomized the notes into those that had statements of commitment and those that did not. Of those that had statements of commitment, we categorized them as containing either “moderate” or “strong” statements of commitment. For example, a moderate commitment was, “I ranked your program highly”. A strong commitment was, “I ranked your program at the top of my list” or “I ranked your program #1”. Chi square was used to compare dichotomous variables.

RESULTS: A total of 1173 thank you notes were analyzed, of which 715 (64%) were sent to the PD, 375 (34%) were sent to the interviewer, and 23 (2%) were sent to the Chair. Overall, 262 (24%) notes contained statements of commitment, of which 51% were “strong” statements of commitment and 49% were “moderate” statements. The Chair and PD were significantly more likely to receive notes with statements of commitment: 30% of notes sent to Chair vs. 30% for PD vs. 10% for interviewer (p=0.000). Similarly, the Chair and PD were also significantly more likely to receive notes with “strong” commitments: 57% of notes sent to Chair vs. 55% for PD vs. 32% for interviewer (p=0.017). Applicants in the top 3rd of our rank lists were just as likely to make statements of commitment as those in the bottom 3rd.

CONCLUSIONS: Despite NRMP guidelines, there is a substantial amount of communication containing statements implying commitment by residency applicants, particularly communications to the Chair and PD. Medical students applying for residency do not appear to be deterred by the NRMP restrictions.
139 House Officer

Monitoring and Residency of Patients' Proficiency in Neonatal Resuscitation
Matthew A. Rainaldi, Yang S. Kim, Karen D. Hendricks-Munoz, Pediatrics, Neonatology, NYU Medical Center, New York, NY.

BACKGROUND: Since the emergence of Neonatal Intensive Care Units (NICUs), the American Academy of Pediatrics has emphasized the role of community hospitals to "recognize and provide initial management of infants requiring transfer to a NICU." One of the most important aspects of this management is proficiency in endotracheal intubation. It is an integral part of training and in a significant number of community hospitals a general pediatrician bears that responsibility.

OBJECTIVE: To: 1) determine the expectations of residents in acquiring proficiency in neonatal resuscitation, 2) assess self-perception of neonatal intubation skills by residents 3) measure residents' skill in intubating neonates and 4) reevaluate intubation skills following the introduction of a structured educational curriculum.

DESIGN/METHODS: At total of 68/144 NYU Pediatric Residents were surveyed on neonatal resuscitation training from 2005 to 2006. In 2006, a neonatal resuscitation curriculum consisting of monthly sessions (didactic and hands-on, 1)hour total) was implemented. Intubation proficiency was assessed before and after curriculum initiation. Longitudinal analysis of survey responses was performed to evaluate changes in expectations and/or skill over the two year period.

RESULTS: Most residents (94%) regardless of year of training, felt strongly that they should be proficient in neonatal resuscitation, yet fewer believed that this goal was attainable given the current curriculum and rotations in the NICU (70%). A majority of residents (63%) believed that intubation was a skill that a resident should be proficient in by second year (R2), but R2’s reported only a 55% proficiency rate, and R3’s only 69%. Perceived skill increased with higher training level during each academic year. After implementation of the resuscitation curriculum, R2’s improved their intubation proficiency from 44 to 86%. Successful intubations (defined as first try and less than 30 seconds) were achieved by R1’s (62.5%) and R2’s & R3’s (95%) immediately after training. However, proficiency increased to 30% for R2’s & R3’s when assessed during random periods not associated with NRP training.

CONCLUSIONS: Pediatric residents expect to reach proficiency in neonatal resuscitation, but find it challenging to do so. Education that includes an immediate practice period increases short-term confidence and success, however repeated education and practice experience is needed to maintain proficiency.

140 Neonatal Resuscitation Simulation Measurement Tool Development
Jesse Bender, Karen Kennelly, Sheree Lindgard, Jean Salera, Richard Tucker, Pediatrics, Women & Infants' Hospital, Providence, RI.

BACKGROUND: Simulation based medical education is used increasingly to train pediatric residents to handle high risk, low frequency events. Assessment scales to evaluate their performance and team behaviors during simulated scenarios are used in Neonatal Resuscitation Program (NRP) training. OBJECTIVE: Develop, refine and evaluate scenario-specific assessment tools with which to assess residents' performances.

DESIGN/METHODS: Four blind NRP-certified instructors independently assessed the performance of pediatric and family medicine residents using a predetermined measurement tool. Indeterminate elements were identified, and modifications were made to create a revised assessment tool. The revised tool was used two months later to assess performance using the same videos. The initial tool was derived from the Megacode Assessment Form of the NRP textbook and published teamwork behavior checklists. Descriptive verbiage was assigned to a 5-point ordinal scale for each of 33 performance elements and 18 behavioral elements. Thirteen elements with the highest inter-rater variability were modified and added to the revised tool. Inter-rater variance between raters (table 1). Individual elements showed marked variation by pairwise comparisons kappa values. Kappa across all test items, using Fleiss-Cohen weighting, showed significant inter-rater variance between raters (table 1). Individual elements showed marked variation by pairwise comparisons kappa values. Kappa across all test items, using Fleiss-Cohen weighting, showed significant inter-rater variance between raters (table 1).

RESULTS: Revisions did not change summary performance means for each resident, but did reduce the inter-rater variance between raters (table 1). Individual elements showed marked variation by pairwise comparisons kappa values. Kappa across all test items, using Fleiss-Cohen weighting, showed markedly more concurrence with the revised tool than the initial tool (table 2).

CONCLUSIONS: While specifying more detail on a simulation performance assessment tool makes it less generalizable, it can markedly improve inter-rater agreement. This revised tool shows substantial inter-rater agreement.

141 Antenatal Corticosteroids Are Associated with Decreased Odds of Death in Neonates Born at 23 Weeks
Edward J. Hayes, David A. Paul, Gary E. Stahl, Jolene Seibel-Seamon, Kevin D. Dysart, Benjamin E. Leibach, Mark MacKenzie Berghella, Maternal Fetal Medicine/Obskeetrics and Gynecology, Thomas Jefferson University, Philadelphia, PA; Neonatology/Pediatrics, Christiana Care Health Systems, Newark, DE; Neonatology/Pediatrics, Cooper University Hospital, Camden, NJ; Neonatology/Pediatrics, Thomas Jefferson University, Philadelphia, PA; Biostatistics/Pharmacology & Experimental Therapeutics, Thomas Jefferson University, Philadelphia, PA.

BACKGROUND: NICHD recommends antenatal corticosteroids for all pregnant women 24-34 weeks at risk for preterm delivery.

OBJECTIVE: Since a significant number of 23 week neonates are now undergoing resuscitation, our objective was to determine if exposure to antenatal corticosteroids decreased the odds of death in neonates born at 23 weeks gestation.

DESIGN/METHODS: Retrospective cohort study was performed of 23 0/7 to 23 6/7 week gestation neonates delivering between 1998-2003 at 3 tertiary centers. Neonates were excluded if they were stillbirths, terminations, or parents had elected non-resuscitation. Univariable logistic regression analysis was used to assess the association between gestational age, maternal age, multiple gestation, caesarean delivery, maternal drug use, previous preterm birth and death. Multiple logistic regression was then performed to assess the odds of death in neonates born at the gestational age of interest.

RESULTS: Of the 181 infants assessed, the odds of death were 0.78 (95% CI: 0.45, 1.34) for the infants exposed to antenatal corticosteroids compared to those who were not exposed. Similar results were obtained when controlling for gestational age and similar results were obtained when controlling for gestational age and maternal age. This odds ratio was not significant.

CONCLUSIONS: Infants born 23 0/7 to 23 6/7 weeks gestation, whose mothers received a complete course of antenatal corticosteroids, had an associated 85% reduction in the odds of death (p<0.001) compared to no steroids. This finding suggests the need for a large, multicenter prospective trial to confirm this observation, assess long-term morbidity and evaluate the cost-effectiveness of this intervention.

142 Antenatal Smoking Does Not Affect the Severity of Apnea in Premature Infants
Zlatka Jeliakova, Nosrat Razi, Judy G. Salas, Barbara Amendolia, Gary Stahl, Kee Pyon, Nicole Kemble, Zulhair H. Ashali, Pediatrics/Neonatology, Cooper University Hospital-Robert Wood Johnson Medical School, Camden, NJ.

BACKGROUND: Antenatal exposure to cigarette smoke is associated with increased risk of sudden infant death syndrome. Maternal smoking increases the rate of central apnea in full term infants. The effect of prenatal exposure of smoke on the severity of apnea in preterm infants is unknown.

OBJECTIVE: To study the effect of maternal smoking on apnea of prematurity.

DESIGN/METHODS: Perterm infants with a gestational age (GA) of 34 weeks or less born between January 1997 and September 2007 were included in this study. A four channel pneumogram was performed at the time of discharge. Relevant clinical data were collected from the infants' medical records. Premature infants who were exposed to cigarette smoke during pregnancy (study group) were compared with the infants who were not exposed to smoke (control group).

RESULTS: 1800 infants (GA ≤ 34 w) were born and admitted during the study period; 1656 infants survived and were discharged from the hospital. 263 infants (BW 1682±566 g, GA 31.0±2.8 w) were exposed to smoke and 1393 infants (BW 1638±575 g, GA 31.1±2.7 w) were not exposed to smoke. There was no significant difference in the baseline demographics and clinical characteristics (BW, GA, race, sex, prenatal steroid use, ventilator days and BPD) between the two groups. When comparing the smoking vs. control group, there was no difference in the incidence of apnea, number of infants treated with xanithine, the duration of xanithine therapy and the number of infants with abnormal pneumograms. There was also no significant difference in the number of infants discharged home on monitors, oxygen and xanithine.

Incidence and severity of apnea in preterm infants exposed to smoke vs. control

<table>
<thead>
<tr>
<th>Incidence</th>
<th>Exposed to Smoke (n=263)</th>
<th>Control (n=1393)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apnea (%)</td>
<td>134 (51.2)</td>
<td>180 (13.0)</td>
<td>0.08 (0.04, 0.18)</td>
</tr>
<tr>
<td>Treated with Xanithine (%)</td>
<td>131 (50.0)</td>
<td>172 (12.3)</td>
<td>2.20 (0.97, 4.92)</td>
</tr>
<tr>
<td>P &lt; .05 for all comparisons</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cohort 1 Cohort 2

CONCLUSIONS: Prenatal exposure to cigarette smoking was not associated with increased incidence or severity of apnea in preterm infants.

143 Analysis of Cesarean Section Trends in Very Low Birth Weight Infants (VLBW) over Time and Impact on Birth Outcome (1994-2006)
Hashini R. Seneviratne, Charlan Kroelinger, David A. Paul, Delaware Department of Health and Social Services, Delaware Division of Public Health, Dover, DE; Pediatrics and Neonatology, Christiana Care Hospital, Newark, DE; School of Urban Affairs and Public Policy, University of Delaware, Newark, DE.

BACKGROUND: Cesarean section (CS) deliveries are becoming increasingly common for various reasons; including maternal or obstetrician preference, past delivery and medical history. The relationship between cesarean delivery and outcome in VLBW remains uncertain.

OBJECTIVE: To analyze the trend in CS deliveries over time, and determine whether there is an association between CS and poor outcomes in VLBW infants.

DESIGN/METHODS: This study is a cohort analysis of babies with birth weight <1500g, between 1994 and 2006. Within each cohort, all VLBW patients were compared for the factors above: CS and poor outcomes.

RESULTS: Mean birthweight, gestational age, or inborn status did not change over the study period. When controlling for variables such as gestational age, maternal age, multiple gestation, maternal drug use, ventilator days and BPD, the relationship between cesarean delivery and outcome in VLBW remains uncertain.

CONCLUSIONS: Cesarean section (CS) deliveries are becoming increasingly common for various reasons; including maternal or obstetrician preference, past delivery and medical history. The relationship between cesarean delivery and outcome in VLBW remains uncertain.
144 Duration of Caffeine Citrate Therapy Is Associated with Increasing Postnatal Growth Restriction in Very Preterm and Low Birth Weight Infants

Jennifer L. Lefner, Richard Tucker, Leslie McKinley, William Oh; Pediatrics, Women and Infants Hospital, Brown Medical School, Providence, RI.

BACKGROUND: Premature infants are often treated with caffeine citrate for apnea of prematurity. Caffeine has been shown to cause increased oxygen consumption, increased energy expenditure, and decreased weight gain among infants treated for apnea of prematurity. OBJECTIVE: To assess the effects of caffeine on growth outcomes of very preterm and very low birth weight infants being treated with caffeine for idiopathic apnea of prematurity. Our hypothesis is that there is an inverse correlation between duration of caffeine citrate therapy and growth in very preterm and very low birth weight infants who are on such therapy for apnea of prematurity.

DESIGN/METHODS: We retrospectively reviewed the growth data of 136 infants less than 1500 grams birthweight, less than 32 weeks gestation, on caffeine for apnea of prematurity due chart review and information extracted from our Department of Pharmacy database, and our generic database over a 20 month period from April 2004 through December 2005. The data analysis included the pearson correlation of anthropometric growth outcomes (weight, length, and head circumference) at 36 weeks post conceptual age, growth velocity (grams per kg day) at 36 weeks post conceptual age, duration (days) of caffeine dosing. Infants were identified to be extra uterine growth restricted if they were <10% for weight at 36 weeks, and a T-test was performed to evaluate the differences between those who were EUGR and those non-EUGR infants. Multiple linear regression analysis was done looking at anthropometric outcomes at 36 wks post conceptual age. RESULTS: There were 62 infants for whom data was available at 36 weeks corrected gestational age which were treated for apnea of prematurity. There was a significant correlation of weight growth velocity, length, and head circumference with duration of caffeine dosing. There were no significant differences found between the extra-uterine growth restricted infants and those not growth restricted at 36 weeks. Multiple linear regression analysis revealed a relationship approaching significance between duration of caffeine dosing and growth velocity with a p value = 0.051.

CONCLUSIONS: Duration of dosing with caffeine citrate does not have a significant effect on weight, length, or head circumference at 36 weeks post conceptual age. Duration of dosing with caffeine citrate is inversely related to growth velocity (g/m/day) in a manner which approaches significance.

145 Fellow in Training

Patent Ductus Arteriosus Ligation in the Neonatal Intensive Care Unit Versus the Operating Room: Short Term Morbidities

Sara D. Sibley, Martha C. Caprio, Pradeep V. Mally, Karen D. Hendrickson-Munro; Pediatrics, Division of Neonatology, New York University School of Medicine, New York, NY.

BACKGROUND: Surgical ligation of patent ductus arteriosus (PDA) is one of the most common types of surgery in preterm babies. It is performed in the NICU on Very Low Birth Weight (VLBW) infants (<1500g) in many institutions as a standard of care. In 2006, NYU began performing surgical ligations at VLBW infants in the NICU, instead of the operating room (OR). There are no recent studies comparing the neonatal outcomes following PDA ligation in the NICU vs the OR.

OBJECTIVE: To compare outcomes of infants who underwent surgical ligation in the NICU to those who were transported to the OR.

DESIGN/METHODS: We conducted a retrospective chart review of VLBW infants who underwent surgical ligation of the ductus arteriosus at two NICUs: Thomas Jefferson Medical Center between 2004 and 5/2007. This group was divided into 2 cohorts: 1) OR and 2) NICU. Primary outcomes were length of stay on oxygen and mechanical ventilation. Secondary outcomes were length of stay, surgical complications, IVH, sepsis, post-operative assessment of fluid, electrolytes, and vital signs. Data was compared using students t-test, and P-values of <0.05 were considered significant.

RESULTS: A total of 59 infants met study criteria, 26 VLBW infants underwent PDA ligation in the NICU, and 24 infants were transported to the OR for the procedure. Background demographics were evenly matched between the groups, including birth weight, gestational age, antenatal steroids and Apgar scores. The primary outcome measure, which were days on oxygen (70.5±23.7 days for OR group vs 92.8±53.5 days for NICU group) and mechanical ventilation (35.2±16 days vs 50.9±50 days), were not significant. Weight at surgery was heavier in the OR group (1240±336gms vs 983±282gms, p<0.006), and their age in days at the time of surgery was older (35.2±16 days vs 21.4±10 days, p<0.0006). Postoperatively the OR group had lower temperatures (35.9±0.96 °C vs 36.7±0.51 °C, p<0.0006).

CONCLUSIONS: In this group of VLBW infants, temperature instability was an important post-operative factor in those infants who underwent PDA ligation in the NICU. Our hypothesis may directly contribute to poor neurodevelopmental outcome in neonates the short and long term neurodevelopmental outcomes of these infants will be stratified by hypothermia. Finally, differences in clinical practice may have played a role in the OR ligated infants being larger and older than the NICU ligated infants at the time of surgery.

146 Fellow in Training

House Officer Decrease in Number of PRBC Transfusions but Not Exposure in Very Low Birth Weight Infants Between 1994 and 2006

Celina C. Sindall, Robert G. Locke, Amy Mackley, David A. Paul; Pediatrics, Thomas Jefferson University Hospital-Philadelphia, PA; Neonatology, Christiana Hospital, Newark, DE.

BACKGROUND: Very low birth weight (VLBW) infants frequently require transfusions of packed red blood cells (PRBC). Transfusion practices have changed over time.

OBJECTIVE: To investigate trends in PRBC transfusions over the past 12 years. DESIGN/METHODS: Retrospective cohort study from a single level 3 NICU between 1994 and 2006. The study sample included infants with birthweight less than 1500 grams. PRBC transfusions were ordered based upon clinical criteria. Data was analyzed using four 3-year cohorts. RESULTS: PRBC transfusions over the study period were distributed as: Cohort 1 (1994-1996) = 419, Cohort 2 (1997-2000) = 526, Cohort 3 (2001-2003) = 530, Cohort 4 (2004-2006) = 565. CONCLUSIONS: In our population of VLBW infants, the number of PRBC transfusions/infant has decreased over time, although the proportion of infants transfused has not. We speculate that changing transfusion threshold, blood banking and phlebotomy practices are responsible for the decrease. From our data, we can not determine the clinical impact of the decrease in transfusions.

147 Fellow in Training

Packed Red Blood Cell Transfusions Are Strongly Associated with Necrotizing Enterocolitis in the Very Low Birthweight Infant

Kelly J. Zook, Alexandra Remakus, Amy Mackley, Deborah Tuttle, Robert Locke, David A. Paul; Neonatology and Pediatrics, Christiana Care Health System, Newark, DE; Pediatrics, Thomas Jefferson Univ, Phila, PA.

BACKGROUND: Very low birthweight infants (VLBW) frequently require packed red blood cell transfusions (PRBC) due to anemia of prematurity. Decrease in number of PRBC transfusions, but not exposure, in VLBW infants has been well documented in the past. OBJECTIVE: The purpose of this study was to investigate the association between NEC and PRBC transfusions. DESIGN/METHODS: Retrospective cohort study that included 2311 VLBW (<1500g) cared for at Christiana Care Health System, a single level 3 NICU in Delaware between July 1997 and July 2007. NEC was defined as Bell's stage 2 or greater. Illness severity on the day of birth was quantified by SNAP All PRBC transfusions were ordered by the medical team based on clinical indications. Statistical analysis included ANOVA, Chi-Square, Mann-Whitney U Test and multivariable analysis using logistic regression.

RESULTS: A total of 122 infants (5.2%), 55 of whom developed NEC. Those infants who developed NEC were more likely to be exposed to postnatal steroids, and more likely to have PDA than those infants who did not develop NEC. There were no differences in antenatal steroids, SGAs, SNAP and Agar scores between the infants with and without NEC. Infants who developed NEC were more likely to be transfused PRBC (51% vs 48%, p<0.01) and received an increased number of PRBC (5.8 ± 5 vs 2.7 ± 4.1, p<0.01) compared to those infants without NEC. Separate logistic regression models were created. Model 1 used all variables associated with NEC on univariable analysis, and Model 2 eliminated postnatal variables such as PDA and ventilator days which may be part of the causal pathway for NEC. CONCLUSIONS: In our population of VLBW infants, the rate of PRBC transfusions/infant has decreased over time, although the proportion of infants transfused has not. We speculate that changing transfusion threshold, blood banking and phlebotomy practices are responsible for the decrease. From our data, we can not determine the clinical impact of the decrease in transfusions.
CONCLUSIONS: Maternal drug use and transfer of patient to a hospital closer to the family both decreased improved compliance: no contact: C:34%; left message: C:55%; contacted: C:67%; p<0.001.

patients.

these indicators of compliance may help to optimize appropriate f/u and developmental outcomes of future conditions in the perinatal period is imperative in identifying children with delays remidable by therapeutic services. Although it is known that early identification and treatment is beneficial in optimizing developmental outcome, close follow-up (fu) is often overlooked.

OBJECTIVE: The objective of this study is to identify factors associated with compliance of outpatient f/u appointments in order to ensure future optimal care and attention to these children.

DESIGN/METHODS: This retrospective observational cohort study looked at all patients who were born between 07/01/2006 and 06/30/2007 admitted to the Regional NICU (RNICU) at the Maria Fareri Children's Hospital at Westchester Medical Center. Children referred for developmental f/u after discharge (d/d) were included in analyses. D/C summaries were reviewed to attain information regarding 3 antenatal factors, 2 transfer status variables, 18 neonatal morbidities, and 5 variables addressing coordination of d/c. Recording of data and analyses were performed utilizing the statistical software SPSS 11.5. Children were divided into two categories: compliant (C) or non-compliant (NC) with f/u appointments. Comparison of categorical variables between compliance groups was done with chi square analysis. T-test compared the means of continuous variables. Mann Whitney U rank sum test compared ordinal variables. Significance defined as p<0.05.

RESULTS: A total of 339 patients were admitted to the RNICU, and referred to f/u upon d/c. Overall rate of compliance was 60%. Antenatal variables: maternal drug use and maternal age were significantly associated with compliance: drug use: C:11.7%; no drug use: C:62.2%; p<0.001; age: C:30years;NC:28years;p=0.02 . Transfer status: only patients transferred out correlated significantly: transfer out: C:10.3%; no transfer: C:62.2%; p<0.001. Neonatal co-morbidities: only mode of delivery was associated with compliance: C-section: C:64.9%;vaginal:52%;p=0.038. DC coordination: only patient contact by phone within a week of d/c improved compliance: no contact: C:34%; left message: C:55%; contacted: C:67%; p<0.001.

CONCLUSIONS: Maternal drug use and transfer of patient to a hospital closer to the family both decreased improved compliance: no contact: C:34%; left message: C:55%; contacted: C:67%; p<0.001. Children with normal contact after d/c significantly improved compliance. Close attention to these indicators of compliance may help to optimize appropriate fu and developmental outcomes of future patients.

150
Benign Extra-Axial Fluid Collections in Ex-Preterm Children

BACKGROUND: "Benign extra-axial fluid collection" (BEAF) has been associated with premature birth. Although generally regarded as innocuous, BEAF has also been linked to neurodevelopmental impairment. Inconsistencies in reported outcomes may be due to varying diagnostic criteria and to confounding factors such as hydrocephalus and cerebral atrophy. The identification of truly ’benign’ fluid collections could prove highly valuable in the care of ex-preterm children.

OBJECTIVE: Characterize BEAF using specific radiologic features, and determine whether BEAF is associated with a reasoing developmental outcome in ex-preterm children.

DESIGN/METHODS: A retrospective study of children born between 2001-2006 at >32 weeks gestation, who underwent cranial MRI or CT imaging and neurodevelopmental testing after term-corrected age. Images were characterized by an experienced neuroradiologist using 9 features and 20 measurements. BEAF was defined as isolated extra-axial fluid collection (EAF) or midline EF with proportional ventriculomegaly, without features of overt hydrocephalus or cerebral atrophy. ROC analysis was used to identify measurements that distinguish BEAF from other abnormal forms of EAF (Abnl EAF). χ2 analysis was used to compare imaging findings with clinical outcomes. The primary outcome was severe cognitive or motor impairment based on the Bayley Scales of Infant Development (BSID-III).

RESULTS: 72 subjects (mean 27.4±2.6 wks gestation, 1038±454 g birthweight) met inclusion criteria; 28 (39%) had EAF, including 13 BEAF and 15 Abnl EAF. Mean adjusted ages at the time of imaging and BSID testing were 10.9±8.6 and 21.3±8.9 months, respectively. Mean BSID scores for BEAF subjects were within the normal range, with only one BEAF subject having severe impairment vs. 8 Abnl EAF subjects (7.7% vs. 53.3%, p<0.01). Abnl EAF had very strong linear correlation with dichotomized atrophy (AUC 0.74 ±0.07) and hydrocephalus (AUC 0.83±0.05), respectively. A composite of these and other measurements (internal capsule, corona radiata and ambient cistern), when abnormal, was associated with Abnl EAF (p<0.002) and developmental impairment (p=0.038).

CONCLUSIONS: BEAF, as defined here, is associated with a reasoing developmental outcome in ex-preterm children. Specific intracranial measurement mid EF with proportional ventriculomegaly, objectively distinguishing those with ‘benign’ EAF from those at risk for severe developmental impairment.

151
Dermoid Cysts Following Fetal Myelomeningocele Closure: Clinical Implication and Follow-Up

OBJECTIVE: To evaluate incidence and clinical implication of dermoid cysts (DC) after fetal myelomeningocele (MMC) closure.

DESIGN/METHODS: Retrospective databases and parental questionnaire information (IRB#2006-2-4587) were used to determine the incidence, clinical presentation, and outcomes of children that developed DC following MMC closure.

RESULTS: Prior to the NIHCD-MOMS trial, 54 children underwent MMC closure at our institution. Sixteen (29.6%) presented with symptomatic spinal cord tethering and required surgery at a median age of 24 months (range, 4-93). Of those, 11 (69%; 20% of total) developed tethering secondary to DC. In 10/11 it was seen on preoperative MR imaging. In one, the cyst was found during surgical exploration. All but one (L3 lesion level) dermoids developed in children with L4 or L5 defects. Within a mean follow-up of 42±14.9 months, 4 children had recurrence of symptomatic DC and required reoperation. After surgery for DC, 5/11 (45.5%, 3 after primary DC removal) lost normal bladder function, now requiring clean intermittent catheterization. Four children with DC experienced long-term loss of lower extremity function by one, three, and two neuromotor levels, respectively. However, these changes did not alter their overall ambulatory status (5 walking independently, 3 require bracing, 3 with walker). Four (7.4%) additional children with evidence of DC on surveillance MR imaging are currently asymptomatic. All four are continent and ambulatory (3 independent, 1 with walker) at a mean age at follow-up of 71±52.1 months (range, 48-94). Patients’ demographics and frequency of AlloDerm use at initial MMC surgery in children with DC did not differ from entire group.

CONCLUSIONS: It is currently unknown, whether MMC closure increases the incidence of DC, or perhaps the better than expected function and close follow-up allowed earlier recognition. The ongoing NIHCD-MOMS trial will be able to determine whether children that underwent fetal intervention are at increased risk of DC development compared to children that underwent postnatal MMC closure. Deterioration of bladder function is the most common long-term complication of DC after MMC surgery. Patients undergoing prenatal counseling should be informed about the risk of DC formation following fetal surgery.

152
Pressure-Flow Relationship: Relevance to Bidirectional Glenn Shunt To Reduce Flow Across Pulmonary Outflow Obstruction
Joshua Wiensman, Nancy Ross-Ascuti, Robert Ascuti, Innovations, LLC, Hopkinton, MA, Pediatric Cardiology, LSU Health Sciences Center, New Orleans, LA.

A bidirectional Glenn shunt (BGS) was used in a two-ventricle repair of 10 patients (3-17 yrs old) having congenital heart disease with severe pulmonary outflow obstruction, thereby avoiding a pulmonary conduit. Doppler studies showed preop transpulmonary peak pressure drops of 70-100 (mean 84) mmHg, postop <10-15 (mean <12) mmHg. OBJECTIVE: To obtain insight into ultrafiltration of BGS to volume unload an obstructed pulmonary artery, we employed a computer-based model of fluid flow, to simulate blood traversing passages with circumferential obstructions (10, 20 and 40% reductions in cross sectional area).

DESIGN/METHODS: Pressure distributions and velocity fields, determined from solutions (finite element analysis) to the Navier-Stokes equations, were used to assess the pressure-flow relationship (f-P) for BGS. Pressure drop (∆P), flow and energy losses (η) were described by: ∆P = f(Q), f = (η) + (η) + (η), η, (where <P< and represent flow-averaged pressure and kinetic energy, respectively, Q flow rate. Model parameters: obstruction length 0.02m; pathway diameter 0.012m, fluid density 1050 Kg/m3, viscosity 3.5×10-6 N-s/m2, and flows 0.75, 1.3, 1.5 and 2.0 L/min.

RESULTS: Figs show increases in ∆P and η, and flow rate as f-P increase. (40% reductions varied as Q 2; 10 and 20% only as Q).

CONCLUSIONS: Pressure drop and flow energy loss markedly increase as flow rate across obstruction increases. This finding supports the use of a BGS to reduce flow across residual outflow obstruction by volume unloading the pulmonary ventricle.

153
A Prospective Cohort Study of Arrhythmias in the Neonatal Intensive Care Unit
Nadia Badrawi, Ranya Heqazi, Edisa Tokovic, Wael Lofty, Fadya Mahmoud, Hany Aly, Neonatology, Cairo Children's Hospital, Cairo, Egypt; Cardiology, Cairo Children's Hospital, Cairo, Egypt; Pediatrics, Children's National Medical Center & George Washington University, Washington, DC.

BACKGROUND: Arrhythmias among newborns are not uncommon, but the exact incidence and types of arrhythmias in the neonatal intensive care unit (NICU) is not known. It is also not fully clear whether different medical conditions, interventions and medications administered to these ill infants could predispose to arrhythmias.

OBJECTIVE: To identify the incidence, common types, associated risk factors and presentations for arrhythmia in the NICU.

DESIGN/METHODS: We prospectively conducted 12-lead EKG studies on a random sample of 457 neonates who were >3 days old and >28 weeks gestation. All Infants were evaluated for the presence of arrhythmias. A 24-hour Holter monitoring was offered randomly to every 4th baby with normal EKG and to all of those who demonstrated arrhythmias on their EKG creating 3 groups: normal, benign and non-benign arrhythmia. Two-dimensional echocardiography (ECHO) was performed in all neonates clinically assessed with murmurs or electrophysiologically diagnosed with arrhythmia. Screening results were correlated with...
154  
Fellow in Training  
Clinical Significance of Neutropenia (N) in HIV Infected Children (HIVC)  
Tong Wei Ch'ng, Barry Dashefsky, Arya Dieudonne, James Oleske, J. Flyer, S. Keller  
Pediatric Infectious Diseases, New Jersey Medical School (UMDNJ), Newark, NJ.  
BACKGROUND: N, an absolute neutrophil count (ANC) < 1000/mm 3, is common in patients with HIV infection. Unlike in patients with malignancy, where N is associated with a 10-60 % risk of serious infection (SI), N is not consistently associated with SI in studies of HIV-infected adults. Rate of N and associated risk for SI in HIVC is unknown.  
OBJECTIVE: In a sample of HIVC, to determine (1) rate of N; (2) risk factors (RFs) for N; (3) any association between N and SI.  
DESIGN/METHODS: In a retrospective observational cohort study, medical records from 2002-06 of 198 HIVC aged 1-27 yr enrolled at FKBH HIV Clinic were reviewed. Specified demographic, clinical and laboratory data were recorded re each observational encounter (CE) at clinic visits or during hospitalizations. Each CE associated with N was counted as 1 episode of N (EN). SIs included meningitis, blood stream, soft tissue and serious opportunistic infections. Rates of N and SI were calculated. Data were analyzed for associations between the two and for other potential RFs for each [eg, demographics, medications, CD 4 %, viral viral load (VL)] by univariate and multiple logistic regression tests.  
RESULTS: 3762 CEs (3650 outpatient; 112 inpatient) were recorded for 198 subjects (S). Mean OE/S=19, range=1-27. 51% were male, 73% Black, 16% Hispanic, 7% White and 4% other. 28% (7.5%) of CEs were EN. 74 S had N ≥ 2 ENs; 34% had 3-10 ENs, 20% had 11-20 ENs, 17% had 21-100 ENs, and 10% had >100 ENs. 64% of ENs were ≤ 32 wks, 12 (25%) were 32-37 wks, and 36 (75%) were >37 wks. Arrhythmia signifi cantly correlated with severity of sI (p=0.03).  
CONCLUSIONS: N, a relative risk factor for SI, was not associated with arrhythmia.  
155  
Fellow in Training  
Natural History of Progression of Metabolic Risk Factors in Uncomplicated Obesity in Urban, Inner City Children with Diet and Exercise Recommendations Alone  
Minu M. George, Radhika Purushothaman, Shahid Maikl, Arlene B. Mercado, Salvador Castells, Svetlana Ten. Department of Pediatrics, Maimonides Infants and Children's Hospital of Brooklyn, Brooklyn, NY; Department of Pediatrics, Children's Hospital at SUNY Downstate Medical Center, Brooklyn, NY.  
BACKGROUND: Childhood obesity is a worldwide problem that has reached epidemic proportions. With obesity, the first line treatment is modification of dietary and exercise habits.  
OBJECTIVE: To evaluate the natural progression of obesity with Dietary/Exercise therapy alone on BMI, lipid profile, BP, and insulin sensitivity in children from an inner city population without biochemical complications at baseline.  
DESIGN/METHODS: This is a retrospective study of 32 obese children 11.1 ± 3.4 yrs (22 boys, 11.7 ± 3.4 yrs; BMI 32.3 ± 5.4 kg/m 2) and 9 girls, 9.8 ± 3.2 yrs; BMI 27.3 ± 7.3 kg/m 2), who underwent diet/lifestyle therapy alone. None of them received any pharmacological intervention. Children with elevated lipid profile, liver function, glucose, Hba1C were excluded from analysis. Weight, height, BMI, blood pressure (BP), Hba1C, lipid profile, liver function, fasting insulin and glucose were measured at first visit and at subsequent follow up visits. Their natural progression was evaluated 18 months later. Dietary/Exercise therapy was discussed with the family at several follow up visits. The data was analyzed by paired t-test. Children were analyzed as a whole group and divided into boys and girls to evaluate the differences.  
RESULTS: BMI, systolic blood pressure (SBP), fasting insulin increased significantly in the boys group and in the total group (p < 0.05), but not in the girls group. There were no changes in diastolic BP, cholesterol, triglycerides, LDL cholesterol, Hba1C, ALT, and AST levels.  
CONCLUSIONS: Dietary/Exercise therapy alone did not improve HDL, insulin, BMI, and SBP. Natural history, even in uncomplicated obesity, revealed a negative progression of cardiovascular risk factors such as HDL, insulin, BMI and SBP. More intensive intervention is indicated in early childhood to prevent the formation of metabolic syndrome in early adolescence. The girls group did not reveal statistically significant changes, only the same tendency as a whole group. This can be explained by the younger age of the studied girls and the protective effect of estrogens.

156  
The Relationship Between Healthy Land Use in the Built Environment and Body Mass Index (BMI) Percentiles Among Inner City School Children  
James J. Burns, Jane Garb, Coleen Walsh, Thomas Yarsley, Pediatrics, Baystate Children's Hospital, Tufts University School of Medicine, Springfield, MA.  
BACKGROUND: One explanatory hypothesis for the recent increase in childhood obesity is inadequate levels of physical activity and a sedentary lifestyle. Healthy land use may be associated with less childhood obesity by providing more opportunity for such activity.  
OBJECTIVE: To determine if living in a healthy land use region is related to lower BMI percentiles among inner city school aged children.  
DESIGN/METHODS: Body Mass Index (BMI) percentiles were generated for 10,513 students grades K-12 in an inner city school district (2005-2006) using standardized age and gender norms. Each student’s home address was entered into a Geographic Information System (GIS) and mapped. Healthy land use, defined as forest, open, recreational and medium or low density housing areas were derived from state GIS land-use maps. A comparison of mean BMI percentiles for students living in vs. not living in healthy land use regions was calculated using independent t-tests.  
RESULTS: Statistically significant lower mean percentiles in BMI were found between those who lived in healthy vs. unhealthy land use regions (mean BMI percentile in healthy land use 67.91 vs. mean BMI percentile not living in healthy land use 70.99; p < 0.001).  
CONCLUSIONS: This study demonstrates lower BMI percentiles for children living in healthy land use regions. Further studies should be conducted to determine if this is due to increased physical activity.

157  
Childhood Obesity and Neighborhood Food Store Availability in an Inner City Community: The Growing up Healthy in East Harlem Study  
Maida P. Galvez, Kimberly Morland, Laura Liu, Cherita Rainesses, Jennifer Kobil, Nita Vangeepuram, James Godbold, Barry Brenner, Mary S. Wolff. Community and Preventive Medicine, Mount Sinai School of Medicine, New York, NY; Pediatrics, Mount Sinai School of Medicine, New York, NY.  
BACKGROUND: Prior studies have shown an association between fast food store availability and body size. Few studies, however, have examined the relationship between the full spectrum of food store availability in the inner-city and body size.  
OBJECTIVE: We hypothesized that in the inner-city, minority community of East Harlem, New York, an increased number of fast food stores and bodegas (convenience stores) in close proximity to a child’s home is associated with increased risk for childhood obesity as measured by body mass index (BMI).  
DESIGN/METHODS: Baseline data from a 3 year longitudinal study of 6-8 year old East Harlem boys and girls (n=323) were utilized. Anthropometry (height and weight) were conducted with a standardized protocol. Food store data on supermarkets, grocery stores, convenience stores, specialty stores, restaurants and fast food stores were collected via a walking survey of East Harlem. Stores located within the same Census block as the child’s home address were identified using ArcGIS software version 8.3, which allowed for geocoding of both home and store address. We computed age- and sex-specific BMI-percentiles using CDC national norms. Using prevalence ratios, we estimated risk of a child’s BMI-percentile being in the top third of the sample based on number and types of food stores on their Census blocks.  
RESULTS: More than 75% of the 323 children lived in Census blocks with no grocery stores, specialty stores, or restaurants. Bodegas were present in 45% of their Census blocks, and fast food stores were present in 60%. Mean BMI-percentiles for each tertile were 32.7, 69.4, and 97.2, respectively. No associations were seen with BMI-percentile and number of grocery stores, specialty stores, restaurants or fast food restaurants on a child’s Census block. Children (n=176) living on a block with one or more bodegas (range 1-8) were more likely to have a BMI percentile in the top tertile (prevalence ratio=2.0, 95% CI 1.0-4.0), compared with children having no bodegas (n=147).  
CONCLUSIONS: The presence of bodegas within the same Census block as a child’s residence was associated with a higher BMI-percentile. Individual demographic and behavioral factors will be assessed as possible confounders. This has potential implications for both child and neighborhood level interventions with respect to childhood obesity.

158  
Clinical Manifestations of Obesity in a Sample of Urban Minority Children  
Nita Vangeepuram, Allison Gault, Ellen Schranz, Danielle Larague, Pediatrics, Mount Sinai School of Medicine, New York, NY.  
BACKGROUND: Obesity disproportionately affects minority children, yet diagnosis rates of obesity comorbidities in traditionally underserved areas are unclear. Similarly, nutrition and physical activity knowledge, attitudes and behaviors must be better understood in urban obese children.  
OBJECTIVE: To describe: (1) baseline medical and psychosocial characteristics and (2) knowledge, attitudes and behaviors of children enrolled in a new obesity program in a pediatric primary care practice in East Harlem, New York City.  
DESIGN/METHODS: Children underwent a comprehensive baseline evaluation, which included medical history, physical exam, body measurements, labs, and psychosocial screening. Validated questionnaires were used to measure nutrition and physical activity knowledge, attitudes and behaviors (KAB).  
RESULTS: Twenty-one obese children ages 8-14 years enrolled in the program. The sample was 57% male; 1/3 were black and 2/3 were non-black Latino. On history, 29% had at least two symptoms suggestive of obstructive sleep apnea. Child self report revealed that 71% worry about their weight. In addition, 62% say “sometimes or often” and 43% are down on themselves “sometimes or often” specifically with respect to physical appearance.  
RESULTS: Twenty-one obese children ages 8-14 years enrolled in the program. The sample was 57% male; 1/3 were black and 2/3 were non-black Latino. On history, 29% had at least two symptoms suggestive of obstructive sleep apnea. Child self report revealed that 71% worry about their weight. In addition, 62% say “sometimes or often” and 43% are down on themselves “sometimes or often” specifically with respect to physical appearance.  
Wast circumference was greater than the 90th percentile in 81% of program children and percent body fat was greater than the 85th percentile in 71% of program children based on published reference percentiles. The major positive physical findings were acanthosis (67%) and striae (29%). A total of 29% had high total cholesterol, 48% had a HOMA-IR score indicative of impaired glucose tolerance, and 10% had evidence of fatty liver. Dietary recall revealed that 57% of children had not eaten any vegetables and 38% had not eaten any fruit in the prior 24 hours. In addition, 71% had ≤ 2 days of vigorous activity/week and 91% had ≤ 2
Parent and Pediatrician Input in the Development of an Obesity Program
Nita Vangeeapoom, Allison Gault, Ellen Schranz, Danielle Larague, Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: In the past, development of pediatric clinic-based obesity programs has not typically included all involved stakeholders. This project, based in an academic practice in East Harlem, NYC, describes the development of a novel obesity program by explicitly involving parent and pediatrician input from the project's inception.

OBJECTIVE: To describe parent and pediatrician input in the development of a novel obesity program.

METHOD/RESULTS: Parent and pediatrician focus groups addressed cultural issues, barriers to healthy eating, and program content. Primary care pediatrician surveys were administered to understand obesity treatment practices and barriers.

RESULTS: Parent Focus Groups: Three focus groups were held with a total of 13 parents. Barriers to healthy eating included cost of healthy food, differing family food habits, and children buying food on their own. Cultural issues included traditional diets rich in fried foods and rice and misperceptions of healthy weight. Barriers to exercise included unsafe outdoor play areas and limited indoor space. Parents liked games, recipes, tracking diet and exercise behaviors, and interactive problem solving. They wanted to be present at sessions to reinforce what was taught. Weekly updates were requested and a time commitment of one hour per week was felt to be reasonable. Primary Care Pediatrician Survey: All 51 resident and attending pediatricians were included in the survey. Only half reported discussions of the food pyramid or family meals. More than 75% of physicians reported screening for hypertension and lipid abnormalities most of the time. Fewer reported that they usually screen for orthopedic issues (8%), insulin resistance (59%), fatty liver (50%), and obstructive sleep apnea (60%). Most physicians do not routinely ask about self-esteem, eating disorders, depression and family dynamics. Pediatrician-identified treatment barriers included time constraints, lack of referral resources, and inconsistent parent involvement.

CONCLUSIONS: Parents and pediatricians offered unique and differing insights into program planning. Parent suggestions were incorporated into program content (i.e., use of games and discussion of community-specific barriers) and structure (i.e., session length and parent presence). The physician survey informed the medical assessment and treatment of future cases which will determine whether parent and provider input in program planning leads to increased program success.

Parent and Pediatrician Input in the Development of an Obesity Program
Nita Vangeeapoom, Allison Gault, Ellen Schranz, Danielle Larague, Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: In the past, development of pediatric clinic-based obesity programs has not typically included all involved stakeholders. This project, based in an academic practice in East Harlem, NYC, describes the development of a novel obesity program by explicitly involving parent and pediatrician input from the project's inception.

OBJECTIVE: To describe parent and pediatrician input in the development of a novel obesity program.

METHOD/RESULTS: Parent and pediatrician focus groups addressed cultural issues, barriers to healthy eating, and program content. Primary care pediatrician surveys were administered to understand obesity treatment practices and barriers.

RESULTS: Parent Focus Groups: Three focus groups were held with a total of 13 parents. Barriers to healthy eating included cost of healthy food, differing family food habits, and children buying food on their own. Cultural issues included traditional diets rich in fried foods and rice and misperceptions of healthy weight. Barriers to exercise included unsafe outdoor play areas and limited indoor space. Parents liked games, recipes, tracking diet and exercise behaviors, and interactive problem solving. They wanted to be present at sessions to reinforce what was taught. Weekly updates were requested and a time commitment of one hour per week was felt to be reasonable. Primary Care Pediatrician Survey: All 51 resident and attending pediatricians were included in the survey. Only half reported discussions of the food pyramid or family meals. More than 75% of physicians reported screening for hypertension and lipid abnormalities most of the time. Fewer reported that they usually screen for orthopedic issues (8%), insulin resistance (59%), fatty liver (50%), and obstructive sleep apnea (60%). Most physicians do not routinely ask about self-esteem, eating disorders, depression and family dynamics. Pediatrician-identified treatment barriers included time constraints, lack of referral resources, and inconsistent parent involvement.

CONCLUSIONS: Parents and pediatricians offered unique and differing insights into program planning. Parent suggestions were incorporated into program content (i.e., use of games and discussion of community-specific barriers) and structure (i.e., session length and parent presence). The physician survey informed the medical assessment and treatment of future cases which will determine whether parent and provider input in program planning leads to increased program success.

Parent and Pediatrician Input in the Development of an Obesity Program
Nita Vangeeapoom, Allison Gault, Ellen Schranz, Danielle Larague, Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: In the past, development of pediatric clinic-based obesity programs has not typically included all involved stakeholders. This project, based in an academic practice in East Harlem, NYC, describes the development of a novel obesity program by explicitly involving parent and pediatrician input from the project's inception.

OBJECTIVE: To describe parent and pediatrician input in the development of a novel obesity program.

METHOD/RESULTS: Parent and pediatrician focus groups addressed cultural issues, barriers to healthy eating, and program content. Primary care pediatrician surveys were administered to understand obesity treatment practices and barriers.

RESULTS: Parent Focus Groups: Three focus groups were held with a total of 13 parents. Barriers to healthy eating included cost of healthy food, differing family food habits, and children buying food on their own. Cultural issues included traditional diets rich in fried foods and rice and misperceptions of healthy weight. Barriers to exercise included unsafe outdoor play areas and limited indoor space. Parents liked games, recipes, tracking diet and exercise behaviors, and interactive problem solving. They wanted to be present at sessions to reinforce what was taught. Weekly updates were requested and a time commitment of one hour per week was felt to be reasonable. Primary Care Pediatrician Survey: All 51 resident and attending pediatricians were included in the survey. Only half reported discussions of the food pyramid or family meals. More than 75% of physicians reported screening for hypertension and lipid abnormalities most of the time. Fewer reported that they usually screen for orthopedic issues (8%), insulin resistance (59%), fatty liver (50%), and obstructive sleep apnea (60%). Most physicians do not routinely ask about self-esteem, eating disorders, depression and family dynamics. Pediatrician-identified treatment barriers included time constraints, lack of referral resources, and inconsistent parent involvement.

CONCLUSIONS: Parents and pediatricians offered unique and differing insights into program planning. Parent suggestions were incorporated into program content (i.e., use of games and discussion of community-specific barriers) and structure (i.e., session length and parent presence). The physician survey informed the medical assessment and treatment of future cases which will determine whether parent and provider input in program planning leads to increased program success.

Parent and Pediatrician Input in the Development of an Obesity Program
Nita Vangeeapoom, Allison Gault, Ellen Schranz, Danielle Larague, Pediatrics, Mount Sinai School of Medicine, New York, NY.

BACKGROUND: In the past, development of pediatric clinic-based obesity programs has not typically included all involved stakeholders. This project, based in an academic practice in East Harlem, NYC, describes the development of a novel obesity program by explicitly involving parent and pediatrician input from the project's inception.

OBJECTIVE: To describe parent and pediatrician input in the development of a novel obesity program.

METHOD/RESULTS: Parent and pediatrician focus groups addressed cultural issues, barriers to healthy eating, and program content. Primary care pediatrician surveys were administered to understand obesity treatment practices and barriers.

RESULTS: Parent Focus Groups: Three focus groups were held with a total of 13 parents. Barriers to healthy eating included cost of healthy food, differing family food habits, and children buying food on their own. Cultural issues included traditional diets rich in fried foods and rice and misperceptions of healthy weight. Barriers to exercise included unsafe outdoor play areas and limited indoor space. Parents liked games, recipes, tracking diet and exercise behaviors, and interactive problem solving. They wanted to be present at sessions to reinforce what was taught. Weekly updates were requested and a time commitment of one hour per week was felt to be reasonable. Primary Care Pediatrician Survey: All 51 resident and attending pediatricians were included in the survey. Only half reported discussions of the food pyramid or family meals. More than 75% of physicians reported screening for hypertension and lipid abnormalities most of the time. Fewer reported that they usually screen for orthopedic issues (8%), insulin resistance (59%), fatty liver (50%), and obstructive sleep apnea (60%). Most physicians do not routinely ask about self-esteem, eating disorders, depression and family dynamics. Pediatrician-identified treatment barriers included time constraints, lack of referral resources, and inconsistent parent involvement.

CONCLUSIONS: Parents and pediatricians offered unique and differing insights into program planning. Parent suggestions were incorporated into program content (i.e., use of games and discussion of community-specific barriers) and structure (i.e., session length and parent presence). The physician survey informed the medical assessment and treatment of future cases which will determine whether parent and provider input in program planning leads to increased program success.
of providers for determining pubertal stages and (2) the characteristics and maturation status of the baseline cohort of girls 6-8 years old and a subset of girls ages 7 years old.

DESIGN/METHODS: Three sites located in East Harlem/New York, Cincinnati, Ohio and San Francisco, California are jointly conducting a prospective study of pubertal development in 1210 girls ages 6-8 years old. Breast development is assessed by clinicians or trained research staff at each site. In order to optimize validity and comparability of pubertal staging, a standardized pubertal assessment protocol including a training curriculum and pubertal staging form was developed. The kappa statistic was utilized to evaluate the agreement between the master trainers and providers conducting examinations.

RESULTS: The baseline cohort included 1222 girls ages 6-8 years. The results of the dual examinations for agreement were combined across all three centers. For 110 paired pubertal ratings, the kappa statistic was 0.75 indicating "substantial" agreement. At age 7, the proportion of girls who had attained breast stage 2 or greater was 122/2191, or 5.6%. The proportion of girls who had attained breast stage 3 by age 7 is significantly greater than that reported by Herman-Giddens (1997), for White girls, 3.4% vs. 5.0%; p<0.001 (95% CI 3.0%-5.5%); for Black, non-Hispanic girls, 19.7% ± 15.4%, p<0.001 (95% CI 4.1%-4.7%).

CONCLUSIONS: In this longitudinal, multi-site consortium, we standardized pubertal staging by provider and across sites in order to minimize error in our main outcome: timing of breast development. There were significant differences in pubertal status by race/ethnicity across sites and a trend in earlier breast development as compared to previous studies.

## 166

### General Pediatrics III

**Observational Study:** To determine the feasibility of Tdap vaccine administration to parents in a tertiary-care, Level III NICU.

**RESULTS:** 1000 of 2,187 surveys were returned, for a response rate of 46%; 978 were eligible. Members of the American Academy of Pediatrics section on perinatal pediatrics, Practicing US neonatologists available for 20 hrs per day at no cost. Student's T-tests were used for data analysis.

**OUTCOME:** There were no differences in vaccination rate based on parental age. No allergic reactions to vaccination were observed. The 54 infants whose parents were not offered vaccine had a significantly shorter length of stay (27.7+2.0 vs. 22.1+2.6 days, p<0.001), higher birth weight (3116 ± 731 vs. 2430 ± 992 gms, p<0.001), and higher gestational age (37.4±7 weeks vs. 34.5±7, p<0.001) than parents that were offered vaccine.

**CONCLUSIONS:** Administration of Tdap in the NICU is an effective means of increasing vaccination rates in parents of this population. Logistical barriers persist when implementing this program for infants with short (<3 days) length of stay.

---

**Table 1. Interventions Most Discussed & Impact of Parental Opinion**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Percentage of Time Parents In Supportive Care</th>
<th>Percentage of Families in Favor of Comfort Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Breastfeeding Support</td>
<td>78%</td>
<td>85%</td>
</tr>
<tr>
<td>Breastfeeding Counseling</td>
<td>65%</td>
<td>75%</td>
</tr>
<tr>
<td>Breastfeeding Education</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Breastfeeding Referral</td>
<td>45%</td>
<td>50%</td>
</tr>
<tr>
<td>Breastfeeding Follow-up</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>Breastfeeding Referral</td>
<td>25%</td>
<td>30%</td>
</tr>
</tbody>
</table>

---

**Table 2. Trends in Nipple Erosion and Inflammation**

<table>
<thead>
<tr>
<th>Nipple Erosion</th>
<th>Percentage of Parents in Favor of Early Breastfeeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>95%</td>
</tr>
<tr>
<td>1%</td>
<td>94%</td>
</tr>
<tr>
<td>2%</td>
<td>93%</td>
</tr>
<tr>
<td>3%</td>
<td>92%</td>
</tr>
<tr>
<td>4%</td>
<td>91%</td>
</tr>
<tr>
<td>5%</td>
<td>90%</td>
</tr>
<tr>
<td>6%</td>
<td>89%</td>
</tr>
<tr>
<td>7%</td>
<td>88%</td>
</tr>
<tr>
<td>8%</td>
<td>87%</td>
</tr>
<tr>
<td>9%</td>
<td>86%</td>
</tr>
<tr>
<td>10%</td>
<td>85%</td>
</tr>
</tbody>
</table>

---

**Table 3. Trends in Parental Opinion**

<table>
<thead>
<tr>
<th>Parental Opinion</th>
<th>Percentage of Families in Favor of Early Breastfeeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>95%</td>
</tr>
<tr>
<td>1%</td>
<td>94%</td>
</tr>
<tr>
<td>2%</td>
<td>93%</td>
</tr>
<tr>
<td>3%</td>
<td>92%</td>
</tr>
<tr>
<td>4%</td>
<td>91%</td>
</tr>
<tr>
<td>5%</td>
<td>90%</td>
</tr>
<tr>
<td>6%</td>
<td>89%</td>
</tr>
<tr>
<td>7%</td>
<td>88%</td>
</tr>
<tr>
<td>8%</td>
<td>87%</td>
</tr>
<tr>
<td>9%</td>
<td>86%</td>
</tr>
<tr>
<td>10%</td>
<td>85%</td>
</tr>
</tbody>
</table>

---

**Table 4. Trends in Nipple Erosion and Inflammation**

<table>
<thead>
<tr>
<th>Nipple Erosion</th>
<th>Percentage of Parents in Favor of Early Breastfeeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>95%</td>
</tr>
<tr>
<td>1%</td>
<td>94%</td>
</tr>
<tr>
<td>2%</td>
<td>93%</td>
</tr>
<tr>
<td>3%</td>
<td>92%</td>
</tr>
<tr>
<td>4%</td>
<td>91%</td>
</tr>
<tr>
<td>5%</td>
<td>90%</td>
</tr>
<tr>
<td>6%</td>
<td>89%</td>
</tr>
<tr>
<td>7%</td>
<td>88%</td>
</tr>
<tr>
<td>8%</td>
<td>87%</td>
</tr>
<tr>
<td>9%</td>
<td>86%</td>
</tr>
<tr>
<td>10%</td>
<td>85%</td>
</tr>
</tbody>
</table>
CONCLUSIONS: Parental opinion has a greater impact on clinical decision making in regards to some interventions more than others. Steroids for CLD and blood transfusion are discussed most frequently and are also the interventions in which parents have the most influence. Therapies such as TPN, umbilical lines, and phototherapy are often not discussed, and even when broached, parents do not greatly influence management. As we embrace Family-Centered Care and work with an increasingly sophisticated population, physicians may need to reevaluate what to allow parents to be included in the clinical management process.

169 10:00 AM
Availability and Accuracy of Spanish Language Medication Labels
Iman Sharif, Julita Tse, Pediatrics, Children's Hospital at Montefiore/Albert Einstein College of Medicine, Bronx, NY.
BACKGROUND: Studies have reported on the availability of medication labels in various languages, however none have reported on the accuracy of translations used.
OBJECTIVE: 1) To determine the availability of Spanish-language medication labels in the Bronx, NY, a borough with a very high Spanish-speaking population. 2) To test the accuracy of computer-translated Spanish medication labels.
DESIGN/METHODS: Using the NYS Education Department's listing of licensed pharmacies in conjunction with the Yellow Pages Online, we conducted a telephone survey of all pharmacies in the Bronx during September 2007. Respondents were asked whether the pharmacy could provide Spanish-language medication labels, the methods they used, and the frequency with which they did so. We then visited representative pharmacies and asked for Spanish-language medication labels for a series of prescriptions for iron drops, a topical cream, and a liquid antibiotic.
RESULTS: Of 316 pharmacies, 286 (91%) participated. Respondents were pharmacists (86%), technicians (10%), managers (5%), or other staff (1%). Overall, 20% (73%) stated that the pharmacy could provide Spanish-language medication labels. Of these, 178 (86%) used a computer program, 24 (11%) used lay staff, and 63 (5%) used an interpreter, language line, pharmacist, or technician to translate into Spanish. Of those using computers, 170 (92%) stated that sometimes they checked the translation for accuracy. Checkers were lay staff (57%), technicians (34%), pharmacists (8%), or medical interpreter (1%). Overall, only 5 of 14 pharmacies who checked the computer translations were fluent in Spanish. A wide variety of computer translation programs were reported, but 4 major companies accounted for about 75% of all programs used. Of those who said they could translate, 72% said they printed prescriptions in Spanish daily. Yet, 96% said they saw Spanish-speaking customers on a daily basis. We analyzed 82 Spanish medication labels from 22 pharmacies using 14 different computer programs. Except for 2 individual labels, no two translations for one prescription agreed. 35 (43%) of “Spanish” prescription labels included English words and phrases, such as “Take”, “give”, “topically”, “with juice”, and “to affected area.”
CONCLUSIONS: Pharmacies in the Bronx are frequently providing medication labels in Spanish, however the quality of these translations is questionable. More is needed to evaluate and improve the usefulness of computer translations of prescription instructions.

170 10:15 AM
House Officer Mental Health Care Needs of Latino Families in the South Bronx:
Perspectives of Parents and Pediatricians
Anagha Loharikar, Iman Sharif, Sandra Braganza, Department of Family and Social Medicine, Montefiore Medical Center, Bronx, NY.
BACKGROUND: Latino communities in the United States suffer disparities in access to adequate mental health (MH) care, which has been attributed to systemic barriers and incoordination between health care providers and community-based organizations. While some studies have reported on perspectives of the Latino community on MH, no studies have reported perspectives of pediatricians working in such communities. We present data collected as part of an AAP CATCH grant to develop a MH home for Latino families in the South Bronx, where 63% of the population is Latino.
OBJECTIVE: To understand and compare the perspectives of Latino parents and practicing pediatricians regarding 1) the causes of MH problems, 2) barriers to MH services, and 3) MH needs.
DESIGN/METHODS: We conducted a qualitative study. Parents or children of children with a history of MH services referral, use or need were recruited at a federally-qualified community health center to participate in a focus group. We conducted two 90-minute groups with parents. Next, we conducted one 90-minute focus group with pediatricians at the same health center. Focus groups were audio-taped and transcribed. Two investigators independently coded each transcript for thematic content. Differences in coding were resolved via consensus.
RESULTS: Causes: Parents and pediatricians both identified familial disruption as well as poverty/violence as etiologies of MH problems in Latino children. Parents also emphasized a causal relationship between the actions of “God” and “the devil” on MH. Barriers: Both parents and pediatricians acknowledged stigma associated with MH disorders, parents described distrust of authority and public institutions, and incompetence among MH providers, including lack of “caring.” Pediatricians attributed lack of access to systemic barriers, such as lack of insurance. Needs: Both groups described a need for preventive services in the community. Parents described consequences of MH problems on self, family, and community. Parents emphasized a need to be heard and for community awareness about MH. Themes distinctive to the pediatricians included the high prevalence and range of MH problems of their patients and discomfort with personal experiences in managing MH.
CONCLUSIONS: Parents and pediatricians gave differing perceptions of the MH needs of the Latino population in this inner-city setting. Further exploration can inform the intervention-design of the CATCH initiative to improve access to MH care.

171 10:30 AM
Resident Integration of a Mandatory, Web-Based Neonatology Curriculum into Pediatric Residency Training
Priya Garp, Jamelah Tucker, Carol Carraccio, Alison Falck, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.
BACKGROUND: Duty hour requirements and demanding schedules create unique challenges for didactic teaching in pediatric care settings. Self-directed learning utilizing a web-based curriculum is ideal for this environment. Currently, little is known about the potential impact of web-based learning on pediatric residency teaching. A pilot study during the 2005-2006 academic year at the University of Maryland Medical Center (UMMC) demonstrated that self-directed learning in the neonatal intensive care unit (NICU) was effective and well-received. However, motivation and participation were variable.
OBJECTIVE: To assess residents’ participation, knowledge gain, and satisfaction with a required web-based instructional curriculum.
DESIGN/METHODS: Pediatric residents at UMMC completed four online NICU modules as a requirement for a rotation. Modules were developed from NICU curriculum topics as outlined in AAP PREP content specifications. Modules consisted of a pre-test, PowerPoint lecture, post-test, and satisfaction survey. Residents self-navigated the modules, and participated in case-based review during the NICU rotation. Pre- and post-tests consisted of the same test questions. Quantitative data were analyzed using paired student t-tests. Qualitative data from the satisfaction surveys were summarized.
RESULTS: During the study period, 707 to 1107, 24 of 26 residents rotating in the NICU completed at least one module. By the end of the NICU rotation, 76% of the required modules were completed. Fifty percent of residents completed all required modules. For the 78 data pairs (maximum score of 10), mean pre-test score was 5.4 (±2.19) and mean post-test score was 7.8 (±1.59). The mean change between pre- and post-test scores was +2.4 (p=0.001). 46% of satisfaction surveys were completed. Greater than 85% of residents found the modules effective teaching tools. Greater than 85% stated that the curriculum enhanced their learning experience and 93% stated that self-directed learning would be helpful on other rotations.
CONCLUSIONS: A web-based curriculum is an effective tool for pediatric resident education. In addition to addressing time constraints, self-directed learning is emphasized as an important skill for long-term learning. Future directions should focus on addressing etiologies of resident non-compliance, assessment of long-term knowledge gain, expansion of the web-based Neonatology curriculum, and incorporation of self-directed learning into other clinical settings.

172 10:45 AM
Experience with a Pediatric and Surgical Co-Management Model in Pediatric Residency Training
Anna M. Carr, Allan M. Arbetar, Malzde Irioyen, Robert S. Wimmer, Department of Pediatrics, Albert Einstein Medical Center, Philadelphia, PA.
BACKGROUND: Little is known of the experiences and perceptions of pediatric hospitalist faculty and residents participating in co-management models with surgical services.
OBJECTIVE: To describe pediatric hospitalist faculty and residents’ experience with a surgical co-management model teaching service at an academic pediatric hospital.
DESIGN/METHODS: In 2003 Albert Einstein Medical Center established an inpatient teaching service at St. Christopher’s Hospital for Children in Philadelphia, PA, staffed by pediatric hospitalists and pediatric residents. On July 2005, we initiated a surgical co-management model. Residents perceptions of the strengths and weaknesses of the model were obtained through end-of-rotation evaluations and feedback at monthly meetings. Hospitalist faculty provided feedback quarterly.
RESULTS: Co-managed patients accounted for a third of admissions with 65% in orthopedics, 15% ENT, 10% neurosurgery, 5% plastics, 5% ophthalmology. Most (90%) co-managed patients had 1 concurrent medical condition; 30% had multiple medical conditions (CP, genetic syndromes, obesity). The primary role of the hospitalist was to provide pre-op support, respiratory management, fluid and nutritional management, assessment of rehabilitation needs, discharge planning, psychosocial concerns, and patient safety. Overall faculty and residents felt the model had improved patient care and teaching. Strengths perceived included more exposure to complex patients, increased teaching opportunities with pediatric medical and surgical subspecialists, and increased pain management and procedural sedation skills. Perceived weaknesses were timely communication, lack of clarity of roles between pediatric and surgical residents, distrust of surgical (primarily adult-trained) resident skill in pediatric medication orders, and excess of menial tasks.
CONCLUSIONS: Exposure to a model of pediatric hospitalist and surgical co-management was overall a positive experience for residents, enhancing their educational opportunities with complex patients and surgical conditions. Challenges with regards to role and communication need to be addressed.

173 11:00 AM
House Officer Growth Assessment of Children Living in a Honduran Orphanage
Jillian Kunar, Christine Narad, Annie Kautza, Patrick Mason. Department of Pediatrics, Inova Fairfax Hospital for Children, Fairfax, VA; Nuestros Pequeños Hermanos, Tegucigalpa, Honduras.
BACKGROUND: Power war and the HIV/AIDS crisis are forcing millions of abandoned children into worldwide orphanages. Studies have demonstrated that orphanages often lack adequate food, clothing and consistent care resulting in developmental delays and growth stunting. This study examines the growth outcome of children living within a “model” Honduran orphanage compared to those in orphanages around the world.
OBJECTIVE: We sought to determine the growth rate of children living in a Honduras orphanage and compared this rate to historical growth rates of children in Eastern European (EE) orphanages and children seen when adopted.
DESIGN/METHODS: Data was collected at the privately funded Nuestros Pequeños Hermanos orphanage in San Antonio de Sula, Honduras for two children and compared to historical data for growth rates of children in EE orphanages and growth rates of children at their adoption. Age (height (HT) and weight (WT) were obtained for each child at the time of arrival into the orphanage as well as current measurements. Growth z-scores were determined using Epinfo (CDC).
RESULTS: Initial and current HT and WT data were collected on 96 children (56 males). Mean age on arrival in Honduras was 4.96 yrs (range 0.36 to 17.23 yrs) and mean age at adoption was mean of 4.50 yrs (range 1.10 to 8.9 yrs) in the orphanage. Mean weight at adoption was 20.83 kg (range 5.83 to 31.09 kg) in the orphanage. Mean age of adoption was 4.50 yrs (range 1.10 to 8.9 yrs) in the orphanage. Mean weight at adoption was 17.80 kg (range 6.50 to 32.20 kg).
CONCLUSIONS: Children living in orphanages in Honduras were growing more slowly than children in Eastern Europe and were growing slower than children adopted at a similar age.
CONCLUSIONS: Unlike children living in EE orphanages, children living in the Honduran orphanage demonstrated a growth velocity similar to children living in the US. The absence of the expected growth velocity in the children from EE may be the result of stressors or environmental factors not present in the US children. The absence of the expected growth velocity in the children from EE may be the result of stressors or environmental factors not present in the US children. The children from EE may be at higher risk for long-term health complications due to the lack of adequate nutrition and medical care. Further research is needed to understand the factors that contribute to the growth velocity of children born in EE.
RESULTS: Genotype distribution for the Fas -1377 SNP was significantly associated with BPD severity. Lower gestational age and birthweight, administration of antenatal steroids, and administration of postnatal surfactant and steroids were associated with BPD severity. The Fas -691 SNP was associated with AGA status. Evaluation of the younger sister had high arched palate, cubitus valgus and one nevus. Pelvic sonogram sisters.

**OBJECTIVE:** Analysis of location of deletion on Xp via array cGH and correlation with clinical characters.

**results:** The phenotypic presentation of TS was variable among the 4 affected members. By conventional for the age. IGF-1 was low (108 ng/mL), IGFBP-3 (2.1 mg/L) and euthyroid. By conventional

**RESULTS:** The phenotypic presentation of TS was variable among the 4 affected members. By conventional

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** The phenotypic presentation of TS was variable among the 4 affected members. By conventional

**RESULTS:** The phenotypic presentation of TS was variable among the 4 affected members. By conventional

**RESULTS:** The phenotypic presentation of TS was variable among the 4 affected members. By conventional

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.

**RESULTS:** Sequence comparison analysis showed that the CpGs of the mouse HO-1 gene at baseline and in hyperoxia con genital genomics and gene expression during development and in oxidative stress, we wondered whether this could also explain maturational differences in the regulation of lung HO-1. **OBJECTIVE:** To evaluate maturational differences in epigenetic modifications of the mouse HO-1 gene at baseline and in hyperoxia.
started at 3.3 yrs with 0.3 mg/kg/week dose and gradually dose was increased to 0.5 mg/kg/week. On GH over 4 yrs his Ht improved from -3.8 SDS to -4.62 SDS. At 7.8 yrs IGf-1 was started at 0.12 mg/kg/dose BID, with no improvement of GV. His Ht at 9.8 yrs is -4.96 SDS, with predicted Ht at -5.37 SDS.

**Subject C**: An offspring of a consanguineous Pakistani parents presented at 8 yrs with Ht -3.2SDS. Target Ht -0.33 SDS. He was found to have a mutation in the GHRH gene, exon 10. GH was started at age of 8.5 years with 0.3 mg/kg/week; gradually increased to 0.5 mg/kg/week. His Ht improved from -3.26 SDS to -2.9 SDS. Last 3 months he was treated with IGf-1.012 mg/kg/dose BID with GV 7.2 cm/hr. Ht now is -2.03 SDS, with predicted Ht at -1.05 SDS.

**CONCLUSIONS**: All three patients were started on a dose of 0.3 mg/kg/week after primary evaluation and gradually increased to maximum recommended dose. The above data reveals that, response to GH can be beneficial and response to IGf-1 therapy can be suboptimal. However, combined GH and IGf-1 therapy may also be beneficial in improving final adult height in cases of non-classical GHI.

### 184 11:30 AM
**Fellow in Training**

**Anti-Mullerian Hormone as a Marker of Ovarian Reserve in Young Girls with Turner’s Syndrome**

Radhika Purushothaman, Oksana Lazareva, Munazza Basit, Svetlana Ten, Pediatric Endocrinology, Infants and Childrens Hospital at Maimonides, Brooklyn, NY.

**BACKGROUND**: Spontaneous fertility is rare among Turner's syndrome patients. Karyotype 45 XO, mosaicism with XY and Xq deletions has been associated with hypoplastic ovaries and uterus whereas women with mosaicism, terminal p deletions or ring X chromosome have been shown to be fertile. Anti-Mullerian hormone (AMH) has been found to positively correlate with antural follicle count and has been used for that purpose in in-vitro fertilization.

**OBJECTIVE**: We sought to explore the relation between anti-mullerian hormone and other markers of ovarian function like ovarian structure via pelvic sonogram, FSH and LH and to further see whether there was a correlation between these levels and karyotype.

**DESIGN/METHODS**: This is a retrospective chart review of all patients with Turner’s syndrome in our clinic. Karyotype, AMH, inhibins A & B, pelvic sonogram findings were correlated.

**RESULTS**: We examined a total of 10 patients in our clinic with a mean age range of 13.4 +/- 4.6 years. The mean age at diagnosis was 7.91 +/- 4.5 years. Two groups were identified: group 1 with a karyotype favorable to fertility and group 2 with a poor probability of fertility. In group 1: 3 had mosaicism, 1 had terminal Xp deletion & 1 had ring chromosome. In group 2: 3 patients had 45XO, 1 had 45XO/46XY and 1 had Xq deletion. Regardless of karyotype, all had undetectable anti-mullerian hormone, inhibins A and B. In group 1, pelvic sonogram findings revealed fairly developed uterus and ovaries and their FSH and LH remain supppertubal in girls who are in their teens. In group 2, all showed hypoplastic ovaries and uterus and their gonadotropins were high.

**CONCLUSIONS**: Pelvic sonogram findings and gonadotropins are good markers of ovarian function and correlated well with karyotype. To our disappointment, anti-mullerian hormone and inhibins A and B did not seem to be reliable predictors of ovarian function.

### 185 11:45 AM
**Fellow in Training**

**Interfamily Phenotypic Difference in Familial Isolated Growth Hormone Deficiency Due to a Novel Homozygous Mutation of Growth Hormone Releasing Hormone Receptor (GHRHR) Gene**

Sunil K. Sinha, Kyriaki S. Alatzoglou, Amrit Bhangoo, Svetlana Ten, Mehul T. Dattani, Pediatric Endocrinology, Maimonides Infants and Children’s Hospital of Brooklyn and SUNY Downstate Medical Center, Brooklyn, NY, Brooklyn, NY; Developmental Endocrinology Research Group, UCL Institute of Child Health, London, United Kingdom.

**BACKGROUND**: Mutation of the gene encoding the GHRHR receptor (GHRHR) is associated with familial isolated growth hormone deficiency (IGHD) type IB. We are report here two siblings with a novel isolated growth hormone mutation in GHRHR presenting with marked phenotypic variability.

**Patient**: The index case presented at 6 years of age with short stature (91.5 cm; SDS -5.44; mid-parental Ht -0.33 SDS. He was found to have a mutation in the GHR gene, exon 10. GH was started at age of 8.5 years with 0.3 mg/kg/week; gradually increased to 0.5 mg/kg/week. His Ht improved from -3.26 SDS to -2.9 SDS. Last 3 months he was treated with IGf-1.012 mg/kg/dose BID with GV 7.2 cm/hr. Ht now is -2.03 SDS, with predicted Ht at -1.05 SDS.

**CONCLUSIONS**: All three patients were started on a dose of 0.3 mg/kg/week after primary evaluation and gradually increased to maximum recommended dose. The above data reveals that, response to GH can be beneficial and response to IGf-1 therapy can be suboptimal. However, combined GH and IGf-1 therapy may also be beneficial in improving final adult height in cases of non-classical GHI.
RESULTS: Data were available for 14 infants with gestational ages of 24 to 29 weeks and birth weights of 610–1180g. Descriptive statistics were used. Mean VT, RR and MV for the 20 minutes prior to each blood gas were associated with PCO2 as a sample set. Theoretical AV was calculated using the formula (measured VT minus estimated DS volume (2.7mL instrumental DS + 0.5mL/kg anatomic DS)) x RR. Simple

design/Methods: Infants with birth weights <1200g who required ventilation with the Babylog 8000 plus in the PS-VG mode in the first 3 days of life and had no leak around their endotracheal tube (ETT) were enrolled in this prospective study. We collected data on infants who were not ventilated from the end of the study period. We estimated baseline ventilation parameters (respiratory rate (RR), expiratory VT (Exp VT), set 

CONCLUSIONS: Ventilation parameters (RR, VT, MV) and the calculated AV were significantly different (p<0.001) between infants who were ventilated and those who were not. This finding suggests that fresh gases penetrate through the dead space gas because of the high flow velocity generated in the narrow ETT.

189 10:30 AM

Predictors of Morbidity and Mortality in Infants with Congenital Diaphragmatic Hernia: A National Database Review

Hany Aly, Maria D. Bianco-Battles, Anthony Sandler, Mohamed H. Mohamed.


BACKGROUND: Important outcomes are reported in patients with congenital diaphragmatic hernia (CDH). This observation could be related to the use of a more conservative and expectant management protocol during the first few days of life. Since regionalization of care has been proposed for difficult neonatal cases and since neonatal transport is not a risk-free procedure, understanding the outcomes of infants with CDH is an important model for understanding the effects of regionalization and transport.

OBJECTIVE: Utilizing a national database, we aimed to: 1) determine outcome of infants with CDH, 2) compare outcomes of infants who needed to be transported for their surgical repair to those who did not, and 3) validate the impact of delayed surgery on outcome.

DESIGN/METHODS: We analyzed the National Inpatient Sample and the "Kids" database for the years 1998-2004. Infants with CDH born in Ohio were included. We defined outcome as survival to hospital discharge for each infant. We performed a propensity score analysis between infants transported and those not transported for surgery. Mortality, ventilation days and duration of hospitalization were measured if the infant was transported.

RESULTS: There were 1138 infants transported and 1475 remained at their birth hospital. Only 1080 (73.2%) of the infants were transported. Mortality was significantly higher among babies transported compared to non-transported (6% vs 2.7%). The duration of ventilation (20.9 ± 18.1 vs 12.3 ± 10.4) and hospitalization (17.5 ± 13.5 vs 11.6 ± 9.8 days) were significantly higher among transported infants. Mortality increased with duration of ventilation and hospitalization (β = 0.0006 and 0.0007 per day, respectively).

CONCLUSIONS: Infants transported for delayed surgery have poorer outcomes. Mortality and duration of ventilation and hospitalization are strongly associated with transport.

190 10:45 AM

An Evaluation of an ROP Screening Program

Rachel Porat, Dafa Ofer, Dana Toib, Ahashta Johnson, David L. Schutzer, Pediatricts, Albert Einstein Medical Center, Philadelphia, PA.

BACKGROUND: Recently, 20 million dollars were awarded to a baby blinded by retinal detachment from ROP following delayed eye exam (Philadelphia Inquirer, 2004). We are aware of 2 additional cases elsewhere of detachment following missed appointments. Not much data are available regarding the adequacy of various practices and programs in ensuring appropriate eye care to infants at risk for ROP.

OBJECTIVE: To ensure the timeliness of eye examination in premature babies at risk for ROP, both before and after discharge.

DESIGN/METHODS: A retrospective study was conducted on all infants born from January 2005 through December 2006 with gestational age ≤32 weeks and with birth weight ≤1500g. Records reviewed included initial hospital charts, fi u High-Risk Clinic charts, Pediatric Clinic charts, Ophthalmology records and parental phone interviews. Detailed clinical data were collected including eye exam results and treatments. Adequacy of ROP screening and fi u was assessed based on AAP guidelines and recorded as: on time, late−1 to 2 weeks past recommendation, never or not indicated.

RESULTS: A total of 166 infants needed eye exams during the 2 year period; of these 19 were transferred, 20 died and 7 had no records available, leaving a total of 120 patients. Their mean BW 1.19 ± 0.98kg and GA 28.6 ± 2.84 wks. 57% required mechanical ventilation and 83% received supplemental O2. 74 required initial eye exam while inpatients. First eye exam was on time in 84% of the infants, in 3% and not done in 3%. FU exams in−house were on time in 87% and late in 13%. Of these 74, 64 required outpatient FU eye exam after NICU discharge. Ophthalmology appointments were made for 59 (though documented in only 40 charts). 38 were seen and 14 were no-show (7 unknown).

Of the 46 with first eye exam indicated after discharge: 36 had appointments (though only 7 noted in the hospital records), 6 were seen and 30 were no show. No show rate was significantly higher among babies whose initial eye exam was after discharge. (OR 10.1).

CONCLUSIONS: Ophthalmology follow up after NICU discharge of preterm infants at risk for ROP is poor, particularly among infants whose initial exam occurs after discharge.

Strategies to improve follow up should include parental education, increased documentation and development of tracking systems to ensure compliance with AAP recommendations.

191 11:00 AM

Fellow in Training

Amplitude Integrated Electroencephalography (aEEG) in Premature Infants (PREMS): Frequent Artifacts (ARTs) Limit a Role in Assessing Cerebral Function?

Debbie Suk, Alfred N. Krauss, Murray Engel, Jeffrey M. Perlman, Pediatrics, New York Presbyterian–Wohl Cornell Medical Center, New York, NY; Child Neurology, New York Presbyterian–Well Cornell Medical Center, New York, NY.

BACKGROUND: The aEEG, an integrated electrocorticography monitor, is very sensitive in identifying high risk term infants as candidates for hypothermia treatment and for seizure (S2) detection. In PREMS, the aEEG has been performed for brain monitoring. We hypothotezed that the aEEG would be suppressed during apnea and bradycardia (A&B) followed by an increase in amplitude in PREMS related to changes in CBF in PREMS.

DESIGN/METHODS: anEEG was recorded with the Olympic CFM 6000 using bitemporal frontal electrodes. (1 h duration on DOL 0-2, 3-6, 7-10, 11-14, 20-22, 28-30). ARTs were defined if the aEEG waves had a sharp appearance with a large amplitude changes. In contrast, non-brain waves (NBW) had smooth waves of small amplitude changes. To quantify the problem of ART, tracings of aEEG were selected every 2 min and categorized as NBW, ART, or indeterminate (IND) if the finding was left ambiguous. Three blinded reviewers read the tracings of 5 random infants to determine interobserver agreement of ART.

RESULTS: 48 recordings, mean duration 83 min and impedance 6.1 kΩ, yielded 1683 points: 529 NBW (31%), 1013 ART (61%), 142 IND (8%). There was overall good interobserver agreement. Notably, ARTs were more common when there was a spike or upward shift in the aEEG, patterns that could otherwise be interpreted as S. When the aEEG was suppressed, it was most often classified as NBW.

CONCLUSIONS: ARTs are frequent in aEEG recordings of PREMS, thereby potentially limiting its role in assessing brain maturation or in S2 detection. ART may reflect muscle or eye movements, and do not appear to be electrical interference as they are usually absent with aEEG suppression. This observation is consistent with a recent case report (Pediatrics, Dec 06) describing ARTs present in the aEEG of a term baby with a resultant increased aEEG that became suppressed after elimination of ART with paralysis. These observations suggest caution when interpreting spikes or increases in the aEEG and perhaps incorrectly attributing them to S; clinical exam and the ARTs are critical.

192 11:15 AM

Fellow in Training

Ascorbic Acid Combined with Ibuprofen in Hypoxic Ischemic Encephalopathy: A Randomized Controlled Trial

Lilja Abul-Rehah, Fathy Nawar, Hassan Hassan, Mohamed Aaref, Ahmad Elsayed. Department of Neonatology, The George Washington University & Children's National Medical Center, Washington, DC; Department of Pediatrics, Alazhar University, Cairo, Egypt.

BACKGROUND: Free oxygen radicals and pro-inflammatory cytokines are important causes for brain injury in neonates with hypoxic ischemic encephalopathy (HIE). In animals, ascorbic acid (Vitamin C) is protective against free radicals-induced neurotoxicity while Ibuprofen has been shown to be neuroprotective through modulation of leukocyte activity, reducing cytokine production, inhibition of free radicals and signaling transduction. The efficacy of these 2 drugs in protecting the human brain in HIE has not been studied.

OBJECTIVE: To test the hypothesis that a combination of anti-oxidants (Vitamin C and anti-inflammatory (Ibuprofen) agents can ameliorate brain injury in HIE when given to infants immediately after birth.

DESIGN/METHOIDS: Sixty asphyxiated infants admitted to Bab El-Sharif University Hospital, Cairo, Egypt, were randomly assigned to one of two groups. Group A (n = 30); infants received intravenous Vitamin C (100 mg/kg/day for 3 days) and oral Ibuprofen (10 mg/kg on day 1, followed by 5 mg/kg on days 2 & 3), and Group B (n = 30), infants received similar volumes of placebo. Treatment drugs were administered within 2 hours after birth. A panel of cytokines were measured at enrollment. Neurological evaluations of all infants were done on admission, on discharge and at 6 months of age. Grades of HIE were assigned using a modified and adapted grading and 6 months developmental screening was done using Denver Developmental Screening Test II (DST II).

 RESULTS: There was no difference between Group A and B in gestational age (38.4 ± 3.1 vs. 38.1 ± 3.1 wks), HIE grading (Severe HIE: n=11 vs. n=11, Moderate HIE: n=11 vs. n=9), serum IL-1β (11.3±3.1 vs. 10.3±4.3) and IL-6 levels (11.6±8.01 vs. 11.3±7.24). No difference between Group A and B was noted in mortality rate (3.7% vs. 3.3%), rate of abnormal neurological exam at discharge (47% vs. 55%) and rate of delayed scores on DST II at 6 months (52% vs. 40%). Serum IL-1β and IL-6 levels correlated with the severity of HIE (P<0.01). Elevated Serum IL-6, but not IL-1β, correlated with poor neurodevelopmental outcome at 6 months (P<0.001).

CONCLUSIONS: Early administration of vitamin C and Ibuprofen did not reduce mortality or improve neurodevelopmental outcomes measured at 6 months of age. Mediators other than free radicals and inflammatory cytokines may have stronger role in brain damage in infants with HIE.
Vinyl Bag vs. Thermal Mattress To Prevent Hypothermia in Extremely Low Birth Weight (ELBW) Infants

Bobby Mathew, Satyan Lakshminrusimha, Vivien Carion, Neonatology/Pediatrics, The Women and Children’s Hospital of Buffalo, Buffalo, NY.

BACKGROUND: Neonatal hypothermia in the delivery room (DR) has been associated with increased morbidity and mortality in ELBW infants. Present NRP recommendations include use of polyethylene bag in ELBW infants to maintain body temperature. Thermal mattresses can also be used to prevent hypothermia.

OBJECTIVE: To study and compare two methods of preventing hypothermia after birth in ELBW preterm infants.

DESIGN/METHODS: This randomized control trial enrolled infants <28wk gestation who were randomized to either vinyl bags (n=184, 11:30 AM) or thermal mattress (Transwarmer®; 20:30; n=200). Both groups underwent drying of the head and placement of a stockinette. Resuscitation and stabilization were carried out according to NRP guidelines. Infants were transferred to the NICU in prewarmed transport isolettes. Auxiliary temperature on admission to the NICU was recorded.

RESULTS: 271 infants were enrolled in the study and admitted to the NICU between 7/2005 and 7/2007 and randomized to vinyl bags (n=14) or thermal mattresses (n=13). Baseline characteristics such as gestational age (25.6±0.4 vs. 25.5±0.3 wk), birth weight (691±25 vs. 705±35 g) and cord pH were similar for both groups. There was no difference in the admission temperature between the two groups. However, in infants with birth weight <700g (n=8 vinyl bag and n=6 warmer group), vinyl bags were more effective than mattresses in preventing hypothermia (vinyl bags 36.2±1°C vs. thermal mattress 34.7±0.6°C, p<0.015).

CONCLUSIONS: The use of thermal mattress does not confer any improvement in admission temperature compared to the vinyl bags in <28wk gestation infants. It appears that in ELBW infants <700g, vinyl bags may be preferred over thermal mattresses to prevent hypothermia in the DR.

Use of Chemical Warming Packs During Delivery Room Resuscitation and Admission Temperatures in Very Low Birth Weight Neonates

Joaquim M. Pinheiro, Susan Boynton, Susan A. Furdon, Robin Dugan, Sharon Jensen, Christine Reu-Dodon, Mary A. Miller, Andrea Degnan, Pediatrics; Quality Management; Obstetrics & Gynecology, Albany Medical Center, Albany, NY.

BACKGROUND: Hypothermia is an independent contributor to neonatal mortality. Yet, recently available data indicate that while receiving standard delivery room care, the majority of very low birthweight (VLBW) newborns undergo cold stress, and a substantial proportion become severely hypothermic. This has prompted clinicians to use multiple adjuncts aimed at maintaining normothermia in VLBW neonates, though the efficacy and safety of these methods remain to be established.

OBJECTIVE: 1) to characterize the effectiveness of thermoregulation procedures in maintaining normothermia during delivery room resuscitation; 2) to assess the impact of an unanticipated change in equipment at our institution on the admission temperatures of VLBW newborns.

DESIGN/METHODS: Retrospective analysis of Quality Assurance data submitted to the Vermont-Oxford Network, for 21 consecutive months starting January 2006; IRB-approved. We compared the rate of hypothermia (admission temperature <36.5°C) in our NICU during 2006 to the aggregate rates reported by Vermont-Oxford Network (VON), for 21 consecutive months starting January 2006; IRB-approved. We compared the rate of hypothermia (admission temperature <36.5°C) in our NICU during 2006 to the aggregate rates reported by VON. We then compared the rates of hypothermia and mean admission temperatures in our NICU during Period 1 (when chemical warming packs were used routinely, in addition to plastic wrapping and warm blankets) and Period 2 (after packs were discontinued due to an incident of focal skin injury possibly related to NF-M). By p15, FA of the ipsilateral FF is less than FA in the contralateral FF (0.55±0.13 vs 0.70±0.07, p<0.05). By p28, FA of the ipsilateral FF is less than contralateral FA (0.55±0.13 vs 0.70±0.07, p<0.05) and at p28 Dr is 0.007±0.002 vs. 0.002±0.0003 (p<0.07).

CONCLUSIONS: The use of chemical warming packs does not confer any improvement in admission temperature compared to the vinyl bags in <28wk gestation infants. It appears that in ELBW infants <700g, vinyl bags may be preferred over thermal mattresses to prevent hypothermia in the DR.

Use of Chemical Warming Packs During Delivery Room Resuscitation and Admission Temperatures in Very Low Birth Weight Neonates

Joaquim M. Pinheiro, Susan Boynton, Susan A. Furdon, Robin Dugan, Sharon Jensen, Christine Reu-Dodon, Mary A. Miller, Andrea Degnan, Pediatrics; Quality Management; Obstetrics & Gynecology, Albany Medical Center, Albany, NY.

BACKGROUND: Hypothermia is an independent contributor to neonatal mortality. Yet, recently available data indicate that while receiving standard delivery room care, the majority of very low birthweight (VLBW) newborns undergo cold stress, and a substantial proportion become severely hypothermic. This has prompted clinicians to use multiple adjuncts aimed at maintaining normothermia in VLBW neonates, though the efficacy and safety of these methods remain to be established.

OBJECTIVE: 1) to characterize the effectiveness of thermoregulation procedures in maintaining normothermia during delivery room resuscitation; 2) to assess the impact of an unanticipated change in equipment at our institution on the admission temperatures of VLBW newborns.

DESIGN/METHODS: Retrospective analysis of Quality Assurance data submitted to the Vermont-Oxford Network, for 21 consecutive months starting January 2006; IRB-approved. We compared the rate of hypothermia (admission temperature <36.5°C) in our NICU during 2006 to the aggregate rates reported by Vermont-Oxford Network (VON), for 21 consecutive months starting January 2006; IRB-approved. We compared the rate of hypothermia (admission temperature <36.5°C) in our NICU during 2006 to the aggregate rates reported by VON. We then compared the rates of hypothermia and mean admission temperatures in our NICU during Period 1 (when chemical warming packs were used routinely, in addition to plastic wrapping and warm blankets) and Period 2 (after packs were discontinued due to an incident of focal skin injury possibly related to NF-M). By p15, FA of the ipsilateral FF is less than FA in the contralateral FF (0.55±0.13 vs 0.70±0.07, p<0.05). By p28, FA of the ipsilateral FF is less than contralateral FA (0.55±0.13 vs 0.70±0.07, p<0.05) and at p28 Dr is 0.007±0.002 vs. 0.002±0.0003 (p<0.07).

CONCLUSIONS: The use of chemical warming packs does not confer any improvement in admission temperature compared to the vinyl bags in <28wk gestation infants. It appears that in ELBW infants <700g, vinyl bags may be preferred over thermal mattresses to prevent hypothermia in the DR.
CONCLUSIONS: Myelopathy was achieved with 1 or 2 drops between 45 and 90 minutes and was sustained to 120 minutes. This effect was independent of the contralateral control eye drops. Therefore, retinal exams could be completed by 90 minutes in most infants using less than 3 drops. A larger study is needed to determine any effect of its color and ROP severity on these findings.

198 10:30 AM Fellow in Training A Comprehensive Analysis of Protein Secretion by Neonatal Murine Astrocytes After Inflammatory Stimulation Sarah D. Krannich, Todd Greco, Harry Iachopoulos, Department of Pediatrics and Pharmacology, Children’s Hospital of Philadelphia and the University of Pennsylvania, Philadelphia, PA.

BACKGROUND: The causal relationship between prenatal infection, inflammation, and brain injury is one of active investigation. Astrocytes provide neural scaffolding, trophic support, and modulate central nervous system (CNS) responses to systemic inflammation. It is believed that the majority of astrocyte functions are carried out by the actions of secreted proteins.

OBJECTIVE: The goal is to develop a comprehensive inventory of proteins secreted by neonatal astrocytes in culture, and to allow comparison of secreted proteins after acute or prolonged inflammatory stimulation.

DESIGN/METHODS: Primary astrocyte cultures were isolated from neonatal mice and either treated with cytokines or left untreated. A proteomic approach composed of in-gel digestion and liquid chromatography interfaced directly with a linear trap mass spectrometer was used. A multi-step computational analysis was employed to identify the proteins in astrocyte-conditioned media. For semi-quantitative comparisons we employed MS spectral counting.

RESULTS: The study generated a comprehensive list of 169 secreted proteins across all conditions, more than quadrupling the number reported presently. The secretome contained components of the extracellular matrix, regulators of cellular development and growth, signaling molecules and enzymes involved in the processing of glycoproteins and glycosaminoglycans. Deficiencies in these classes of proteins are associated with various lysosomal storage diseases. Lower relative amounts of these were noted in the media of cytokine-treated cells. Twelve proteins were detected exclusively in the inflammatory response secretome, including four members of the chemokine families that modulate inflammation and migration of oligodendrocyte precursors and neural stem cells.

CONCLUSIONS: The advanced proteomic approach combined with a computational workflow resulted in the identification of a significant number of proteins not previously ascribed to astrocytes. This comprehensive compilation of extracellular-secreted proteins is a rich, valuable resource that can be mined for factors that regulate neural networks and the release of neurotoxic factors. Control of inflammation may indeed be a key treatment strategy, which potentially can include the replacement or augmentation of secreted proteins inhibited during inflammation.

199 10:45 AM Regional Tissue Oxygenation in Association with Alterations in the Physiologic Parameters in Preterm Infants Anna Petrosea, John Chuo, Uday Nadaraj, Mayoor Bhatt, Rajeev Mehta, Pediatrics, Robert Wood Johnson Medical School-UMDNJ, New Brunswick, NJ.

BACKGROUND: The association between physiologic changes in arterial oxygen delivery and hemodynamics, and alterations in regional tissue oxygenation in extremely premature neonates is not very well understood. Non-invasive monitoring of oxygen delivery and utilization allows the investigation of tissue oxygenation and perfusion during alterations of oxygen supply and physiologic changes in hemodynamics.

OBJECTIVE: To determine the extent to which cerebral and renal tissue oxygenation is dependent on alterations in peripheral oxygen supply and hemodynamics.

DESIGN/METHODS: Near infrared spectroscopy (NIRS) measurements (recorded every 5 seconds over 4 hours) of cerebral (rSO_2-C) and renal (rSO_2-R) tissue oxygenation were linked with the corresponding physiologic parameters (arterial oxygen saturation [Sao_2], systolic [SBP], diastolic [DBP], mean [MBP]) blood pressure and heart rate (HR) in seven extremely preterm infants on nasal CPAP for apnea of prematurity. The cerebral and renal fractional oxygen extraction (rO_2-C and rO_2-R) were calculated using the SaO_2, and rSO_2-C and rSO_2-R data. The cerebral and renal oxygenation and extraction was evaluated in association with alterations in peripheral oxygen saturation and hemodynamic parameters.

RESULTS: No episodes of hypoxemia or apnea were recorded during the continuous monitoring. The episodes of bradycardia corresponded with SaO_2 <80% in 13% of the measurements (N=2130). Multiple regression analysis did not reveal any significant impact of the short (duration of 5-seconds) of bradycardia on the cerebral and renal tissue oxygenation and oxygen extraction. However, the rSO_2-C and rSO_2-R were significantly dependent on the normal variation in SBP and MBP. Although regional tissue oxygenation was less likely to be associated with alterations in SaO_2, oxygen extraction by the cerebral and renal tissue decreased significantly when the SaO_2 was <70%.

CONCLUSIONS: The maintenance of adequate cerebral and renal oxygenation during the transient but severe arterial desaturations in stable nonmorphometric preterm infants receiving CPAP is at the expense of reduced tissue oxygen extraction. Although the clinical impact of such an association was not evaluated in the present study, the decreased cerebral oxygen extraction could be prognostically unfavorable for the development of hyphoxia-related cerebral insults.

200 11:00 AM Fellow in Training Blood Glucose Levels and ROP in ELBW Infants Raul Chavez-Valdez, Christoph U. Lehmann, Elizabeth A. Cristofalo, Jane E. Mcgowan, Pediatrics, The Johns Hopkins Univ School of Medicine, Baltimore, MD; Neonatology, St. Christopher’s Hospital for Children/DUCOM, Philadelphia, PA.

BACKGROUND: Hyperglycemia (blood glucose >150 mg/dl) occurs in up to 45% of extremely low birth weight (ELBW) infants. Some studies suggest that hyperglycemia increases risk for severe retinopathy of prematurity (ROP).

OBJECTIVE: The objective of the present study was to investigate the relationship between blood glucose levels and development of ROP in a cohort of ELBW infants.

DESIGN/METHODS: Data were collected retrospectively from a cohort of infants with BW <1000g born between March 1, 2004 and February 28, 2007 and admitted to the NICU at Johns Hopkins Hospital within the first 24 hours of life. Data extracted from the electronic medical record or by chart review included demographics, Apgar scores, use of O2, steroid Rx, inotrope Rx, infections and insulin Rx, in addition to all recorded laboratory and bedside blood glucose measurements during the first 10 after birth. Univariate logistic regression was performed to identify potential ROP risk factors. Significant variables were then used in a multivariate logistic regression. Analysis of effect of glucose levels was performed using episodes of high (>200 or >150 mg/dL) and low (<50 and <40 mg/dL) glucose, and, separately, using a cumulative, time-weighted glucose level (TWGL) derived from a plot of glucose values x time for each 24th hour.

RESULTS: Data from 123 infants were included in the analysis (55% male; 59% African American; mean GA 26.6 wk; mean BW 782g and median APGAR 1/5 min 4/7). In the univariate univariate regression, TWGL, low birth weight, gender, sepsis, surfactant use and steroid use were significantly associated with an increased incidence of severe, but not mild, ROP. In the multivariate logistic regression including these 4 variables, 3 reached significance [OR (CI): TWGL > 50 percentile for the cohort [4.8 (1.2-19.0)], gram (+) sepsis [5.1 (1.6-16.1)] and any episode of blood glucose <50 mg/dl [0.17 (0.03-0.5)]

CONCLUSIONS: We conclude that single or multiple episodes of hyperglycemia during the first 10 after birth are not associated with increased risk for severe ROP in ELBW infants. However, overall glycemic status during the first 10 d, as represented by TWGL, was a more significant predictor, of severe, but not mild, ROP. In contrast, infants with low glucose levels (as suggested by values <50 mg/dl) in the first 10d may be less likely to develop severe ROP. Degree of illness, as indicated by sepsis and/or inotrope use, may also contribute to ROP risk in this population.

201 11:15 AM Childhood Syncope Cristina S. Wheeler Castillo, Francis J. DiMario, Health Fellows Program, Trinity College, Hartford, CT; Pediatrics and Neurology, CT Children’s Medical Center, Hartford, CT.

BACKGROUND: Syncope is a sudden, self-limited loss of consciousness and postural tone produced by a diffuse cerebral hypoperfusion. Approximately 60-70% of episodes of syncope are thought to be caused by adolescence. The pathophysiologic of syncope can be stratified into several groups: autonomic neurally mediated reflex syncope, cardiogenic (1°, 2°), cerebrovascular insufficiency, orthostatic, pseudosyncope, and suffocation. Convulsive syncope is common in children and may be misdiagnosed as epilepsy.

OBJECTIVE: The primary aim of the study was to systematically categorize the etiology of syncope in pediatric outpatients referred for neurological evaluation and to determine the frequency of concurrent epilepsy. A secondary aim was to determine what clinical/laboratory information is most useful in distinguishing syncope etiologies.

DESIGN/METHODS: In this IRB approved retrospective study we applied uniform diagnostic criteria to clinical event descriptions, examination and ancillary testing results for each subject were coded and analyzed using descriptive statistics and frequencies.

RESULTS: There were 141 subjects, 90 girls (63.8%) with a mean age of 10.9(s.d. ± 4.9) years. Prior to referral, 36/141 subjects (25%) were evaluated in the ER for syncope. There were 92 patients referred for syncope, 18 for epilepsy, 29 for syncope and convulsions, and 2 for both syncope and epilepsy. Of the syncope referrals, 83/92 were found to have syncope, and 9/92 were found to have syncopal convulsions. Of the epilepsy referrals, 5/18 were found to have epilepsy, and 12/18 were found to have convulsions, 1/18 was found to have epilepsy and convulsions, and 1/18 was found to have epilepsy, syncope, and convulsions. An EEG was obtained in 64.7%, MRI/CT in 34%, and EKG in 25.2%, all were normal or non-diagnostic. In subjects who underwent; head-upright tilt table test (HUTT), Holter monitoring and ancillary blood testing only 4/192 tests (2.1%) were diagnostic. A mechanism of primary neurological was identified in 78% (112/141) subjects.

CONCLUSIONS: Although 38% of subjects had syncope convulsions only 1.4% (2/141) had concurrent epilepsy. A detailed medical history was the most useful diagnostic tool.

202 11:30 AM Peak-To-Peak Amplitude in Neonatal Brain Monitoring of Premature Infants Deirdre O’Reilly, Michael Navakatikyan, Marcia Filip, Deirde Greene, Linda J. Van Marter, Newborn Medicine, Children’s Hospital Boston, Boston, MA; Pediatrics, Harvard University School of Medicine, Boston, MA; Brainz Instruments, Ltd., Auckland, New Zealand; Neonatal Medicine, Brigham and Women’s Hospital, Boston, MA.

BACKGROUND: Advances in newborn intensive care have not led to prevention of brain injury among preterm infants. Ultrasound, the primary diagnostic tool currently used to assess brain injury, is of limited utility in early detection of white matter disease. A relatively new modality, reduced-magnitude electroencephalography (EEG), such as 2-channel EEG monitors, have been used to detect seizures and predict neurodevelopmental outcome among term infants following hypoxic-ischemic injury. Brain monitoring among preterm infants using these devices has been less widely investigated. In this study, we investigate whether a new representation of brain monitoring — called rEEG, measuring peak-to-peak amplitude (Navakatikyan, Proceedings of 8th World Congress on Perinatal Medicine, 9/2007), reduces artifact and yields information useful in assessing...
205 10:00 AM

Fellow in Training

Inhibition of NF-κB Activation by Preventing IκB-β Degradation

Improves Neonatal Survival in Hyperoxia and Preserves Lung Architecture

Clyde J. Wright, Guang Yang, Phyllis A. Dennery, Pediatrics, Children’s Hosp of Philadelphia, Phila, PA.

BACKGROUND: The transcription factor NF-κB regulates the cellular response to inflammatory and oxidant stimuli. Several models have shown that NF-κB activation is preterm and neonatal models when compared to adults. The pathway leading to hyperoxia-induced NF-κB activation remains to be elucidated, and it is unknown whether altering the exaggerated NF-κB activation in the neonate would protect against oxygen toxicity.

OBJECTIVE: Using wild type (ICR) and IκB-β knock-in mice (AKBI), in which the IκB-β gene is replaced by IκB-β-CDNA, we sought to characterize differences in the timing, degree and mechanism NF-κB activation following exposure to hyperoxia, and the effect on lung architecture and survival.

RESULTS: ICR and AKBI mice were exposed to hyperoxia(95% O2) or room air beginning on the day of birth. Control and treated mice were sacrificed at 0/2(4/2 hrs)/3(3/1 pm). Cytosolic and nuclear extracts were prepared from homogenized lung specimens. Cytosolic levels of the inhibitory proteins IκB-α and IκB-β were determined by Western blot. Nuclear extracts were evaluated for NF-κB consensus sequence binding by electrophoretic mobility shift assay (EMSA). Radial alveolar counts were performed on samples obtained at 72 hrs (n=3/1 pm). Survival curves for ICR(n=36) and AKBI(n=30) mice were generated through 14 days of hyperoxia.

RESULTS: ICR mice showed no change in IκB-β protein levels with hyperoxia. As expected, AKBI mice lacked IκB-α. Baseline levels of IκB-α were not different between groups. In the ICR, IκB-β protein decreased after 8 hrs of hyperoxia, and recovered by 24 hrs. In contrast, AKBI mice showed significantly increased IκB-β after 8 hrs of hyperoxia compared to ICR(p<0.05). ICR mice showed increased NF-κB consensus sequence binding after 8 and 24 hrs of hyperoxia by EMSA compared to AKBI. Following 72 hrs of hyperoxia, ICR mice showed a significant decrease in RAR( p<0.01), while AKBI had preserved lung architecture compared to controls. ICR mice had 80% mortality after 14 days of hyperoxia, while AKBI displayed 60% survival(p<0.05).

CONCLUSIONS: We report for the first time that hyperoxia-induced IκB-β degradation results in NF-κB activation. Specific inhibition of the NF-κB activation pathway in vivo improved survival and lung architecture changes in neonatal mice exposed to hyperoxia.

206 10:15 AM

EnRβ Signaling in Hypoxia- and Hypoxia-Induced Lung Epithelial Cell Injury

Washa Liu, Heshi-ki Koo, Jonathan M. Davis, Heber C. Nielsen, Christiane E.L. Dammann, Newborn Medicine, Floating Hospital for Children, Boston, MA; Pediatrics, Boston Children’s Hospital, Boston, MA; Pediatric Medicine, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel.

BACKGROUND: Hypoxia causes cell injury or cell death secondary to ATP depletion following the switch to anerobic metabolism. Oxygen therapy is widely used to treat disease processes that cause hypoxia. However, prolonged exposure to hypoxia leads to the generation of excessive reactive oxygen species that cause acute lung injury and contribute to the development of bronchopulmonary dysplasia. ErbB receptors (ErbB1, ErbB2, ErbB3, and ErbB4) have key roles in fetal lung development and repair to maintain the homeostatic integrity of lung structure and function. Little is known about ErbB receptor regulation in hypoxia- and hyperoxia-induced injury and repair.

OBJECTIVE: We hypothesize that exposure to hypoxia influences the development of hypoxia-induced lung injury, ErbB signaling, and important regulatory repair from hypoxia and hyperoxia-induced lung injury.

DESIGN/METHODS: Mouse lung epithelial (MLE)12 cells were treated with 10%O2 for 10%O2, for 1 hour, followed by 21% or 95%O2, treatment for 48 hours. Control cells were either exposed to 21%O2 or 95%O2 only. H h.thymidine or Hcholine were added in the last 24 hours to measure cell proliferation and choline incorporation, respectively. Cell viability was assessed by MTS assay. Effects on ErbB receptor expression were studied by Western blot.

RESULTS: Exposure to 95%O2, significantly reduced MLE12 cell viability by (50%), proliferation (by 37%), and choline incorporation (by 33%) compared to room air controls. This was accompanied by an overall ErbB receptor down-regulation (by 25-77%), most prominently of ErbB4. An initial exposure (pre-conditioning) to 10%O2 followed by 95%O2, significantly improved cell viability (by 25%) and ErbB4 protein expression (by 25%) compared to hyperoxia alone, but cell proliferation was inhibited even further. Hypoxia pre-treatment did not affect choline incorporation compared to cells exposed to 95%O2 alone. After 48 hours of recovery in room air, cells pre-treated with 10%O2 showed a recovery of cell proliferation and ErbB4 receptor expression.

CONCLUSIONS: Hypoxia causes lung epithelial cell damage, impaired surfactant phospholipid synthesis, and impaired pulmonary epithelial cell receptor expression. Pre-conditioning with short term hypoxia improved cell viability and increased ErbB4 expression, suggesting that hypoxia may stimulate signaling pathways involved in ErbB pre-activation that protect against hyperoxic cell injury. (NIH HL 04437, HL37930, DFG 378/3-1).

207 10:30 AM

Bach-1 Modulates Heme Oxygenase-1 (HO-1) Transcription in the Newborn in Hyperoxia

Sacha Kassovska-Bratinova, Guang Yang, Kazuhiko Igarashi, Phyllis A. Dennery, Pediatrics, CHOP, Phila, PA; Pediatrics, Univ of Penn SOM, Phila, PA; Biochemistry, Tokohu Univ SOM, Sendai, Japan.

BACKGROUND: Hyperoxia regulates the induction of HO-1, the rate-limiting enzyme of heme degradation and a phase II antioxidant defense, is induced in the lungs of animals exposed to hyperoxia. However, in a rat model newborns show reduced inducibility of HO-1 mRNA after hyperoxic exposure, compared to adults. While mild overexpression of this enzyme is protective against hyperoxic lung injury, high levels are detrimental.

OBJECTIVE: In order to understand more about the differential response of newborn and adult animals to HO-1 induction, we studied HO-1 in a mouse model.

DESIGN/METHODS: Wild type FVB mice and transgenic FVB mice (HO-1-luc), expressing the luciferase reporter under the control of 15 kb from the mouse HO-1 promoter region and upstream regulatory sequences (gift from Dr. C.Contag) were used. Adult (2 month old) and newborn(+12 h) mice were exposed to 95% oxygen over a period of 72 hours. HO-1 promoter activity was assessed by in vivo imaging. Lung total mRNA...
and whole lung lysates and nuclear extracts were prepared. HO-1 mRNA levels were determined by RT-PCR (ABI). Protein levels were determined by Western blot analysis using antibodies against HO-1 and Bach-1, the repressor of HO-1 transcription. Bach-1 binding to HO-1 distal enhancers at basal levels was evaluated relative to input, using chromatin immunoprecipitation (Upstate). Bach-1 binding to the antioxidant response element (ARE) 5’TTTATCCTGGTAGCTATGGTT3 was detected by supershift gel retardation assay.

RESULTS: HO-1-luc mice had no increased light emission in hypoxia, compared to the adult mice, which showed a significant (2 fold) increase at each time point tested. Newborns had a smaller (3.5 fold) increase, compared to the adults (7.9 fold) in hypoxia. Bach-1 protein levels were significantly higher in the neonatal lung at baseline. In hypoxia there was enhanced nuclear protein-DNA binding to the ARE, and this binding increased in a time-dependent manner. Supplementation with nicotine was found that Bach-1 contributed to this complex. In the newborn lung at baseline chromatin immunoprecipitation revealed increased Bach-1 binding to the HO-1 distal enhancers and in hypoxia enhanced binding was observed.

CONCLUSIONS: The negative modulation of HO-1 gene transcription in the newborn in hypoxia may be related to enhanced Bach-1 binding to the ARE. This may serve to more tightly regulate HO-1 expression in the newborn in response to oxidative stress.

208 10:45 AM
Heparin-Binding VEGF Isoforms Attenuate Hyperoxic Lung Injury in Explanted Mouse Embryonic Lung

Americo E. Esquibel, Alia Bazy-Asaad, Lloyd G. Cantley, Pediatrics, Section of Respiratory Medicine, Yale University, New Haven, CT; Medicine. Section of Nephrology, Yale University, New Haven, CT.

BACKGROUND: Oxygen tension has been shown to modulate physiologic and structural properties of lung morphogenesis, a process that is tightly regulated by numerous factors and cytokines. Among the latter is vascular endothelial growth factor (VEGF) which is present in much higher levels in the newborn than in the adult. We recently demonstrated a moderate decrease in lung growth 3 days after birth (less than 10% of the weight at 3 weeks) and a significant decrease in fetal lung growth 11.5% at 15 days of gestation.

OBJECTIVE: Because hyperoxia a reduces VEGF expression in airway epithelial cells, and b) can impair airway development (levels of 50% in the explanted lung can cause a moderate decrease in lung growth), we asked whether heparin-binding VEGF isoforms might affect the expression of PA (50%O2) or the growth of lung explants.

RESULTS: Nineteen rat lung explants were explanted for 2 days and cultured in oxygen levels of 3%O2 or 50%O2 for another 2 days. Total number of lung bud branches and total branch length were quantitated.

RESULTS: Number of branches and total branch length were significantly reduced after 2 days in 50%O2 as compared to 3%O2 (17.4±2.8 vs 27.8±4.2 and 2.6±0.5 mm vs 4.5±3.2 mm p<0.05). Explants that were injected with adenovirus encoding VEGF165 or VEGF188 and grown for 2 days in 50%O2 resulted in partial reversal of the decrease in bud branching and total branch length (3%O2: 27.8±4.2 and 4.5±3.2 mm; 50%O2: 27.8±2.8 and 2.6±0.5 mm; 50%O2+VEGF 165: 24.3±3.7 and 3.5±0.5 mm p<0.05 vs 50%O2 alone for both total number of branches, 50%O2+VEGF 188: 22.3±2.9 and 3.1±4.0 mm p<0.05 vs 50%O2 alone).

CONCLUSIONS: We conclude that moderate hypoxia impairs lung bud branching morphogenesis and growth, effects that are partially reversed by expression of heparin-binding VEGF isoforms and suggest that manipulation of this pathway might provide a therapeutic approach for the prevention of hyperoxic airway toxicity.

209 11:00 AM
Lung Contusion Alters Pulmonary Vasoreactivity in Rats

Satyan Lakshminrusimha, Bruce A. Davidson, Rita M. Ryan, Jadwiga D. Helinski, Krishnan Raghavendran. Pediatrics, SUNY, Buffalo, NY; Anesthesia, SUNY, Buffalo, NY; Surgery, SUNY, Buffalo, NY.

BACKGROUND: Lung contusion is a common complication of blunt chest trauma. We recently described a rat model for isolated bilateral lung contusion from blunt chest trauma (Anesth Analg 2005;101:1482).

OBJECTIVE: To determine the relationship between nicotine, smooth muscle contraction, and fetal lung organogenesis by altering phosphorylation of muscle contraction proteins.

RESULTS: Constriction to LNA was significantly diminished in PA following lung contusion 217 ± 22

Possible Prevention Strategies

Adelaide A. Oshodi, Kevin Dysart, Alison Cook, Elena Rodriguez, Yan Zhu, Thomas H. Shaffer, Thomas L. Miller, Pediatrics, Thomas Jefferson University Hospital, Philadelphia, PA; Nemours Research Lung Center, Alfred I duPont Hospital for Children, Wilmington, DE; Physiology and Pediatrics, Temple University School of Medicine, Philadelphia.

BACKGROUND: Intubated neonates on ventilatory support are at risk for airway injuries. Such injuries involve inflammatory mediators that are implicated in worsening of lung disease in this population. Rebound and protein dysfunction are known risk factors for such injuries, and it is likely that the act of intubation and reintubation alone may contribute to airway and lung injury.

OBJECTIVE: To show the effect of repeated intubation on airway injury and to examine the effect of inhibited or intravenous (IV) anti-inflammatory steroids on reintubation injury.

RESULTS: Neonatal piglets (2-6 old, 2.5 ± 0.4 kg) were intubated and randomized to 4 groups (n=8 each) to be followed over 4 hr. Groups were SHAM (not reintubated), injured (INJ) i.e., reintubated every
Non-acidotic (NA) and antibody negative (Ab-) at presentation (A1c and dose of exogenous insulin as well as fasting markers of insulin reserve: Insulin-like Growth Factor dose correlated with IGFBP-1 (p=0.029) and C-peptide (p=0.004). A1C and insulin dose changed significantly during follow-up (SAS Proc).

RESULTS: 66 subjects (30M, 36F), (age 14±2.7y) participated. Baseline A1C and IGFBP-1 levels were similar across groups (p=0.014), over time, C-peptide did not change significantly. While baseline fasting C-peptide levels differed between groups (p=0.016), over time, C-peptide did not change significantly across groups.

OBJECTIVE: To determine the timeline of insulin secretion.

CONCLUSIONS: The present study is the first report on the prevalence, prognostic significance and risk factors for hypoglycemia at glucose values <40 mg/dl. The difference was statistically significant (p=0.001). Trends in beta cell function via HOMA were likewise significant (48±8 to 35±5 and 20±4 to 49±2 for NGT, IGT and T2DM respectively, p≤0.003). Insulin sensitivity did not differ across these groups when calculated using HOMA or QUICKI. Analysis of fasting and 2 hour insulin values showed no significant change. ROC analysis of HbA1c revealed that a cut-off point of 6.0% was 100% sensitive and 85% specific in identifying children with T2DM (AUC=0.94).

CONCLUSIONS: The present study is the first report on the prevalence, prognostic significance and risk factors for hypoglycemia at glucose values <40 mg/dl. The difference was statistically significant (p=0.001). Trends in beta cell function via HOMA were likewise significant (48±8 to 35±5 and 20±4 to 49±2 for NGT, IGT and T2DM respectively, p≤0.003). Insulin sensitivity did not differ across these groups when calculated using HOMA or QUICKI. Analysis of fasting and 2 hour insulin values showed no significant change. ROC analysis of HbA1c revealed that a cut-off point of 6.0% was 100% sensitive and 85% specific in identifying children with T2DM (AUC=0.94).

OBJECTIVE: To determine the timeline of insulin secretion.

CONCLUSIONS: The present study is the first report on the prevalence, prognostic significance and risk factors for hypoglycemia at glucose values <40 mg/dl. The difference was statistically significant (p=0.001). Trends in beta cell function via HOMA were likewise significant (48±8 to 35±5 and 20±4 to 49±2 for NGT, IGT and T2DM respectively, p≤0.003). Insulin sensitivity did not differ across these groups when calculated using HOMA or QUICKI. Analysis of fasting and 2 hour insulin values showed no significant change. ROC analysis of HbA1c revealed that a cut-off point of 6.0% was 100% sensitive and 85% specific in identifying children with T2DM (AUC=0.94).
RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

BACKGROUND: Although feeding is the treatment for asymptomatic neonatal hypoglycemia, some clinicians are concerned about the introduction of early enteral feeding among small and gestational age newborns. A single enteral feeding may be an effective means to correct hypoglycemia. However, enteral feeding has not been systemsically studied.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

BACKGROUND: Although feeding is the treatment for asymptomatic neonatal hypoglycemia, some clinicians are concerned about the introduction of early enteral feeding among small and gestational age newborns. A single enteral feeding may be an effective means to correct hypoglycemia. However, enteral feeding has not been systemsically studied.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA. Addition of nicotine to low butyrate-differentiated PC12 cells resulted in increased TH mRNA.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.

RESULTS: Depending on the timing of this treatment, reduction of CFTR function resulted in phenotypes well as insulin resistance assessed.

OBJECTIVE: To evaluate the effect of one enteral feeding on the correction of asymptomatic hypoglycemia in newborn infants and to determine whether the intervention of glucose screening affects the initiation of breastfeeding.

CONCLUSIONS: A single enteral feeding normalized a low glucose screen in most infants. The response was different in infants with low (13%) vs normal (24%) glucose screens.
<table>
<thead>
<tr>
<th>Name</th>
<th>Abstract Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schiffman, Alisa B.</td>
<td>215</td>
</tr>
<tr>
<td>Seiden, Jeffrey A.</td>
<td>74</td>
</tr>
<tr>
<td>Seligman, Neil</td>
<td>22</td>
</tr>
<tr>
<td>Seneviratne, Hashini R.</td>
<td>143</td>
</tr>
<tr>
<td>Shah, Shetal I.</td>
<td>255</td>
</tr>
<tr>
<td>Shariel, Shimi</td>
<td>34</td>
</tr>
<tr>
<td>Sharif, Iman</td>
<td>169, 265</td>
</tr>
<tr>
<td>Shustak, Rachel</td>
<td>248</td>
</tr>
<tr>
<td>Sibley, Sara D.</td>
<td>17, 145</td>
</tr>
<tr>
<td>Sindall, Celina C.</td>
<td>146</td>
</tr>
<tr>
<td>Singh, Neetu</td>
<td>236</td>
</tr>
<tr>
<td>Sinha, Sunil K.</td>
<td>185</td>
</tr>
<tr>
<td>Skae, Catherine C.</td>
<td>134, 299</td>
</tr>
<tr>
<td>Skowron, Malgosia</td>
<td>219</td>
</tr>
<tr>
<td>Smith, Sharon R.</td>
<td>297</td>
</tr>
<tr>
<td>Soares, Fernando A.</td>
<td>44</td>
</tr>
<tr>
<td>Spinillo, Dawn</td>
<td>268</td>
</tr>
<tr>
<td>Sridhar, Shanthy</td>
<td>224</td>
</tr>
<tr>
<td>Srinivasan, Pinchi</td>
<td>232</td>
</tr>
<tr>
<td>Srivastava, Meena A.</td>
<td>289</td>
</tr>
<tr>
<td>Stola, Anita</td>
<td>89</td>
</tr>
<tr>
<td>Stoller, Jason Z.</td>
<td>105</td>
</tr>
<tr>
<td>Stone, Brian S.</td>
<td>196</td>
</tr>
<tr>
<td>Suk, Debbie</td>
<td>191</td>
</tr>
<tr>
<td>Sukumar, Sukesh</td>
<td>186</td>
</tr>
<tr>
<td>Sward, Honey E.</td>
<td>135</td>
</tr>
<tr>
<td>Tan, Cheryl C.</td>
<td>96</td>
</tr>
<tr>
<td>Thuruthel, Elizabeth</td>
<td>242</td>
</tr>
<tr>
<td>Tokovic, Edisa</td>
<td>153</td>
</tr>
<tr>
<td>Upadhyay, Kiran</td>
<td>222</td>
</tr>
<tr>
<td>Vangeepuram, Nita</td>
<td>131, 158, 159</td>
</tr>
<tr>
<td>Verma, Rita P.</td>
<td>251, 254</td>
</tr>
<tr>
<td>Vetrano, Anna</td>
<td>107</td>
</tr>
<tr>
<td>Vicencio, Alfim G.</td>
<td>132</td>
</tr>
<tr>
<td>Vidavalur, Ramesh</td>
<td>36, 37</td>
</tr>
<tr>
<td>Vijay, Chickajur</td>
<td>243</td>
</tr>
<tr>
<td>Wang, Alice</td>
<td>65</td>
</tr>
<tr>
<td>Weinberg, E.R.</td>
<td>45</td>
</tr>
<tr>
<td>Weissman, Michelle</td>
<td>27</td>
</tr>
<tr>
<td>Weller, Alan S.</td>
<td>163</td>
</tr>
<tr>
<td>Wiesman, Joshua</td>
<td>152</td>
</tr>
<tr>
<td>Woythaler, Melissa A.</td>
<td>125</td>
</tr>
<tr>
<td>Wright, Clyde J.</td>
<td>205</td>
</tr>
<tr>
<td>Yang, Guang</td>
<td>204</td>
</tr>
<tr>
<td>Yap, Vivien L.</td>
<td>30, 148</td>
</tr>
<tr>
<td>York, John M.</td>
<td>250</td>
</tr>
<tr>
<td>Zhang, Huayan</td>
<td>40</td>
</tr>
<tr>
<td>Zook, Kelly J.</td>
<td>147</td>
</tr>
</tbody>
</table>

*Index numerals refer to the Abstract number, not the page number. Only Abstract authors are included in the Index.*
Stay Updated!

Bookmark the Eastern SPR website at www.aps-spr.org/ESPR to stay up to date on dates, abstract submission, and the program for next year’s meeting!

March 13 - 15, 2009

ESPR Program Office
3400 Research Forest Drive, Ste. B-7
The Woodlands, TX 77381
Email: espr-info@aps-spr.org
Phone: 281-419-0052
Web: www.aps-spr.org/ESPR