Mechanically injured human asthmatic fully-
A

In vitro experiments were performed wherein airway epi-
Acute decompensated heart failure (HF) is a major
TGF-β1 in Airway Epithelial
4.7%. There was no
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We evaluated the determinants of StO2 changes in 73
659
Consenting patients with an index admission for HF at a
&T
After an index HF admission, all-cause readmission rates

Risk Factors for All-Cause Readmission after Heart Failure
Admission in Patients with Preserved or Reduced Ejection Fraction
Jonathan S. Siegfried1, Ofer Sagiv1, Eric Berkowitz1, YURI TAKAHASHI1, absolute
people in both normal and reduced EF
Methods Used: Consentng patients with an index admission for HF at a
single medical center were followed prospectively for 30 days. Data regarding demographics, risk factors and discharge plan was collected during the index admission and during any readmission to the center within 30 days. Patients who were not re-admitted within 30 days were contacted and interviewed via telephone for admssions elsewhere.

Summary of Results: 136 patients were enrolled in the study. 3 died during the index admission and were excluded from the analysis. 85 (63.9%) patients had a reduced EF (75%) and 46 (34.6%) had a normal EF; 2 had no EF recorded and were excluded. Overall, 40 (30%) were readmitted within 30 days. There was no significant difference in readmission rates between patients with normal EF and patients with reduced EF (15/46 [33%] vs 25/85 [29%], p=0.43). Patients with a reduced EF were more likely to be readmitted if they had a history of coronary artery disease (CAD, 20/53 [37%] vs 5/32 [15.6%], p=0.025) or a history of stroke (6/11 [54.5%] vs 8/73 [12.0%, p=0.39). There were no patients with history of stroke and normal EF. Use of beta-blockers, ACE inhibitors and aldosterone antagonists did not have a significant effect on readmissions in patients with either reduced or normal EF.
Conclusions: After an index HF admission, all-cause readmission rates within 30 days were similar in patients with normal EF and those with re-
duced EF. History of CAD or stroke was associated with increased risk of readmission in patients with reduced EF but not in patients with normal EF, while HF medications had little effect in either group.

Mitotic Dysynchrony Induces TGF-β1 in Airway Epithelial Progenitor Cells
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Purpose of Study: Mitotic behavior is important for homeostasis in lung diseases with epithelial injury. We showed that while normal airway epithelial cells progress in synchrony through the cell cycle, asthmatic progenitor cells proliferate with a more even distribution. Asthmatic progenitor cells are coincident with elevated secretion of TGF-β1. The purpose of this study was to establish the directionality of mitotic dysynchrony and TGF-β1 secretion.
Methods Used: In vitro experiments were performed wherein airway epithelial progenitor cell mitosis was dysynchronous due to asthma and resynchronized by capture of the G1/S checkpoint via two-hour exposure to dexamethasone, simvastatin, or aphidicolin. Experiments utilized a novel method for inducing mitotic dysynchrony in normal progenitors.

Summary of Results: Mechanically injured human asthmatic fully-
differentiated ALI epithelial mitosis was dysynchronous (G1=[mean:SEM], S,G2,M:47.4±3.8,23.9±6,3,28.7±5.7%relative to normal (71±1,12±2,17±2%). Mitotic capture increased the percent of progenitors in G1. Resynchronization in the asthmatic epithelia reduced basalateral TGF-β1 at 24-hours (TGF-β1 [PBS]=8.285±7.47g/mL,45±177g/mL[DEX],81±267g/mL[SIM],77±507g/mL[APH]). If inflammatory signals are downstream of abnormal mitotic be-
havior, conditioned media would not alter the synchrony of normal pro-
genitors. There was no change in synchrony of these progenitor cells.

Dysynchrony was induced in parallel cultures of normal proliferating ep-
ithelial cells via transient serum starvation. The mixed samples showed
dysynchrony at 6 and 12 hours that resolved spontaneously by 24 hours. The cells grown in mixed conditions show elevated TGF-β1 secretion at 12 hours compared to the controls.

Conclusions: We used a series of experiments where airway epithelial mi-
tosis was de- and resynchronized via G1/S checkpoint manipulation. Mitotic synchrony is the homeostatic state in airway epithelial progenitors and poorly-synchronized mitosis (as in asthma) induces TGF-β1 secretion and a pro-fibrotic airway. This finding establishes rationale for targeting progenitor cell mitotic behavior rather than immune-mediated inflammation.
4 Proteomic Profiling of the CF Secretome

Purpose of Study: CF is caused by mutations in the cystic fibrosis transmembrane conductance regulator (CFTR), resulting in a viscous airway surface liquid (ASL) that impairs mucociliary function and facilitates bacterial adherence, but the molecular basis is unclear. The deficient in vivo host antimicrobial response in CF lungs is potentiated in vitro as functional comparison of secretions from primary CF and non-CF cells at air-liquid interface (ALI) demonstrated decreased CF antimicrobial activity. We hypothesized that expression and secretion of innate immune proteins is altered in CF ASL.

Methods Used: Three sets of life-extended CF (7E5F08/7E5F08) and non-CF human bronchial epithelial cell lines (Fulcher ML et al. 2009) were differentiated at ALI for four weeks. Cells were labeled by stable isotope labeling with amino acids in cell culture (SILAC). Equal volumes of CF and control apical secretions were combined, separated by one-dimensional gel electrophoresis, in-gel digested with trypsin, analyzed by LC-MS/MS and identified proteins were quantified (CF/non-CF). Proteins were filtered by abundance, significance (p<0.05), and differential expression (1.5-fold +/-).

Summary of Results: Gelsolin and complement C3 were two of the most abundant proteins in non-CF secretions and almost two-fold decreased in CF. CF secretions also exhibited a protease/protease inhibitor imbalance and dysregulated innate immune proteins, including decreased members of the complement cascade. The top-scoring IPA network (score = 67) centered on MMP-9, CD44, and fibronectin and identified predominant functions as wound repair, cell movement and morphology, cell-matrix adhesion, actin organization, proteolysis, apoptosis, signal transduction and innate immunity.

Conclusions: Gelsolin, which interacts with actin in CF sputum to decrease viscosity when added exogenously, is secreted by HBE cells and decreased in CF HBE secretions at baseline. The complement cascade, which is constitutively expressed under normal conditions as an innate defense against pathogens, is also down in CF. Dysregulated innate immune proteins in the in vitro secretion model under uninfected, non-inflammatory conditions indicates that the downstream consequences of CFTR in CF airways set the stage for chronic inflammation and infection.

6 Identifying Directional Secretomes of In Vitro Differentiated Primary Normal Bronchial Epithelium
Dinesh Pillai, Binu J. Sankoorikal, Eric Johnson, Jessica Zurko, Angelo Seneviratne, Kristy J. Brown, Yetri Hasholf, Mary C. Rose, Center for Genetic Medicine, Children’s National Medical Center, Washington, DC, United States; Division of Pulmonary Medicine, Children’s National Medical Center, Washington, DC, United States.

Purpose of Study: As a polarized barrier, airway epithelium interacts with local stimuli from the external environment (i.e. airborne pathogens) at its apical surface and transmits a signal to the rest of the body through its basal lamina. This leads to local and systemic changes based on these external stimuli. Maintaining this barrier and its polarity is vital to preserving directional signaling between the apical and basolateral sides and is responsible for homeostatic lung function. Our aim is to establish an in vitro airway secretion model for normal epithelium as a tool to study relevant global protein changes that occur in lung diseases.

Methods Used: Normal human primary bronchial epithelial (HBE) cells were differentiated to respiratory tract epithelium (n=3) under air-liquid interface conditions. Apical and basolateral secretions were collected from each compartment at 24h under homeostatic conditions and processed for secretome profiling. Only proteins present in all 3 HBE secretions and unique to compartment or differentially expressed between compartments (paired Student t-test; p<0.05) were included in final analysis. Bioinformatic analysis included Uniprot, SignalP, and Panther Database. Results of secretome profiles were validated by Western blot and ELISA.

Summary of Results: A total of 246 proteins were identified in all HBE secretomes. Based on protein abundance, 51% were classified as secreted proteins (35% secreted, 16% exosomal). A total of 67 unique apical, 8 unique basolateral and 14 differentially secreted proteins were identified in apical and basolateral secretomes. Bioinformatic analysis identified unique patterns of apical and basolateral biologic processes. Expression of annexin A4 (apical) and desmoglein-2 (basolateral) were validated.

Conclusions: This is the first study demonstrating proteomic analysis of in vitro airway epithelial apical and basolateral secretomes and reinforces that protein networks consistent with homeostatic function are present in normal epithelium. Applying this directional secretome model to future lung disease studies may lead to candidate biomarkers identification of functional epithelial abnormalities.

7 High Levels of Circulating MicroRNAs from miR17-92 Family Indicate Favorable Outcomes in Ovarian Cancer Patients (OvCa)
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Purpose of Study: Over 75% of women are diagnosed at stage III OvCa. Treated with surgery and chemotherapy, only 1/5th are cured. Patterns of circulating miRs may explain the role of surgery and chemotherapy in cure.

Conclusions: Patients with RA undergoing PCI for AMI have a 30% lower in-hospital mortality. Age, female gender, CHF, CVD, chronic pulmonary disease, acute renal failure, cardiogenic shock, gastrointestinal bleeding and use of intraaortic balloon pump are all independent predictors of in-hospital mortality.
Purpose of Study: IL-33, a new member of the IL-1 cytokine family, may be atheroprotective via induction of a Th1-to-Th2 immunologic switch. However, to date, the role of IL-33 in cardiovascular disease remains unclear. The purpose of this study is to assess the level of IL-33 in atrial patients and its effect on the expression of proteins involved in cholesterol transport.

Methods Used: Plasma IL-33 was measured by ELISA (GenWay Biotech) in 10 healthy volunteers (NHC) and 10 atrial patients (AP). THP-1 human macrophages were exposed to 10% NHC or AP plasma (18 hours). mRNA was isolated and reverse transcribed. Message levels were quantified by QRT-PCR for the efflux proteins ABCA1 and ABCG1 and the scavenger receptors CD36 and SR-A1. Expression was normalized to the housekeeping gene, GAPDH.

Summary of Results: IL-33 levels in AP ranged from 2-500ng/ml, significantly higher than NHC (P<0.01). Exposure of THP-1 macrophages to AP plasma downregulated ABCA1 and ABCG1 mRNA by 34.0±12.5% and 51.0±12.5%, respectively (n=3, P<0.01). Plasma from AP with lowest level of IL-33 (<10ng/ml) correlated with the lowest mRNA levels of ABCA1 and ABCG1. CD36 was upregulated to 143.4±36.5% (P<0.01, n=3). The AP with the highest IL-33 level (500ng/mL) correlated with highest CD36 mRNA.

Conclusions: Plasma from AP induces changes in cholesterol flux gene expression, potentially reflecting a pro-atherogenic state. Given the wide variety of cellular responses regulated by IL-33, further investigation with a larger atrial sample size will allow us to clarify the role of IL-33 in cholesterol homestasis in these patients.

Determinants of Late Acute Rejection in Pediatric & Adolescent Kidney Transplant Recipients

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Purpose of Study: Long-term graft function has not kept pace with short-term graft survival in children. Late Acute Rejection (LAR) episodes are in part responsible for the lack of long-term graft survival. The risk factors for LAR in pediatric & adolescent in kidney transplant (Tx) recipients are not well defined.

Methods Used: A retrospective analysis of pediatric & adolescent kidney Tx recipients ≥1 yr of age at the time of Tx with at least 1 yr follow-up. Of 73 Tx recipients, 64 were included in the analysis. 9 recipients were excluded for either graft loss or early acute rejection (occurring ≥6 months post-Tx). The included patients were divided into two cohorts; control group-41 & LAR group-23 patients (76 months at time of rejection). Donor-Specific Antibodies (DSA) were obtained at the time of clinical suspicion of LAR.

Summary of Results: LAR was diagnosed by clinical & histological criteria in 23 (35.9%) Tx recipients. Mean age at the time of LAR was 14.7±4.8 yrs with 60.8% ≥12 yrs of age. Mean follow-up period was 31.2 (3.9-79) months. Significant clinical & demographic factors that were associated with LAR by univariate analyses in the cohort are shown below in table1. Other variables with P<0.10 in univariate analyses were included in multivariate logistic-regression analyses with the odds ratio of each variable shown below in table2.

Conclusions: Development of de-novo DSA, DGF, & increased variability of TAC levels are risk factors for LAR in pediatric & adolescent. The effect of non-adherence on LAR couldn’t be demonstrated in multivariate analyses.

These results need to be validated through a prospective multi-center study.

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**Table 1.**

<table>
<thead>
<tr>
<th>Significant Variables (n)</th>
<th>LAR</th>
<th>Control</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>de-novo DSA 26 (40.6)</td>
<td>15 (52.2)</td>
<td>0.22 (0.63)</td>
<td>0.11 (0.36)</td>
</tr>
<tr>
<td>Delayed Graft Function (DGF) 16 (25)</td>
<td>10 (43.1)</td>
<td>0.45 (0.84)</td>
<td>0.30 (0.45)</td>
</tr>
<tr>
<td>Non-adherence 13 (17.2)</td>
<td>8 (34.8)</td>
<td>0.15 (0.54)</td>
<td>3 (7.3)</td>
</tr>
<tr>
<td>Coefficient Variation (CV) % of TAC Levels</td>
<td>41.8</td>
<td>34.2-49.4</td>
<td>34.6</td>
</tr>
</tbody>
</table>

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MiRs-17-92 have essential roles in embryo but are deleted in 20% of ovarian cancers. Aim: To identify changes in microRNA patterns in plasma pre-postop for OvCa & chemotherapy and correlate with outcomes.

Methods Used: Between 2004 and 2011 we investigated patterns of plasma miRNAs collected before, after surgery, during and after chemotherapy in 50 patients presenting for surgery for ovarian cancer and 11 age and race-matched normal controls. We also collected blood at ovarian cancer relapse and tumor and benign ovary for miRNA analysis. 2-sample t-test was used comparison and ANOVA followed by Benjamin-Hochberg method for multiple testing to limit the false discovery rate (FDR) at the 5% level. All tests were 2-tailed, results with P<0.05 were considered statistically significant.

Summary of Results: Fifty patients were operated for EOC mean age at surgery 65 (range 51-78), 11 race matched women consented as controls – mean age of 58 (range 25-67). Four patients were cured, 21 patients died within 36 months of their diagnosis and 21 patients who survived long term not cured but continue to receive chemotherapy. Preop plasma of patients who survived <36 (SOS) or >60 months. Survivors had pre-operative plasma miR: miR-25 15 fold higher than SOS p<0.04; miR-196 18 fold higher than SOS p<0.03; miR-17 30 fold higher than SOS p<0.03. Changes in miR-17-92 cluster were the most dramatic in patients with OvCa treated with surgery and chemotherapy. Patients in whom miR-17-92 were higher prior to surgery had better long-term outcome compared to those in whom miR-17-92 remained low during chemotherapy.

Conclusions: During chemotherapy, levels of miR-17-92 change dramatically compared to the pre-surgical levels. Shifts in microRNAs from the cluster 17-92 observed in the nadir phase of adjuvant chemotherapy Ov Ca patients correlate with long term outcomes. Patients with higher circulating miR-17-92 levels in pre-surgical plasma levels tended to have better long-term survival.
Predictors of In-Hospital Mortality in Hospitalized Patients with Thoracic Thromboembolic Purpura

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Purpose of Study: Despite the widespread availability of plasmapheresis, acquired thoracic thromboembolic purpura (TTP) is associated with a high mortality rate. There is paucity of data on predictors of poor outcome in this population.

Methods Used: The National Inpatient Sample (NIS) is the largest available all-payer inpatient care database in the United States. It contains data from approximately 8 million hospitalizations each year. We used the NIS database for the years 2001 through 2010, and identified our study population based on the presence of ICD 9-CM codes for both TTP and therapeutic plasmapheresis. Data on several baseline demographic and clinical characteristics were used to assess the incremental value of GSM measurements in predicting CV risk.

Summary of Results: Of the 4032 patients (68% women, mean age 52 years) identified with TTP who also underwent plasmapheresis, in-hospital mortality was 11%. By multivariate logistic regression analysis, the predictors of increased in-hospital mortality were older age (OR: 1.032, 95% CI: 1.024 - 1.041; p<0.001), acute myocardial infarction (AMI) (OR: 1.892, 95% CI: 1.244 - 2.879; p=0.003), acute renal failure (OR: 2.745, 95% CI: 2.108 - 3.575; p<0.001), congestive heart failure (CHF) (OR: 1.656, 95% CI: 1.173 - 2.338; p=0.004), acute cerebrovascular disease (CVD) (OR: 2.680, 95% CI: 1.867 - 3.847; p<0.001), cancer (OR: 2.490, 95% CI: 1.826 - 3.395; p<0.001) and sepsis (OR: 2.594, 95% CI: 1.876 - 3.586; p<0.001). Tobacco use (OR: 0.521, 95% CI: 0.342 - 0.795; p=0.002) and hypertension (OR: 0.432, 95% CI: 0.331 - 0.564; p<0.001) were negative independent predictors of in-hospital mortality.

Conclusions: In this large registry, patients with TTP who received plasmapheresis had an in-hospital mortality rate of 11%. Predictors of in-hospital mortality were older age, AMI, acute renal failure, CHF, acute CVD, cancer, and sepsis. Tobacco use and hypertension were negative independent predictors of in-hospital mortality.

Table 2.

<table>
<thead>
<tr>
<th>Clinical Characteristics</th>
<th>OR</th>
<th>SD (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug User</td>
<td>1.15</td>
<td>1.09 - 1.21</td>
<td>0.002</td>
</tr>
<tr>
<td>TTP</td>
<td>1.16</td>
<td>1.13 - 1.19</td>
<td>0.001</td>
</tr>
<tr>
<td>CV % of TAC Levels</td>
<td>1.06</td>
<td>0.99 - 1.11</td>
<td>0.057</td>
</tr>
<tr>
<td>Non-asthenic</td>
<td>4.4</td>
<td>3.09 - 4.67</td>
<td>0.227</td>
</tr>
<tr>
<td>ILEA DR-Mismatch (T vs. Other)</td>
<td>3.2</td>
<td>1.01 - 1.56</td>
<td>0.821</td>
</tr>
<tr>
<td>Age at T vs. 5 yrs</td>
<td>0.69</td>
<td>0.46 - 0.99</td>
<td>0.088</td>
</tr>
<tr>
<td>Race (A-A vs. Others)</td>
<td>1.6</td>
<td>1.29 - 2.66</td>
<td>0.039</td>
</tr>
</tbody>
</table>

MP1

The Relationship of the Carotid Artery Gray Scale Median to Anatomical and Functional Measures of Cardiovascular Risk

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Purpose of Study: The Grey scale median (GSM) is a measure of echogenicity on ultrasound images and has been used to characterize carotid plaque and intima-media density, and to assess cardiovascular (CV) risk. Few studies have evaluated the relationship of intima-media echogenicity to other CV risk factors. Bone demineralization, carotid intima-media thickness and functional measures such as arterial stiffness are associated with higher CV event rates. We evaluated the relationship of the carotid GSM to these CV risk measures and to the standard Framingham risk score.

Methods Used: We measured carotid GSM in 41 African-American women who also had measurements of bone density (BMD) using DEXA scan, the arterial stiffness measures of pulse wave velocity and augmentation index using applanation tonometry, and carotid intima-media thickness by vascular ultrasound. Lipid profile and Framingham risk scores were available in a subset.

Summary of Results: The mean age was 58±16 yrs. The BMI was 29.9±7.2. GSM inversely correlated with Framingham risk (r=-.39, p<.05), total cholesterol (r=-.39, p<.03) and LDL, cholesterol (r=-.39, p<.03). There was no correlation between GSM and CIMT, bone density, pulse wave velocity or augmentation index (p=NS for all). There was significant correlation between CIMT and Framingham risk (r=-.54, p=.004). On multivariate analysis CIMT (R²=.36) and not GSM was an independent predictor of Framingham risk.

Conclusions: In summary GSM predicts Framingham risk and does not correlate with bone density, CIMT or arterial stiffness. However GSM does not predict risk when CIMT is added to the multivariate model. Further studies are needed to assess the incremental value of GSM measurements in predicting CV risk.

MP2

Effects of Topical Capsaicin on Carotid-Radial Pulse Wave Velocity in Healthy Subjects

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Purpose of Study: Capsaicin is a component of chili peppers of the genus capsicum. The commercial preparation is sold as a topical cream for pain relief. Capsaicin is an agonist at TRPV1 expressed in vascular smooth muscle and arteriolar endothelial cells and helps regulate microvascular tone. The use of capsaicin as a provocative agent in assessing vasodilatory responses is unknown. Pulse wave velocity (PWV) is a measure of arterial stiffness. Our objective was to assess topically applied capsaicin on forearm vasodilation using carotid to radial artery PWV measurements in healthy subjects.

Methods Used: PWV was measured by applanation tonometry (Atcor Medical) before and at intervals of 5, 10, 15, 25, and 30 min. after topical administration of 0.5 inch cream (Capsaicin 1%, capsaicin 0.1%, Chattem Inc, Chattanooga Tn, USA) to the forearm over the radial artery. For comparison, PWV was measured without capsaicin application in a subset of the original group of subjects comprising the control group. The responses of 42 healthy subjects, age 28±4 yrs were compared to that of 22 controls, age 27±5 yrs.

Summary of Results: In the capsaicin group PWV decreased from 8.3±1.1m/s at baseline to 8.0±1.1m/s at 5 min. (p<0.04) whereas PWV was unchanged without capsaicin (8.3±1.4 m/s vs. 8.3±1.4 m/s, p=0.64). In a subgroup of 11 subjects asked to identify onset time of local burning sensation and to grade it on Likert pain scale from 0-10, time to burn onset was 7.1±3.3 min., and burn Intensity was 3.4±0.5 out of 10. The 5 min. PWV decline (%) was correlated with time to burn onset (p<0.05) but not with burn intensity (p=ns). Healthy subjects exhibit a time dependent decrease in PWV with and without capsaicin. After application of topical capsaicin the PWV decline occurs earlier, with a 4% decrease in PWV at 5 min. vs. no change (0%) without capsaicin.

Conclusions: These pilot data suggest that capsaicin induces forearm vasodilation as evidenced by a more rapid decrease in PWV. Decrease of PWV precedes local burning sensation (5mins vs. 7.1 min). The 5 min PWV decline is related to the time of onset but not to the intensity of subjective burning sensation. These results may serve as pilot data to study subjects who have cardiovascular disease.

MP3

Presence of Third Molars Predicts Increased Mandible Fractures

David Milzman1, Dave Weiner1, Ryan Murray1. 1Emergency Medicine, Georgetown U School of Medicine, Washington, DC, United States.
Purpose of Study: Facial trauma is a common cause of mandibular fracture. The majority are young men, and the mechanism of injury is often due to assault, vehicular accident, or contact sports. Third molar presence is suggestive of skeletal maturity while removal leads to subsequent ossification which may strengthen the mandible. Controversy exists regarding the efficacy of third molar removal and its association with ossification and skeletal maturity. Objectives: To determine if the presence of third molars, specifically impacted teeth, is associated with an increased risk of mandibular fracture fracture compared to patients with an already extracted third molar.

Methods Used: Retrospective analysis of 4 years of consecutive presentations of mandible fractures to an urban level 1 Emergency Department. Eligible patients were identified by Radiographic analysis by expert reviewers confirmed the presence and location of fractures and third molars as well as molar angulation. Study inclusion was based on an ICD9 diagnosis of mandibular fracture (802.xx). Electronic chart abstraction and review was performed by a trained abstractor who was blinded to the study hypothesis. McNemar’s Test was used to calculate odds ratios.

Summary of Results: 569 patients were identified, 34 excluded due to incomplete data. The mean age of patients was 29.6 (95% CI: 26.7-31.5). 87% were male, 71.5% AA and, 12.1% Caucasian. 312 Pts were admitted for immediate fixation (54.8%). 82.4% had third molars present, with 53% impacted and 47% non-impacted. 95.9% (513) were imaged for evaluation had a fracture, with 82% requiring operative repair and fixation. 62.4% of pts underwent ORIF, 52.6% were fitted with arch bars, and 36% also required extraction. Presence of a third molar significantly increased the risk of a mandibular fracture (OR 5.6, 95% CI 2.6-13.8, p<0.01) as well as specifically at the mandibular angle (OR 3.1, 95% CI 1.9-5.3, p<0.01).

Conclusions: The presence of a third molar increases the likelihood of a mandible angle fracture following trauma. The presence of an impacted third molar may serve as the leading point in mandibular fractures due to blunt force trauma. Further study is necessary to determine if this association predicts fracture at lower force and contributes to recommendations for elective extraction, particularly in athletes involved in contact sports.

Purpose of Study: To characterize subjective and motor response to acute IV alcohol in social drinkers, and to compare responses for two paradigms: the clamp where breath alcohol concentration (BrAC) is held constant, and the oral-mimic where BrACs follow a standard oral alcohol exposure profile with ascending and descending limbs.

Methods Used: 19 male and female 21-30 year-old healthy social drinkers underwent 2 infusion sessions, on separate days, in counter-balanced order: alcohol clamp (target BrAC~ 0.06%), and oral-mimic with a target oral exposure profile. Serial BrACs were obtained, and subjective measures (Drug Effects Questionnaire (DEQ) and Biphasic Alcohol Effects Scale (BAES)) and motor performance (completion time for grooved pegboard task (CT-GPB)) were assessed at baseline (B1), and at 20 min (B2) and 110 min (B3) during the infusion, at equivalent BrACs during both sessions. Repeated-measures ANOVA were conducted to examine the effect of block and paradigm on response measures.

Summary of Results: Average BrACs during B2 and B3 were 0.06±0.005% and comparable within and between paradigms. There were no significant differences between the clamp and mimic paradigms for any of the measures. BAES-Stimulation scale showed significant increase from B1 to B2 and return to baseline at B3. BAES-Sedation scale showed significant increase from B1 to B2 and a further increase to B3. DEQ measures of Feeling Drug Effects, High and Intoxicated showed consistent significant increases from B1 to B2 and sustained increases at B3. DEQ measures of Liking Drug Effects and Wanting More showed significant increases from B1 to B2, and a return to baseline at B3. CT-GPB showed high inter-individual variability, and a trend for faster responses for females compared to males across blocks and paradigms. CT-GPB for non-dominant hand showed a significant increase from B1 to B2, with sustained increase at B3.

Conclusions: Acute IV alcohol resulted in subjective measures of stimulation, sedation and drug effects, as well as motor impairment. Stimulation and Liking drug effects showed acute tolerance development, while Sedation and feeling High and Intoxicated, and motor impairment did not show acute tolerance. There was no difference between the clamp and oral-mimic paradigm in alcohol responses.
Sumatriptan is effective for migraine headaches in the pediatric emergency department. Our migraine headache clinical pathway recommends sumatriptan for pediatric patients meeting pathway criteria. This is based on adult data and limited pediatric data. Our study aims to test the hypothesis that sumatriptan is effective for pediatric patients in the emergency department setting. Our secondary objective is to comment on the safety of sumatriptan in this population.

Methods Used: In this retrospective observational study, we describe a cohort of patients that received sumatriptan in the pediatric emergency department of a free standing children’s hospital between September 2007 and July 2012. We queried our pharmacy records for patients receiving sumatriptan in the emergency department during this time period. We reviewed the electronic health record of these patients for effectiveness and side effects. We excluded patients older than 21 years and patients without a documented repeat pain score. We used Wilcoxon signed-rank test to determine the statistical significance of the change in pain score before and after sumatriptan for each patient.

Summary of Results: We identified 134 orders for sumatriptan, of which 93 patients were eligible for analysis. The mean (+/- s.d.) age of patients was 15.6 (+/-2.4) and they were 76.3% female. Prior to sumatriptan, patients had received one of the following, or a combination of NSAIDS (61.3% of patients), IV fluids (71%), anti-emetics (73.1%), acetaminophen (10.8%), narcotic (5.4%), valproic acid (4.3%), or no other medications (18.3%). The median (IQR) pain score prior to sumatriptan was 8 (IQR 6 – 10) and the median pain score after sumatriptan was 3 (IQR 1-7). The improvement in pain score after sumatriptan was clinically and statistically significant (p<0.001). Eighty-three (89.2%) were discharged and 4 (4.3%) returned within 72 hours. Eight (8.6%) patients experienced a significant side effect, including throat tightness, chest tightness, difficulty swallowing, neck pain, numbness, and visual changes. All side effects were transient.

Conclusions: Sumatriptan is effective for treatment of migraine headaches in pediatric patients in the emergency department. Patients should be cautioned that transient but concerning side effects may occur.

Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Pts</th>
<th>Pt Annual Deaths</th>
<th>Age @Death</th>
<th>Time till Death (yr)</th>
<th>Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>82</td>
<td>37</td>
<td>44.9</td>
<td>2.39</td>
<td>45.1%</td>
</tr>
<tr>
<td>2001</td>
<td>88</td>
<td>50</td>
<td>43.1</td>
<td>2.02</td>
<td>56.8%</td>
</tr>
<tr>
<td>2002</td>
<td>524</td>
<td>238</td>
<td>46.5</td>
<td>2.11</td>
<td>45.4%</td>
</tr>
<tr>
<td>2003</td>
<td>724</td>
<td>264</td>
<td>48.7</td>
<td>1.76</td>
<td>36.5%</td>
</tr>
<tr>
<td>2004</td>
<td>767</td>
<td>235</td>
<td>48.3</td>
<td>1.62</td>
<td>30.6%</td>
</tr>
<tr>
<td>2005</td>
<td>845</td>
<td>219</td>
<td>46.5</td>
<td>1.32</td>
<td>25.9%</td>
</tr>
<tr>
<td>2006</td>
<td>1377</td>
<td>266</td>
<td>47.5</td>
<td>1.01</td>
<td>19.3%</td>
</tr>
<tr>
<td>2007</td>
<td>1504</td>
<td>228</td>
<td>48.9</td>
<td>0.57</td>
<td>15.2%</td>
</tr>
<tr>
<td>2008</td>
<td>1564</td>
<td>132</td>
<td>49.7</td>
<td>0.27</td>
<td>8.4%</td>
</tr>
<tr>
<td>2009</td>
<td>1946</td>
<td>56</td>
<td>51.1</td>
<td>0.06</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

positive patients admitted, they did suffer very quick deaths despite large decreases in overall mortality rates (table 1).

Conclusions: Despite inability to prospectively screen for unknown HIV sero-prevalence in these hospitals, the actual rate of of known HIV sero-prevalence rose to 4% of all ED patients and 14% of all admits in the final year of the study. This demonstrates the need for universal screen in the ED to overcome the numerous problems most ED encounter with HIV screening attempts. The actual morbidity and acuity on ED presentation also significantly decreased over the study period. The rates of HIV -positive patients from men having sex with men (MSM) fell 34% over the study period. However of those HIV
should be considered during PEM fellowship. The results of this study have generated a formal, simulated debriefing program at Children’s National Medical Center.

MP10

Upper and Lower Airway Inflammation Modulate the Phenotypical Expression of OSA in Children

Shelahnoor Huseni 1, Maria Gutierrez 2, Carlos Rodriguez-Martinez 2, Cesar L. Nino 3, Geovanny F. Perez 1, Gustavo Nino 1. 1 Children’s National Medical Center, Washington, DC, United States; 2 Pennsylvania State University College of Medicine, Hershey, PA, United States; 3 National University of Colombia, Bogota, Colombia; 4 Javeriana University, Bogota, Colombia.

Purpose of Study: Atopic rhinitis (AR) and asthma are airway inflammatory conditions that often coexist with obstructive sleep apnea (OSA) during childhood. The latter suggests that upper and lower airway inflammation may be important modulators of the phenotypical expression of OSA in children. In this regard, we have recently described that asthmatic children with OSA have a distinct phenotype characterized by more Rapid-Eye-Movement (REM)-related OSA compared to children with OSA alone. This study was designed to investigate the role of AR, as a clinical surrogate of upper airway inflammation, in OSA severity, REM-related OSA and REM-related hypoxemia.

Methods Used: We conducted a retrospective cross-sectional analysis of 160 children aged 2-12 years with OSA diagnosed by polysomnography (PSG) at Penn State sleep center. Outcomes included PSG parameters and obstructive apnea hypopnea index (OAHI) during REM and non-REM sleep. AR and asthma were determined based on standardized criteria prior to clinical record review. Linear model or logistic regression model was built to study the joint effect of AR and OSA parameters with control for potential confounders (significance level p<0.05).

Summary of Results: AR did not affect OSA severity or REM-related hypoxemia in children with OSA. In contrast, OAHI severity during REM sleep in children with moderate-severe OSA was significantly increased in subjects with AR and OSA (43±6 vs 6.2) compared to those with OSA alone (26±3; SE=3.5). The coexistence of AR and asthma was significantly associated with more REM-related hypoxemia. Multivariate analysis revealed that the association between AR and REM-related OSA parameters is independent of obesity, age, gender and ethnicity.

Conclusions: Children with AR have a distinct OSA phenotype characterized by more REM-related OSA. Nonetheless, AR did not affect REM-related hypoxemia unless asthma was also present. These findings suggest that upper and lower airway inflammation have distinct modulatory effects during REM-sleep in OSA. Further research is needed to delineate the link between REM-sleep and the physiology of the nasal and pulmonary airways during health and disease.

MP11

Response to Bronchodilators in Patients with Cystic Fibrosis

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Purpose of Study: The aim of our study was to document the prevalence of reversible lower airway obstruction among patients with cystic fibrosis.

Methods Used: Retrospective review of pulmonary function tests of patients with CF who had undergone testing with spirometry before and after administration of bronchodilator. For patients who had been tested multiple times, the first technically acceptable (by ATS standards) test was included in the analysis. The response to bronchodilator was assessed on the basis of the change in one of the following parameters: forced expiratory volume (FVC), forced expiratory volume in the first second (FEV1) and/or forced expiratory flow between 25-75% of FVC (FEF 25-75%).

Summary of Results: A total of 133 patients (ages 5-60 years; 16.7±9.8 yrs) were identified as having acceptable pre and post bronchodilator flow-volume curves. Fifty-three patients (40%) showed response to bronchodilator with significant increase in at least one parameter. Only ten patients (8%) showed significant response in all indices. Thirteen patients showed response only in the FEV1 and FEF25-75; and twenty-eight (21%) had a significant increase only in the FEF25-75.

Conclusions: Our results demonstrate that a fairly significant number of patients with CF do show response to bronchodilators, suggesting that the lower airway obstruction is in part due to bronchoconstriction. The smaller airways (reflected by the FEF25-75) appear to be the most affected. Further studies are needed to determine whether the response to bronchodilator is related to specific demographic, genetic or clinical factors. This can potentially impact clinical decision making in the acute and chronic management of the pulmonary manifestations of cystic fibrosis.

MP12

Atherogenic Properties of Rheumatoid Arthritis Plasma: Effect on Cholesterol Efflux Genes in 20 Subjects

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Purpose of Study: Cardiovascular (CV) morbidity and mortality are common complications in patients with RA. Previously, we have demonstrated pro-atherogenic properties of pooled RA plasma that promotes cholesterol overload in THP-1 macrophages. In the present study, we examine the effect of individual RA patient plasma samples from a cohort of patients treated in Nassau County, NY. We have analyzed demographic properties, inflammatory markers and pro-atherogenic effects of plasma from 20 RA patients. We expose naive macrophages to RA plasma and evaluate the impact on expression of cholesterol efflux proteins 27-hydroxylase (27-OHase), ATP binding cassette (ABC) transporter A1 and ABCG1. These proteins are crucial for efficient movement of cholesterol out of the macrophage, a process that prevents foam cell formation and protects against atherosclerosis.

Methods Used: 20 healthy controls (HC) and 20 RA patients were enrolled in this IRB-approved study. Duration of disease, level of cholesterol, low density lipoprotein (LDL), high density lipoprotein (HDL), CRP, ESR, RF and CCP were analyzed. ABCA1, ABCG1 and 27-OHase expression were evaluated in THP-1 human macrophages upon exposure to 10% of either RA or HC plasma (18h) by QRT-PCR.

Summary of Results: 10% RA plasma decreased levels of ABCA1 and G1 transporters in THP-1 macrophages. On average, ABCA1 was suppressed to 47.3±12.5% and ABCG1 to 73.7±14.2% of the corresponding levels in THP-1 macrophages exposed to 10% HC plasma (n=20, P<0.01). 27-OHase levels were reduced to 26.5±5.5% (n=20, P<0.001) of THP-1 exposed to HC plasma.

Conclusions: Traditional CV risk assessments in RA patients do not reflect abnormalities in cholesterol handling at the cellular level. This study demonstrates that RA plasma disrupts the cholesterol transport gene profile in human macrophages. Our data suggest that chronic exposure of monocytes/macrophages to RA plasma adversely affects the capacity of the arterial wall to metabolize cholesterol and maintain lipid homeostasis, thereby contributing to the development of premature atherosclerosis. This work underscores the pathogenic significance of cholesterol transport gene disruption in RA. These results may have predictive value for CV risk in this susceptible population.
Purpose of Study: Asthmatic epithelium is characterized by airway remodeling, explained, in part, by the epithelial-to-mesenchymal (EMT) transition. In this TGF-β1-mediated process, there is increased expression of mesenchymal markers (e.g. fibronectin). We sought to evaluate the impact of estrogen and TGF-β1 on fibronectin expression in asthmatic airway epithelium, hypothesizing that estrogen augments fibronectin expression in asthmatic epithelium.

Methods Used: Commercially available asthmatic HBE cells (n=2) were grown to confluence, then ALI for 31-36 days. At 0 hrs, cells were exposed to estrogen (1nM or 10nM) or estrogen free media. After 24hrs, cells were concomitantly exposed to TGF-β1 (10ng/mL) and their respective estrogen or estrogen free dose for 12 or 24hrs. Total RNA was extracted with Trizol. mRNA expression was measured via rt-PCR, fold change expression normalized to GAPDH. NP-40 buffer harvested cell lysate, fibronectin protein expression measured via ELISA.

Summary of Results: Asthmatic epithelia up-regulated fibronectin mRNA expression after 12 hrs of TGF-β1 and estrogen exposure (fold change 1nM+TGF-β1 vs non-exposed = 9.07 [95%CI: 16.97, 1.18], 10nM-TGF-β1 vs non-exposed = 8.98 [16.97, 1]) while estrogen only did not show any significant mRNA expression changes (1nM vs non-exposed= -0.9 [1.03, 0.77], 10nM vs non-exposed = -1.18 [1.49, 0.18]). 24 hours after TGF-β1 exposure, fibronectin mRNA was up-regulated (1nM+TGF-β1 vs non-exposed = -4.52 [8.05, 0.99], 10nM-TGF-β1 vs non-exposed = -4.80 [9.09, 0.51]), while estrogen only exposure was unchanged (1nM vs non-exposed = 1.06 [1.39, 0.73], 10nM vs non-exposed = -1.10 [1.40, 0.8]). Higher dose estrogen increased fibronectin protein expression at 12 hours, (Estrogen 10nm 4639 pg/mL, 1nM 4441±1681 pg/mL), an effect present after the addition of TGF-β1 (10nM-TGF-β1 8913±50 pg/mL, 1nM-TGF-β1 5972±349 pg/mL). This pattern is similar at 24 hours post TGF-β1 exposure (Estrogen 10nM 4224±335 pg/mL, 1nM 4639±856 pg/mL, (10nM+TGF-β1 3163±278 pg/mL, 1nM+TGF-β1 2165±55 pg/mL). Conclusions: Asthmatic epithelium exhibit TGF-β1 dependent, estrogen dose-dependent fibronectin mRNA up-regulation, but estrogen impacts fibronectin expression irrespective of TGF-β1 exposure. Estrogen’s role in asthmatic airway remodeling at the protein level may circumvent TGF-β1-induced EMT pathways.

A New Artificial Neural Networks Model of Cardiovascular Risk in Renal Disease Outlines Carotid Artery Markers
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Purpose of Study: Vascular abnormalities are identified from the early stages of chronic kidney disease (CKD) patients with multiple risk factors as diabetes and hypertension. The efforts to prevent cardiovascular (CV) complications in patients with renal disease may benefit from noninvasive vascular monitoring and risk models evaluations. We have studied common carotid intima media thickness (CIMT), internal carotid plaque and stenosis and tested endothelial function by brachial flow mediated dilatation (FMD) in CKD and end stage renal disease (ESRD) patients. After one year we evaluated the prediction power of CV risk factors for end point events (EPE): stroke, infarct and death and after five years we aim to find the impact of noninvasive markers on the mortality prediction and CV model performance.

Methods Used: Aterial Doppler ultrasound examinations were performed on 67 patients with renal disease and 26 healthy matched controls. EPE prediction was evaluated with an original neural networks model (ANN). This used all 93 subjects’ data as input: 24 risk factors including traditional and noninvasive markers (P1) and repeated without carotid plaque/stenosis features (P2) or without carotid markers and diabetes (P3) by retraining only the elements contributing more than 0.0001.

Summary of Results: We observed EPE on subjects with carotid stenosis, plaque, or CIMT over 75 percentile. All hemodialysis(HD) patients that have reached EPE presented endothelial dysfunction irreversibly after one dialysis session. Changes in FMD after HD correlated with CIMT measurements (r=0.5, p=0.001). Success rate prediction was significantly greater utilizing carotid structural markers: P1=0.81, versus P2=0.5 and P3=0.62.

Mortality after five years, representing about 49% from the end stage renal disease patients, can be continuously computed into the ANN model.

Conclusions: Carotid markers highly enhance a new ANN model performance to CV risk in renal disease. The model can be improved on a larger scale and may find practical use for risk stratification and selecting personalized treatment aimed at reducing unfavorable CV outcome.

Acute Myocardial Infarction and In-Hospital Mortality After Carbon Monoxide Poisoning: An Analysis of the Nationwide Inpatient Sample 2002-2010
Mayara Mugui1, Sahil Khura1, Dhyal Kolte1, Chandrasekar Palaniyappan2, Jalaj Garg3, Wilbert S. Aronow2, 1Internal Medicine, New York Medical College, Ossining, NY, United States.2. Cardiology, New York Medical College, Valhalla, NY, United States.

Purpose of Study: Acute myocardial infarction (AMI) and in-hospital mortality rates following carbon monoxide (CO) poisoning have not been studied in a national database.

Methods Used: All hospitalized patients age 718 years included in the nationwide inpatient sample (NIS) 2002-2010 databases with a confirmed diagnosis of CO poisoning, as per the ICD-9-CM code 986 were identified. Discharge weight was used to predict national estimates. Multivariable logistic regression analysis was used to determine the association of incident AMI and in-hospital mortality as well as to identify independent predictors of incident AMI among hospitalized CO-poisoned patients.

Summary of Results: Patients hospitalized with CO poisoning (n=19,949) had a mean age of 51 (±18) years, 40% were women, and 74% whites. Incident AMI during the same hospitalization occurred in 1,119 (6%) of 19,949 CO poisoned patients. In-hospital mortality occurred in 9% (98/1,119) of incident AMI patients compared to 3% (50/18,830) of non-AMI patients (adjusted odds ratio, 2.50; 95% confidence interval, 1.93-3.24; P < .001). Among the 98 AMI patients who died in the hospital, 31% had a cardiac arrest, 26% had an anoxic brain injury, and 10% had both cardiac arrest and anoxic brain injury. Independent predictors of incident AMI among CO poisoned patients are displayed in the Table.

Conclusions: In this national database, AMI was uncommon after hospitalization due to CO poisoning; however, AMI was an independent predictor of in-hospital mortality.

Adipocyte Exosomal miRNAs May Mediate The Effects Of Obesity On Lung Disease
Sarah Ferrante1, Evan Nadler1, Zuyi Wang1, Monica Hubal1, Dinesh Pillai1, Sammie Sevilla1, Andrew Wiles1, Julia Anderson1, Robert J. Freishtat1, 1Children’s National Medical Center, Washington, DC, United States.

Purpose of Study: With rates of comorbid asthma and obesity increasing, identifying mechanisms by which obesity affects asthma is critical. Obesity results in a systemic inflammatory state. Our group has shown that adipocytes from obese patients produce numerous mediators, including TGFβ which is central to asthma pathobiology. Exosomes are secreted endocytic vesicles that contain and transport miRNAs, mRNAs and proteins among cells, both
in the microenvironment and over larger distances. Adipocytes release exosomes. We hypothesize that adipocyte exosomes from obese patients spread dysfunction to other organs, including the lungs, particularly through the TGFβ pathway.

**Methods Used:** We isolated exosomes from surgically-acquired lean (L) and obese (Ob) paired visceral (v) and subcutaneous (s) adipose depots (n=3L/5Ob). We confirmed exosome size and quantity using a novel bead-based flow cytometry assay that we developed. We measured Exosomal miRNA using Affymetrix GeneChip miRNA 3.0 arrays. Data were analyzed in Partek Genomics Suite. T-test was used to compare miRNA expression between L and Ob groups, using p<0.01 and fold change≥2.1.

**Summary of Results:** Adipose donors were African American or Caucasian females between 12 and 19 years of age. The diameters of the isolated exosomes were within the 50-90 nm range for exosomes. Because visceral fat is most associated with obesity-related disease, we focused on vOb vs. vL exosomes. We found 39 miRNAs (with 5,862 confirmed or putative miRNA targets) differentially-expressed between these conditions. Using Ingenuity Pathways Analysis, TGFβ signaling was ranked the second top canonical pathway reflecting our data with 49 out of 89 predicted miRNA targets. Downregulated miRNAs included mir-379, mir-133, mir-654, mir-R376, mir-142, and mir-4438. Downregulation of these miRNAs is predicted (and confirmed in the cases of mir-379 and mir-133) to increase TGFβ signaling in target tissues.

**Conclusions:** Adipocytes from obese individuals release exosomes that contain miRNAs that are downregulated compared to those from lean individuals. This is associated with increased TGFβ signaling in target tissues. Adipose exosome-derived stimulation of TGFβ signaling may be a mechanistic link between adipose and lung and this could lead to novel therapeutic targets.

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**16**

**Comparison of Peak Troponin (cTnl) Levels Based on Various Patient Characteristics**

David Milzman1,2, George Hughes-Strange3, Anthony Napoli1, 1Georgetown University, Washington, DC, United States. 2. Emergency Medicine, Washington Hospital Center, Washington, DC, United States.

**Purpose of Study:** Currently, EDs employ a standardized cut-off for troponin levels to rule out Non-ST elevation myocardial infarction (NSTEMI) that fails to incorporate patient characteristics into the measurement. Objectives: To determine whether patient demographic characteristics (race, age & sex) are associated with the peak troponin (cTnl) level recorded during an NSTEMI event.

**Methods Used:** Methods: The study population included all patients who presented to the ED at Washington Hospital Center from 11/15/2009 to 12/31/2011. Medical charts were extracted for patients with an ICD-9 code of 410.71 (NSTEMI). These patients presented to the ED and were subsequently admitted to inpatient floors. Univariable and multivariable linear regression were performed. Exploratory data analyses, was conducted to look for an association between troponin levels and age, race, and sex. Peak troponin levels were not normally distributed and were log transformed for regression analyses to satisfy model assumptions of normality. A Shapiro-Wilk test was performed to test the normality assumption for the transformed troponin levels. Univariable and multivariable linear regression analyses were performed to measure the association between peak cTnl and patient characteristics. All analyses were conducted in Stata version 12.

**Summary of Results:** 450 patients matched our search criteria of an ICD-9 code 410.71. Of these, five patients were excluded from further analysis. 13 patients had multiple admissions to the ED. Peak troponin levels ranged from 0.01 - 800 ng/ml. Univariable and multivariable regression analysis for geometric mean of peak cTnl was completed for the various demographic characteristics. Sex and age showed non-significant differences between peak troponins. Race showed a significant difference between peak troponins in both the univariable and multivariable analysis. Caucasians had 1.9 times (95% CI 1.24 - 2.96) higher geometric mean peak cTnl level than African-Americans.

**Conclusions:** Race was the only characteristic with statistically significant differences in peak cTnl level with African-Americans having a lower peak than other races. This information could be important for future research because diagnostically treated levels of cTnl may need to modified to include differences between race.

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**17**

**Trends in Percutaneous Coronary Intervention and Outcomes Among Patients ≥ 80 Years of Age with ST-Elevation Myocardial Infarction**

Dhaval Kolte1, Sahil Khaira1, Marijan Mujibi1, Chandrasekar Palaniswamy1, Tarunjit Singh1, Wilbert S. Aronow1, 1Internal Medicine Cardiology, New York Medical College, Valhalla, NY, United States.

**Purpose of Study:** Patients aged ≥ 80 years with ST-elevation myocardial infarction (STEMI) are often underrepresented in major percutaneous coronary intervention (PCI) trials. The proportion of patients aged ≥ 80 years receiving PCI for STEMI and their outcomes over the past 10 years needed investigation.

**Methods Used:** We examined the temporal trends (2001-2010) in STEMI, use of PCI for STEMI and outcomes (average length of stay and in-hospital mortality) among patients aged ≥ 80 years in the United States using the Nationwide Inpatient Sample (NIS) database.

**Summary of Results:** During 2001-2010, among 1,704,385 patients aged ≥ 80 years admitted for acute myocardial infarction, 570,824 (33.5%) had STEMI. There was a 19% decrease (P<0.001) in the prevalence of STEMI among patients aged ≥ 80 years over the 10-year period. The proportion of patients aged ≥ 80 years undergoing PCI for STEMI increased from 9.2% in 2001 to 31.2% in 2010 (P<0.001). Among these patients, a significant decrease in the average length of stay (5.6 ± 5.5 days in 2001 versus 4.9 ± 4.6 days in 2010; P<0.001) and in-hospital mortality (age-adjusted mortality rate per 1,000 of 150 in 2001 versus 116 in 2010; PR=0.020) was observed.

**Conclusions:** Although the percentage of patients aged ≥ 80 years presenting with STEMI has decreased during the past decade, the percentage of patients receiving PCI for STEMI has increased. This is also associated with a decrease in the duration of hospitalization and in-hospital mortality over the past 10 years.
Repression of MUC5AC Gene Expression in Human Lung Epithelial Cells by Classical and Dissociative Steroids

Lindsay M. Garvin,1 Yajun Chen,2 Jesse M. Damsker3,3, Michael Rose,2 1George Washington University, Washington, DC, United States. 2ReveraGen BioPharma, Rockville, MD, United States.

Purpose of Study: Asthma, one of the most common airway inflammatory disorders, is continuing to increase in incidence in the USA. Glucocorticoids are the class of anti-inflammatory standard of care; however, compliance is often low due to side effects associated with these drugs. Many side effects are considered to be a result of Glucocorticoid Response Element (GRE)-mediated gene activation, while the anti-inflammatory effects are due to targeting of inflammatory transcription factors. Recent studies have shown that the dissociative steroid VBP15, a 9, 11 glucocorticoid analogue, has the potential to reduce side effects as it does not induce GRE-mediated transcriptional upregulation, but rather inhibits inflammatory mediator-induced NF-κB activation, while the anti-inflammatory effects are due to targeting of inflammatory transcription factors such as NF-κB and/or CREB. Determining the exact mechanism of repression of mucins is important in drug development to reduce morbidity and mortality in individuals suffering from asthma.

Methods Used: We measured mRNA abundance via RT-PCR, antagonized GR with RU-486, observed GR location by immunofluorescence and investigated the MUC5AC promoter using ChIP analysis.

Summary of Results: VBP15, like Dex, reduced MUC5AC mRNA abundance in a dose-and time-dependent manner. Repression occurred optimally at 1/10M of VBP15 between 6 and 18 hours of exposure. Data indicated that the VBP15-induced repression of MUC5AC was completely abrogated in the presence of 1M RU-486 (GR antagonist) demonstrating that repression is GR-dependent. VBP15, like Dex, induced nuclear translocation of GR within 0.5 hours in lung epithelial cells. ChIP analyses showed that VBP15/GR did not bind to the GRE3 site in the MUC5AC promoter, in contrast to Dex/GR.

Conclusions: We hypothesize that VBP15 trans-represses MUC5AC gene expression via GR interactions with inflammatory transcription factors, such as NF-κB and/or CREB. Determining the exact mechanism of repression of mucins is important in drug development to reduce morbidity and mortality in individuals suffering from asthma.

BMP-2 Synergizes the Bone Healing Effect of FGF-2 on Calvarial Defects in Mice

Liping Xiao1, Sylvain Catros2, Daisuke Ueno3, Colin Homer-Bouchiette1, Lyndon Charles1, Lisa Kuhn1, Marja Hurley1, 1University of Connecticut Health Center, Farmington, CT, United States. 2University of Bordeaux Segalen, Bordeaux, France. 3Toyama University, Yokohama, Japan.

Purpose of Study: Bone morphogenetic protein 2 (BMP-2) is FDA approved for bone defect healing but is expensive and requires high concentrations. Since we reported that targeted overexpression of the low molecular weight (LMW) FGF-2 in osteoblasts resulted in increased bone mass in LMWTg mice, we determined whether low concentrations of BMP-2 would be additive or synergistic in calvarial bone defect healing in LMWTg mice.

20 Novel Urinary Biomarkers of Acute Kidney Injury and Mortality 3-Years After Cardiac Surgery

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Purpose of Study: The association between novel urinary biomarkers of acute kidney injury (AKI) and outcomes beyond hospital discharge is unknown.

Methods Used: 1199 adults that underwent cardiac surgery in the TRIBE-AKI cohort were followed prospectively for death. The primary exposures were the peak concentration of five urinary biomarkers on post-operative days 1-3: neutrophil gelatinase-associated lipocalin (NGAL), interleukin-18 (IL-18), kidney injury molecule-1 (KIM-1), liver fatty acid binding protein (L-FABP), and albumin in patients with and without clinical AKI (AKI Network stage 1 or worse). We adjusted for cardiopulmonary bypass time, peak change in serum creatinine, and 12 pre-operative clinical variables.

Summary of Results: During a median follow-up of 3.0 years (IQR 2.2-3.6), 139 participants died (50/1000 person-years). Among patients with clinical AKI, the upper tertiles of the 5 urinary biomarkers were each independently associated with a 2 to 3-fold increased risk of mortality (Figure). In patients without clinical AKI, the upper tertiles of peak IL-18 and KIM-1 were also independently associated with death (Figure). When all biomarkers were combined together, the 3rd tertiles of peak change in serum creatinine, urinary KIM-1, NGAL, and urinary albumin were independently associated with death (adjusted HR 2.0, 1.8, 1.3, and 1.2, respectively). No reclassification improvement ranged from 5 to 7% with the addition of each biomarker to the clinical model.

Conclusions: Novel urinary biomarkers of kidney injury in the post-operative period provide additional prognostic information beyond that of changes in serum creatinine and clinical variables for risk of 3-year mortality.

Stratified Analyses of Risk of Death by Tertiles of Peak Urinary Biomarkers and Clinical AKI Status.

21 BMP-2 Synergizes the Bone Healing Effect of FGF-2 on Calvarial Defects in Mice

Liping Xiao1, Sylvain Catros2, Daisuke Ueno3, Colin Homer-Bouchiette1, Lyndon Charles1, Lisa Kuhn1, Marja Hurley1, 1University of Connecticut Health Center, Farmington, CT, United States. 2University of Bordeaux Segalen, Bordeaux, France. 3Toyama University, Yokohama, Japan.

Purpose of Study: Bone morphogenetic protein 2 (BMP-2) is FDA approved for bone defect healing but is expensive and requires high concentrations. Since we reported that targeted overexpression of the low molecular weight (LMW) FGF-2 in osteoblasts resulted in increased bone mass in LMWTg mice, we determined whether low concentrations of BMP-2 would be additive or synergistic in calvarial bone defect healing in LMWTg mice.

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BMD was significantly increased in LMWTg compared with VecTg. Digital x-ray, micro-CT and bone histomorphometry were performed to compare healing among groups. RNA was extracted from the defect area to examine the expression of genes that are important for bone formation including transcription factors RUNX2 and Osterix, Osteocalcin (OCN) as well as WNT signaling.

Summary of Results: BMD was significantly increased in LMWTg compared with VecTg. BMP-2 treatment completely healed the defect in LMWTg mice. BMP-2 treatment resulted in incomplete healing of the defect in VecTg mice. Osterix mRNA was not different between VecTg and LMWTg, however BMP-2 significantly increased osterix in both genotypes. Runx2 and OCN mRNA were significantly increased in LMWTg compared with VecTg. BMP-2 caused a further significant increase in Runx2 and OCN in LMWTg. There was a synergistic increase in OCN mRNA in BMP-2 treated LMWTg mice. ?-catenin mRNA was increased in LMWTg compared with VecTg. BMP-2 treatment increased ?-catenin in VecTg. There was a synergistic increase in ?-catenin mRNA in BMP-2 treated LMWTg mice.

Conclusions: These studies demonstrate that BMP-2 synergistically increased the bone healing effect of LMF FGF-2 via modulation of WNT signaling pathways. These results provide a rationale for the clinical application of low dose combinations of these two growth factors to augment bone defect healing.

Practice Patterns in the Management of Febrile Neonates with No Lumbar Puncture
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Purpose of Study: A full septic work up including blood, urine, and cerebrospinal fluid (CSF) cultures with empiric antibiotic therapy is considered the standard of practice when evaluating neonates presenting with fever, but sometimes CSF is unable to be obtained. The objective of our study is to identify the trends in practice when CSF is not obtained in febrile neonates.

Methods Used: This retrospective cohort study utilized data collected from the Pediatric Health Information System (PHIS), a multi-center administrative database owned by Children’s Hospital Association (CHA, Inc.). Patients 0–28 days of age admitted to the hospital between July 2004–June 2012 with a diagnosis of fever or bacterial infection, with charge codes for blood and urine cultures, but not for CSF culture or CSF cell count, were included in the study. Patients admitted to the NICU were excluded. Length of stay (LOS), duration and type of antibiotic therapy, placement of peripherally inserted central catheter (PICC), frequency of chest x-ray and viral testing, discharge diagnoses and disposition were collected.

Summary of Results: Of the 47271 neonates with a diagnosis of fever or bacterial infection, 10846 (23%) had blood and urine cultures without concomitant CSF cultures. For these patients, the median length of stay and median duration of antibiotic therapy was 4 days. Chest X-ray was performed in 60% and Respiration Syncytial Virus testing in 31%, but only 64 children (0.6%) were diagnosed with pneumonia. 26% of patients received 7 or more days of antimicrobials. PICC lines were placed in 1165 (11%) patients. Despite absence of CSF culture, meningitis was diagnosed in 231 neonates. In patients coded with a diagnosis of meningitis, 56/231 (24%) had PICC insertion, compared to 1109/10,615 (10%) of those without meningitis (p<0.0001). 392 neonates (4%) received no antibiotic therapy. 87% of patients were discharged to home.

Conclusions: Nearly a quarter of neonates diagnosed with fever or infection did not have CSF culture obtained. Chest X-ray appears to have very low yield of positive results in this population. A large proportion of these children received PICCs, suggesting that absence of CSF specimens may result in prolonged antibiotic therapy in a subset of these children.

Bone Mineral Density in Overweight Children with and without Forearm Fractures
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Purpose of Study: The incidence of pediatric forearm fractures is increasing. Overweight [body mass index (BMI)] ≥ 85th percentile is a risk factor for forearm fracture, although overweight children have increased bone mineral density (BMD) compared to healthy-weight children. The influence of BMD on fracture risk in the subgroup of overweight children is not well described. Our objective is to determine whether overweight children with forearm fractures have lower BMD compared to overweight fracture-free controls.

Methods Used: This case-control study of African American children, ages 5–9 years, included 1375 with forearm fracture and controls without fracture. Evaluation included measurement of BMI, BMD by dual energy x-ray absorptiometry, serum 25-hydroxyvitamin D concentration [25(OH)D] and dietary calcium intake. Multivariable logistic regression was used to test for associations between fracture status and BMD in study participants with a BMI ≥ 85th percentile, controlling for other potential confounders.

Summary of Results: The final sample included 35 cases and 22 controls, all with a BMI ≥ 85th percentile. Compared to controls, cases had significantly lower whole body (less head) BMD Z-scores [0.98 ± SD 1.61 vs 1.68 ± 1.18; adj OR 0.39 (95%CI:0.16-0.98)] without a corresponding significant difference in lumbar spine BMD Z-scores [0.85 ± 1.15 vs 1.26 ± 1.40; adj OR 0.68 (0.31–1.44)]. Cases were more likely to be younger in age [adj OR 0.16 (0.03–0.80)] and taller in height [adj OR 1.24 (1.02–1.50)]. There were no significant differences between cases and controls in gender, parental education, range of BMI, physical activity, serum 25(OH)D and dietary calcium intake.

Conclusions: Lower whole body (less head) BMD is significantly associated with increased odds of forearm fracture among this sample of overweight African American children aged 5–9 years. These effects are independent of gender, range of BMI, physical activity, serum 25(OH)D and dietary calcium intake.

High-Throughput Signal Processing of Polysomnography Identifies Airflow-Independent Respiratory Features of OSA in Adults
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Purpose of Study: The diagnosis of obstructive sleep apnea (OSA) requires the identification of airflow interruption via nasal/oral sensors during overnight polysomnography (PSG). This study aimed to identify airflow-independent features of OSA that can be used in new methods for OSA screening and diagnosis. To this end, we applied high-throughput signal processing to PSG data to compute the magnitude coherence spectrum (MCS) between oxygen saturation (SpO2) and respiratory channels. Our main hypothesis was that MCS analysis can detect OSA cycles in adults using only SpO2 and either, chest or abdominal movement.

Methods Used: PSG raw data from 30 adult subjects with moderate-severe OSA (n=13) or without OSA (n=17) was used for high-end signal processing. Robust estimation was conducted to elicit the MCS of single-channel data from SpO2, against other channels, i.e. nasal thermistor (CTC), pneumotachometer (PT), chest and abdominal (abdom) motion and compute the mean MCS of every pair of signals. Peak amplitude (PA) was used to parameterize the power spectrum in the low-frequency (LF) band and high-frequency (HF) band. Multivariate analysis contrasted LF-PA and HF-PA bands from
different MSC models in subjects with and without OSA adjusting for demographic and anthropometric variables.

Summary of Results: 1) MSC SaO2-CTC and MSC SaO2-PT (MSC flow-independent models) and MSC SaO2-chest and MSC SaO2-abd (MSC flow-independent models) identified a distinct HF-PA corresponding to normal breathing cycles in all subjects. 2) MSC flow models and MSC flow-independent models identified a significant LF-PA in all subjects with OSA but not in controls (p<0.05). This sharp LF-PA, indicative of OSA cycles, was virtually identical in flow-dependent and flow-independent MSC models.

Conclusions: Our results provide new evidence that MSC using SaO2-chest or SaO2-abd models can identify OSA without need of airflow channels. This new approach may allow the design of more comfortable and reliable portable devices for screening, diagnosis and monitoring of OSA in adults, utilizing only pulse-oximetry and abdominal or chest sensors.

Purpose of Study: Cardiolipin (CL) is a unique phospholipid that is an essential component of the inner-mitochondrial membrane (IMM) and is critical to normal energy metabolism. In the heart, CL exists predominantly in the tetralinoleic form, (18:2) 4CL, which has the greatest affinity for the IMM and protection against cellular apoptosis. Biosynthesis of CL occurs by means of a five-step enzymatic pathway. Tetralinoleic CL is formed by the remodeling of existing CL. Total CL content is lower in ventricular tissue from adult humans with idiopathic dilated cardiomyopathy (IDC). The aim of this study was to determine which mitochondrial CL biosynthetic and linoleic remodeling enzyme levels are dysregulated in adult IDC.

Methods Used: mRNA was isolated from failing adult left ventricle (LV) of patients with IDC obtained at the time of transplant (n=27; mean age = 67±10) and non-failing control LV from donor hearts not implanted for technical reasons (n=15; mean age = 43±8). RT-PCR was employed to measure gene expression of CL biosynthesis and (18:2) 4CL remodeling enzymes.

Summary of Results: In the biosynthesis pathway we found 37% lower CDP diacylglycerol synthase 2 and 35% lower phosphorylcholinephosphatase synthase (both P<0.05) in the failing LV. We also found 66% lower monosynicolipid acyltransferase, and 43% lower tafazzin expression (both P<0.01), two remodeling enzymes, in the IDC LV compared to non-failing controls.

Conclusions: These results demonstrate that bio synthetic and remodeling CL abnormalities are present in the IDC adult failing heart and may contribute to mitochondrial CL abnormalities in heart failure. Future investigations will compare enzymatic dysregulation between these adult groups with pediatric IDC samples for potential age-related patterns in dysregulation. Ultimately, we hope to elucidate mechanisms of CL dysregulation and targets for pharmacological therapy.

Purpose of Study: Hyperglycemia is the major cause of diabetic vascular complications. AGEs accumulate under hyperglycemic conditions and contribute to atherosclerosis. ATP binding cassette transporters (ABC) A1, G1, and cholesterol 27-hydroxylase (27-OHase) facilitate removal of cholesterol from macrophages and constitute a first line of defense in the prevention of atherosclerosis. ABCA1 and G1 are known to be suppressed by AGEs. Here we investigated the effects of AGEs on the expression of reverse cholesterol transport (RCT) proteins and scavenger receptors in THP-1 human macrophages.

Methods Used: THP-1 monocytes (106 cells/ml), differentiated into adherent macrophages (phorbol dibutyrate, 100nM, 48 h) were incubated for 1h, 3h or 5h (370C, 5% C02) ± 50 µg/ml of the AGE carboxymethyl lysine (CML)-human serum albumin (HAS). 1µg of total RNA was used per condition for QRT-PCR. 27-OHase, ABCA1 and G1 were measured to assess cholesterol efflux. CD16, SRA1 and LOX1 to assess influx. PCR results were confirmed by Western blot.

Summary of Results: Expression of ABCA1 and G1 diminished in the presence of AGEs. For the first time, we demonstrate that, AGEs decrease message and protein level of 27-OHase (by 54.5±12.9% and 48.7±9.23%, respectively). AGEs upregulated the CD36 receptor, to 156.5±5.9% for mRNA and 176.78±12.2% for protein, versus untreated. Expression of SRA1 and LOX-1 were unchanged.

Conclusions: AGEs contribute to the process of accelerated atherosclerosis in diabetes by promoting lipid overload through downregulation of 27-OHase and other genes involved in cholesterol transport. Our present study provides a novel negative effect of AGEs on lipid handling.

Purpose of Study: Aging is associated with a pro-inflammatory state in serum and many tissues. Indeed, nearly all risk factors linked to most age-associated chronic diseases that are leading causes of disability and death worldwide are associated with a pro-inflammatory state. However, it has been challenging to determine cause and effect – do the age-associated pathologies increase inflammation, or does an increased pro-inflammatory state induce the age-associated pathologies, or both? Recently, we identified the cause/effect relationship between tissue repair and inflammation by demonstrating that normal tissue repair is mitotically synchronous and non-inflammatory, whereas chronic inflammatory states are intrinsically mitotically dysynchronous and release pro-inflammatory cytokines. Given this, we hypothesized that aging alone is sufficient to induce progenitor cell mitotic dysynchrony.

Methods Used: Tracheal epithelial cells from healthy C57BL6 mice in two age groups of both genders were isolated. Young mice were between 8 and 12 weeks of age. Aged mice were acquired from the NIA aged rodent colonies and were 34 months of age. Tracheal epithelial progenitor cells (i.e. basal cells) were cultured on collagen-coated membranes for 6 days. Cultures were exposed continuously to bromodeoxyuridine (BrdU). Cell proliferation was analyzed by flow cytometry for 7-AAD DNA staining in BrdU+ cells.

Summary of Results: More than 50% of the cultured cells were BrdU+ in the young mice while less than 30% were positive in the aged mice. Additionally, the tracheal epithelium progenitors from male and female aged mice were dyschronously distributed along the cell cycle (G1, S, G2/M: 40, 15, 45% and 40, 33, 26%, respectively) compared to those from male and female young mice (62, 16, 22% and 61, 11, and 28%, respectively).

Conclusions: Our data support the concept that aging is sufficient to induce progenitor cell mitotic dysynchrony. It is possible that this epithelial mitotic dysynchrony would then contribute to the pro-inflammatory state associated with aging, as we have seen in other chronic inflammatory states.
The Basic Domain of HIV-Tat is Essential for Targeting Tat to Lipid Rafts (LR) and its Regulation of FGF-2 Signaling in Human Podocytes

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Methods Used: HIV-Tat constructs, and a podocyte cell line (P1-HIVAN), were derived from children with HIV-nephropathy (HIVAN). Tat constructs carrying different mutations were generated to determine their localization and signaling activity in purified LR preparations from podocytes. Western blots and confocal microscopy were used to detect the localization of Tat and formation of stress fibers. HIV-activation was assessed using ghost (3) cells. Wild type and HIV-transgenic mice were injected with FGF-2 to assess the podocyte changes in vivo.

Summary of Results: Tat was preferentially recruited to LR in P1-HIVAN podocytes. Arginines in the basic domain (RKKRRQRRR) were identified as essential for targeting Tat to the LR, 2 increasing its ability to induce the phosphorylation of Rho-A in LR and 3) enhancing the FGF-2-induced signalling in P1-HIVAN podocytes. Tat carrying alanine substitutions remained localized in the cytosol, and was no longer associated with LR, nor capable of translocating to the nucleus, transactivating HIV-1, or inducing FG-2 signaling and cytoskeletal changes in P1-HIVAN podocytes. FGF-2 induced similar cytoskeletal changes and podocyte injury in HIV-Tg mice, in association with the activation of Rho-A.

Conclusions: We have identified the key domain responsible for the association of Tat with LR and its regulation of FGF-2 signaling in podocytes from children with HIVAN. These findings provide a molecular framework to identify new therapeutic strategies against HIVAN.

Proteomic Profiles in Long Term Follow-up of Patent Foramen Ovale Related Stroke Patients

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Purpose of Study: Paradoxic embolism from patent foramen ovale (PFO) is associated with more than 150,000 strokes per year in the United States. However, PFO related stroke is a heterogeneous multi organ condition involving brain, lung, heart and blood, lacks consensus for treatment options due to variability among individual patients. Clinical proteomic approaches may be promising for such complex diseases, where the disease process can be monitored in clinically accessible fluid such as blood. Here, we apply a pharmaco-proteomic approach to study PFO endovascular closure, an intervention that requires better risk stratification and monitoring of therapeutic efficacy to individualize treatment.

Methods Used: To reduce confounders in an inherently complex system, the most robust clinical proteomic comparisons are those of profiles taken over time from the same individual. Accordingly, in consecutively recruited patients who underwent PFO closure, we analyze venous blood obtained prior to closure and in long-term followup (>1 year) post closure.

Summary of Results: More than 1 year post closure, plasma protein profiles show a statistically significant (p<0.05) decrease of coagulation markers such as fibrinogen, fibrinogen fragments, D-dimer and others. Moreover, markers of inflammatory changes such as hsCRP, apolipoproteins and various immuno- globulins also remain decreased.

Conclusions: Previously, we found that plasma small molecule signals such as serotonin (5HT) – which may avoid pulmonary filtration via PFO – decrease immediately in the systemic circulation after effective PFO closure. Now we study the long-term effect of PFO endovascular closure. We found that a pharmaco-proteomic approach is clinically feasible and may help to monitor therapeutic efficacy, improve patient selection, and ensure more precise clinical phenotyping for clinical trials in PFO-related stroke. More than 1 year post PFO closure, inflammatory and coagulation factors remain lowered after adjusting for other confounders such as medication changes. Further studies are needed to explore the utility of proteomic profiling to help individualize treatment in PFO-related strokes.

Risk Factors for Non-Adherence in Adolescents with Food Allergy

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Purpose of Study: Non-adherent behavior (defined as not carrying self-injectable epinephrine and trying foods known to contain allergen) among adolescents and young adults with food allergy is prominent. Previous small-scale, qualitative studies have identified several barriers to compliance. However, risk factors for non-compliant behavior are unknown. The current study aims to assess the prevalence of non-adherent food allergy self-management behaviors in a diverse sample of adolescents with food allergy, and identify the risk factors most significantly predictive of non-compliance.

Methods Used: One hundred and fifteen adolescents, aged 13 to 21, completed an online questionnaire assessing food allergy clinical history, beliefs, social factors, and institutional barriers to adherence. Predictors of adherence were examined.

Summary of Results: Sixty-three percent of respondents were age 13 to 16 years. Two-thirds had experienced anaphylaxis, and 57% had received epinephrine. Adherence to epinephrine carriage was reported by 76%, although only 32% “never” forgot epinephrine. Diet adherence was reported by 74%; however, fewer (63%) avoided foods without labels. Non-adherence was unrelated to caregiver education level, previous food allergy education, prior epinephrine treatment, peer support, feelings of isolation, or food allergy teasing. Non-adherence to epinephrine carriage was significantly related to increasing time since last reaction (p<0.02), lack of fear of anaphylaxis (p<0.001), forgetting (p=0.01), not planning ahead (p=0.02), and lack of understanding about food allergy (p=0.02). In multiple logistic regression, only fear of anaphylaxis and recent reaction remained significant predictors of adherence to both behaviors.

Conclusions: Fear of and timing of reactions are predictors of adherence in adolescents with food allergy.

Quality of Life in a Racially Diverse Cohort of Children with Eosinophilic Esophagitis and Comparison to Other Chronic Illnesses

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Purpose of Study: Eosinophilic esophagitis (EoE) negatively impacts health-related quality of life (HRQL), but its impact has not been assessed in...
pediatric patients or compared to other chronic illnesses. Using a validated tool, the Pediatric Quality of Life Inventory (PedsQL), we examined HRQL for a racially diverse cohort with EoE.

Methods Used: Families were recruited prospectively and completed HRQL instruments: the PedsQL parent form (PedsQL–PF) and child form (PedsQL–CF), PedsQL Gastrointestinal Symptom Scale (PedsQL–GI), and Food Allergy Quality of Life Questionnaire (FAQQL). Scores were compared to each other and to published norms.

Summary of Results: Seven patients completed the HRQL instruments. Most participants were male (57%) and non-White (57% Black, 29% White, and 14% Hispanic). Mean age was 8.4 years. The mean PedsQL–PF score was not significantly different from that in “healthy” control children in previous studies (80.2 vs. 79.9, p = 0.96). The mean PedsQL–GI score was lower than the PedsQL–PF score (59.1 vs. 80.2, p = 0.14), suggesting a more disease-specific tool better detected EoE impairments.

Conclusions: In this cohort, overall EoE HRQL was not comparable to other chronic illnesses. However, HRQL specific to gastrointestinal symptoms was decreased. Existing HRQL measures may not capture impairment in EoE, emphasizing the need for a novel pediatric EoE-specific HRQL tool.

P3 Extracorporeal Life Support for a Five Week Old Infant with Idiopathic Pulmonary Hemosiderosis
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Purpose of Study: Idiopathic pulmonary hemosiderosis (IPH) is a rare disease that causes recurrent episodes of diffuse alveolar hemorrhage. It is defined by the triad of iron deficiency anemia, hemoptysis and diffuse pulmonary infiltrates on chest radiograph. Clinically, IPH can cause dyspnea and in some cases, an acute onset of massive pulmonary hemorrhage. The traditional treatment for the latter, especially when the patient is in acute respiratory failure, is conventional mechanical ventilation or high frequency oscillation in conjunction with immunosuppressive therapy. In patients that are not responsive to these modalities, there are case reports of the successful use of extracorporeal life support (ECLS). This is despite a potential relative contraindication of ECLS with ongoing pulmonary hemorrhage, as it requires anticoagulation. In our case report, we describe a one month old infant presenting with hemoptysis, massive pulmonary hemorrhage and significant hypercapnic respiratory failure. He failed conventional ventilation but responded well to ECLS that was initiated early in his course. IPH was suspected in light of his response to high dose steroids and was confirmed by subsequent lung biopsies. This case further contributes to existing evidence that pulmonary hemorrhage secondary to IPH should not be an absolute contraindication to ECLS when conventional therapies have been exhausted.

P4 Complicated Euglycemic Diabetic Ketoacidosis in Pregnancy
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Purpose of Study: There have been very few case reports of euglycemic and Diabetic ketoacidosis in pregnancy. The fetus and placenta can consume blood glucose preventing hyperglycemia even in the presence of DKA. Moreover, in pregnancy there is increased production of ketones. It is important that physicians recognize DKA with normoglycemia to start timely treatment. Delay in treatment can lead to severe maternal and fetal complications.

Summary of Results: A 31 year old female with history of Type 1 Diabetes Mellitus who was 35 weeks pregnant came to the ER with chief complaints of nausea, vomiting and retrosternal burning sensation for 3 days. Symptoms started after she missed a few doses of her twice daily NPH insulin. Physical exam revealed mild epigastric tenderness. Vitals were stable except for mild tachycardia. Laboratory work showed: White count 7300/mm3, Sodium 135meq/L, Potassium 4.5meq/L, Chloride 100meq/L, Bicarbonate 10meq/L, BUN 8meq/L, Creatinine 0.8mg/dL, Blood glucose 97mg/dL. An ABG showed: pH 7.35, CO2 23mmHg. A diagnosis of high anion gap metabolic acidosis was made. Serum and urine ketones were found to be high. Blood and urine toxicology was negative. Even though glucose was normal, a provisional diagnosis of Diabetic ketoacidosis was made. Patient was started on D5NS with potassium drip intravenously. The blood glucose did not improve; symptoms worsened and follow up electrolyte panel in 2 hours showed further decrease in bicarbonate. Fluids were changed to D10 0.45%NS which minimally increased blood sugar to 120mg/dL. Patient received 4 units of intravenous insulin in 24 hours and a minimal improvement in bicarbonate to 10meq/L was seen. Patient received multiple ampules of D50 intravenously and one dose of glucagon 1mg intramuscularly. Subsequently, blood sugars increased and patient received more i.v insulin. Vomiting subsided, bicarbonate improved to 20meq/L and anion gap closed. Patient was restarted on oral feeds and subcutaneous insulin glargine.

Conclusions: Diabetic ketoacidosis should be suspected in any diabetic patient with high anion gap metabolic acidosis irrespective of serum glucose levels. Sometimes, it may be difficult to raise blood sugars before giving insulin especially in pregnancy. All modalities that can be used to increase blood sugars quickly may be considered.

P5 Predictors of Mortality After a Percutaneous Endoscopic Gastrostomy
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Purpose of Study: Percutaneous endoscopic gastrostomy (PEG) is a procedure performed by both Gastroenterologists and Surgeons for a myriad of indications. It is associated with significant post-operative complications and mortality. We aimed to determine the predictors of 30 and 100 day mortality after PEG tube placement.

Methods Used: Retrospective analysis of all PEG tube insertions performed at a University Hospital from Jan 2010 through Dec 2011 was performed. A logistic regression analysis was used to identify factors associated with higher complication rates and mortality.

Summary of Results: A total of 314 PEGs were performed. Commonest indications included cerebrovascular accidents (31.6%), respiratory failure requiring prolonged ventilation (20.6%), post-trauma (15.0%) and dysphagia (10.6%). 99 (31.5%) of all PEGs were placed by gastroenterologists and 215 (68.5%) by surgeons. 27 (8.6%) and 59 (18.8%) patients died at day 30 and 100 respectively. Age > 65 (odds ratio [OR]: 3.87, 95% confidence interval [CI]: 2.16–15.92), serum albumin < 2.9 g/dL (OR: 2.56, 95% CI: 1.11–5.93), serum creatinine > 1.3 mg/dL (OR: 3.07, 95% CI: 1.28–7.37) and hypertension (HTN) (OR: 2.12, 95% CI: 1.17–3.67) as predictors of increased mortality post PEG tube placement.

Conclusions: Nearly one-fifth of patients undergoing PEG placement died after 100 days. Advanced age, poor nutritional status, renal failure, inadequate blood pressure control and postoperative complications are independent predictors of increased mortality post PEG tube placement. Further studies...
are needed to ascertain if modifying these risk factors could improve the overall prognosis.

P6
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Purpose of Study: AH accounts for significant morbidity, mortality and financial burden. Aim of this study is to evaluate temporal trend of hospitalizations from AH and evaluate its financial impact.

Methods Used: The National Inpatient Sample (NIS) databases (from 2002 to 2007) which are collected by Agency for Healthcare Research and Quality were utilized. Individuals with age ≥ 21 years were included. The hospitalizations with primary diagnosis of AH were captured by ICD-9 codes (571.1, 571.2, and 571.3). The national estimates of hospitalization were derived using sample weights. Ages standardized population rate of hospitalizations were calculated from US census estimate. The change in total average charges per each hospitalization over the years was calculated after taking inflation into account. Simple linear regression method was used to assess trends in hospitalization over time.

Summary of Results: Hospitalization with primary diagnosis of AH has not changed significantly from 67,102 in 2002 to 66,983 in 2007, while hospitalization with secondary diagnosis has increased from 182,783 in 2002 to 219,035 in 2007. Most cases were male (72%). Hepatic coma was the most common admitting diagnosis for individuals hospitalized with secondary diagnosis of AH (8.9% in 2002 and 9.7% in 2007). There was a significant decrease in inpatient mortality from primary diagnosis of AH from 10% (2002) to 7.4% (2007) (p < 0.001), while the additional cost of each hospitalization increased around 26% in 2007 compared to 2002 after adjusting for inflation (additional cost per hospitalization $6949 in 2007 compared to 2002). Private insurance (including HMO) were the most common expected primary payer for AH hospitalizations (27%). Despite increase in cost per hospitalization, length of stay for hospitalization does not decrease significantly (6.7 days in 2002 to 6.3 days in 2007, p = 0.06).

Conclusions: A trend in hospitalizations related to AH does not seem to be increasing. Though financial burden related to AH increased in last few years, there was a trend towards a decrease in inpatient mortality.

P7
Lymphocytic Colitis Can Mimic Food Allergy and other Mucosal Disorders
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Purpose of Study: To present microscopic colitis which can occur in up to 9% of patients with chronic diarrhea, mimicks food allergy, lactose intolerance, C. difficile, celiac and irritable bowel syndrome (IBD)

Methods Used: We present a 24 year-old white male evaluated in the Allergy Immunology clinic after seen by Gastroenterology in our outpatient clinic complaining of intermittent diarrhea.

Summary of Results: He experienced 3-4 watery episodes of diarrhea daily, unrelated to food despite avoiding lactose. Gastroenterology evaluation 6 years prior revealed lactose intolerance and IBD after EGD. Diarrhea continued associated with abdominal discomfort, nausea, and bloating. He denied food allergy and displayed only mild left lower quadrant tenderness without rebound. Laboratory evaluation was negative for anti-gludin, anti-TTG, stool O&P C. difficile. Subsequent EGD revealed esophageal candidiasis. He was placed on oral fluconazole. Colonoscopy was normal.

Random biopsies performed showed intraepithelial lymphocytosis normal subepithelial collagen and foam histiocytes.

Conclusions: Keys to making the diagnosis are obtaining biopsies of normal appearing colonic mucosa and sufficient number of biopsies to avoid sampling errors. Pathophysiology comes from colonic perfusion studies showing the absorption of water and salt which is impaired in both collagenous and lymphocytic colitis. Budesonide is has been evaluated in randomized trials to produce a clinical response. In patients with chronic diarrhea colonoscopy should be performed since there may be an underlying diagnosis of microscopic colitis.

P8
Factors Affecting Stroke Outcome and Hospital Resource Utilization Among Elderly
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Purpose of Study: The aim of the study was to look at stroke outcome, factors determining it and resource utilization among patients aged 80 years and above.

Methods Used: This is a retrospective study performed in large a stroke center. The study included stroke patients aged 80 and above. Patients with hemorrhagic stroke, brain tumors and advanced malignancy were excluded. After exclusions, the sample size was 175 patients. Stroke outcome was defined based on discharge destination, functional activity and death. The functionality for nursing home and rehabilitation center patients was determined at 30 days post discharge using modified functional independence score. Any functionality requiring moderate assistance or more was considered as poor outcome for the purpose of this study. Home discharge was considered good outcome. Outcome data was analyzed with respect to diagnostic studies, stroke severity and co-morbidities. Length of stay was analyzed with respect to investigational studies. Investigational studies were assessed based on the amount of additional information each test provided. A test was considered unnecessary if no additional information that changed treatment plan was obtained.

Summary of Results: In our study, 49% patients had favorable outcome. Stroke outcome was found to depend on severity of stroke, presence of comorbid conditions, dysphagia and dementia. (p-value < 0.05). About 56% of patients had at least one diagnostic study that was considered unnecessary. Diagnostic studies had no effect on outcome (p-value > 0.05). Length of stay was 2.7 days more for those patients who underwent more diagnostic investigations (p-value < 0.05). The risk factor profile was similar in outcome groups.

Conclusions: Even though stroke care standards are available, they are generally not patient specific and do not take into consideration the functional status among elderly patients leading to improper health care resource utilization. Identifying factors that impact stroke outcome, may reduce unwanted investigations, decrease the length of hospital stay and lead to proper utilization of hospital resources which in turn could be used for improvement in the functional state of patients.

P9
Neurological Involvement in Chronic Lymphocytic Leukemia: A Report on 6 Cases
Reena Vora1, Mohammad Khan1, Shinro Parshad1, Angelica Hollweg1, Kanti Rai2, Jacqueline Barrientos1, 1, Hematology and Medical Oncology, Hofstra North Shore-LIJ School of Medicine, Hempstead, NY, United States.

Purpose of Study: Chronic lymphocytic leukemia (CLL) is the most common adult leukemia in the United States. According to the SEER database, the annual incidence is about 15,000 new cases. It has been estimated...
that there are approximately 150,000 individuals living with CLL in the United States. Direct involvement of the nervous system (including the brain, cranial nerves, spinal cord, leptomeninges, and peripheral nerves) by CLL is rare. Presenting symptoms include headaches, changes in mental status, neuropathy or weakness of the lower extremities, and cerebellar symptoms. The true incidence of neurological involvement with CLL is unknown: though central nervous system involvement has been reported in the range of 8-20% in CLL autopsy studies, anti-mortem studies report the incidence at less than 2%.

Methods Used: We aim to describe the clinical course as well as prognostic and cytogenetic markers of 6 patients that presented with CLL neurological involvement during the last two years. Amongst these 6 cases, 2 had biopsy proven infiltration of the sural nerve with neoplastic CLL cells, which has yet to be described in the literature. To put it in perspective, our clinic routinely follows 2,000 CLL patients with an average of 140 new consults per year.

Summary of Results: To the best of our knowledge, this is the largest case series from a single institution. Our analysis will include the prognostic markers of these cases (not previously reported in the literature) including the findings of chromosomal aberrations, IgVH, zap 70, and CD 38+ status along with the clinical course of these patients. In our case series we will review the literature on neurological complications in patients with CLL, treatment options, and outcome.

Conclusions: Because central nervous system invasion is infrequently described in CLL, it may be misdiagnosed or under-reported. Physicians need to consider CLL involvement of the central nervous system when patients report nonspecific neurologic manifestations. Early identification and therapeutic interventions targeting the underlying CLL can improve the patient's quality of life, particularly in patients with systemically dormant CLL (stable cell lines, no lymphadenopathy, or organomegaly) and/or lacking typical B symptoms (fvers, night sweats, weight loss).

**P10**

Neutropenic Enterocolitis (NEC) in Adults with Acute Leukemia

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**Purpose of Study:** NEC, a life threatening complication of chemotherapy induced neutropenia, by definition is defined by abdominal pain, fever and bowel wall thickening. This is a single center retrospective chart review of NEC in adults with acute myeloid leukemia (AML), acute lymphoid leukemia (ALL), or myelodysplastic syndrome (MDS).

**Methods Used:** We identified 20 cases between 1/2008-3/2012. All had T > 38°C, abdominal pain, neutropenia (< 500/mL), submucosal edema, pericolonic inflammation or bowel wall thickening on CT imaging and AML, ALL, or MDS.

**Summary of Results:** M:F ratio 1:1. Mean age 51.5 years (25-82). The 3 who died had a shorter mean duration from onset of symptoms to documentation of NEC by imaging was 5.6 days (0-15), mean duration of symptoms 16.4 days (0-46), mean duration of neutropenia prior to diagnosis of NEC 10.9 days (0-32). The 3 who died had a shorter mean duration from onset of symptoms to documentation of NEC by imaging was 5.6 days (0-15), mean duration of symptoms 16.4 days (0-46), mean duration of neutropenia prior to diagnosis of NEC 10.9 days (0-32). The 3 who died had a shorter mean duration from onset of symptoms to documentation of NEC by imaging was 5.6 days (0-15), mean duration of symptoms 16.4 days (0-46), mean duration of neutropenia prior to diagnosis of NEC 10.9 days (0-32). Among the 17 who recovered from NEC these durations were 6.3, 17.9, and 11.7 days, respectively. Mean age of 3 who died was 72 years (67-82), while mean age of 17 who recovered was 47 years (25-69). All 3 who died had AML, 2 receiving induction and 1 remission consolidation. None of the pts had surgery.

Conclusions: This is the largest single institution retrospective study of NEC in adults with acute leukemia. 17 of 20 recovered. Deaths occurred in pts who had shorter duration of symptoms and neutropenia prior to diagnosis, perhaps reflecting disease virulence. Advanced age may be a risk for poor outcome. 11 of 17 who survived received a clear liquid diet, suggesting that complete bowel rest may not be necessary. Further studies are needed to establish guidelines for treatment of NEC.

**P11**

May-Thurner Syndrome or Iliac Vein Compression Syndrome in Postpartum Period - A Rare Cause of Extensive Deep Venous Thrombosis

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**Purpose of Study:** Left common iliac vein can be compressed between right common iliac artery and underlying fifth lumbar vertebral body leading to unprovoked deep venous thrombosis or chronic venous congestion. This is called iliac vein compression syndrome or May-Thurner syndrome.

**Methods Used:** A 24 year old active, healthy woman presented to the ER with one week of pain and swelling of her left lower extremity and left groin. She underwent a cesarean section five weeks before. The hospital course was uncomplicated. She has no previous or family history of clotting disorders and was never on oral contraceptives. On examination, her left lower extremity was swollen and tender with some redness. The results of coagulation work-up, including Prothrombin time and Partial thromboplastin time, were found to be normal. Venous doppler ultrasonography showed an extensive clot involving the left common iliac, external iliac, common femoral, and superficial femoral veins. She was started on anticoagulation. A vascular surgeon was consulted for the purpose of thrombolysis. Hence a conventional venography was performed on the patient. Conventional venography by intervention radiologist revealed complete occlusion of the left common iliac vein consistent with May Thurner syndrome with some collateral veins. Patient was immediately referred for percutaneous catheter-directed thrombolysis and stenting of the left common iliac vein to ensure long term patency of the vein and to prevent post thrombotic syndrome.

**Summary of Results:** This rare clinical entity presents between third and fifth decades. Postpartum period could be a risk factor. The 2008 American College of Chest Physicians Evidence-based clinical practice guidelines recommends catheter-directed thrombolysis (with or without mechanical thrombectomy) and endovascular stent placement in these cases.

**Conclusions:** May-Thurner syndrome should be suspected in any young patient with extensive thrombosis involving common iliac vein. Patients should be considered for further diagnostic tests and treatment. Delay in diagnosis can lead to recurrent deep venous thrombosis not responsive to anticoagulation and complications like post-thrombotic syndrome.

**P12**

A Rare Case of Relapse of Chronic Demyelinating Inflammatory Polyneuropathy After Influenza Vaccine

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**Purpose of Study:** Guillain Barre syndrome or GBS (Acute Inflammatory Demyelinating Polyneuropathy) or its chronic variant Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) as well as relapse of CIDP are rare disorders. There is evidence for causal association between oral polio and tetanus toxoid-containing vaccines and GBS/CIDP. Studies have shown only small or no risk of these disorders from influenza vaccine. Delay in recognition of these disorders post vaccination could be life threatening.

**Methods Used:** A 78-year-old man presented with complaints of five days of generalized weakness. He also reported difficulty in getting up from a chair and difficulty while lifting his arm. On further questioning, he reported taking an influenza vaccine shot a few days prior to his weakness. He gave history...
Currently, we do not have any definitive guidelines regarding cerebral vasculitis and recurrent ischemic stroke in a young adult. Soft restraints were reinstated later. Investigational studies were repeated to look for an underlying cause. The results were negative. As there was no response, higher doses of haloperidol at night and lower doses in the daytime were used to restore his sleep-wake cycle. There was a planned reduction in the number of visits from the hospital staff. Instead, his family was allowed to spend more time with him. Music and television were used in an effort to reorient the patient to daily life. Soft restraints were reinstated. Non-pharmacological measures play a very important role in treatment. Scenario of Results: A 26-year-old man presented with a one day history of left hand and foot numbness and dysesthesia accompanied by blurry vision. Brain imaging revealed acute ischemic strokes in multiple vascular territories. Persistent visual symptoms prompted ophthalmologic examination; fluorescein angiography demonstrated early hypofluorescence and late hyperfluorescence of placoid lesions in the foveomacular region, consistent with AMPPE. CSF analysis showed a mild lymphocytic pleocytosis. ANA and anti-Ro titers were elevated in absence of other systemic signs. One week into his hospital course, the patient developed acute right-sided sensory changes associated with new strokes on brain imaging. Despite negative brain biopsy, conventional angiography demonstrated vascular irregularities suggestive of CNS vasculitis. The patient was treated with immunosuppressive therapy without further ischemic events. Conclusions: AMPPE is an acquired inflammatory disorder of the retinal pigment epithelium and choroid that primarily affects young adults. Although the exact cause of AMPPE is unknown, various autoimmune and infectious etiologies have been implicated. Whereas AMPPE is often a self-limited condition, this entity has been infrequently associated with significant neurologic sequelae including stroke and venous sinus thrombosis. Although there is limited data available regarding the etiologies of recurrent stroke in young adults, AMPPE should be considered a risk factor for ischemic events. In the absence of significant findings on brain biopsy, which may often be falsely negative, ophthalmologic findings may aid in the diagnosis and early treatment of cerebral vasculitis.

P13
Ophthalmologic Findings Associated with Recurrent Stroke in a Young Adult
Rachel Egyhazi 1, Pankaja Ramakrishnan 2, MingMing Ning 1.

Summary of Results: A 26-year-old man presented with a one day history of left hand and foot numbness and dysesthesia accompanied by blurry vision. Brain imaging revealed acute ischemic strokes in multiple vascular territories. Persistent visual symptoms prompted ophthalmologic examination; fluorescein angiography demonstrated early hypofluorescence and late hyperfluorescence of placoid lesions in the foveomacular region, consistent with AMPPE. CSF analysis showed a mild lymphocytic pleocytosis. ANA and anti-Ro titers were elevated in absence of other systemic signs. One week into his hospital course, the patient developed acute right-sided sensory changes associated with new strokes on brain imaging. Despite negative brain biopsy, conventional angiography demonstrated vascular irregularities suggestive of CNS vasculitis. The patient was treated with immunosuppressive therapy without further ischemic events. Conclusions: AMPPE is an acquired inflammatory disorder of the retinal pigment epithelium and choroid that primarily affects young adults. Although the exact cause of AMPPE is unknown, various autoimmune and infectious etiologies have been implicated. Whereas AMPPE is often a self-limited condition, this entity has been infrequently associated with significant neurologic sequelae including stroke and venous sinus thrombosis. Although there is limited data available regarding the etiologies of recurrent stroke in young adults, AMPPE should be considered a risk factor for ischemic events. In the absence of significant findings on brain biopsy, which may often be falsely negative, ophthalmologic findings may aid in the diagnosis and early treatment of cerebral vasculitis.

P14
A Rare Case of B-Cell Lymphoma Mimicking Lateral Medullary Syndrome
Sandhya Samavedam 1, Sitasraya Devathi 1, Devathi Sreedhar 1, Vimal Ravi 1.

A 50 year old male was brought to the ER for one day history of dysphagia, hoarseness of voice, dysphagia and diplopia. On examination, patient had ataxia on the left side, nystagmus on extreme left gaze and decreased sensation on the right side of the body. Lab results were normal except for elevated total bilirubin with normal direct bilirubin. CT scan of the head without contrast did not show any abnormality. An MRI brain was ordered before any treatment was started because of long duration of symptoms. MRI of brain with contrast showed enhancing mass in the brain stem involving the left medulla, left cerebellum and crossing the midline to the right without any obstruction of the ventricle. During the process of evaluation, patient developed altered mental status and repeat MRI of brain showed CSF obstruction which was relieved by a ventriculostomy. Subsequently, he developed fever. Spinal fluid cytology was performed to evaluate for source of fever. CSF analysis showed CD20+ cells. A probable diagnosis of B-cell lymphoma was made. Patient died during hospital stay from intracerebral hemorrhage as a result of a fall before further evaluation and treatment was possible. Conclusions: The most common cause of Lateral Medullary syndrome is vascular occlusion of the small arteries like PICA and sometimes by the occlusion of the vertebral artery. This case demonstrates the significance of CNS mass lesions presenting as Lateral Medullary Syndrome. Unrelenting vomiting and long duration of symptoms should raise suspicion of CNS masses.
and lines etc. are some examples. Soft restraints should be used only after pharmacological measures fail. Even though these measures are more emphasized among elderly, younger patients may also benefit.

**P16**
Glyco-proteomic Study of “Cool Therapy” in Global Ischemic Brain Injury Post Cardiac Arrest

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**Purpose of Study:** Global ischemic brain injury post cardiac arrest is prevalent with dismal prognosis – less than 10% survive to hospital discharge. Therapeutic hypothermia (TH) is an efficacious neuroprotective treatment, protects against multi-organ damage, doubles the chance of good neurologic outcome and decreases mortality by 25%, but is grossly underutilized (<5%). We use a glyco-proteomic approach to better understand and predict TH response, because: 1) glycosylation is one of the most important and common extracellular post- translational modifications in immunity and coagulation, and is crucial in TH-related side effects such as sepsis and bleeding; 2) it occurs rapidly over the time window of treatment; and 3) it can be used to focus proteomic profiling by targeting specific plasma signals.

**Methods Used:** Lectin array and various lectin immunoblots were used to study plasma glycosylation patterns of TH patients (24 hrs post cardiac arrest) with good vs poor clinical outcome (evaluated at 3 months post event). To identify and enrich candidate plasma proteins with potential clinical utility, specific lectin affinity chromatography and LC-MS/MS were performed.

**Summary of Results:** Plasma glycosylation patterns differ dramatically with respect to clinical outcome in TH-treated patients. On screening lectin blots, whereas SBA showed little change, RCA (decreased around 100kD) and ConA (increased around 40-150kD) were different in a wide range of MW, and WGA identified unique banding around 100kD in TH responders. In lectin affinity pull-down, more than 400 specific glycoproteins were identified showing significant changes with respect to TH outcome.

**Conclusions:** A glyco-proteomic approach is promising to help predict neurologic outcome, select hypothermia treatment responders, and triage hypothermic therapy in global ischemic brain injury patients post cardiac arrest. Further studies are under way to investigate these exploratory findings.

**P17**
Plasma Protein Changes after Tissue Plasminogen Activator (tPA) treatment in Acute Ischemic Stroke Patients

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**Purpose of Study:** The utilization of IV tPA remain low after more than a decade of FDA approval. We aim to widen the therapeutic window for tPA by understanding clinical thrombolysis response. Besides its intended role in clot lysis, tPA is also a pleiotropic signaling protease in the blood, whose efficacy may potentially be monitored by proteomic profiles directly in stroke patients.

**Methods Used:** We mapped quantitative profiles of all proteins pre and post IV tPA administration in plasma of stroke patients. Plasma was sampled from stroke patients immediately before and 6-12hrs after tPA administration. Quantitative changes of proteins pre and post tPA were mapped by LC-MS.

**Summary of Results:** Both intra- and extracellular proteins were found. Compared to pre-tPA levels, we found significantly increased post-tPA levels of thrombolytic-related proteins such as fibrinogen gamma chain, 7-2-antiplasmin, and a decrease in factor X. Changes were also found in non-thrombolytic pathways, such as 7-2-macroglobulin and GPX3 glutathione peroxidase 3.

**Conclusions:** In order to study thrombolysis response and monitor thrombolysis efficacy at the bedside, we mapped plasma protein changes stroke patients treated with IV tPA. We found a coordinated change not only in reported thrombolysis pathways, but also in other important proteolytic pathways in patient plasma. These early results are a step toward attempts to monitor clinical thrombolysis response in acute stroke patients in real time. Further studies are under way to compare plasma profiles of tPA-treated stroke patients with respect to different clinical outcome.

**P18**
Genetic Counseling and Testing Among a Consecutive Series of Patients with Epithelial Ovarian (EOV), Tubal (ETC), or Peritoneal Carcinoma (PC) in the Community Setting

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**Purpose of Study:** To evaluate genetic counseling and results of testing among a series of consecutive patients with ovarian, tubal, or peritoneal carcinoma.

**Methods Used:** Methods: Since April 2006, a policy we adopted of universal genetic assessment among patients with ovarian, tubal, or peritoneal carcinoma. Every patient diagnosed with ovarian tubal or peritoneal cancer received genetic counseling regarding the hereditary implications of their condition and the role of a genetics assessment. We aimed to understand barriers to genetic testing and burden of BRCA mutation in ovarian cancer with or without family history of cancer.

**Summary of Results:** Between 2006-2011, 340 patients with ovarian, tubal, or peritoneal carcinoma were seen in consultation by the medical oncology service. The mean age of diagnosis was 62 (range 21-89). Of these patients, 133 (30%; 95%CI 23-44) agreed to a genetics evaluation and underwent mutation analysis, 39 (30%; 95%CI 21-57) found to have mutations in BRCA1/2. There were 23 patients with BRCA1 mutations and 16 with BRCA2 mutations. The majority of patients with BRCA mutations did not have first degree relatives with breast and/or ovarian cancers and most of them (90%) had (30/35; 95%CI 75-97) had high grade serous lesions.

**Conclusions:** A policy of universal genetic assessment has increased the rate of genetic testing among our patients. Of those tested in this unselected fashion, 39% (39 of 133) had mutations detected with the overwhelming majority associated with serious lesions of varying stage. This inclusive approach to the comprehensive patient evaluation highlights the critical place of genetic analysis in the management of gynecologic cancer patients. Identifying genetic mutation in cancer patients allows for early detection and prevention in their family members.

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Implementation of a Structured Handoff Tool, SOUND, Leads to an Improvement in Patient Handoffs in a Pediatric Emergency Department

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Purpose of Study: Handoff communication is an important contributor to safety and quality in the emergency department (ED). Breakdowns in this process may lead to unsafe conditions or adverse events. The purpose of this study was to test the hypothesis that the quality of patient handoffs would improve after implementing a structured handoff method.

Methods Used: We developed a handoff tool after researching existing literature. This tool contains 5 components judged essential by our expert consensus group, and is described by the mnemonic SOUND - Synthesis, Objective Data, Upcoming Tasks, Nursing Input, and Double Check. We implemented SOUND through an educational module and reminder signs posted in team changeover areas. We measured the completeness of handoffs before and after implementation and used statistical process control (SPC) to measure the effects of the intervention. A successful handoff was one in which 4 of the 5 components were included. As a balancing measure, we measured mean time per patient discussed before and after the implementation of SOUND.

Summary of Results: We observed 638 patient handoffs, 286 pre-intervention and 352 post-intervention. As demonstrated in the figure, there was a significant increase in percentage of successful handoffs after implementation of SOUND. This improvement was evident in both trainees and staff physicians. There was an associated mean increase in handoff time of 20 seconds per patient (52.9 vs. 73.0 seconds, p=0.005).

Conclusions: The implementation of a structured handoff tool, SOUND, improves the completeness of patient handoffs in the ED, with only a modest increase in the amount of time required to discuss each patient.

Improvement in Patient Handoffs in the Pediatric Emergency Department After Implementation of the SOUND Model

<table>
<thead>
<tr>
<th>Batch</th>
<th>Percent Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Interns</td>
<td>50%</td>
</tr>
<tr>
<td>SOUND Model Implemented</td>
<td>90%</td>
</tr>
</tbody>
</table>

P21
Signs and Symptoms Associated with Surgical Intervention in Children with Abdominal Pain

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Purpose of Study: We developed a clinical pathway for the evaluation of abdominal pain including risk stratification based on multidisciplinary consensus due to absence of strong published evidence. We performed this study to test our risk stratification and determine if specific signs and symptoms, identified at the time of triage, are associated with an increased risk of surgical intervention, defined as operative management, reduction of intussusception, or surgical admission for > 24 hours.

Methods Used: This was a retrospective case-control study at an urban, academic pediatric hospital. Cases had a discharge diagnosis of appendicitis, intussusception, obstruction, or volvulus and surgical intervention. We matched 1:1 with random and age-matched controls with a discharge diagnosis of appendicitis and no surgical intervention. Exclusion criteria were pain > 7 days, age < 2 months or > 18 years, prior diagnostic imaging, or abdominal surgery within the preceding 30 days. Independent variables included presence or absence of candidate predictors based on the pathway: fever, abdominal distention, pain score > 5/10, age > 24 months, referred with concern for surgical abdomen, altered mental status, localized right lower quadrant (RLQ) pain, dehydration, bilious emesis, vomiting with previous abdominal surgery, and surgical intervention, defined as operative management, reduction of intussusception, or surgical admission for > 24 hours.

Summary of Results: We identified 145 cases, with a mean (± s.d.) age of 10 (± 5) years, 39.3% were female and 117 (80.7%) of cases were appendicitis. The following were associated with surgical intervention in bivariate analyses: male gender, fever, referred with concern for surgical abdomen, localized RLQ pain, dehydration, and pain worsened by movement. Multivariate analysis identified localized RLQ pain (adj OR 25.5, 95% CI
Localized RLQ pain and male gender are associated with surgical intervention.

**Conclusions:** Localized RLQ pain and male gender are associated with surgical intervention in children presenting with abdominal pain. Appendicitis was the most common surgical condition. Further research is warranted to determine clinical signs and symptoms associated with less common surgical diseases.

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**P22**

**The Parent Perspective on Return Emergency Department Visits**

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**Purpose of Study:** Approximately 5% of pediatric patients return to the Emergency Department (ED) within 72 hours of initial evaluation. Multiple studies report reasons for return visits based on retrospective chart reviews. Few studies have evaluated return visits from a family-centered perspective. The purpose of this study was to identify themes related to return visits from the parent perspective.

**Methods Used:** Two parent focus groups were conducted. Parents were excluded from participation if the return visit was unrelated to the initial visit or the child was asked to return (e.g. wound check). The focus groups were audiotaped, transcribed, and analyzed using qualitative techniques.

**Summary of Results:** A total of 13 parents participated. Children were 10 months to 11 years (mean 4.2 years). Primary symptoms of concern for parents included respiratory (n=6), gastrointestinal (n=2), orthopedic (n=2), and other infectious (n=3; stomatitis, cellulitis, abscess). Return visits occurred 12 to 50 hours (mean 28.2 hours) after the initial visit. Dominant themes for return visits included 1) continued or worsening symptoms, 2) lack of follow up, 3) dissatisfaction with initial visit, and 4) generic discharge instructions. Parents commonly cited continued fever as a reason for return visit. "His fever came back up and the Tylenol wasn’t working." Scheduling appropriate follow up with pediatricians or subspecialists was difficult for a number of families. "Instead of just waiting trying to get a sick visit, I just took him back to the ER." "I called orthopedics and they say they can’t see him for another week." Some parents were dissatisfied with the initial visit, feeling "brushed off" or rushed. Others felt that their concerns were not appreciated and more tests should have been performed. Generic discharge instructions prompted a few return visits. "I followed the instructions on the paper. I waited 48 hours...and the fever was not going away." "The discharge instructions were specific kid instructions...keep them hydrated...I don’t even remember because it was so vague." 

**Conclusions:** Several of the reasons parents identify for return visits are within the control of the ED. Surveys based on these focus groups will help quantify these reasons and prioritize future strategies to decrease the number of return visits.

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**P23**

**Lead Testing of Red Blood Cell Products for Pediatric Use**

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**Purpose of Study:** Lead is a neurotoxin that can affect individuals at any age, especially children with their developing neurological system. Recent studies has suggested that levels less than 10 micrograms/dL can be associated with neurocognitive deficits and adult mental retardation. In NICU, premature infants are frequently transfused with RBC's to decrease donor exposure. Children's National Medical Center screens blood donors by using an FDA approved point of care lead testing system (Leadcare® I device. Being able to easily screen blood products for lead using this device will allow rapid screening of high lead packed RBCs for children, especially premature infants.

**Methods Used:** After processing the whole blood unit for packed RBCs, lead levels will be analyzed by using both GFAA and Leadcare® I. Because lead is primarily found in whole RBCs, we will obtain the hematocrits of donor whole blood and packed RBC products and determine lead content of the samples to correct for dilution of the product during processing. We will also analyze different anticoagulant and additive solutions by using both GFAA and Leadcare® I. Statistical analysis will be performed. Correlations between values obtained from GFAA Leadcare® I will be performed.

**Summary of Results:** By GFAA, lead levels of both packed RBC's and washed RBC's were decreased by almost 50 % with each dilution. However, by Leadcare® I, lead levels of both packed RBC's and washed RBC's were slowly decreased with each dilution. But after the fourth dilution, lead levels were not decreased and stayed around 3.

**Conclusions:** We are still looking for 0 lead level diluent.

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**P24**

**‘Tree-in-Bud’ Appearance on CT Scan of Chest**

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**Purpose of Study:** ‘Tree-in-bud’ pattern is usually seen on thin section-CT scan of chest. This is seen in multiple respiratory conditions. It is important to recognize this important radiologic sign for an accurate diagnosis.

**Methods Used:** A 55-year-old Russian female with past medical history of coronary artery disease presented with cough, chest pain, shortness of breath and low grade fevers for 1 week. Physical exam showed bilateral crackles at lung bases and mild leg edema. Oxygen saturation was above 95% on room air. EKG, BNP and other laboratory results were within normal limits. Chest X-ray showed mild pulmonary edema. Patient’s physical exam and diagnostic studies were not consistent with any particular diagnosis. Hence, a CT chest was done which showed appearance of the so-called tree-in-bud pattern. Based on CT findings, symptoms and history of immigration, a PPD skin test and tests for atypical pneumonia were ordered. Empiric antibiotics for pneumonia were started. Serology for Mycoplasma pneumonia was positive. PPD skin test was negative. Patient’s symptoms dramatically improved with antibiotics.

**Summary of Results:** ‘Tree-in-bud’ pattern is seen when peripheral airways are filled with pus or fluid with peribronchial inflammation. These airways get well demarcated on CT scan giving a tree like pattern. When respiratory bronchioles and alveolar ducts are inflamed, a bad like pattern is seen. Hence the name ‘Tree-in-bud’. It is seen in a variety of conditions. This was originally described in endobronchial spread of Mycobacterial Tuberculosis. Subsequently, it was described in multiple conditions – aspiration, atypical Mycobacterial infections, Pneumonia (Staphylococcus Aureus, Hemophilus Influenza and Mycoplasma pneumonia). Aspergillosis, low grade adenocarcinoma, immunological diseases etc.

**Conclusions:** Knowledge of pathophysiology and etiology of this CT sign is important to make a correct and timely diagnosis.
P25

Recognizing Factors Associated With Doubling in Creatinine From Baseline in Children Through Automated Adverse Event Detection

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Purpose of Study: Automated adverse-event (AE) detection using triggers derived from the electronic health record (EHR) is an effective method of identifying adverse events, including rise in serum creatinine (Cr). However, the occurrence of adverse events related to increasing Cr in hospitalized children and the harm that results remain largely unknown. We explored the use of a trigger based detection system to identify a doubling of Cr, categorize adverse events associated with Cr doubling and describe factors associated with these events in hospitalized children.

Methods Used: A retrospective observational study of 100 consecutive Cr triggers to assess the incidence of adverse events at a large urban children's hospital. Trigger was defined as a Cr value of at least twice from inpatient admission baseline and > 0.6mg/dL. Patients on dialysis and having been on cardiopulmonary bypass within 72 hours were excluded. Clinical and demographic variables were analyzed to identify subpopulations at risk for rise in Cr. Each trigger was reviewed to determine if there was an AE, its preventability and the harm associated if there was an AE.

Summary of Results: 73 triggers were categorized as AEs (positive predictive value 73%), which represented 2.61 AE/1000 patient days and 1.61 AE/100 admissions. No AEs were categorized as preventable. 39 events (53%) occurred in either the pediatric or cardiac intensive care units. 36 events (49%) occurred in patients receiving vancomycin, which was associated with an increased absolute Cr elevation from baseline as compared to patients not receiving vancomycin (1.1 mg/dL vs. 0.7 mg/dL, p=0.025). No other differences in Cr elevation were observed based on patient factors (e.g. gender, history of kidney disease) or clinical factors (e.g. receipt of diuretics, non-steroidal anti-inflammatory agents).

Conclusions: Rise in Cr is common in hospitalized children, especially critically ill children. An automated EHR derived trigger system was effective in identifying rise in Cr associated with vancomycin in this patient population. Cr doubling was not associated with preventable AEs in this limited sample.

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Dual Stent Migration: Complication Never Reported

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Purpose of Study: There has been significant increase in endovascular stents in the management of dialysis access stenosis, incidence of stent related complications like stent re-stenosis, thrombosis, stent shortening, stent fracture, stent infection and stent migration has increased significantly.

Methods Used: A 44 – year old woman was transferred to our facility for the management of left peritoneal retroperitoneal hematoma. The patient has a past medical history of lupus nephritis (diagnosed more than decade ago) on hemodialysis. Patient had arteriovenous graft (AVG) placed (in 2005) for dialysis in the right lower extremity with multiple vascular access issues with placement of two stents 7*37 and 7*27 in 2007 (unknown type and make of stent). Besides extremity examination which revealed right lower extremity AV graft, bruit and thrill + trace pedal edema bilateral, rest of the physical examination was unremarkable.

Summary of Results: Echocardiogram demonstrated embolized AV graft stent, proximal end of the stent abutting right atrial wall, with distal end of the stent appears to be within tricuspid valve. Cardiothoracic surgery was consulted and patient underwent elective surgery, which involved extraction of right atrial stent with right atrial wall repair and also partial removal of left pulmonary artery stent.

Conclusions: With the increasing use of endovascular stents in the management of dialysis access stenosis, incidence of stent related complications has increased significantly. Despite the recent advances in the scientific, procedural and conjectural knowledge, the role of stent placement in hemodialysis access dysfunction still remains controversial.