Adolescent Medicine and General Pediatrics III
Concurrent Session
8:00 AM – 10:00 AM
Saturday, January 28, 2017

369 ELICITING HEALTH NEEDS IN ORPHANED POPULATIONS: A PHOTOVOICE PROJECT IN NEPAL

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10.1136/jim-2016-000365.369

Purpose of Study Following devastating twin earthquakes in 2015, Nepali people continue to face energy shortages, political instability, poverty, physical and mental traumas, infectious diseases, pollution, and malnutrition. Orphans in Kathmandu are a vulnerable and underrepresented subset of this population. Identifying their health needs and their understanding of their needs is an important part in ensuring their well-being.

Methods Used We used a qualitative methodology derived from Photovoice to investigate pressing health needs of Nepali orphans. Cameras were distributed and children (n=16) were given the option to photograph or draw pictures of "healthy and unhealthy behaviour". Photos were categorized and a 3-hour focus group provided an opportunity for the children to explore the meaning and stories behind what they captured.

Summary of Results The 151 images collected and the focus group transcripts revealed four themes: 1. Environmental pollution, 2. Preventative actions (e.g. nutrition and exercise), 3. Self-awareness (e.g. self-image and identity), and 4. Self-discipline and social expectations (e.g. stigma, customs).

Conclusions Our findings provide some insight into the health-related issues that are most pertinent to children who are orphans in Nepal, and help validate a methodology for capturing health needs and perspectives of vulnerable populations. The themes and examples explored help us understand their perceived sense of agency in meeting their health needs. These results can be helpful in navigating care of children (both directly and indirectly) and other vulnerable populations in low-income and post-disaster setting.

370 A SKULL DEPRESSION IN A 9-MONTH OLD GIRL

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10.1136/jim-2016-000365.370

Case Report A 9-month old unvaccinated African American girl presents to the emergency department for an evaluation of an abnormal head "bump". When obtaining history, the mother reports that five days prior to presentation, the patient had rolled over on a bed and fell three feet to the ground. Following the fall there was no change in behavior from the patient, apparent pain, or emesis. Since the incident mother reports the patient has been doing well, however, the mother became concerned over the last two days when she noticed a depression on the patient's head while bathing her.

The infant was born full term but small for gestational age. According to the parent, at birth, there were concerns for a leg deformity, and an X-ray was performed showing bilateral "bowed legs." However, patient was lost to follow-up after nursery discharge with no establishment of a primary care pediatrician

On examination, her vital signs are within normal limits. The patient's weight and height are both below the 3rd percentile. The patient is interactive and playful. There is a small depression 4 centimeters in diameter on the left parietal region of her head with no associated crepitus or tenderness to palpation. The remaining physical exam is normal.

Laboratory studies are obtained, with a CBC and CMP within normal limits. A head CT without contrast shows a 13 millimeter depressed comminuted left parietal skull fracture with possible small underlying subarachnoid hemorrhage.

A skeletal survey shows multiple fractures. Trauma surgery, orthopedics, ophthalmology, endocrinology, genetics, and child and protective services were all eventually consulted and patient was closely monitored in the hospital. Labs ordered included growth hormone markers IGF-1 and IGFBP-3, thyroid studies, a celiac panel, ESR, prealbumin, and genetic testing for Osteogenesis Imperfecta genes COL1A1 and COL1A2. Based on the findings at discharge, a clinical diagnosis of Osteogenesis Imperfecta was established. Genetic testing later confirmed a never-before reported point mutation in the COL1A2 gene of unknown severity, and the patient is now under the care of a multi-subspecialty team but has since suffered another femur fracture.

371 A COUGH WITH NO BREATH SOUNDS: A PRESENTATION OF AN ORPHAN CANCER

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10.1136/jim-2016-000365.371

Case Report Pleuroplumonary blastoma is an extremely rare childhood lung cancer with fewer than 500 cases reported. Early detection is essential for a favorable prognosis as the progression from type I to type III significantly decreases the likelihood of survival.

A previously healthy 2-year-old fraternal twin male with no significant past medical history presented to the emergency department with 3 weeks of cough, rhinorrhea, intermittent fever and fatigue. His mother reported that he appeared very pale and had a 7 lb weight loss over the last 6 months. He was seen in an urgent care 2 days prior to presentation and parents were informed that he had an upper respiratory infection and was sent home. On our examination, he had a croup-like cough and diminished breath sounds in the left chest. His chest radiograph revealed complete opacification of the left hemithorax. This finding was further evaluated with cross-sectional imaging which revealed a complex cystic mass filling the entirety of left hemithorax with resulting deviation of the mediastinum to the right. On admission to the pediatric ICU, he was

hemodynamically stable and comfortable on room air. His initial labs showed a leukocytosis of 20 x 10^3/uL, elevated CRP, ESR and LDH with a normal uric acid. His respiratory viral panel was negative. He was empirically treated with vancomycin and ceftriaxone. On day 3, he became tachycardic to 160 beats per minute, but was otherwise hemodynamically stable. On day 6, he was taken to the operating room for a left lobectomy to remove a large purulent and necrotic mass from his left hemithorax. His tachycardia also resolved post-operatively. Preliminary pathology report showed pleuropulmonary blastoma type II. He was started on chemotherapy while inpatient and is currently being followed by our oncology group.

This case illustrates the importance of maintaining a broad differential diagnosis for common pediatric presentations such as cough, fever and fatigue. Early tumor detection of this malignancy is critical for improved survival for the patient and lowering the threshold for diagnosis in relatives.

372 CORRELATION OF BLOOD LEAD LEVELS IN CHILDREN WITH AUSTISM SPECRUM DISORDER (ASD) AND ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): A LITERATURE REVIEW

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Purpose of Study Increased lead exposure has been associated with delayed and detrimental effects on children's central nervous system. The objective of this review is to summarize the relationship between different lead levels and the risk of developmental disabilities such as attention deficit disorder (ADHD) and autism spectrum disorder (ASD).

Methods Used A systematic literature review on PubMed and Google Scholar databases using the search terms: lead poisoning, children, blood lead levels, long term effects, development disorders and toxic levels was conducted. Only prospective studies of patients <18 years of age with diganosis of either ADHD or ASD and age matched controls were included inthe analysis.

Summary of Results Of nineteen initial results, only six studies met the inclusion criteria (see table 1). All studies included patients with clinical diagnosis of ADHD or ASD, questionnaires, and blood sampling of each patient. Three publications studied the effects of lead exposure and the risk of ADHD and three studied the effects of lead exposure and risk of ASD. Two studies were able to adjust for confounding factors. In 2 of 3 studies the blood lead levels were not significantly different in control versus ASD group while there was a significant difference in all studies involving ADHD patients.

Conclusions Our review demonstrated that there is a correlation between increased lead levels and the development of ADHD in children. However, there was not correlation between higher blood lead levels and the development of ASD. A majority of the studies had limitations that included small sample size, difficulty finding matching control pairs and accounting for confounding variables. Further studies are needed to confirm the relationship between lead exposure and its association with various neurological disorders.

373 HIGH AMBIENT TEMPERATURES AS A CAUSE OF NEONATAL FEVER? INVESTIGATING THE ASSOCIATION BETWEEN ENVIRONMENTAL TEMPERATURE AND NEWBORN BODY TEMPERATURE

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10.1136/jim-2016-000365.373

Purpose of Study Fever in newborns is highly concerning for serious infections, prompting clinicians to perform a workup and initiate antibiotic treatment. High environmental temperatures during summertime may be associated with non-infectious temperature elevation in newborns, yet little is known about the prevalence of fever during that season.

Abstract 372 Table 1

First Author and Year	Number of Patients in Each Group	Geographic Location of Study	Outcome Measured by: IQ, Questionnaire, Exam, or Clinical	Disorder and Mean Lead Level	Mean Lead Level in Controls	P-Value
Mohammad, 2014	200 children ages 2–8 years, 100 match pairs of ASD & Controls	Kingston, Jamaica	Questionnaire, Clinical Diagnosis, Clinical Examination	ASD: 2.55 μg/dL	2.72 μg/dL	p=0.64 after adjustments
Wang, 2008	1260 children ages 4–12 years, 630 matched pairs of ADHD & Controls	Anhui Province, People's Republic of China	Questionnaire, Clinical Diagnosis, Clinical Examination	ADHD: 8.77 ±3.89 μg/dL	5.76±3.39 μg/dL	p<0.01
Kim, 2013	128 children ages 5–12 years, 71 ADHD positive, 58 Controls	Omaha, NE	Questionnaire, Clinical Diagnosis, Clinical Examination	ADHD: 1.89 μg/dL	1.51 μg/dL	p<0.05 after adjustments
Nigg, 2008	150 children ages 8–17 years, 47 ADHD predominate (PI), 50 ADHD Combined, 53 Controls	Michigan	Questionnaire, Clinical Diagnosis, Clinical Examination	ADHD-PI: 0.95 +0.46 μg/dL ADHD-C: 1.26 +0.67 μg/dL	0.89+.39 μg/dL	p<0.01
Mostafa, 2016	120 children ages 5–12 years, 60 matched pairs of ASD & Controls	Cairo, Egypt	Clinical Diagnosis, Clinical Examination	ASD Median (IQR): 9(8) μg/dL	Median (IQR): 6(3) μg/dL	p<0.001
Tian, 2009	52 children ages 2–5 years, 37 ASD, 15 controls	Davis, CA	Questionnaire, Clinical Diagnosis, Clinical Examination	ASD: 1.03 μg/dL	1.16 μg/dL	p=0.71

Our goal was to determine the prevalence of elevated body temperatures of asymptomatic infants <3 mo during routine exams in high ambient temperatures during summer in India.
Methods Used The study took place in Mota Fofalia Pediatric Center, in Gujarat, India and included randomly selected infants <3 mo who received routine (non sick) newborn care in the postnatal ward or during routine post-hospitalization health checkups the home of the child. During encounters the following measurements were taken: weight, heart rate, ambient temperature of the room, rectal temperature, and presence of danger signs. Infant's vaccination and mother's infection status were abstracted from the medical record. Reporting is descriptive.
Summary of Results 81 environmental and body temperature measurement pairs were obtained in 41 children: female: 20 (49%); mean age: 7 days (range: 0–42 days). The average environmental temperature was 35.9°C (Range: 34.4–40.4°C); the mean rectal temperature in infants was 37.6°C (Range: 36.9–39.8). 14/41 (34%) of children were measured febrile >38°C with 19/81 (24%) of rectal temperatures elevated at 38.0°C or above (Range: 38.0–39.8°C). Ambient temperatures in febrile vs. afebrile measurements were not significantly different (36.1°C vs 35.8°C; p>0.2). Febrile vs afebrile children did not differ with regards to age, birth weight, and vital signs (p>0.1). None of the 41 children exhibited signs of systemic infection; 2/41 infants received systemic antibiotic therapy: one febrile for maternal fever, one afebrile for conjunctivitis). All children were well and alive after 1 week.
Conclusions Elevated body temperatures in asymptomatic infants less than 3 mo of age are common in high environmental temperatures. Further studies are needed to determine the clinical implications on this finding.

374 EARLY INTRODUCTION OF FOOD ALLERGENS AND ITS EFFECTS ON DEVELOPING FOOD ALLERGIES

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Purpose of Study The timing of introduction of allergenic foods in infants has been a subject of interest. The objective

Abstract 374 Table 1 Results Table

First Author and Year	Setting	Control (Avoidance) Group (# patients and start age)	Experimental (Consumption) Group (# patients and start age)	Allergies tested	Method of testing	Duration	Outcome or Prevalence of Allergy	P value
Du Toit, 2008	Israel and United Kingdom	3943 in UK (>6 months)	4657 in Israel (3–6 months)	Peanuts	Clinically validated questionnaire	N/A	Prevalence of peanut allergy in the UK=1.85% Israel=0.17%	<.001
Du Toit, 2015	United Kingdom	321 (no-peanuts) (4–11 months)	319 (peanuts) (4–11 months)	Peanuts	Skin-prick test	5 years of age	Control group (avoidance)=13.7% Experimental (consumption)=1.9%	<.001
Filipak, 2007	Germany	1559 (older than 4 months)	259 (at 4 months of age)	Diversity 3–8 food groups	Eczema	4 years	Odds ratio 1.05–1.26	NS
Hesselmar, 2010	Sweden	44 (at one year of age)	107 (at 6 months of age)	Fish	IgE levels and Eczema	18 months	2% (early) vs. 18% (late group)	<0.001
Koplin, 2010	Australia	933 (no eggs) (7–9 months)	485 (4–6 months)	Egg	Skin-prick test, parent report	1 year of age	Infants introduced Control (later)=7.8% Experimental (earlier) =5.6%	<.001
Kumar, 2010	United States	378 (6 months or older)	411 (under 6 months)	Milk, soy, egg white, wheat, fish mix, shellfish mix, peanut, sesame, and walnut	Skin prick test, blood test	1 years of age	Odds ratio=0.8	NS*
Palmer, 2016	Australia	413 (no eggs) 4–6 months	407 (4–6 months)	Egg	Blood test, medical assessment	1 year of age	Experimental (egg in diet)=7.0%, Control (no egg)=10.3%	0.20
Perkin, 2016	United Kingdom	651 (6 months or older)	652 (3 months)	Cow milk, peanut, egg, sesame, white fish, wheat	Skin-prick test	3 years of age	67% lower positive skin tests in the experimental (early) group	0.002
Peterson, 2011	United States	358 (older than 4 months)	236 (under 4 months of age)	Peanuts, Eggs, Milk	IgE levels	2–3 years	Odds ratio 0.3 (only for peanuts)	0.017
Poole, 2006	United States	654 (6 months or older)	958 (3–6 months)	Wheat	Questionnaire, blood test	4 years of age	Experimental (early) =0.41% Control (late)=1.8%	0.025
Venter, 2009	United Kingdom	496 (4 months or older)	416 (under 4 months)	Milk, egg, wheat, cod, peanut, and sesame	Skin prick test	3 years of age	Experimental (early) =1.44%, Control (late)=4.23%	0.01

*Protective for late introduction group without eczema.

of this study was to investigate the effects of early consumption of allergenic foods in prevention of developing future food allergies.

Methods Used A literature review was conducted using PubMed and Google Scholar. We included only studies with controls that were published in the last eleven years and compared introduction of allergenic foods to infants before 4–6 months of age and those older than 4–6months of age. The outcome was comparing the prevalence of allergic disease in the two groups.

Summary of Results Eleven studies met the selection criteria. Please see the table below. Of the eleven studies, eight showed a protective effect when the allergenic foods were introduced early. Two studies concluded that there was no difference between the two groups and another study reported the opposite effect, that late introduction was beneficial to the prevention of food allergies in infants without a history of eczema.

Conclusions Majority of studies show that early introduction of solid food has a protective effect against food allergies. Limitations for these studies include recall bias with questionnaires, low number of studies for certain allergenic foods, variation in outcome assessment, patient drop outs, variation in atopic status of the infant at the time of introduction of food, and differences in the diet of the breastfeeding mother. Large prospective studies that take into account these variables are needed.

375 STERILE ABSCESSES AFTER IMMUNIZATION WITH ALUMINUM-ADJUVANT BASED VACCINES

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10.1136/jim-2016-000365.375

Case Report A 21-month old previously healthy boy was referred to the Infectious Disease clinic for recurrent sterile abscesses occurring 1 week after immunizations at 6, 12, 18 and 20 months of age (Table 1). Cultures of lesions on two occasions were sterile. All reactions occured after receipt of aluminum-containing vaccines (ACV).

Literature Search: A search was performed on June 21, 2016 on PubMed and Web of Knoweldge (WOK) with the terms "Vaccine" and "Sterile abscess" with no restrictions. Reports involving the the DTP vaccine were excluded. 122 articles were produced, with 3 describing sterile abscess formation after vaccination with ACV's (Table 2). Each article was searched with citation tracker in WOK as well as a search of all references, with no additional reports found. The search was repeated with the terms "chemically induced", "hypersensitivity" or "aluminum", with no additional cases.

Conclusion Sterile abscesses following immunization with ACV's are rarely described. They occur after apparent 'priming' with prior immunizations, and appear several weeks after subsequent immunizations.

Abstract 375 Table 2 Sterile Abscess Formation Following Immunization with Aluminum-Containing Vaccines in the Literature

Author	Year	Gender	Age at Onset	Prior Vaccinations without Abscess (age)	Timing after Immunization
Klein	2009	Female	5 months	2 months	3 weeks
Klein	2009	Male	5 months	2 months	3 weeks
Lehman	2008	Female	5 months	2 months	4 weeks
McMillan	2000	Male	8 months	2,4 and 6 months	6 weeks

376 AN EARLY PRESENTATION OF A COMMON MALFORMATION: AN INFANT WITH AN INFECTED THYRGLOSSAL CYST

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Case Report Infected thyroglossal cysts are extremely rare in infants. These cysts require rapid intervention to prevent

Abstract 375 Table 1 Summary of Sterile Abscess Formation Following Vaccination

Date	Vaccine	Aluminum Content	Leg	Reaction
12-2-14	Pentacel	0.33 mg	Left	None
	Hepatitis B	0.25 mg	Left	None
	Prevnar 13	0.00125 mg	Right	None
2-2-15	Pentacel	0.33 mg	Left	None
	Prevnar 13	0.000125 mg	Right	None
4-6-15	Pentacel	0.33 mg	Left	Left leg abscess
	Hepatitis B	0.25 mg	Left	Left leg abscess
	Prevnar 13	0.000125 mg	Right	None
10-19-15	Hepatitis A	0.225 mg	Right	Right leg abscess
	Influenza	0 mg	Left	None
	MMR	0 mg	Left	None
4-1-16	Pentacel	0.33 mg	Right	Right leg abscess
	Prevnar 13	0.000125 mg	Left	None
5-16-16	Hepatitis A	0.225 mg	Left	Left leg abscess

MMR=measles, mumps, rubella

impeding acute respiratory failure and prompt initiation of empiric antibiotic therapy. A previously healthy 6-week old male who was born at term with no significant medical history presented acutely to the emergency department with right neck swelling and fever for one day. Parents noticed decreased oral intake, fussiness, and nasal congestion 2 days prior. On the day of presentation, patient was noted to have a fever and an area of swelling under his right chin. There was no history of trauma, neonatal teeth or stridor. On arrival to the emergency room, the patient was febrile to 38.5 °C with a respiratory rate of 52, heart rate of 180, and was saturating at 100% on room air. On exam, the patient was ill-appearing and in respiratory distress with impending respiratory failure. The patient's oropharyngeal exam was remarkable for tongue elevation and lateral deviation with substantial drooling. Due to impending airway compromise, the patient was intubated and transferred to a local tertiary care center and admitted to the pediatric ICU pending ENT consultation. The patient was empirically started on vancomycin and ceftriaxone. His workup was significant for a mild leukocytosis of 12.3×10^3/uL and a CRP of 29 mg/dL. A neck CT showed a well-defined 1.7×1.5×1.2 cm infrahyoid mildly rim-enhancing fluid collection, consistent with a thyroglossal duct cyst. ENT was consulted and recommended ultrasound-guided IR drainage of cyst fluid, which grew two species of gram-negative anaerobic species (Enterobacter and Prevotella). On day two, the patient was extubated following incision and drainage and antibiotics were transitioned to ampicillin-sulbactam. On day three, patient was discharged to home on oral ciprofloxacin with outpatient close ENT follow-up. Although the incidence of thyroglossal cysts in the general population is about 7%, they are typically diagnosed after the first decade of life due to either increasing size or infection. This case illustrates the importance of identifying oral anatomical malformations as a cause of acute respiratory failure. It also highlights the unique position primary care providers have in early recognition and initiation of lifesaving measures in infants.

Behavior and Development II
Concurrent Session
8:00 AM – 10:00 AM
Saturday, January 28, 2017

377 COMPARISON OF LANGUAGE PATTERNS IN SPECIFIC LANGUAGE IMPAIRMENT AND HIGH FUNCTIONING AUTISM

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10.1136/jim-2016-000365.377

Purpose of Study To examine differences in the use of language in children with specific language impairment (SLI) and high functioning autism (HFA) by analyzing verbal responses on standardized tests

Methods Used Responses from the CELF-4 Formulated Sentences (FS) subtest and WASI Vocabulary and Similarities subtests of 16 children with SLI, 28 children with HFA, and 52 typically developing (TD) participants were examined for response length, grammatical errors, filler words, perseverations, revisions (repeated attempts to begin or continue a sentence), off topic attention shifts (lapses in attention to the task), and rambling. Data were analyzed using both parametric and non-parametric methods.

Summary of Results SLI responses were longer and contained more filler words than did those of the other two groups, while HFA responses exhibited more grammatical errors, off topic attention shifts, and rambling. Both SLI and HFA responses showed higher rates of perseveration compared to controls. There were no significant differences in revisions among the 3 groups.

Conclusions Differences in language patterns of participants with SLI and HFA suggest that these conditions may be distinct from each other. The observed differences may be useful clinically in distinguishing between the two conditions.

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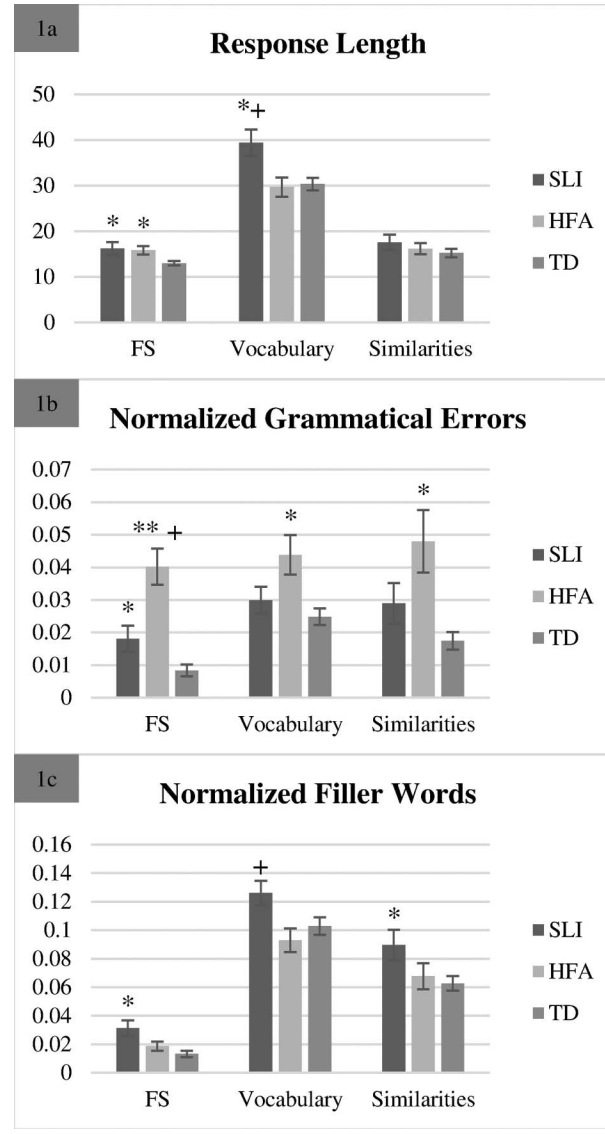

Abstract 377 Figure 1 Figure 1. Summary of language features of SLI, HFA, and TD participants. *=SLI or HFA compared with TD (*p<0.05, **p<0.001), += SLI compared with HFA (+p<0.05)

378 EFFECTS OF YOGA ON ATTENTION, IMPULSIVITY AND HYPERACTIVITY IN PRESCHOOLERS

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10.1136/jim-2016-000365.378

Purpose of Study Symptoms of attention-deficit hyperactivity disorder (ADHD) are often observable by preschool. Behavioral therapies are the first line treatments in this age group. Small promising studies of yoga as an intervention for school age children with ADHD exist, but none were found for preschoolers. This study evaluated the effects of yoga on attention and challenging behaviors rated by parents and teachers, scores of attentional control, and heart rate variability (HRV) in preschoolers with ADHD symptoms.

Methods Used This was a randomized waitlist-controlled crossover trial of a 6 week yoga intervention in preschoolers with≥4 ADHD symptoms. Parents and teachers completed the ADHD Rating Scale IV-Preschool Version and the Strengths and Difficulties Questionnaire (SDQ). Objective measures included the KiTAP (computer based attention tasks) and HRV (a measure of self-regulation). Group 1 (G1; n=12) did yoga during the 1st six weeks. Group 2 (G2; n=11) was the wait-list control; they did yoga during the 2nd six weeks. Data were collected at four time points: baseline, T1 (6 wk), T2 (12 wk), and follow up. We report between-group differences in means at T1, when G1 had completed yoga whereas G2 had not. Linear mixed effects models were used to analyze the data.

Summary of Results At baseline there were no significant differences between G1 and G2 on any measures. At T1, G1 had faster reaction times on the KiTAP Flexibility (p=0.03), Go/No go (p=0.04), Distractibility (p=0.06), and Alertness (p=0.08) subtests. G1 also had fewer Distractibility errors (p=0.02) than G2 at T1. For the rating scales, G1 and G2 had similar scores at T1. However, children with more severe symptoms at baseline improved at T1 in G1 (but not in G2) on parent ratings of the SDQ hyperactivity scale (p=0.04) and inattention scale of the ADHD Rating Scale (p=0.03). HRV measures did not differ between the groups.

Conclusions Children with higher parent ratings of hyperactivity and inattention at baseline improved in these behaviors after practicing yoga for 6 weeks. An objective measure of attention (KiTAP median reaction times) also improved after yoga. However, HRV was not different. Yoga may be a promising treatment for ADHD symptoms in preschoolers.

379 SEX DIFFERENCES IN AUTISM SPECTRUM DISORDER

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10.1136/jim-2016-000365.379

Purpose of Study Autism spectrum disorder (ASD) is more prevalent in males. The reason is not understood, but likely multifactorial. Literature historically suggested that females with ASD are more likely to be intellectually disabled, while males have more restricted/repetitive behaviors. Phenotypic differences may guide screening, diagnosis and treatment.

Methods Used The Childhood Autism Risk from Genetics and Environment (CHARGE) study includes 2–5 yo children with ASD and typically developing (TD) controls. For this analysis, children who met criteria for ASD on the Autism Diagnostic Observation Schedule, 2nd Edition (ADOS-2) and Autism Diagnostic Interview – Revised (ADI-R) were included. Known genetic syndromes were excluded. We evaluated developmental and adaptive function in 724 children with ASD (612 M, 112 F) and 482 TD controls (397 M, 85 F). Chi-square and ANOVA were used to analyze baseline demographics, t-tests were used for autism characteristics, and 2X2 factorial ANOVA was used to determine interaction effects between sex and diagnosis.

Summary of Results Demographics were similar among groups. Autism characteristics including age at diagnosis, ADOS-2 comparison and ADI-R scores, and percentage in therapy did not differ between sexes. On the Mullen Scales of Early Learning, there was a main effect of sex on visual reception, receptive and expressive language, fine motor, and the early learning composite with females scoring higher. There were no significant sex by diagnosis interactions. On the Vineland Adaptive Behavior Scales, there was a main effect of sex on communication, daily living skills, socialization, and the composite. There were also significant sex by diagnosis interactions in daily living skills, socialization, and the composite. TD females tended to score higher than TD males, while ASD chilren had similar skills.

Conclusions Females scored higher in all developmental domains, regardless of group. For adaptive skills, females only outscored males in the TD group. Female advantage in developmental and adaptive skills is a well described phenomenon through early childhood. Adaptive function tends to correlate tightly with cognitive ability. However, a developmental advantage did not translate into superior adaptive functioning in females with ASD in this sample.

380 EXPLORING PRELIMINARY RELATIONSHIPS OF PSYCHOLOGICAL SYMPTOMS TO ADAPTIVE FUNCTIONING IN TRIPLE X SYNDROME

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10.1136/jim-2016-000365.380

Purpose of Study Triple X syndrome (47, XXX) is a sex chromosome aneuploidy (SCA) associated with variable neuropsychological features including cognitive impairments, attention and executive functioning deficits, emotional, and social difficulties. These features can be complex and impact overall adaptive functioning skills. This study aims to explore the relationship of cognitive and behavioral features to adaptive skills in Triple X.

Methods Used Participants age 6–18 years (mean 12.9±3.6 yrs) with nonmosaic 47, XXX were selected from a larger study on health and development in SCA. 32 females were evaluated for cognitive skills (WISC-IV) and behavioral features (BASC-2, Conners Parent Rating Scale, Social Responsiveness Scale (SRS), and BRIEF). Adaptive functioning was measured using the BASC-2 adaptive

composite score. Correlations of adaptive composite with WISC-IV IQ scores, Conners attention and hyperactivity subscales, BRIEF executive functioning composite and SRS Total score. For categorical analysis participants were classified as normal (T-score 40 or greater) or at risk (T score<40) based on BASC-2 adaptive skills scores.

Summary of Results Overall 77.8% (n=21) were at risk for adaptive functioning problems and 29.6% (n=8) had clinically significant deficits. Adaptive skills were not significantly correlated with WISC-IV cognitive scores. BASC-2 Adaptive Skills scores correlated with Total SRS scores (Spearman's rho r=–0.681, p=0.001) and BRIEF Global Executive Function Scores (r=–0.723, p<0.001). Prenatal diagnoses was more common among females with no adaptive risk (83.3%).

Conclusions Females with 47, XXX are at risk for adaptive functioning difficulties. In this preliminary exploratory analysis, executive dysfunction and impaired social communication were associated with poorer adaptive functioning and may suggest targets for intervention to improve overall adaptive skills. Most participants with good adaptive outcomes were diagnosed prenatally, suggesting that early diagnosis may allow for developmental surveillance and supports leading to improved adaptive skills. Further study in a larger cohort will allow further exploration of early predictors of adaptive functioning and modifying genetic and environmental influences.

381 REPEATED ASSESSMENT OF NEUROMOTOR SKILLS IN FRAGILE X SYNDROME

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Purpose of Study With more studies of targeted treatments in fragile X syndrome (FXS), there is a critical need to ensure study designs and outcome measures are appropriate, feasible and reliable in FXS.We analyzed factors related to successful task completion on standardized neuromotor (NM) assessments across multiple visits.The goal of the analysis was to characterize completion rates, analyze potential practice effects and behavioral features associated with feasibility.

Methods Used Participants (Ss) included 10 males (M=17.33 years, SD=9.42) and 4 females (M=14.62 years, SD=9.55).Autism symptoms, behavior, and IQ were assessed.A total of 8 NM tests were given as part of a larger study evaluating NM outcome measures in FXS.Ss were seen twice at least 2 months apart.Test items were coded as refused, attempted but failed, or successfully attempted.

Summary of Results The average number of items refused remained constant at visit 1 and visit 2 (M=2.4 items).The average number of items attempted but failed at visit 2 (M=8.4 items) was significantly less than visit 1 (M=18.8 items), z=–2.37, p=0.016, r=–.63.There were no significant changes in scores between visit 1 and visit 2 (all p>.06).At the test level, we identified 4 tests with more attempted items at visit 2 compared to visit 1, 2 tests with consistently high success at both visits and 2 tests with consistently low success at both visits.Testing site, examiner, IQ, age, gender, total ABC score and autism symptoms were not significantly related (all p>0.05) to task completion.

Conclusions Overall, the number of failed attempts at standardized NM assessment items decreased at the visit 2, and more items were successfully completed at visit 2. The increase in task completion between visits was not related to other clinical or examiner variables nor was there evidence of improvement in scores, suggesting that repeated exposure can improve task completion without practice effects.Despite the small sample size of this initial analysis, the effect size of the reduction in failed attempts was large (r>0.5).Therefore, clinical trials involving individuals with FXS may need to account for this effect between baseline and subsequent visits.Visit 1 may not measure baseline ability in a tested domain, but reflect the ability to participate in and complete a novel task.

382 DOCUMENTATION OF SLEEP PROBLEMS IN CHILDREN WITH ASD AND ADHD: A DEVELOPMENTAL-BEHAVIORAL PEDIATRICS RESEARCH NETWORK STUDY

Won DC, Feldman HM, Huffman LC. *Stanford University, Stanford, CA.*

10.1136/jim-2016-000365.382

Purpose of Study Sleep problems are highly prevalent in children with Autism Spectrum Disorder (ASD) (50–80%) and Attention-Deficit/Hyperactivity Disorder (ADHD) (50–75%) compared to typically developing children (26–32%). Sleep problems are associated with behavior problems, decreased neurocognitive function, and family stress. The proportion of children with ASD and/or ADHD who are documented by Developmental-Behavioral Pediatricians (DBPs) as having a sleep problem is unknown. Aims: (1) determine proportion of children with ASD and/or ADHD who had sleep problems documented at clinic visits at 12 academic medical centers comprising Developmental-Behavioral Pediatrics Research Network (DBPNet); (2) identify patient, family, clinician, and visit characteristics that predict documentation of sleep problems.

Methods Used Secondary analysis of data collected in 2011–12 DBPNet Practice Variation Survey. DBPs completed surveys for up to 10 diagnostic and 10 follow up visits. Dependent variable: documented sleep problem. Independent variables: sociodemographics (child age, gender, race, ethnicity; caregiver education; medical insurance); child medical diagnosis (ASD, ADHD); comorbid diagnosis (enuresis, mood diagnosis); visit type (diagnostic, follow-up); clinician supervision status (attending alone, trainee, nurse practitioner). Analysis: (1) frequencies, proportions, chi square. (2) binary logistic regression (predictors of variation in sleep problem documentation).

Summary of Results Surveys for 1039 child visits (465 diagnostic, 574 follow-up) were returned. Mean age 7.8 years +/– 3.8; 81% male; 63% white. Medical diagnosis: ADHD (45%), ASD (41%), ASD+ADHD (13%). DBPs documented sleep problems in 16.5% of children.

Significant predictors of sleep problem documentation were: comorbid diagnosis of enuresis, age range 3–7 years, and non-Hispanic ethnicity. This model explained 10% of variance in sleep problem documentation.
Conclusions Documentation of sleep problems by DBPs in DBPNet does not match reported prevalence of sleep problems in children with ASD and ADHD. Findings suggest that there is an opportunity for quality improvement in the area of sleep problem identification, documentation, and consequent treatment.

383 MOTHER'S PARENTING STYLE AS MEDIATOR BETWEEN CHILDHOOD HYPERACTIVITY AND DISTRACTIBILITY AND ADOLESCENT RISK BEHAVIORS

T Nelson, P East, S Gahagan. *Pediatrics, U California, San Diego*

10.1136/jim-2016-000365.383

Purpose of Study Childhood ADHD is a risk factor for behavioral and social dysfunction in adolescence. Maternal parenting practice affects the behavioral profiles of ADHD children and adolescence, but is it a mediator between these important developmental time periods? We examined mothers' punitive, and separately nurturant, parenting at child's age 10 years as mediators between child's hyperactivity and distractibility at 5 years and risky behaviors at adolescence. Risk behaviors studied were aggression, cigarette use, and affiliation with deviant friends.
Methods Used Data gathered from a retrospective longitudinal cohort study of 1,000 healthy Chilean children followed every 5 years from infancy to adolescence, was analyzed. Hyperactivity and distractibility at 5 years were assessed by parent-ratings on the CABI questionnaire. Observer ratings on HOME inventory assessed mothers' punitive and, separately nurturant, parenting. Youth ratings on the Youth Self-Report assessed risk behaviors at ages 12 and 16 years. Structural equation path models were computed, controlling for relevant child, family, and socioeconomic factors.
Summary of Results The model had good fit. Results indicated that 5 year hyperactivity was strongly related to high maternal punitiveness at age 10 ($\beta=-0.17$, $p<0.001$), and mothers' punitiveness was related to youth aggression at adolescence ($\beta=0.09$, $p<0.05$). Both severity of hyperactivity and distractibility symptoms at age 5 were related to mothers' low warm/nurturant parenting at age 10 ($\beta=-0.10$, $p<0.01$ and $\beta=-0.09$, $p<0.05$ respectively), and mothers' low warm/nurturant parenting was related to youths' cigarette use at adolescence ($\beta=-0.09$, $p<0.05$).
Conclusions Our study suggests the importance of mothers' parenting as a mediator between early childhood distractibility and hyperactivity and certain adolescent risk behaviors. Maternal parenting practices may be a good area for intervention in this subset of children prone to risky behavior in adolescence.

384 FACTORS PREDICTING POST CONCUSSIVE SYMPTOMS IN MILITARY SERVICE MEMBERS

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10.1136/jim-2016-000365.384

Purpose of Study Mild traumatic brain injury (MTBI) is among the most consequential injuries affecting today's military with up to a third of all service members returning from deployment with MTBI. MTBI is among the most salient risk factors for PTSD and severe depression and result in healthcare costs nearly four times higher than those unaffected. Due to the individualized nature of MTBI response, reliable predictors of post concussive symptoms (PCS) remain elusive. Utilizing a sample of active duty service members we examined multiple standardized behavioral measures and demographic characteristics to determine their efficacy in predicting PCS. The goal of the present study is to identify key factors that correlate with PCS, describe the extent of reported symptoms, and utilize stepwise linear regression to determine which factors possess independent predictive value.
Methods Used Baseline measures and demographic information was collected from 356 active duty service members with history of MTBI by interview during study enrollment. Measures analyzed included the PTSD Checklist for DSM-5 Military version (PCL-M), Patient Health Questionnaire (PHQ-9), Connor-Davidson Resilience Scale and Pittsburgh Sleep Quality Index. Demographic factors analyzed included prior mental health treatment, years of education, military occupational specialty (MOS) category, military rank, total prior deployments, cumulative deployment time, and cumulative TBIs. PCS outcomes were measured by the Rivermead Post-Concussion Symptoms Questionnaire score.
Summary of Results Greater sleep quality and higher resilience scores predicted reduced levels of PCS. Higher PCL-M and PHQ-9 scores, history of mental health treatment, support oriented MOSs and greater cumulative TBIs predicted greater levels of PCS. Surprisingly total prior deployments, cumulative deployment time, education years, combat oriented MOSs and military rank showed no PCS predictive value. Overall individual behavioral measure scores showed the greater predictive power over demographic factors when predicting PCS.
Conclusions Key behavioral measures and demographic factors demonstrate significant prognostic value in determining PCS following MTBI. Our results guide identification of high risk patient subgroups and inform selection of treatment targets amenable to modification such as sleep interventions and resiliency education.

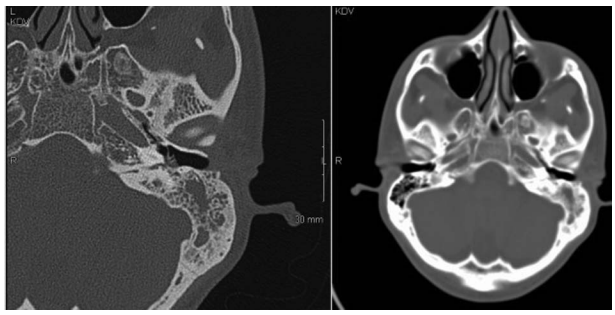
Case Reports
Concurrent Session
8:00 AM – 10:00 AM
Saturday, January 28, 2017

385 COCCIDIOIDOMYCOSIS DISSEMINATION TO THE MASTOID BONE

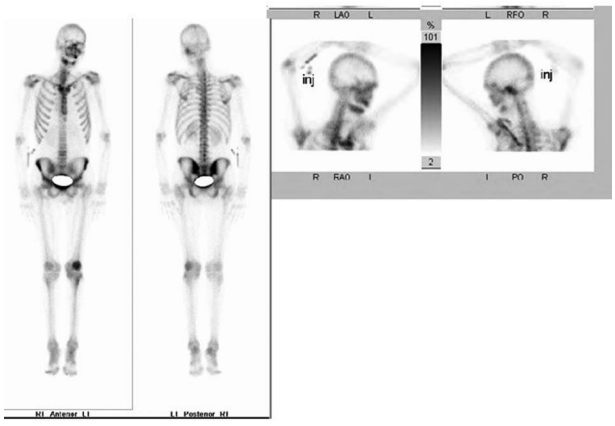
Ammar A, Petersen G, Duffin C, Heidari A. *UCLA Kern Medical, Bakersfield, CA.*

10.1136/jim-2016-000365.385

Case Report We describe a case of disseminated coccidioidomycosis involving the left mastoid bone after failed



Abstract 385 Figure 1 Preoperative CT of the left mastoid demonstrating mucosal membrane thickening and gross opacification with fluid in left mastoid air cells.



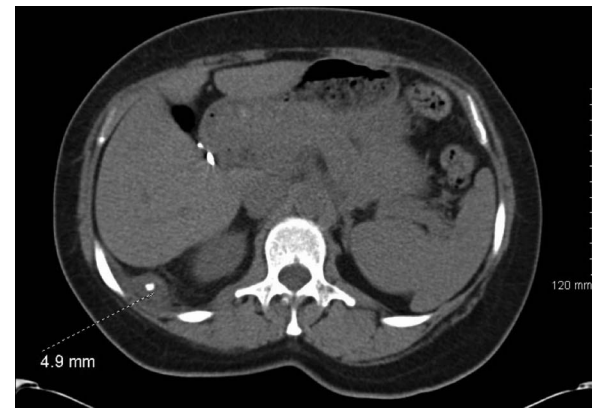
Abstract 385 Figure 2 Bone scan, full body (left) and oblique (right), demonstrating enhancement in the left mastoid.

antifungal therapy. This is a 27-year old Hispanic male with type I diabetes mellitus and disseminated coccidioidomycosis involving the lungs and left knee. He presented to the emergency room multiple times over several months complaining of unilateral hearing loss, ear pain and purulent otorrhea. Nuclear bone scan identified tracer uptake at the left mastoid bone, and computed tomography (CT) scans confirmed boney involvement (Figures 1, 2). This led to resection of the left mastoid process. Mastoid bone biopsy identified epithelioid granulomas enclosing spherules with endospores, thus establishing the diagnosis of disseminated coccidioidomycosis. Post-operatively, the patient had multiple readmissions after presenting with subjective fevers, multiple episodes of emesis, worsening cachexia and grand mal seizures. This is an extremely unusual because there is no such prior case documented in an adult in the literature.

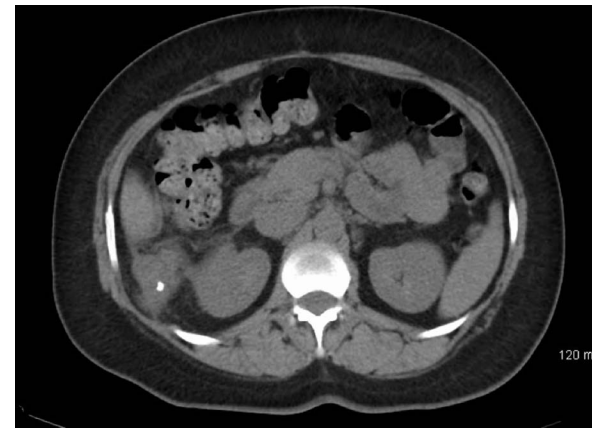
386 A CURIOUS PRESENTATION OF *SALMONELLA* TYPHI AS A HEPATIC ABSCESS

FD Palacios[1,2]. [1]*Rio Bravo Family Medicine Residency Program, Bakersfield, CA;* [2]*Kern Medical, Affiliated with University of California, Los Angeles, Bakersfield, CA.*

10.1136/jim-2016-000365.386



Abstract 386 Figure 1 CT Abd/Pelvis without contrast 6/10/13



Abstract 386 Figure 2 CT Abd/Pelvis without contrast 2/15/15

Case Report A case of recurrent hepatic abscess with *Salmonella* typhi resulting from an unretrieved gallstone acting as the nidus for infection in a 51 year-old Hispanic female is presented. The patient had three confirmed cases of infection over a four year period which were treated with antibiotics, percutaneous drainage, open surgical drainage and ultimately partial hepatectomy.

387 CASE REPORT OF A 5-MONTH-OLD INFANT DIAGNOSED WITH COBALAMIN C DEFICIENCY AFTER NORMAL NEWBORN SCREENING

Shah P, Cushing T, Heidenreich R, Magdaleno Y. *University of New Mexico School of Medicine, Albuquerque, NM.*

10.1136/jim-2016-000365.387

Purpose of Study We report an interesting case involving a relatively common inborn error of metabolism, cobalamin-C (Cbl-C) deficiency, which was apparently not detected through expanded newborn screening. We also present a rare complication of this disorder, ichthyosis, which appears to be resolving after the initiation of appropriate therapy.

Methods Used We conducted a chart review during and after the patient's hospitalization.

Summary of Results Cbl-C deficiency is an inborn error of metabolism of cobalamin due to mutations in *MMACHC*.

MMACHC codes for an enzyme that converts cobalamin into the metabolically active forms of adenosylcobalamin and methylcobalamin. When mutated, the resulting enzyme defect causes increased intracellular levels of homocysteine and methylmalonic acid (MMA) and decreased methionine. Patients with Cbl-C deficiency can present early in infancy with multisystem manifestations of disease.

We present the case of a 5-month-old, term male who was admitted for new onset seizures in the setting of severe macrocytic anemia and was found to have a subdural hematoma that did not appear acute in nature. These findings led to the initiation of a non-accidental trauma (NAT) work-up. Upon further investigation, the infant was found to have diffuse cerebral volume loss, developmental regression, diffuse hypotonia, neutropenia, and diffuse ichthyosis. Due to the constellation of developmental regression and seizures, a metabolic consultation was requested.

Biochemical analysis revealed elevated levels of MMA and homocysteine, and further genetic testing confirmed the *MMACHC* mutation. He was successfully treated with oral betaine and subcutaneous hydroxocobalamin and has shown developmental progress along with improvement of his ichthyosis and hematologic derangements.

Conclusions Although newborn screening has a high sensitivity for the detection of Cbl-C deficiency, this infant's newborn screens failed to identify his metabolic disorder. As such, this case emphasizes the need for clinical suspicion of inborn errors of metabolism in the face of expanded newborn screening. Also, the patient had well documented ichthyosis, a very rare complication of this disorder, which appears to have improved with appropriate therapy.

388 "KILLING HIM SOFTLY" *A UNIQUE UNVEILING OF INFECTIVE ENDOCARDITIS*

Patel J, Abukamleh H, Heidari A. *Kern Medical, Bakersfield, CA.*

10.1136/jim-2016-000365.388

Case Report A 29 year old Caucasian male with hypoxic injury at birth that had residual severe psychomotor retardation was brought in to the emergency department by his parents due to urinary retention, "rapid pulse", and bilateral lower extremity swelling of 1 day onset. Patient was transitioned from chronic foley to adult diapers at home and had no prior history of heart disease, recent surgery, or illnesses. On physical exam, vitals reflected tachycardia of 122, blood pressure of 104/46, temperature 98.3 F, pulse oximetry 90% on room air, respiratory rate of 18. Aside from chronic upper extremity spasticity and non-verbal communication due to developmental delay, patient was noted to have a 2/6 grade early diastolic murmur in the 3rd intercostal space with bounding radial and dorsalis pedis pulses along with bibasilar crackles on respiratory exam. He was also noted to have bladder distention with 1000 ml upon placement of foley catheter. Admission labs included: white blood cell count of 7,300 per mcL, Hgb 9.7 g/dl, Hct 30.3%, Platelet count 210,000, unremarkable basic metabolic panel, cardiac enzyme leve, and lactate. The single notable lab of an elevated BNP was 785 pg/mL. With inconclusive clinical history given lack of patient cooperation, elevated BNP, in combination with the physical exam, chest imaging was warranted showing new onset left pleural effusion with linguilar subsegmental atelectasis on CT scan. Transthoracic echocardiography was ordered subsequentially in light of new onset pleural effusion, resulting in a left ventricular ejection fraction of 55%, normal right ventricular systolic function, abnormal aortic valve anatomy appearing to be bicuspid with multiple mobile masses on the aorta with severe aortic regurgitation. Blood cultures were ordered subsequently growing Streptococcus Anginosus in four bottles tested for aerobic and anearobic species. He was started promptly on Ampicillin 2 g every 4 hours and upon cardiology and cardiothoracic discussion with family, it was decided to avoid invasive surgery due to his multiple comorbidities and baseline poor prognosis. Despite this patient's initial presentation of urinary retention, this case report highlights an incidental finding of infective endocarditis based on clinical findings prompting the investigation of abnormal cardiac function.

389 THIRSTY FOR MILK: BREASTFEEDING ASSOCIATED HYPERNATREMIC DEHYDRATION CAUSING RETINAL ISCHEMIA AND CEREBRAL SINOVENOUS THROMBOSIS

Lewis J, Kesavan KN, Chu A. *UCLA, Los Angeles, CA.*

10.1136/jim-2016-000365.389

Case Report A full term male neonate, birth weight (BW) at 45th percentile, was born to a 30 year old primigravid mother via an uncomplicated vaginal delivery. He was exclusively breastfed during nursery course. On day of life (DOL) 1 he was discharged home with weight 2.6% below BW and high intermediate risk bilirubin level. At follow up visit on DOL 2, weight was 9.4% below BW and bilirubin in low intermediate risk zone. Mother reported difficulties with breastfeeding and nutritional guidance was given. On DOL 13 in clinic, mother reported increased fussiness, frequent feeding and decreased wet diapers. Exam was notable for a 32% weight loss from BW, dry skin with tenting, delayed capillary refill, hypotonia, violaceous right foot, but otherwise alert infant. He was admitted to the pediatric ward where fluid resuscitation began. Initial labs were notable for a sodium (Na) >180, potassium 5.8, chloride >140, bicarbonate 17, BUN 205, creatinine (Cr) 6.1 and serum osmolality of 444.5. CBC showed an elevated WBC 20,400 and thrombocytopenia of 8,000. He developed seizure like activity and respiratory failure requiring emergent intubation and transfer to the Neonatal Intensive Care Unit (NICU). In the NICU gradual Na correction was initiated with Na levels normalizing over 3 days. Urine output slowly improved and BUN/Cr levels normalized by hospital day 12. EEG showed left temporal seizure activity. MRI demonstrated diffuse venous sinus thrombosis necessitating anticoagulation therapy. Ophthalmological evaluation revealed bilateral retinal ischemia secondary to vascular thrombosis. Infectious work-up was negative. Breastfeeding associated

hypernatremic dehydration is associated with serious morbidity including seizures, DIC, cerebrovascular accidents, necrotizing enterocolitis, limb amputations and even death. These complications are entirely preventable. There are no explicit guidelines for supplemental feeds in breastfed infants. Supplemental feeds should be considered in neonates with weight loss >7%, jaundice approaching phototherapy levels, low urine output and stool frequency, lethargy, agitation, inconsolable crying and with reports of feeding difficulties (Konetzny G *et al.*, 2009).

390 NOVEL PATHOGENIC MUTATION IN *SLC25A42* CAUSING MITOCHONDRIAL DISEASE WITH SIGNIFICANT INTRAFAMILIAL VARIABILITY

Triano V, Martin MM. *UC Davis, Sacramento, CA.*

10.1136/jim-2016-000365.390

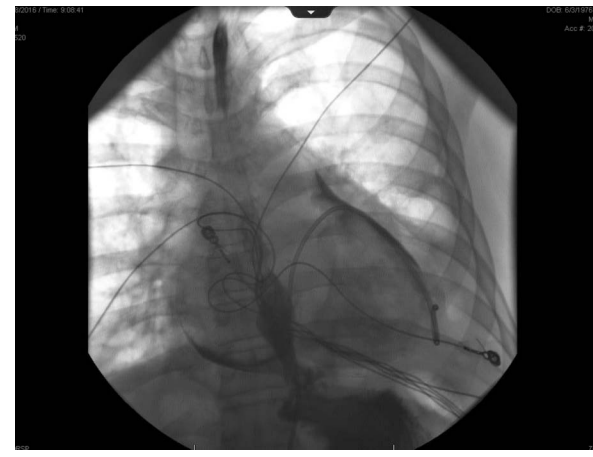
Case Report We present a case of a novel truncating mutation in the *SLC25A42* gene identified in a family with previously unknown mitochondrial disesae. The proband is a 2-year old Hispanic female born to non-consanguineous parents. She presented with developmental regression, emesis, and lactic acidosis. Brain MRI findings were consistent with Leigh syndrome. Whole exome sequencing identified a homozygous truncating mutation in *SLC25A42* (c.31C>T; p.Arg11*). Both parents of the proband were identified as carriers of this mutation. At the time that exome results were reported, mutations in *SLC25A42* were not known to be associated with human disease. However, shortly after the results became available, Shamseldin et al. (2016) reported a 16-year old patient with fatigue, exercise intolerance, and lactic acidosis who was found to have a missense mutation in *SLC25A42*. Family history revealed a 22-year old brother with reported lifelong exercise intolerance. Physical exam revealed normal strength with rapid fatigue of the muscle. His initial lactate level was 8.8 mEq/L (normal 0.3–2.2). Targeted DNA analysis of the *SLC25A2* gene revealed him to be homozygous for mutation identified in his sister.. Testing of additional family members is underway.

SLC25A42 is a nuclear gene which encodes a mitochondrial coenzyme A transporter which plays an integral role in inner mitochondrial membrane transport of various substrates between the cytosol and the mitochondrial matrix. Coenzyme A plays a critical role in numerous reactions that take place in the mitochondrial matrix, including energy-generating beta oxidation of fatty acids and Krebs cycle. The novel mutation in *SLC25A42* demonstrated in our family not only supports the features reported in Shamseldin et al. but further expands the phenotype of this mitochondrial disorder.

391 A REAL FOODIE AT HEART: A RARE CAUSE OF CARDIAC TAMPONADE

Choy H,[1] Lagos L,[2] Ling E,[1] Stripe B,[3] Stauber B,[3] Whitcomb C[3]. *[1]UC Davis Medical Center, Sacramento, CA; [2]UC Davis Medical School, Sacramento, CA; [3]UC Davis Medical Center, Sacramento, CA.*

10.1136/jim-2016-000365.391



Abstract 391 Figure 1

Case Report A 40-year-old African American man a remote history of partial diverting esophagectomy following a gunshot wound presented to the emergency department with worsening dyspnea, chest pain, and altered level of consciousness. Vital signs were stable and initial labs were pertinent for negative troponins and a leukocytosis. Electrocardiogram showed diffuse ST elevations. CT chest showed a large pericardial effusion. Cardiac tamponade with pulsus paradoxus and equalization of heart chamber pressures were demonstrated on emergent catherization. A pericardial drain was placed and 430 cc of suppurative fluid was removed. Broad-spectrum antibiotics were initiated.

Pericardial drainage persisted and suspicion for an esophagopericardial fistula (EPF) grew in light of his prior surgeries. An esophogram was performed showing oral contrast in the pericardial space. The patient was taken emergently to the operating room where a pericardial window was created and an esophageal stent was placed. His post-operative course was complicated by constrictive pericarditis from posterior pericardial loculations and fungal mediastinitis. The patient eventually passes away from an unstable ventricular arrhythmia.

This case illustrates that in a patient with a history of intrathoracic surgery presenting with cardiac tamponade, an EPF should be suspected. Therapy for this condition includes early diagnosis and treatment with antibiotic therapy, pericardial drainage, and operative closure of the fistula.

392 INTERRUPTED AORTIC ARCH DIAGNOSED IN A 57 YEAR OLD FEMALE WITH REFRACTORY HYPERTENSION

Dosani KA. *University of Nevada School of Medicine, Las Vegas, NV.*

10.1136/jim-2016-000365.392

Case Report Interrupted aortic arch is a congenital heart disease where there is loss of luminal continuity between ascending aorta and descending aorta. It accounts for 1% to 1.5 % of congenital heart diseases. These patients are usually diagnosed on prenatal ultrasounds. After birth, they may develop signs of circulatory collapse as the blood

supply to lower extremity is compromised after closure of the ductus arteriosus in the first few days. New diagnosis of interrupted aortic arch in adult population is extremely rare. To the best of our knowledge, only 40 cases have been reported in adult population. We are presenting the case of a 57 year old female with secondary hypertension since childhood. Her blood pressure was difficult to control despite of multiple anti-hypertensive medications. Adult cardiologist tried to perform cardiac catheterization but the procedure was aborted after the guidewire could not be advanced past the descending aorta. The patient was referred to our center for cardiac catheterization by a pediatric interventional cardiologist and she was diagnosed with interrupted aortic arch at catheterization. This article highlights the importance of considering aortic arch abnormalities as a differential diagnosis in patients with refractory hypertension.

Community Health II
Concurrent Session
8:00 AM – 10:00 AM
Saturday, January 28, 2017

393 EXPLORING HEALTH PERSPECTIVES OF THE ELDERLY POPULATION IN TETON COUNTY

Brown K. *University of Washington School of Medicine, Bremerton, WA.*

10.1136/jim-2016-000365.393

Purpose of Study A Community Health Assessment (CHA) plan aims to identify the needs and desires of the community as described by its citizens. There currently is limited data from the perspective of specific populations within Teton County and a recent mail survey was unsuccessful in gathering data due to a low response rate. Teton County has a population of roughly 6,000 people with 20.8% over the age of 65, which is higher than Montana's average. The goal of this project was to conduct the first focus group with the elderly population in a county wide assessment in order to identify potential needs, concerns, and barriers citizens have when improving their wellbeing. Information from this first focus group will then be combined with sequential focus groups the Health Department will conduct as part of a CHA.

Methods Used Discussions with the Teton County Health Department identified the need for a CHA which could pinpoint current areas of strength and weakness as well as potential projects in the future. A literature review was completed that justified the use of focus groups as a means to gathering information with the elderly population. One study specifically justified the use of older adults as a source of "rich data" while another showed how the results of their focus groups were significantly different than the researchers expectations. Other studies supported the claim that focus groups can provide valuable insight into a specific population.

Summary of Results This project produced a literature review to support the Health Department's future use of focus groups as a mechanism to gather information. A focus group was held with 9 citizens all over the age of 65, results were recorded, and analyzed. This population provided some overarching themes such as access: to healthcare, transportation to appointments, nursing home availability, and proximity of the hospital and physicians.

Conclusions The use of focus groups to generate data in a CHA was successfully commenced in that the first elderly population focus group was performed and it identified preliminary themes. This project will require a considerable amount of time to run enough focus groups, with different target populations, to obtain a wider perspective. The Health Department is committed to continuing the CHA as evidenced that they have already completed a second focus group with the elderly population.

394 ONE IN FIVE AT FRESNO HIGH: RAISING AWARENESS ABOUT TEEN DATING VIOLENCE AT A LARGE URBAN HIGH SCHOOL

Medina N,[2] Men MC,[2] Verdot JL,[2] Colwell K,[2] Kinman R[1]. *[1]UCSF-Fresno, Fresno, CA; [2]Fresno High School, Fresno, CA.*

10.1136/jim-2016-000365.394

Purpose of Study According to the Centers for Disease Control and Prevention, among high school students who have dated, 21% of females and 10% of males have experienced physical and/or sexual violence. Teen dating violence can lead to depression, social isolation, worsening school performance, substance abuse, and even suicide. At-risk individuals include not only those in the abusive relationship but also those close to them. Yet fears of retribution and/or loneliness can result in victims remaining in these relationships. To address this issue, a group of peer educators at Fresno High, a large urban high school, teamed with UCSF-Fresno pediatric residents to raise student awareness of teen dating violence.

Methods Used A needs analysis was performed with the use of an anonymous Kahoot survey of 220 students enquiring about personal experiences with dating violence and abusive relationships. A representative from the Marjorie Mason Center, a local non-profit center for victims of domestic violence, provided student peer educators with additional dating violence information and donated informational pamphlets about dating violence and potential resources. Peer educators then informed their fellow students about the survey results during morning announcements, which culminated in the use of an interactive lunchtime presentation to raise further awareness about dating violence and to provide information about available local resources for those currently involved in abusive relationships.

Summary of Results Approximately 1 in 5 students reported that they had been in an abusive relationship, while 8% reported being the abuser, 27% felt they were forced to do something against their wishes, and 70% reported personally witnessing abuse. 31% of students surveyed reported having experienced abuse at some point in their life, 8% of students reported staying in an abusive relationship for fear of retaliation, while 5% of those surveyed stayed in a relationship because of a fear of loneliness.

Conclusions Student peer educators can successfully pair with pediatric residents to design and implement an educational campaign to raise awareness of teen dating violence.

Surprisingly, the incidence of dating violence at a large urban high school was similar to the national average, rather than higher.

395 DEMENTIA SCREENING INITIATIVE: PROVIDING DEMENTIA SCREENING AND COMMUNITY SUPPORT IN SHERIDAN, WYOMING

Korpela C. *University of Washington School of Medicine, Seattle, WA.*

10.1136/jim-2016-000365.395

Purpose of Study The Dementia Screening Initiative (DSI) aims to increase the number of elders screened for dementia and provide them with a community member trained to offer resources and support. Sheridan County's population consist of 19.5% ages 65 and over, and is expected to grow to over 24% by 2040; in addition, Wyoming is expected to see an increase in Alzheimer's from 41.6% to 61.8% in this population by 2025. Hence, increased screening and support is needed to serve this growing population.

Methods Used Through clinic observations and discussions with community members, the need for screening and support for dementia became apparent. A literature search was performed and found that community dementia screening increased total number of people screened and that 98% of those screened reported they were satisfied with the screening. After reporting these results to the Dementia Friendly Community (DFC) founder and the Senior Center's Director of In-Home Services (DIHS), plans were developed to initiate community dementia screening. New and existing clients of In-Home Services (IHS) will be screened by case managers using the Mini-Cog^{TM} (a screening tool designed for use by a lay person), and clients with abnormal results will be connected with a physician, to follow up with further screening, and a personal Gathering Positive Solutions (GPS) volunteer.

Summary of Results DSI was developed after reporting the results of the literature review to community partners. A packet was developed including training video links for administering and scoring the screening tool, a flow chart detailing who to screen and how to follow up with abnormal screening results, and the screening tool (with written permission by the author). This packet was presented at a meeting with the DIHS and the Executive Director of the Senior Center, where they accepted and agreed to implement the intervention once GPS has trained enough volunteers to accommodate the increase in elders screened for dementia.

Conclusions The Dementia Screening Initiative was successfully accepted because of its ease of use, the fact that a layperson can administer the screening, there is no cost to IHS or the clients, and that it connects elders with dementia to volunteers.

396 PARTNER HEALING: COMBATING CHLAMYDIA AND GONORRHEA INFECTION IN THE NORTON SOUND REGION

Stanley M. *University of Washington, Anchorage, AK.*

10.1136/jim-2016-000365.396

Purpose of Study The Norton Sound Partner Healing program aims to improve regional treatment and decrease the reinfection rate for gonorrhea and chlamydia infections by initiating an expedited partner therapy (EPT) protocol in Nome, Alaska. The Norton Sound Health Corporation (NSHC) serves a population of 9,500 in the town of Nome and 15 surrounding villages. Alaska has the highest rate of chlamydia infection and fourth highest rate of gonorrhea infection in the nation. The highest concentrations in the state exist in the north and northwest regions.

Methods Used Conversations with community members, clinicians and members of the medical community, identified sexually transmitted infections as an important health issue in this population. NSHC pharmacists were creating a proposal to begin EPT in Nome and wanted a protocol to expand the program into the surrounding villages. EPT gives a patient diagnosed with gonorrhea or chlamydia medication to treat their infection and medication to distribute to recent sexual partners. A literature search was completed to investigate the efficacy of EPT in reducing reinfection rates and community infection prevalence. Two publications support EPT as an improvement over traditional partner referral, one publication supports EPT as an effective community level intervention, and one publication highlights important barriers in using EPT in rural areas.

Summary of Results The Norton Sound Partner Healing program will be proposed by the pharmacy department this fall. An informative packet was designed to incorporate community health aides (instructions, frequently asked questions, updated protocol). There is a newspaper article ready to provide basic education about sexually transmitted infections through the local newspaper, the Nome Nugget, when the program starts this fall.

Conclusions Norton Sound Partner Healing has good support from the NSHC pharmacy department and some NSHC physicians. The program will be proposed and hopefully initiated this fall by the NSHC pharmacy with support from community health aides in the surrounding villages. There is also a program proposal by the NSHC laboratory department to begin tracking regional statistics for gonorrhea and chlamydia. To be successful the program will need to be well executed by the regional pharmacy, but also supported in the villages where the majority of patients reside.

397 SURVEYING PERSPECTIVE ON MENTAL HEALTH AND SYMPTOM PREVALENCE IN THE VIETNAMESE COMMUNITY

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10.1136/jim-2016-000365.397

Purpose of Study Washington ranks 3rd in state of residence for Vietnamese immigrants and 1 in 5 adults reports being diagnosed with depression in King County. However, wide variation exists in mental health illness rates by race and Asian Americans underutilize mental health services. There is a need for disaggregated data to better understand this minority group in relation to mental health. Culturally appropriate methods that better connect patients with

mental health services also need to be developed. Given these needs, this project aims to gauge depression prevalence and explore attitudes regarding mental health in the Vietnamese community of King County.

Methods Used From clinic observations and provider interviews, it became clear that many Vietnamese patients seek treatment for somatic symptoms rooted in mental health, but do not always opt to see specialists. A literature review revealed key concepts regarding this population and mental health service usage. These include a need for: strong community partnerships, Vietnamese providers, culture/language appropriate materials, and consideration for themes in attitude toward mental health. Next, a culture/language appropriate brochure about physical/mental health and survey about depressive symptoms and attitudes toward mental health were created. Community outreach was achieved by meeting with the priest of the Vietnamese Martyrs Parish to propose executing the project at the church's health fair. Vietnamese volunteers held one-on-one educational sessions using the brochure and offered the survey to patrons.

Summary of Results 30 patrons and 20 surveys completed. Depression severity based on number of symptoms present and results were 65% mild, 25% moderate, and 10% severe. Normalization, the idea that depressive symptoms are normal, was the top reason for choosing not to see a mental health specialist. All participants rated mental health either equally as or more important than physical health.

Conclusions Culturally appropriate methods and a strong community partnership contributed to positive reception of the project. Challenges included a complicated survey and need for proactive measures to approach patrons. Possible next steps are developing a culture-appropriate PHQ-9, holding larger-scale surveys, and partnering with community organizations.

398 BULLYING – ARE PEDIATRICIANS DOING ENOUGH?

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10.1136/jim-2016-000365.398

Purpose of Study Bullying is a big problem that can have significant lifelong consequences, especially among pediatric patients. The aim of our project was to see how pediatric residents were doing in terms of acknowledging bullying in patients. We then set out to improve and equip them with tools to better address this issue.

Methods Used We started with a pre-intervention survey to evaluate UNSOM pediatric residents in August 2015. The survey was used to determine whether residents were addressing the topic of bullying and their level of awareness of resources available. We then had an advocacy presentation about bullying at a general didactics session highlighting its importance and raising awareness. Subsequently, handouts were made for our patients and attached to *Anticipatory Guidance Handouts* at our continuity clinic. We re-surveyed our residents in April 2016 to see if the handouts intervention we implemented helped to increase the number of residents discussing bullying. Statistical analysis was performed using a Z-score calculator for 2 populations test and a two-tailed distribution curve to compare pre-intervention and post-intervention results.

Summary of Results Table 1 shows results from our surveys. On the pre-intervention survey, the most popular answer to the question of what resources were used when dealing with bullying, 10 of 30 responses were "Google" or "Internet". On the post intervention survey, there were more specific responses to the question of resources, including the handouts.

Figure 1 shows the change in number of residents answering "Yes", "No" or "Sometimes" to the question of whether they discuss bullying in their well child checks before (Pre) and after (Post) our intervention. There was a significant increase in the number residents who responded "Yes".

Figure 2 shows an increase in the number of residents who were asking about bullying in all age groups, with the greatest increase in the Elementary school age group.

Conclusions As a result of our project and the implementation of handouts, residents are more actively participating in discussions about bullying with their patients. This handout also helped to gather valuable resources for patients dealing with this issue. We hope to expand on this project to include information to be provided in local schools, and to survey our patients to see if this is impacting the community we serve.

399 LATINO HEALTH REPORT CARD, CITY OF LONG BEACH, CALIFORNIA

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10.1136/jim-2016-000365.399

Purpose of Study How do Latino residents within the city of Long Beach rate on important health indicators concerning physical health, mental health, dental health and nutritional health?

Methods Used Data analysis consisted of descriptive statistics such as measures of central tendency and measures of dispersion for the health indicators. The goal was to use resources such as the US Census to evaluate statistically significant differences between the Latino population and other races in the city of Long Beach, specifically looking at average age, income, education level, drug/alcohol use, and access to health resources and health insurance.

Summary of Results The percentage of Latinos is higher in west Long Beach, a region of the city that also scores the lowest on the socioeconomic index. East Long Beach, where the majority of the population is white, scores highest on the socioeconomic index. Moving from east Long Beach to west Long Beach, there is a 7.2 year decrease in the median life expectancy of the population. More than 30 percent, greater than any other racial group, of Latinos in Long Beach do not have health insurance. Latinos also have relatively higher incidences of death as a result of accidents, intentional self-harm, chronic liver disease and cirrhosis, and assault.

Conclusions From access to education and health care to employment opportunities, where one lives plays a major

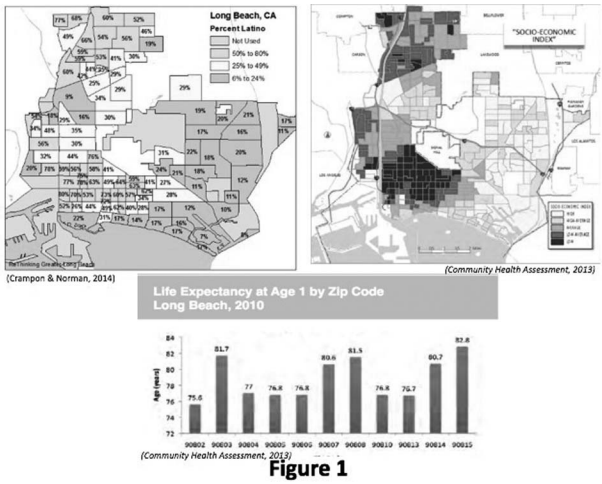

Figure 1

Abstract 399 Figure 1

role in determining life expectancy, propensity for chronic diseases, and overall quality of life. As the Latino population in Long Beach continues to grow, it will become even more crucial to address the barriers facing disadvantaged groups.

400 KODIAK ATV SAFETY

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10.1136/jim-2016-000365.400

Purpose of Study ATV riding in the remote island of Kodiak, Alaska, populated by 6,500 people, is a widespread form of transportation and recreation. The rate of ATV accidents in Kodiak per year has just over quadrupled since 2013, and rank as the 3rd (nearly 2nd) highest cause of traumas on the Island in 2015. Lack of knowledge of proper safety measures can and does result in long-term injuries or death.

Methods Used Conversation with the Trauma Coordinator at the hospital confirmed that ATV accidents were the 3rd highest cause of traumas on the island, with the rate steadily increasing over the past three years. Literature review of previous ATV safety programs in rural towns across the nation showed a variety of methods utilized including surveys, presentations, flyers, and posters, all aimed at decreasing accidents through increased safety education. Community involvement seemed to be a key to success.

Summary of Results With cooperation of the administrator of Ride Kodiak, an ATV rider Facebook page, a safety flyer was pinned to the top of the page, providing statistics, safety tips, and a link to an online course through ATV Safety Institute. As of 9/20/16, the post had been liked by 51 members. A public service announcement was recorded and aired the weekend of July 4th and continued throughout the summer. The same safety flyer displayed on the Facebook group is also on display at local sporting goods stores. A poster was compiled for use in future health fairs, including the Coast Guard Health Fair welcoming new families.

Conclusions This project attempted to improve ATV safety by promoting safety awareness to the ATV riding community of Kodiak, through a Facebook page, Ride Kodiak. Next steps include promoting ATV safety at a young age with a safety presentation to children/teens at the Kodiak Baptist Mission summer camps, and forming a partnership with the ATV dealer, Kodiak Sales and Service, to ultimately offer hands-on ATV safety courses. Trauma data for 2016 will be analyzed at the end of the year for any significant reduction in ATV accident injuries.

General Internal Medicine and Aging Concurrent Session 8:00 AM – 10:00 AM Saturday, January 28, 2017

401 USING A PERSONAL UV EXPOSURE MONITOR TO ASSESS HOW DIFFERENT FABRIC CHARACTERISTICS AND FABRIC TREATMENTS PROTECT FROM THE UV RAYS

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10.1136/jim-2016-000365.401

Purpose of Study The purpose of this study is to assess natural UV exposure using a personal UV exposure monitor under black and white clothing to compare SPF rated clothing and the UV exposure of different fabric materials.

Methods Used Personal UV exposure monitors were used to measure the UV index transmitted by natural sunlight through 3 different types (Shirt A 4.5 oz., Shirt B 5.3 oz., and Shirt C 6.1 oz.) of 100% cotton t-shirts in 4 treatment groups: (1) non-laundered, (2) water-only laundered, (3) wet treatment non-laundered, (4) wet treatment water-only laundered. Special UV Protection fabrics were also used in this study. Each UV protection fabric was assessed in the (1) non-laundered and (2) wet treatment non-laundered state.

Summary of Results The black shirts from Shirt B transmitted 1.61% of UV rays when non-laundered, 0% in laundered, 0.71% in wet non-laundered, and 0.78% in wet laundered. The white colored shirts from Shirt B transmitted more in each group. Shirt C at 6.1 oz. is the most protective shirt compared to the lighter shirts, as it shows a transmission of a minimum of 1.25% of UV rays and maximum of 11.4% of UV rays. The laundered Shirt A 4.5 oz. in black transmitted 0% of the UV rays and the non-laundered shirt in black transmitted 1.43%. For Shirt A: dry white non-laundered shirts transmitted 8.03% and in the wet state, 18.9%. The special SPF rated clothing transmitted none of the UV rays in both non-laundered and wet non-laundered treatment methods across all three tested SPF fabrics (black, light grey, blue).

Conclusions In conclusion, fabric color, fabric weight and fabric treatment play a role in sun protection. This study also shows that wet fabrics offer less protection than dry fabrics. Reduce porosity of the fabric reduced UV transmittance of the fabric, indicating that tighter woven clothing is

more protective than loose clothing. Special SPF fabric offers the best protection in both light and dark hues, and in dry and wet states. Avoiding unnecessary sun exposure remains the most effective strategy in protecting the skin. In choosing an article of clothing, considering all the factors of clothing characteristics: fabric color, weight and laundering condition, can be useful to minimizing UV exposure.

402 LINKING PATIENTS WITH BUPRENORPHINE TREATMENT IN PRIMARY CARE: PREDICTORS OF ENGAGEMENT

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10.1136/jim-2016-000365.402

Purpose of Study Office based buprenorphine treatment offers the potential to dramatically expand the reach of effective treatment for opioid use disorders. Unfortunately, patients may be lost during the engagement period (between initial screening and induction with medication) and never begin treatment. While there are known predictors of retention after starting medication, few data are available regarding rates and predictors of successfully reaching induction. This cohort study examined patient characteristics associated with engagement from screening to induction in a buprenorphine treatment program at an urban, academic primary care clinic.

Methods Used In this office based opioid treatment program, patients complete phone intake, nurse visit and physician visit prior to in-clinic observed buprenorphine induction. We reviewed records for a consecutive sample of 100 new patients who completed phone intake to identify characteristics associated with completion of the steps between intake and induction. Potential predictors included demographic characteristics (age, sex, race/ethnicity), clinical history (recent substance use, treatment history and co-occurring mental health diagnoses) and social characteristics (employment, homelessness, incarceration history and relationship status). We used multivariate logistic regression to identify independent predictors of engagement to induction.

Summary of Results Sixty percent of patients dropped out prior to induction, with the majority dropping out prior to the nurse visit. After adjustment, completion of induction was significantly less likely in patients with recent polysubstance use (OR=0.17, 95% CI=0.05–0.57) or a prior history of substance use treatment (OR=0.14, 95% CI=0.03–0.70). Sociodemographic characteristics, such as younger age, unemployment, recent homelessness, or history of incarceration were not significant predictors of failing to reach induction.

Conclusions Over half of patients seeking buprenorphine treatment dropped out prior to induction. Those with recent polysubstance use or previous substance use treatment may need extra support during the engagement period, particularly early in the process. Some sociodemographic characteristics previously found to predict dropout after induction may not predict failure to engage.

403 PRETESTING NOVEL, PERSON-CENTERED FALL PREVENTION MESSAGES

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10.1136/jim-2016-000365.403

Purpose of Study One-third of community-dwelling adults aged ≥65 years experience a fall each year. While effective fall prevention strategies exist, many are reluctant to adopt these strategies and instead say they are "being more careful" to prevent falls. A previous study gathered opinions on what it means to "be more careful" in the context of fall prevention and yielded 20+ examples, termed "fall prevention messages," of how older adults reported being more careful to prevent falls. The present study aimed to assess the relative merits of these messages, preferences for accompanying images, and ideas for message delivery.

Methods Used 25 community-dwelling adults aged ≥59 years participated in a focus group or one-on-one interview to rate 21 fall prevention messages for comprehension, liking, relevance, and perceived effectiveness (each rated on a 5-point Likert scale) and to share their opinions. Participants also filled out a short demographic survey. Composite scores were calculated for each message by summing comprehension, liking, and relevance scores, with higher scores indicating greater message appeal. Differences in scores by demographic and health characteristics were assessed using T-tests and ANOVA. Session transcripts were analyzed for themes.

Summary of Results The mean age of participants was 79 years; 68% were female, and 56% had fallen in the past year. Messages on awareness and outdoor fall prevention had the highest composite scores, while messages on assistive devices had the lowest composite scores. Few demographic differences were observed: participants who had fallen in the past year and participants who reported poorer health rated certain messages higher than their counterparts. Participants preferred messages that reinforced behaviors they were already doing, had a clear connection to falls, and did not assume debility due to age. Participants suggested pamphlets and calendars as modes by which preferred messages could be distributed and tested to see whether "being more careful" is an effective strategy to prevent falls.

Conclusions A subset of age-agnostic, fall prevention messages is clearly preferred by community-dwelling older adults and will lay the foundation for a novel, person-centered fall prevention strategy.

404 GUMS AND DRUGS

Kendall PD,[1] Vu J,[2] Aronowitz P[2]. [1]*UC Davis School of Medicine, Sacramento, CA;* [2]*UC Davis Medical Center, Sacramento, CA.*

10.1136/jim-2016-000365.404

Introduction Gingival hyperplasia can be a striking and often cosmetically bothersome side-effect of Cyclosporine and several anticonvulsant drugs. This case demonstrates gingival hyperplasia due to rarely implicated drugs.

Case Presentation A 23 year-old man with a history of posterior urethral valves complicated by chronic kidney

disease requiring renal transplant at age 19 was admitted to the hospital for acute abdominal pain and emesis. His family members had recently had vomiting and diarrhea, and he presented with epigastric pain and emesis.

His past medical history was remarkable only for a renal transplant 4 years prior. He had been on Mycophenolate mofetil, Tacrolimus, and Amlodipine since his renal transplant. His post-transplant course had been uncomplicated and without rejection episodes. When the examiners noted gingival hyperplasia on physical exam, the patient reported that he had presented to his dentist several times complaining of this problem. He had never been prescribed Cyclosporine or any type of anticonvulsant.

Physical examination revealed a well-appearing young man who was afebrile and in no acute distress. Abdominal exam was soft and nontender without hepatosplenomegaly. He had marked, nontender gingival hyperplasia without bleeding or friability. Labs were notable for mild leukocytosis, hypokalemia, and a supra-therapeutic Mycophenolate mofetil level. After admission and the administration of intravenous fluids, the patient improved rapidly with no subsequent emesis or abdominal pain. His symptoms were thought to be due to a viral gastroenteritis.

Discussion We present this case as an illustration that drugs other than anticonvulsants and Cyclosporine can cause gingival hyperplasia. Interestingly, this patient was on 3 agents that have been rarely reported to cause gingival hyperplasia. Several studies have demonstrated low rates of gingival overgrowth on Tacrolimus, ranging from 0% to 29% of patients, and gingival overgrowth is described but rarely seen with Mycophenolate mofetil alone. Calcium-channel blockers, including Amlodipine, have rarely been reported to induce gingival overgrowth.

405 ALL MYXED UP: AN UNUSUAL CAUSE OF STROKE

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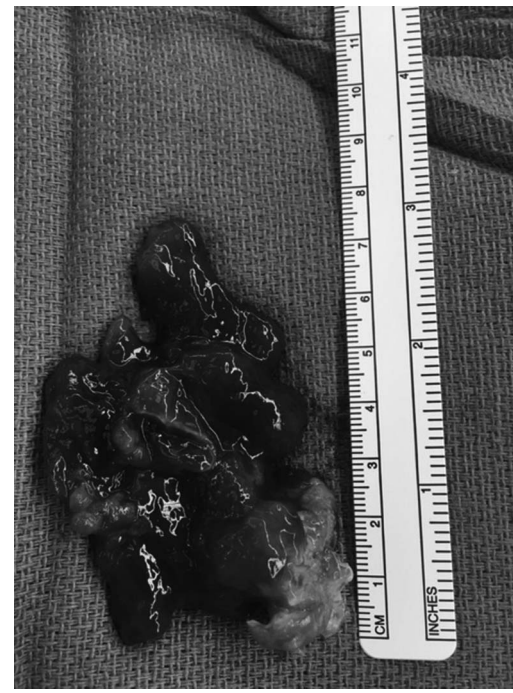
10.1136/jim-2016-000365.405

Case Report A 38-year-old male with no past medical history presented to the emergency department with a chief complaint of 30 minutes of left upper extremity weakness and left-sided perioral numbness. He also noted bilateral lower extremity pain that worsened with exertion and a new rash on his palms and soles. At the time of examination, the left upper extremity weakness and facial numbness had resolved without intervention, and the neurologic exam was without abnormalities. The lower extremities were warm and well perfused with strong pulses. Examination of the bilateral palms and soles revealed erythematous, macular, non-blanching lesions that were mildly tender to palpation. Laboratory workup was significant for a troponin of 3.84 and EKG was without ischemic changes. A stroke workup initially included a non-contrast head CT and carotid ultrasound, both of which were unremarkable. However, transthoracic echocardiogram revealed a large, mobile, pedunculated mass attached to the anterior interatrial septum consistent with atrial myxoma. MRI of the brain revealed scattered areas of reduced diffusion consistent with infarcts of cardioembolic origin. The patient was anticoagulated and cardiothoracic surgery was consulted. The patient ultimately underwent successful removal of a large atrial myxoma with complete resolution of his symptoms.



Abstract 405 Figure 1

Atrial myxoma rarely presents as an acute stroke. Furthermore, this case illustrates the application of Occam's razor to explain the patient's stroke, claudication, rash, and NSTEMI, all caused by cardiac emboli.

406 A RARE CASE OF LENTIGINOUS MELANOMA

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10.1136/jim-2016-000365.406

Objectives Subungal Melanoma, a cutaneous nail bed melanoma, is a very rare and fatal melanoma with very poor prognosis. It can be difficult to be recognized by the patient and many misdiagnoses are made for more common and benign conditions, which can delay the diagnosis. In our case, patient sought medical help after 6 months because of the benign and painless feature of the lesion.

Case Presentation 60 year old female, presented to the emergency with 6 months duration of a black growth under the right great toenail. Physical examination revealed a 2×2 inch growth under the right great toe nail with superficial eschar and black irregular material, with no discharge. Biopsy of the periungal skin revealed invasive malignant melanoma with surface ulceration, acral lentigenous type. After amputation of the toe and sentinel node biopsy patient was diagnosed with stage IIIc malignant melanoma.

Discussion Subungal melanoma with subtypes being acral lentiginous, nodular and desmoplastic is a lethal form of melanoma. Diagnosis can be delayed due to characteristics seen in benign conditions such as wart, tinea, bruising, hematoma,

paronychia. Therefore, melanoma of the foot carries poorer prognosis in comparison to lesions of other body parts.
Results We have described a rare case of hallux melanoma, which was treated with amputation and inguinal lymph node dissection. We reported this case so that physicians can acknowledge the importance of clinical features and early diagnosis of this morbid cancer, as the patients can neglect the lesion because of the existence of many benign differentials.

Neonatology – Perinatal Biology II Concurrent Session 8:00 AM – 10:00 AM Saturday, January 28, 2017

407 STRUCTURAL AND DEVELOPMENTAL CHANGES IN THE BRAIN OF NORMAL LAMBS

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10.1136/jim-2016-000365.407

Purpose of Study MRI for human neurodevelopmental studies have led to the discovery of mechanisms that may be therapeutically targeted. These discoveries highlight the need for realistic animal models of brain structure and development, where additional mechanisms and therapies can be evaluated. Few studies have looked at the structure and development of large animal brains in the setting of premature birth and prolonged respiratory support. Our group uses preterm lambs to assess long-term outcomes of prematurity combined with prolonged respiratory support. Our goal for this study was to use MRI to identify the structural and developmental changes in the brain of normal lambs.
Methods Used We collected MRI datasets of brain images to determine normative developmental trajectories of lamb brains at 2–3 and 5 months' postnatal age. Postnatal age of 2–3 months is when lambs wean from milk (equivalent of 1–2 years for human infants). Postnatal age of 5 months for lambs is interpolated equivalent to ~6 years' postnatal age for human children. Raw T1 and T2 MRI images were post-processed, correcting for rotation and orientation before being normalized, stripped of non-brain tissue, and segmented into gray matter and white matter images. Comparative statistical analysis of the resultant images was done to determine volumetric changes over time.
Summary of Results Comparative statistical analysis of the resultant images shows that brain volume decreases between 2–3 months and 5 months. These decreases are consistent in both gray matter and white matter. Through T1:T2 ratio analysis, we also discovered that myelination occurs prior to 2 months in lambs, without significant change between 2 and 5 months.
Conclusions Both gray matter and white matter volumes decrease as normal lambs age. Our results suggest that the most informative period for evaluating myelination is likely to be in the first 2 months' postnatal period. Supported by T35 HL07744, R01 HL110002

408 *FAH* GENE EDITING USING CRISPR/CAS9-MEDIATED REPAIR

Darnell J,[1] Zhang Q,[2] Grompe M[2]. [1]*Western University of Health Sciences, Lebanon, OR;* [2]*Oregon Health and Science University, Portland, OR.*

10.1136/jim-2016-000365.408

Purpose of Study Deficiency in the enzyme, fumarylacetoacetate hydrolase (*Fah*), in tyrosine metabolism leads to hereditary tyrosinemia type I (HT1) in childhood, which is characterized by hepatic failure and HCC, among other health problems. Therapeutic genome engineering via an endonuclease CRISPR-Cas9 system has shown promise in genome editing to treat genetic diseases such as HT1. The combination of Cas9 endonuclease specificity with the CRISPR RNA single-guide strand can cause an insertion or deletion mutation via non-homologous end joining, or can edit the sequence of a gene via homologous-directed repair. We inserted a *Fah*-targeted guide strand into a chimeric pX330 CRISPR/Cas9 vector to test the therapeutic value of this system with the aim of using the homologous-directed repair method to repair the *Fah* gene.
Methods Used Vector design: We used unique *BbsI* site to insert a single guide sequence designed to target *Fah* into the pX330 CRISPR/Cas9 vector (Addgene). The guide strand was created from an annealed 23 bp primer sequence with complementary 5' and 3' overhangs to the cut sites of *BbsI*. Sequencing was then performed to confirm proper insertion of the guide strand.

Surveyor Assay (Integrated DNA Technologies): The Surveyor assay assesses the precision and cutting properties of our designed vector *in vitro*. In order to prepare for the assay, we transfected our vector into the HEK293 human cell line using Invitrogen's Mirus transfection kit.
Summary of Results Sequencing results confirmed that our guide strand inserted in the correct orientation into the pX330 CRISPR/Cas9 vector. Our transfection in preparation for the Surveyor assay was also confirmed alongside a GFP positive control.
Conclusions After confirming our sequence and transfection *in vitro*, we will move forward with the Surveyor Assay in order to assess the efficacy and gene-editing properties of our pX330 CRISPR/Cas9 vector.

409 POSTNATAL CONFIRMATION OF MOSIAC TRISOMY 17 IN CARDIAC TISSUE IN AN INFANT WITH CONGENITAL HEART DISEASE: CASE REPORT AND REVIEW OF THE LITERATURE

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10.1136/jim-2016-000365.409

Purpose of Study To report findings in a case of mosaic trisomy 17 in which mosaicism in cardiac tissue was confirmed. The findings serve to advance understanding of the phenotypic spectrum of mosaic trisomy 17 and substantiate the association of this condition with congenital heart defects and intestinal malrotation.

Mosaic trisomy 17 is among the rarest of the aneuploidies seen in liveborn infants. The majority of reported

cases are diagnosed prenatally. Normal outcomes have been observed in many cases suggesting that the trisomy may be confined to extraembryonic tissues. When abnormalities are present the presenting findings variably include congenital heart disease, asymmetry, intestinal malrotation. The aneuploidy cell line is typically undetectable in blood which may lead to underascertainment. Examination of tissues other than blood and skin for aneuploidy has been relatively infrequent in reported cases making the correlation of aneuploidy and the sites malformation challenging.
Methods Used Karyotype was performed on peripheral blood, cardiac tissue (aortic membrane) and skin fibroblasts.
Summary of Results Follow recognition of a heart defect mosaic trisomy 17 diagnosed prenatally by amniocentesis. Postnatally, the female infant was found to have complex congenital heart disease including a ventricular septal defect with a supra-mitral ring and patent ductus arteriosus as well as intestinal malrotation. Peripheral blood was 46, XX. At six months of age developmental delay, hypotonia and plagiocephaly were evident. The patient subsequently underwent subaortic membrane repair. At that time thoracic skin and subaortic membrane tissue were sent for chromosome analysis. In both tissues, karyotype showed an extra chromosome 17 present in 4 out 20 cells.
Conclusions We identified mosaic trisomy 17 in the cardiac tissue of an infant with congenital heart disease. Our findings support the proposed association between this trisomy and congenital heart defects as well as intestinal malrotation in this rare syndrome. As the absence of an alternative diagnosis, this combination of findings should prompt consideration of a cytogenetic study from a tissue other than blood.

410 CHROMOSOME 15 Q21.1 MICRODELETION ENCOMPASSING FIBRILLIN 1 (FBN1) IN A MOTHER AND CHILD WITH MINIMAL CLINICAL FEATURES OF MARFAN SYNDROME

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10.1136/jim-2016-000365.410

Case Report The FBN1 gene encodes fibrillin-1, a major component of microfibrils that provides elasticity to skin, ligaments, and blood vessels, and support to bone and connective tissue. Pathogenic variants in FBN1 cause a number of genetic disorders, the most well-known of which is the autosomal dominant disorder Marfan syndrome (MFS), characterized by ocular, cardiovascular, and skeletal abnormalities. While more than 1,300 FBN1 variants have been identified in MFS, whole gene deletions of FBN1 are rare.

The proband is a 7 year old who was initially evaluated at 11 months of age for mildly marfanoid features consisting of increased length, arachnodactyly, and craniofacial dysmorphisms. His only medical concern consisted of mild intellectual disability as a toddler that subsequently resolved with therapy. SNP chromosome microarray revealed a ~2.5 Mb deletion on chromosome 15 q21.1 encompassing 7 genes including FBN1. With serial exams at his follow-up visits, he continues to exhibit very few physical findings consistent with the clinical diagnosis of Marfan syndrome, and echocardiograms have not shown aortic root dilatation. This microdeletion was determined to be maternally inherited, and detailed evaluations of the mother show that she similarly exhibits minimal clinical features of Marfan syndrome.

Pathogenic variants in FBN1 cause a wide spectrum of clinical disease, spanning from MFS to allelic disorders such as the MASS phenotype and isolated mitral valve prolapse, extending to subdiagnostic clinical presentations with minimal and incomplete features. There are very limited genotype-phenotype correlations known with FBN1, but one correlation is that all of the published cases of FBN1 haploinsufficiency have been described to manifest complete or nearly complete MFS. This family we present demonstrates that the phenotypic spectrum of FBN1 deletions extends to the very mild end of the marfanoid spectrum. We conclude that FBN1 deletions appear to exhibit a similar degree of phenotypic heterogeneity as pathogenic variants, and thus other modifiers must influence the clinical phenotype.

411 IDENTIFICATION OF RARE WNT1 OSTEOPOROSIS PATIENT

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10.1136/jim-2016-000365.411

Purpose of Study Osteoporosis is a common skeletal disorder and it is characterized by deterioration of bone mass and microarchitecture, resulting in increased bone fragility and propensity to fracture. The most common monogenic form of osteoporosis is osteogenesis imperfecta (OI). Bone health is dependent on intact matrix proteins as well on the WNT/β-catenin-mediated signaling pathway. Families with severe early-onset osteoporosis were identified to carry heterozygous mutation in WNT1, the key ligand for the WNT signaling pathway in bone (Laine *et al*, NEJM, 2013). The mutated WNT1 resulted in impaired osteoblast function.
Methods Used A patient was referred to the Turku Univ. Hospital Clinical Genetics Department. She had 11 fractures between the ages of 7 months to 29 years and had visited the clinic from early childhood. The fractures were low-energy peripheral fractures. She did not have any dysmorphic features or extra-skeletal features typical for OI, such as dentogenesis imperfecta or impaired hearing. Radiographic healing of old fractures was normal and she had normal growth. Biochemical findings were normal for plasma calcium, phosphate and serum 25-OH-D levels. Also bone turnover markers S-P1NP and U-NTx were normal. Her BMD was below normal ranging from −3 to −2.1. She was suspected to have atypical OI or idiopathic juvenile osteoporosis. To rule out COL1A1 and COL1A2 mutations sequencing was performed and results were normal.
Summary of Results Review of literature and studying the clinical phenotype led us to suspect WNT1 osteoporosis. Since this type of osteoporosis was just recently discovered

none of the molecular genetics laboratories offered the testing. The research laboratory was contacted and asked to do single gene mutation analysis by Sanger sequencing. The heterozygous WNT1 missense mutation c.652T>G (p.C218G) in exon 4 was revealed and molecular and clinical diagnosis was confirmed. This mutation has been reported previously. Subsequently, the proband's mother, maternal uncle and his daughter were confirmed to have the same condition.

Conclusions This case represents the first clinically diagnosed and then molecularly confirmed WNT1 osteoporosis. Correct diagnosis and proper counseling results in fracture prevention and allows treatment if needed.

412 THE ROLE OF SMELL IDENTIFICATION TESTING IN MEDICAL GENETICS CLINIC

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10.1136/jim-2016-000365.412

Purpose of Study Anosmia (absent sense of smell) and hyposmia (decreased sense of smell) occur in numerous genetic syndromes. Classically, these entities are associated with olfactory bulb dysgenesis occurring as part of a malforation syndrome such as CHARGE, Kallmann, or Bardet Biedel. Impaired sense of smell can also occur in progressive or neurodegenerative genetic conditions, often as an acquired feature. Such conditions include myotonic dystrophy type 1, Refsum disease, Gaucher disease, and Alzheimer disease.

Despite our understanding of these associations, formal smell testing is not usually completed; instead, we usually rely on self-reporting of anosmia and hyposmia. Failure to test may be related to perceived difficulty of the process as well as general belief that the test will not alter diagnosis or management. We sought to explore whether testing could improve diagnosis and management of genetic conditions.

Methods Used We used two types of clinically validated smell tests, Sniffn' Sticks and the University of Pennsylvania Smell Identification Test, to evaluate sense of smell in patients with self-reported smell impairment, diagnosis of an anosmia-associated condition, or features of an anosmia-associated condition. If impaired sense of smell was discovered or confirmed, we provided counseling about potential medical and social impact.

Summary of Results Limitations of testing include cultural barriers, test shelf life, patient cooperation, and patient intellectual functioning. However, formal smell testing overall was easy to conduct and generally perceived by patients and families as a positive experience. Patients' prediction of degree of hyposmia or anosmia was not always matched by test results. Furthermore, smell testing impacted medical management by precluding the need for additional workup (e,g, MRI), by allowing appropriate counseling, and by helping to direct genetic testing.

Conclusions Confirming impaired sense of smell can be useful in diagnosing MCA syndromes and in documenting decreased or declining function of a population of neurons that seem to be very sensitive to a variety of insults. Clinical use of a validated smell test can assist in diagnosis and management of multiple genetic conditions.

413 SCHIMKE IMMUNOOSSEOUS DYSPLASIA DIAGNOSIS AND MANAGEMENT OF HEADACHES AND RENAL INSUFFICIENCY

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10.1136/jim-2016-000365.413

Purpose of Study Schimke immunoosseous dysplasia (SIOD) is an autosomal recessive condition characterized by spondyloepiphyseal dysplasia, progressive steroid-resistant nephropathy, and T-cell deficiency. The average age of death is 11 years. SIOD patients can also have severe migraine-like headaches that can be frequent. Whether these are transient neurologic attacks or cerebrovascular abnormalities is poorly understood. Here we describe the diagnosis and management of a twelve year old SIOD patient with debilitating migraine-like headaches who was initially identified at nine years old. We investigate whether headaches may be related to blood pressure.

Methods Used Direct clinical sequencing of *SMARCAL1* was performed by Sanger method. For Ambulatory Blood Pressure Monitoring (ABPM), brachial blood pressure was measured 59 times over a 32 hour period. ABPM was performed before and after clinical interventions. The patient also kept a diary of symptoms during each ABPM time period. ABPM parameters were calculated taking height into account. MRI/MRAV imaging was performed to assess the cerebral vasculature. PubMed was searched for Schimke Immunooseous Dysplasia and the literature was reviewed.

Summary of Results Though SIOD headache treatment has been mentioned, no specific guidelines are available given the unclear pathophysiology. For the present patient, headaches were initially treated with NSAIDs with some relief but progressively worsened. In contrast to pathologic studies of SIOD where cerebral arteriosclerosis has been noted, our patient had a normal brain MRI/MRAV. Interestingly, review of the EMR revealed an increase in BP percentile (adjusted for age, sex, and height) from 65% SBP/24% DBP to 84% SBP/61% DBP over 6 months. ABPM showed a mean blood pressure of 112/68 (90%) over a 32 hour period even without headache. Benazepril may be a medication that may assist with blood pressure control and ABPM results based on dosing will be shown.

Conclusions SIOD management should include renal, endocrine, immunologic, skeletal, and genetics care. Severe headaches are common in SIOD and may be exacerbated by spikes in blood pressure. Aberrant neuronal activity causing inflammation and vascular reactivity has also been suggested. Further studies on medications that benefit headache and renal insufficiency should be considered.

Neonatology General V
Concurrent Session
8:00 AM – 10:00 AM
Saturday, January 28, 2017

414 TRANSITIONING TO ICD-10: THE CHANGING PATTERN OF PROCEDURES PERFORMED IN NEONATES NATIONWIDE

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10.1136/jim-2016-000365.414

Purpose of Study While it is widely recognized that neonates undergo many procedures, there is limited information on the trends of procedures in neonates and whether these trends were affected by the ICD-10 transition. The objectives of this study are: (1) To describe the most frequent ICD-9 procedures performed in neonates 6 months prior to the ICD-10 transition and 6 months after, (2) and to determine whether resource utilization (length of stay and costs) differs from ICD-9 to ICD-10 classification.

Methods Used Data was obtained from the Pediatric Healthcare Information System (PHIS) database from April 1st 2015 to March 31st 2016. PHIS is a sample of 48 Children's Hospitals nationwide that has data on ICD-9 and ICD-10 procedure codes. ICD-9 codes were mapped to ICD-10 via http://www.icd10data.com. Neonates (≤28 days old) admitted to a neonatal intensive care unit with at least one procedure code were included in the study population. Univariate analysis was used to describe the most frequent procedures. Bivariate analysis was used to describe resource utilization differences between the ICD periods.

Summary of Results There were 24,126 neonates discharged between April 1st 2015 to September 30th 2015 nationwide, and 22,822 neonates discharged between October 1st 2015 to March 31st 2016. The most frequent procedures among the ICD-9 era and resource utilization among each ICD period are described in further detail (Table).

Conclusions Differences in procedural utilization, length of stay and costs were noted for the most common procedures between the ICD-9 to the ICD-10 periods. Further studies will be needed to determine whether ICD-10 codes are being under or over reported.

415 CHARACTERISTICS OF PREMATURE INFANTS WITH GRADE IV INTRAVENTRICULAR HEMORRHAGE WHO HAVE FAVORABLE OUTCOMES

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10.1136/jim-2016-000365.415

Purpose of Study In premature infants, severe intraventricular hemorrhage (IVH) is relatively common and is associated with poor neurodevelopmental outcomes. The most severe, grade IV, is associated with the most impaired outcomes, and may prompt discussion with the parents regarding redirection of medical care. However, some infants who develop a grade IV IVH have minimal neurodevelopmental impairment (NDI). Distinguishing those infants who have a poor outcome from those who will do well is difficult. We hypothesize that specific ultrasound findings, in addition to clinical and social factors, may serve as predictors of later unimpaired outcome following grade IV IVH.

Methods Used This is a retrospective review of cranial ultrasound, clinical, and socioeconomic findings of infants who developed a grade IV IVH in a Level IV NICU from July 2009 through September 2015 (n=44). Ultrasound findings evaluated included measured total volume of bleed, presence of mid-line shift, and hydrocephalus requiring shunt. Socioeconomic factors included maternal education and insurance type. The Bayley Scales of Infant Development, 3rd edition (BSID) was administered at 15–24 months corrected age. Good outcome was defined as normal (BSID cognitive scores >85 with no blindness or deafness) or near normal (BSID cognitive <85 but >70, mild cerebral palsy (CP), unilateral blindness or deafness). Poor outcome was defined as death or severe NDI (BSID cognitive <70, disabling CP, bilateral blindness or deafness).

Summary of Results Twenty-one of the 44 patients survived (48%). Of those, 16 had developmental testing performed, and 5 were lost to follow up. To date, 11 (25% of all infants and 69% of all infants tested) have had a good outcome. Smaller total volume of bleed was associated with a good outcome, while maternal college graduate and private insurance status were associated with a poor outcome.

Conclusions In this cohort of infants with grade IV IVH, good outcomes were common among survivors. Preliminary analysis showed smaller total volume of bleed was an early predictor of a good outcome. Maternal education and private payer status were not associated with improved outcome.

Abstract 414 Table 1

	Costs			Length of Stay (Days)		
	ICD9	ICD10	p	ICD9	ICD10	p
Resection of Prepuce, External Approach	67.6±137.0	78.0±160.7	0.0052	22.5±37.35	24.5±39.4	0.0126
Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening	274.2±329.3	309.7±340.3	<0.0001	73.9±77.5	84.2±80.8	<0.0001
Introduction of Nutritional Substance into Peripheral Vein, Percutaneous Approach	153.9±207.7	163.9±205.8	0.0221	44.5±54.4	48.0±52.3	<0.0001
Respiratory Ventilation, Greater than 96 Consecutive Hours	315.3±311.9	343.7±323.2	0.0041	82.5±74.7	91.2±77.6	<0.0001

Results are presented as mean±SD
Costs per $/1,000

416 THE IMPACT OF DELIVERY MODE ON MORTALITY OF PRETERM INFANTS BORN AT 22–24 WEEKS GESTATIONAL AGE

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10.1136/jim-2016-000365.416

Purpose of Study Advances in perinatal medicine have reduced perinatal mortality and morbidity dramatically over the past 20 years. However, the mortality rate of preterm infants born at between 22–24 weeks gestational age (GA) is still high. Concerns regarding the ability of a very preterm fetus to tolerate labor and the potential for injury during vaginal delivery have led some to suggest that Cesarean section (CS) as the mode of delivery may be beneficial for infants with borderline viability. We wanted to study if this hypothetical benefit from Cesarean delivery at the periviable age was applicable in our population.

Methods Used Retrospective data review was conducted from January 2000 to January 2016 on all preterm infants delivered at 22–24 weeks GA. All infants born at LAC +USC Medical Center and Good Samaritan Hospital without congenital anomalies were included in the study. Mode of delivery and mortality were extracted from the neonatal database. Data was limited to liveborn singleton cephalic neonates.

Summary of Results A total of 138 extremely premature infants born at 22–24 weeks of gestation. Majority were born by CS (53%) vs vaginal delivery (VD) (47%). The mean GA of infants born by CS is 23.6 +/− 0.6 and 22.9 +/− 0.8. for those born born by VD (p=<0.01). Mortality was highest for 22 week GA infant compared to 23 and 24 weeks GA (44% vs 33% vs 23% respectively; p=<0.0001). Mortality rate among preterm infants GA 22–24 weeks GA is higher for those born by VD compared to those born by CS (54%vs. 34% p=0.019).

The mortality rate for extremely preterm infants born by VD was no longer significant after correcting for GA. GA is associated with mortality but not mode of delivery. For every one week increase in GA, the infant is 7.25 times more likely to survive.

Conclusions In this retrospective study, Cesarean delivery does not confer benefit of reduced mortality in periviable infants with cephalic presentation. Gestational age is a better predictor of mortality rather than mode of delivery.

417 A QUALITY IMPROVEMENT PROJECT: APPLICATION OF THE EARLY ONSET SEPSIS CALCULATOR IN A COUNTY NICU

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10.1136/jim-2016-000365.417

Purpose of Study A Quality Improvement (QI) project aimed at reducing antibiotic use in neonates, through a selective approach to the management of infants with maternal chorioamnionitis: results of the first year of transition from the CDC guidelines to a focused patient selection, using the Northern California Kaiser Permanente Early Onset Sepsis (KP-EOS) Calculator. Is it a safe alternative in a County hospital population?

Methods Used In the NICU database for years 2011–14, we identified 444 infants born at 35 0/7 weeks and up, automatically admitted to the NICU for maternal diagnosis of chorioamnionitis, as *per* CDC recommendations. For the year 2015, we reviewed the 22 babies admitted, from 125 mothers with chorioamnionitis, identified by KP-EOS, based on their higher risk level and clinical presentation.

Summary of Results Of the 444 newborns admitted for "chorio" diagnosis, all had a partial sepsis evaluation, and received ampicillin and gentamicin; most stopped after 48 hours of negative blood culture, 42 required a full course; 5 were later readmitted with diagnosis of late Sepsis or Meningitis.

In 2015, there were 125 chorioamnionitis diagnoses, by MediTech report of ICD-10 codes O41-(1290, 1090, 1230, 1231). Twelve infants (excluding 10 born before 35 0/7 weeks GA) required admission, sepsis evaluation, and antibiotics in the NICU, a decrease from 100% to 17.6%. Three received a full antibiotic course. All others remained with Mom in the Maternal-Infant Unit (MIU), monitored by vital signs q 4 hours. Only one was later readmitted to the NICU for a 15-day antibiotic course. Nine other neonates, initially discharged from MIU, were admitted to the NICU for a suspected (N=5) or proven (N=4) infection, but none was a "chorio" baby at birth.

Conclusions Extensive literature supports a reduction in the use of empiric antibiotics. Concern over the risk of missing perinatal infections remain an obstacle to a wider application of selective practices. In the first year of using the KP-EOS, our anecdotal experience is reassuring. We did not detect an increase in later NICU admissions, and kept most newborns with their mothers in MIU, a highly sought after goal in neonatal care, since it is considered a critical element for bonding and breastfeeding.

418 EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO) FOR NEONATAL SEPSIS: PREDICTORS OF MORTALITY

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10.1136/jim-2016-000365.418

Purpose of Study We sought to assess factors associated with mortality for infants on ECMO support for neonatal sepsis, which carries a lower survival rate than other common indications for neonatal respiratory ECMO.

Methods Used We collected clinical data by chart review, including ventilator settings, laboratory values, ECMO characteristics and complications, and mortality for all infants with neonatal sepsis requiring ECMO in the University of California San Francisco Intensive Care Nursery (2006–16). We compared characteristics of survivors and non-survivors and evaluated two eras (2006–10 vs. 2011–16) to assess changes over time. Data were analyzed by t-test and Fishers exact test as appropriate with P<0.05 considered significant.

Summary of Results Among 54 neonates (≤30 days) requiring ECMO, 15 patients had a primary indication of neonatal sepsis; 12 culture-proven and 3 clinical sepsis with

low WBC count (<5000) prior to ECMO, and signs of multi-organ failure not attributable to another cause. Infants were mean gestational age (GA) 39.1±2.3 weeks and birth weight (BW) 3.5±0.7 kg. Survival was 80% (12/15). Infants who died had lower pH (7.02±0.21 vs 7.24 ±0.1, p=0.01) and higher lactate levels (20±7 vs 12 ±6 mmol/L, p=0.07) prior to ECMO. Additionally, non-survivors took longer to normalize pH (164±62 vs 15±26 hours, p<0.001) and lactate levels (165±57 vs 32±24, p<0.001) after initiation of ECMO support. GA, BW, APGAR scores, nadir WBC pre-ECMO and type of cannulation (VA vs VV) were not associated with survival. Survival to discharge was lower in the later era (7/10 vs 5/5, for 2011–16 and 2006–10, respectively, p=0.5). In the later era, mean pH was lower (7.30±0.10 vs 7.14 ±0.14, p=0.03) and mean lactate was higher (12±7 vs 15 ±7 mmol/L, p=0.4) prior to ECMO. Time to normalization of pH (0.2±0.4 vs 68±77 hours, p=0.08) and lactate (36±33 vs 70±74 hours, p=0.4) were longer in the later era. 4/10 infants in the later era had gram negative rod infections, compared to 0/5 in the earlier era.

Conclusions Among neonates requiring ECMO for sepsis, mortality was associated with more severe acidosis prior to ECMO, with slower normalization of these parameters. These parameters may indicate a more severe clinical picture in the most recent era.

419 THE IMPACT OF THE BABY FRIENDLY HOSPITAL INITIATIVE ON NEONATAL HYPOGLYCEMIA

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10.1136/jim-2016-000365.419

Purpose of Study Neonatal hypoglycemia is common and treatable, but severe hypoglycemia can result in neurologic impairment. Bottle feeding is often initiated after an episode of hypoglycemia in an asymptomatic newborn. Approximately 10% of hypoglycemic neonates require admission to a neonatal intensive care unit. The Baby Friendly Hospital Initiative (BFHI) seeks to improve successful breastfeeding by optimizing mother/baby bonding and encourages avoidance of artificial nipples for breastfed infants. Our objective was to assess if admissions to a Neonatal Intensive Care Unit (NICU) for hypoglycemia increased after adoption of the BFHI.

Methods Used A chart review was performed with the assistance of biomedical information specialists at the UNM Clinical and Translational Science Center. Eligible subjects were term or late preterm infants (36 weeks gestation or greater) who initially met criteria for admission to the Mother Baby Unit (MBU). These infants were not expected to require a higher level of care. The number and proportion of these infants that were subsequently transferred to higher levels of care for management of hypoglycemia were obtained and chi-squared analysis was performed.

Summary of Results In the 18 months prior to initiation of the BFHI, 3734 babies were admitted to the MBU and 14 (0.37%) of those infants were transferred for management of hypoglycemia. In the 18 months after initiation of BFHI, 3536 babies were admitted to the MBU and 34 (0.96%) of them were transferred for management of hypoglycemia (p=0.002).

Conclusions There was a statistically significant increase in the number of infants admitted to a NICU after introduction of the BFHI. Transfer to a higher level of care remains a rare event. Further studies will focus on identifying risk factors for babies transferred for neonatal hypoglycemia to identify these babies earlier to avoid the need for transfer and thus separation from their mothers.

420 TRANSITIONING TO ICD-10: THE CHANGING PATTERN OF DIAGNOSES IN NEONATES NATIONWIDE

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10.1136/jim-2016-000365.420

Purpose of Study It is recognized that transitioning to ICD-10 coding will largely affect pediatric practices. Limited knowledge exists on the effects on the coding of neonatal diseases due to the ICD-9 to ICD-10 transition. The objectives of this study are: (1) to describe the most frequent diagnoses in neonates six months prior to the transition and six months after, (2) to determine whether resource utilization (length of stay (LOS) and adjusted hospital costs (AHC)) differs from ICD-9 to ICD-10.

Methods Used Data was obtained from the Pediatric Healthcare Information System database from April 1st 2015 to March 31st 2016. All neonates (≤28 days old) admitted to a children's hospital during study period were examined. Univariate analysis was used to describe the most frequent diagnoses. Bivariate tests were used to compare the frequency of diagnoses, LOS and AHC between the periods.

Abstract 420 Table 1 LOS and AHC of common neonatal diagnoses comparing ICD-9 and ICD-10 era

	LOS (days); mean (SD)			AHC ($/10,000); mean (SD)		
	ICD-9 era	ICD-10 era	p-value	ICD-9 era	ICD-10 era	p-value
Immunization	18 (30)	22 (21)	<0.0001	5.1 (1.0)	5.9 (1.1)	0.001
Jaundice w/ preterm delivery	37 (44)	40 (47)	<0.0001	11.0 (16.3)	12.3 (17.2)	0.002
Unspecified jaundice	14 (24)	17 (18)	<0.0001	4.6 (9.6)	5.4 (10.1)	0.0006
Atrial septal defect	24 (49)	26 (51)	0.002	15.3 (2.1)	16.8 (2.3)	0.01

Summary of Results There were 24,132 neonatal discharges from children's hospitals between April 1st 2015 to September 30th 2015, and 22,827 discharges between October 1st 2015 and March 31st 2016. The most frequent diagnoses for ICD-9 era were feeding problems in newborns, prophylactic vaccinations, neonatal jaundice associated with preterm delivery, suspected infectious condition, and unspecified neonatal jaundice, while the most common diagnoses for ICD-10 era were unspecified neonatal jaundice, immunization, feeding problem of newborn, neonatal jaundice associated with preterm delivery, and atrial septal defect. Among the common neonatal diagnoses, LOS and AHC varied significantly between the two periods (Table 1).

Conclusions We observed significant differences of disease frequency, LOS and AHC between ICD-9 era and ICD-10 era. Further studies will be needed to examine the effect of the transition in resource utilization while delivering healthcare to neonates.

421 PREDICTIVE VALUE OF CORD BLOOD BILIRUBINS FOR PHOTOTHERAPY TREATMENT IN NEONATES AT RISK FOR MATERNAL-FETAL BLOOD GROUP INCOMPATIBILITY

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10.1136/jim-2016-000365.421

Purpose of Study Maternal-fetal blood group incompatibility is a risk factor for hemolytic disease of the newborn, which may result in severe (but treatable) hyperbilirubinemia (HB). This study's objective was to investigate the predictive value of cord blood bilirubin (CBB) concentrations for PT in neonates at risk for maternal-fetal blood group incompatibility.

Methods Used Inclusion criteria for this single center prospective case control study included: neonates ≥35 weeks gestational age, mother with blood type O and/or Rh negative or positive antibody screen, CBB performed after birth, and<24 hours of age. Primary outcome was PT. Secondary outcomes included total serum bilirubin (TSB) >75th and >95th percentile. The prognostic ability of CBB for PT was assessed using area under the receiver operating characteristic (ROC) curve.

Abstract 421 Table 1

	Treated with Phototherapy (n=49)	Not Treated with Phototherapy (n=499)	p-value
CBB (mg/dL)	2.3±0.7	1.6±0.4	<0.001
Blood Group Incompatibility	69%	34%	<0.001
Length of Hospital Stay (hours)	61±23	52±22	0.005
TSB >75th Percentile	96%	12%	<0.001
TSB >95th Percentile	57%	0%	<0.001

Abstract 421 Table 2

	Sensitivity	Specificity
Phototherapy	0.77	0.75
TSB >75th Percentile	0.77	0.75
TSB >95th Percentile	0.77	0.81

Values for CBB of 1.9 mg/dL

Summary of Results Of 499 subjects who completed the study, there was a 10% PT incidence. When compared to neonates who did not receive PT, neonates who received PT had 1) higher CBB concentrations, 2) a greater incidence of blood group incompatibility, 3) higher TSB concentrations, and 4) required longer hospital stays (Table 1). A CBB of 1.9 mg/dL had a high sensitivity and specificity for predicting PT and a TSB >75th and >95th percentile (Table 2). The ROC curve for CBB for PT was 0.84 (95% CI 0.8–0.9).

Conclusions CBB may be a useful screening test to predict which neonates warrant closer monitoring for severe HB.

Pulmonary and Critical Care II Concurrent Session 8:00 AM – 10:00 AM Saturday, January 28, 2017

422 ECMO AS A BRIDGE TO LUNG TRANSPLANTATION DOES NOT NEGATIVELY IMPACT IMPROVEMENTS IN HEALTH RELATED QUALITY OF LIFE AFTER TRANSPLANT

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10.1136/jim-2016-000365.422

Purpose of Study Extracorporeal Membrane Oxygenation (ECMO) is increasingly used in critically ill patients as a bridge to lung transplantation (LT). ECMO as a bridge to LT is associated with longer length of stay, increased cost of hospitalization and decreased survival after LT. We sought to study the impact of ECMO as a bridge to transplant on HRQL after LT.

Methods Used In a single-center prospective cohort study, from 2010–2016 we assessed HRQL before and six months after LT using the SF12-Physical Component Score (SF12-PCS; range 0–100; higher scores denote better HRQL; 5=Minimally Clinically Important Difference [MCID]), the respiratory-specific Airway Questionnaire 20-Revised (AQ20R; range 0–20; lower scores denote better HRQL [reverse coded for analysis]; 1.75=MCID), and the Euroqol 5D (EQ5D; range: −0.11–1.0; higher scores denote better HRQL; 0.06=MCID). Changes in HRQL were quantified by

Abstract 422 Table 2 Impact of LT on HRQL stratified by ECMO status at 6 months adjusted for pre-LT age, sex, diagnosis, LAS, pre-LT FEV1 and 6MWD

	ECMO (n=17) Change (95% CI)	Inpatient w/o ECMO (n=41) Change (95% CI)	Outpatient (n=119) Change (95% CI)	P-value
SF-12 PCS	18.1 (13.1, 23.2)	18.6 (13.8, 23.5)	21.0 (18.5, 23.4)	0.592
AQ20–4r	8.6 (6.2, 11.1)	8.6 (6.7, 10.5)	8.8 (7.8, 9.7)	0.975
EQ5D	0.27 (0.15, 0.39)	0.24 (0.16, 0.32)	0.16 (0.12, 0.19)	0.028

mixed models, controlling for age, sex, diagnosis, preoperative FEV1, and 6MWD, and Lung Allocation Score (LAS). We compared these changes to subjects called in for LT as outpatients and subjects hospitalized but not on ECMO at the time of transplant.

Summary of Results Of 177 subjects, 41 were inpatients that did not require ECMO and 17 were inpatients that required ECMO as a bridge to LT. Across all groups, LT resulted in improved HRQL by at least two-fold the MCID (all $p<0.001$). These improvements were similar between groups, except for in EQ5D where outpatients had a higher starting HRQL than inpatients (Table and Figure).

Conclusions Subjects ill enough to require ECMO as a bridge to LT achieve the same improvement in HRQL as those who do not. It is reassuring that LT provides substantial improvements in HRQL; even those who are critically ill in the run up to LT.

423 QUANTIFYING ANTIBIOTIC PRESSURE SCORES TO DETERMINE IMPACT ON ORAL AND FECAL MICROBIOME IN CRITICALLY ILL PATIENTS

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10.1136/jim-2016-000365.423

Purpose of Study Antibiotic interventions in ICU patients have potentially adverse effects on the microbiota, termed dysbiosis. We observed dysbiosis in oral and fecal microbiome samples from ICU patients. The impact of antibiotics on dysbiosis is not well understood. Quantifying effects of antibiotic pressure on the microbiome composition of ICU patients will illuminate potential adverse dysbiosis created by antibiotic use and help identify potential restorative therapeutic options.

Methods Used Data was collected from 149 participants in five ICUs via the "ICU Microbiome Pilot Project." Fecal and oral swabs were collected within 48 hours of ventilation in the ICU and again within 10 days of discharge. Antibiotic pressure was measured before admission (n=121), between admission and discharge (n=75), and following discharge (n=79) using a novel method to capture pressure scores over time. Extending ranks (1–4) previously developed by Braykov et al, the spectrum of activity was weighted based on length administered for 48 discrete antibiotics spanning 381 administrations (scores ranged from 0.00 to 86.63). Expected microbial community (in health) was compared with observed microbiome community.

Summary of Results Higher antibiotic pressure negatively correlated with a lower proportion of the expected community type. Oral communities in individuals with a high antibiotic pressure were significantly different then in patients with lower pressure. In oral samples, discharge pressure and in-between time point pressure differed ($r=-0.48$). Using Adonis, a non-parametric method for assessing distances between samples, oral samples at discharge were significantly structured by pressure ($p=0.004$; $R^2=0.039$). This effect was not statistically significant in fecal communities.

Conclusions The negative correlation between higher antibiotic pressure scores and the structure of the oral microbial communities may suggest that oral communities are more sensitive than fecal communities to stronger antibiotic pressure. Further research is warranted to determine if antibiotic pressure is an important metric in understanding the impact of antibiotics on adverse dysbiosis in ICU patients or if critical illness itself is responsible for previously observed fecal dysbiosis in ICU.

424 CANCELLED

425 THERAPEUTIC LARYNGOSCOPY DURING EXERCISE: A NOVEL NONSURGICAL THERAPY FOR REFRACTORY EXERCISE-INDUCED LARYNGEAL OBSTRUCTION

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10.1136/jim-2016-000365.425

Purpose of Study Exercise-induced laryngeal obstruction (EILO), formally known as vocal cord dysfunction, may affect as many as 6% of the adolescent population, with some patients experiencing symptoms refractory to conservative interventions.

We describe therapeutic laryngoscopy during exercise, a novel, non-surgical intervention that harnesses real-time laryngoscopy video as biofeedback to control laryngeal aperture during high-intensity exercise. Additionally, we quantitate patient-reported perceptions of procedure safety, tolerability, learning value, and effectiveness.

Methods Used Clinical EILO patients with symptoms refractory to conventional respiratory retraining and other therapies were referred for the procedure which features laryngoscopy video as biofeedback during serial physician-

guided 1-minute exercise sprints. We quantify perceptions of procedure safety, tolerability, learning value, and effectiveness through questionnaires offered to all patients as well as observers of the procedure.

Summary of Results Forty-one patients and 37 parent observers were approached for feedback; 88% of patients and 95% of observers consented to participation. Patients and observers reported perceptions of safety and tolerability (81% and 86%, respectively), learning value (78% and 91%, respectively), and effectiveness (58% and 80%, respectively) with patient age predicting some responses. Seventy-five percent of patients noted that "Since the procedure, my breathing during exercise has improved," and 85% of this group noted that therapeutic laryngoscopy during exercise was "the most important therapy leading to my breathing improvement." The procedure also provided insight into the psychological experience of patients, a domain not clinically apparent prior to the procedure.

Conclusions Our data support further study of therapeutic laryngoscopy during exercise as a possible intervention for patients with refractory EILO.

426 DIFFERENT PATTERNS OF LUNG INFLAMMATION AND INJURY IN RATS SUBJECTED TO HYPEROXIA EXPOSURE AND INTERLEUKIN-1/LIPOPOLYSACHARIDE INSUFFLATION

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10.1136/jim-2016-000365.426

Purpose of Study The Acute Respiratory Distress Syndrome (ARDS) is a highly fatal lung disorder characterized by a rapid influx of neutrophils into the lung, edematous lung injury, and a severe hypoxemia that requires aggressive ventilatory assistance, often with high concentrations of oxygen. A number of models are used to study ARDS in animals but these different models are usually not compared head to head in the same laboratory even though these comparisons might provide insights regarding different mechanisms of ARDS development. We compared the outcomes of lung inflammation and injury between continuous hyperoxia exposure and IL-1/LPS insufflation.

Methods Used We assessed lung inflammation by measuring lung lavage neutrophils and macrophages and lung injury by measuring lung lavage protein and lactic dehydrogenase (LDH) levels in Sprague-Dawley rats. Rats were assessed after 52 hours of exposure to 100% oxygen at sea level pressures (hyperoxia) or 24 hours after insufflation with interleukin-1 and lipopolysaccharide (IL-1/LPS).

Summary of Results Both hyperoxia and IL-1/LPS treated rats demonstrated increases in lung inflammation and injury compared to baseline levels in control rats; however, striking differences were observed in the magnitudes of inflammation and injury. More specifically, we found that hyperoxia exposed rats had higher lung lavage protein levels (3.73+/−0.37 vs. 1.77+/−0.32 ug/ul) and alveolar macrophage counts (4.8+/−0.61 vs. 2.5+/−0.5×10^6) but lower lung lavage LDH levels (1.33+/−0.12 vs. 5.95 +/−1.04 U/ml) and neutrophils (7.7+/−1.5 vs. 60.6 +/−6.8×10^6) compared to IL-1/LPS insufflated rats.

Conclusions Rats subjected to hyperoxia or IL-1/LPS both develop ARDS-like abnormalities but also develop distinct patterns of lung inflammation and lung injury. Our observation suggests that different processes contribute to the development of ARDS following hyperoxia or IL-1/LPS. Future testing of therapeutic agents will need to consider the heterogeneity displayed by these two and other models to be fully translatable to this fatal syndrome.

427 INFUSING BONE MARROW CELLS FROM UNIQUE STRAIN OF HYPEROXIA TOLERANT RATS REDUCES LUNG NEUTROPHIL INFLUX IN CONTROL RATS BREATHING HYPEROXIA

Saccomano BW, Repine K, Wilson PV, He Q, Hamidu H, Torres J, Newman J, Newman A, Wang W, Lehenbauer K, Baer K, Fernandez-Bustamante A, Repine J. *Webb-Waring Center at University of Colorado School of Medicine, Denver, CO.*

10.1136/jim-2016-000365.427

Purpose of Study Continuously exposing rats to 100% oxygen (hyperoxia) causes acute edematous lung injury and a rapid pre-terminal influx of neutrophils into the lung—changes resembling the Acute Respiratory Distress Syndrome (ARDS). While studying this phenomenon, we serendipitously developed a "tolerant" rat strain that survives indefinitely and develops less neutrophil influx in hyperoxia. Seeking a mechanism for hyperoxia tolerance, we found tolerant rats had higher expression of heme oxygenase-1 (HO-1) (a potent multidimensional anti-inflammatory antioxidant) in their alveolar macrophages and isolated bone marrow monocytes (precursors of alveolar macrophages that have chemotactic properties for neutrophils) when compared to control rats. We hypothesized that HO-1 rich monocytes from tolerant rats will protect against hyperoxia and tested this premise by infusing bone marrow cells containing monocytes from tolerant rats into control rats before hyperoxia exposure.

Methods Used Bone marrow cells (10E7 cells) from Sprague Dawley tolerant and control rats were extracted, labeled, and injected IV just before hyperoxia exposure for 52 hours. Following exposure, lung inflammation was assessed by measuring lung lavage neutrophils and alveolar macrophages and lung injury by measuring lung lavage protein and LDH levels.

Summary of Results Following hyperoxia exposure, control rats infused with bone marrow cells from tolerant rats had less lung lavage neutrophils (1.4E6 vs 2.7E6) and less alveolar macrophages (0.4E6 vs 1.6E6) than control rats infused with bone marrow cells from control rats. Rats infused with tolerant bone marrow cells had increased lung lavage protein, but the same LDH, levels as control rats infused with control bone marrow cells.

Conclusions Following hyperoxia exposure, control rats infused with bone marrow cells from tolerant rats had less lung lavage neutrophils (1.4E6 vs 2.7E6) and less alveolar macrophages (0.4E6 vs 1.6E6) than control rats infused with bone marrow cells from control rats. Rats infused with tolerant bone marrow cells had increased lung lavage protein, but the same LDH, levels as control rats infused with control bone marrow cells.

Health Care Research III
Concurrent Session
10:15 AM – 12:00 PM
Saturday, January 28, 2017

428 RELATIONSHIP BETWEEN ELECTRONIC MEDICAL RECORD USE AND NUMBER OF PLAINTIFF-WON MEDICAL MALPRACTICE LAWSUITS

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10.1136/jim-2016-000365.428

Purpose of Study Studies regarding the effects of electronic medical record (EMR) use on malpractice risk have been scarce. We investigate this topic to determine whether EMR use increases or decreases physician malpractice risk.

Methods Used Using multiple linear regression, we analyze the association of the number of plaintiff-won closed malpractice lawsuits per state per year with the statewide percentage of non-federal acute care hospitals and statewide percentage of outpatient physicians' offices which were using basic EMRs in that year. Data were available for the period 2010–2014, with 254 observations included in the regression analyses.

Summary of Results The model with best fit showed statistical significance ($p<0.0001$) and an adjusted R-squared of 0.9520. Controlling for state population, the statewide percentage of outpatient physicians' offices which reported using basic EMR was statistically significantly associated with fewer malpractice lawsuits in that state per year ($p<0.0001$). In this model, a 1% increase in the percentage of a state's outpatient physicians' offices using basic EMRs was associated with 1.89 fewer malpractice lawsuits in that state per year.

The percentage of non-federal acute care hospitals which reported using basic EMRs was positively correlated with the number of malpractice lawsuits, but this association was not statistically significant ($p=0.1550$).

Conclusions On a state-by-state basis, outpatient physicians' office EMR use is associated with a statistically significant decrease in plaintiff-won medical malpractice lawsuits. Hospital EMR use was not associated with a statistically significant change in plaintiff-won medical malpractice lawsuits. However, due to the retrospective nature and state-level data, it cannot be concluded that EMRs are responsible for the decrease in malpractice lawsuits against physicians, and further investigation is warranted.

429 PHYSICIAN ASSESSMENT OF BLINDED ADVERSE EVENTS IN RCTS IN CYSTIC FIBROSIS

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10.1136/jim-2016-000365.429

Purpose of Study Adverse Events (AEs) are detrimental medical incidents in a research participant that may or may not be related to the investigational agent. During clinical trials, physicians are required to document attribution of AEs with limited guidance regarding how to assign attribution. The objective of this study was to determine the accuracy of physician based attributions for AEs occurring in cystic fibrosis (CF) patients participating in blinded randomized controlled trials (RCTs).

Methods Used This retrospective study pooled clinical trial data from 4 CF RCTs; all participants who experienced ≥1 AE were included. A repeated measures logistic regression model using generalized estimating equations and adjusted for baseline demographic variables (gender, age, CF genotype), comorbidities, and forced expiratory volume in one second (FEV_1). The primary predictor of interest was receipt of study drug versus placebo. The primary outcome of interest was physicians' determination of the AE as related to study drug.

Summary of Results Study patients were young with mild lung disease (mean age=12 yrs; mean FEV_1% predicted=86.2%). Receipt of study drug was not significantly associated with the likelihood a physician would deem an AE to be related to study drug (unadjusted OR=1.34, 95% CI=0.98–1.82). In a regression model adjusting for demographic and clinical variables, the adjusted OR was 1.39 (95% CI=0.94–2.05). However, we found significant associations between age, gender, and FEV_1 and our outcome of interest- presence of an AE felt by a physician to be related to study drug. For example, females were less likely than males to have an AE determined to be related to study drug independent of actually receiving study drug (OR=0.58, 95% CI=0.39–0.87). These findings suggest a biased assessment of physician attribution.

Conclusions Physician assessment of relatedness in RCT's is a key requirement per the Food and Drug Administration (FDA). We found no significant association between AEs coded as related to study drug and actual study drug receipt. Interestingly, we found other associations implying an intrinsic bias in physician assessment based on age,

Abstract 428 Table 2 Linear Regression Model

Response variable	Model p-value	Model Adjusted R-squared	Explanatory variables	Estimate	Variable p-value
Plaintiff-won malpractice cases against physicians	<0.0001	0.9520	Intercept	72.74	<0.0001
			Population (in 100,000)	2.33	<0.0001
			% offices with EMRs	−188.97	<0.0001
			% hospitals with EMRs	23.50	0.1550
			Dummy variable: New York	885.07	<0.0001
			Dummy variable: Florida	278.88	<0.0001
			Dummy variable: Pennsylvania	445.25	<0.0001
			Dummy variable: Texas	−181.45	<0.0001

gender and disease severity. Further research may clarify whether changes are needed to current FDA guidelines.

430 DO STANDARDIZED INSULIN ORDERS REDUCE RATES OF SEVERE IN-HOSPITAL HYPOGLYCEMIA?

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10.1136/jim-2016-000365.430

Purpose of Study Insulin is a high-risk medication for in-hospital hypoglycemia, which has been shown to increase comorbidity, length of stay, and cost. In effort to reduce patient risk, minimize error and enhance patient safety, standardized insulin order sets were implemented in 2015 at a small community hospital according to the recommendations of the American Diabetes Association. We hypothesized that the total number of hypoglycemia alerts, and the proportion of those characterized as "more severe," would be reduced after implementation of these orders.

Methods Used Automated alerts generated by the electronic medical record were retrospectively collected for patients admitted to the Intensive Care Unit (ICU) and Medical and Surgical wards during the 90 days BEFORE and AFTER implementation of the standardized orders. We also performed a separate ICU-only analysis. Capillary Blood Glucose (CBG) concentrations <10 mg/dl were excluded from analysis. The frequencies of occurrence of all hypoglycemia (CBG <70 mg/dl) and more severe hypoglycemia (CBG <50 mg/dl) were compared using the *chi-squared* test.

Summary of Results During the BEFORE period, there were 280 insulin-requiring diabetes patients admitted, and 76 hypoglycemia alerts occurred in 45 patients. Of these, 15 alerts were categorized as more severe. During the AFTER period, there were 270 insulin-requiring diabetes patients admitted, and 78 hypoglycemia alerts occurred in 38 patients. Of these, 17 alerts were categorized as more severe. Patients did not differ in age (66±19 vs. 63±13 years, p=0.30), sex (p=0.22), or Race and Ethnicity (p=0.17). Overall rates of hypoglycemia (16% BEFORE, 14% AFTER) did not differ (p=0.51), and there was no difference between the periods with respect to the occurrence of more severe hypoglycemia (p=0.71). Rates of occurrence of hypoglycemia similarly did not differ when only data from ICU patients were analyzed.

Conclusions In this analysis, institution of standardized insulin orders did not reduce the occurrence of total hypoglycemia or more severe hypoglycemia as a proportion thereof. Vigilant monitoring for hypoglycemia remains essential after instituting standardized insulin orders for hospitalized adult patients.

431 EVALUATING CLINICAL EXPERIENCES OF PATIENTS AND PARENTS IN THE PEDIATRIC ORTHOPEDIC DEPARTMENT OUTPATIENT CLINIC

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10.1136/jim-2016-000365.431

Purpose of Study The purpose of this study was to assess the overall clinic experience within the pediatric orthopedic clinic, specifically that of patients and their parents. This information gathered will be used to influence policy changes regarding communication and pain management in order to improve the quality of care for families.

Methods Used Participants were recruited for this Quality Improvement project in the Pediatric Orthopedic Clinic at the local hospital. Participants completed an iPad based survey designed by the research team. Two versions of the survey were administered namely; one for children older than 10 years but less than 19, and the other for parents/guardians of the patient (above 19 years old). Potential participants were defined as patients and parents/guardians of patients attending the orthopedic clinic. Both patients who attended for a consultation as well as those who may have had a procedure during the clinic visit were included in this study. Survey data was collected between Jul. 4th–Aug. 5th 2016.

Summary of Results Both patients and their parents felt they were involved in their/their child's healthcare decisions. However, some discrepancies were present within the parent group. Some parents rated limited involvement in their child's healthcare decisions, which could be due to a multitude of factors. The average wait time was recorded at 47 minutes. Patients rated longer general wait times compared to their parents. Both patients and parents believed that they spent enough time with their doctor. The biggest stressor faced by patients was limited WiFi availability and inadequate reception in the clinic. Parents on the other hand, rated longer than expected wait times and parking issues as stressors.

Conclusions There are some differences between parents and patients in the pediatric clinic. Although not validated, this survey data has the potential to increase patient and family satisfaction through minor adjustments in care delivery. Future directions could include validation of the survey, further investigating causes for long wait times and implementing policy changes before re-measuring its effect on care and experience.

432 NON-OPERATIVE EMERGENCY REFERRALS AND W1 MANAGEMENT IN PEDIATRIC PLASTIC SURGERY

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10.1136/jim-2016-000365.432

Purpose of Study Although delayed W1 times have been found to negatively affect a patient's health or delay children from meeting critical developmental milestones, the extent to which non-operative emergency referrals impact W1 times has not been evaluated. Additionally, no study has determined if W1 times are meeting the Pediatric Canadian Access Targets for Surgery (P-CATS) or meeting a surgeons own triage classification in a pediatric plastic surgery practice. This study aimed to (1) determine whether W1 times were within the expected target times of the surgeon's triage classification system and the P-CATS guidelines as well as to (2) identify the impact of

non-operative emergency referrals on W1 management in the senior author's clinic.

Methods Used A retrospective analysis was done of W1 times for new pediatric patients seen by the senior author at BC Children's Hospital from January 1, 2014–December 31, 2015. The volume and median W1 times for both operative and non-operative patients were determined for each of the surgeon's triage and P-CAT classes. The percent of patients seen on time relative to the triage and P-CAT class was calculated.

Summary of Results There were a total of 2921 appointments in the study time period of which 484 were for pediatric new consultations. The majority of new pediatric consults were for non-operative emergency referrals (69%) followed by operative emergency referrals (13%) and elective cases (19%). Emergent and elective patients had median W1 times of 12 and 123 days respectively with the majority of patients (65%) seen on time according to the surgeon's triage time while only 31% were seen on time according to the P-CAT targets.

Conclusions More patients were seen on time according to the surgeon's triage time as compared to the P-CAT guideline indicating the accuracy of an individualized patient triage system as opposed to a generic population based guideline. Given the spectrum of patients seen in this population, there is no obviously quality improvement initiative to improve W1 times. Future studies are needed to better understand factors that prolong W1 times and methods to improve access to care.

433 TEACHING THE MORPHOLOGY OF SMITHS FRACTURE INTEGRATING MULTIPLE MEDIUMS INCLUDING SECTRA AND ULTRASOUND

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10.1136/jim-2016-000365.433

Purpose of Study Robert William Smith described the morphology of the Smith's fracture in his work published in 1847. Smith is credited first to formally describe the reverse Colles' fracture, which evolved into being named the Smith's fracture (SF). SF makes up 3% of all radial and ulnar fractures and its hallmark is a volar displaced distal fragment. It makes up one of the five clinically common fractures of the distal radius (DRF's). Medical students (MSt) are not taught the morphology of Smith's fractures. The objective of this study was to integrate multiple mediums using clay models, X-rays, dissection, CT, CT 3D Sectra and ultrasound (US) to understand the SF morphology.

Methods Used Literature search was conducted regarding SF definition, morphology, treatment, and teaching. Six mediums were chronologically introduced to first-year MSt during anatomy. Clay models demonstrated fracture site, volar angulation, and fragment morphology. X-ray, dissection, CT, and 3D-CT (rendered by SECTRA Visualization Table) into interactive 3D images. 5–12 & 18 MHz US were conducted to identify radial cortex on cadavers and healthy volunteers. Dissection was performed on cadavers (n=40 forearm/wrists). MSt attended formal 20 minute tutorials and were exposed to six mediums in chronological order. Likert scale assessed perceived effectiveness.

Summary of Results Literature search revealed US studies of Colles fracture, but not SF. MSt successfully acquired distal radius US images. 83.3% of students accurately described SF during exams. SF's are commonly diagnosed and treated as Colles' fractures and proper differentiation of the various DRF's may improve patient care. X-ray and CT scans are the standard imaging modalities for DRF's, but US has proven to be effective in identifying fractures. Likert scale of 4.0 (scale 1–5) revealed students thought the mediums and the technique helpful in learning DRF morphology. SF would be included in the top 5 important fractures affecting the distal forearm. To visualize its shape and link it to the mechanism of injury could decrease missed diagnosis and improve outcomes.

Conclusions This study suggests that MSt can learn SF morphology from a progression of modalities culminating in point of care US for triage, diagnostics and maintenance.

434 TRIPLE STIMULATION INTEGRATES SURFACE ANATOMY LANDMARKS WITH ULTRASOUND IMAGING TO AUGMENT MEDICAL STUDENTS' PHYSICAL EXAMINATION SKILL

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10.1136/jim-2016-000365.434

Purpose of Study Anatomy is the cornerstone and foundation of medicine and other human sciences. Learning anatomy is generally focused beneath the skin. Invasive procedures requiring needle placement can be more accurately positioned using ultrasound (US) and understanding visual and palpable surface landmarks. The objective of this study was to identify clinically important surface and palpatory anatomy representing common pathology.

Methods Used Literature search was conducted regarding surface anatomy teaching at high-school, baccalaureate and medical school. Fukuda Denshi UF-760 AG US system with novel SonicEye finger probe was used to identify neurovascular, muscle-tendon structures, osteology landmarks and organs while recording the surface landmark to target vector angle for optimum visualization. 10 healthy volunteers were imaged for surface landmarks of trunk, limbs, and head & neck. Once target structures were identified, Molotow skin writing markers were used to draw and outline target structures.

Summary of Results Literature search revealed no known studies regarding surface anatomy with US guidance for anatomy teaching k-12, baccalaureate, and medical education. All ten subjects consistently revealed common landmarks for surface and palpable anatomy. US confirmed neurovascular and muscle-tendon structures, osteology landmarks, and organs that were mapped out onto a volunteer for the body art. Subjects successfully drew the organ outlines from US. This study developed a surface anatomy module that was used by k-12, baccalaureate, and medical students. Surface anatomy should have at least two major components, one being visual and the second being palpable. Generally when people are learning surface anatomy they do not use US to confirm what is deep to the surface or the palpable landmarks. This study demonstrated the

utility of using US to identify the architecture beneath surface contours of common landmarks. This pilot study was successful when conducted with a group of 20 medical students and is now ready for trial with larger groups.
Conclusions This study revealed triple stimulation can be applied to learn surface anatomy while integrating a dynamic US image modality which could have a profound effect on physical examination skills.

Hematology and Oncology III
Concurrent Session
10:15 AM – 12:00 PM
Saturday, January 28, 2017

435 *GNPAT* P.D519G IS INDEPENDENTLY ASSOCIATED WITH MARKEDLY INCREASED IRON STORES IN *HFE* P.C282Y HOMOZYGOTES

JC Barton,[1] W Chen,[2] MJ Emond,[3] PD Phatak,[4] VN Subramaniam,[5] PC Adams,[6] LC Gurrin,[7] GJ Anderson,[8,9] GA Ramm,[8,9] LW Powell,[8,9] KJ Allen,[10] JD Phillips,[11] CJ Parker,[11] CE McLaren,[2] GD McLaren[2,12]. *[1]Southern Iron Disorders Center, Birmingham, AL; [2]University of California, Irvine, CA; [3]University of Washington, Seattle, WA; [4]Rochester General Hospital, Rochester, NY; [5]Queensland University of Technology, Brisbane, QLD, Australia; [6]London Health Sciences Centre, London, ON, Canada; [7]University of Melbourne, Melbourne, VIC, Australia; [8]QIMR Berghofer Medical Research Institute, Brisbane, QLD, Australia; [9]University of Queensland, Brisbane, QLD, Australia; [10]Murdoch Childrens Research Institute, Melbourne, VIC, Australia; [11]University of Utah School of Medicine, Salt Lake. UT; [12]Department of Veterans Affairs Long Beach Healthcare System, Long Beach, CA, United States.*

10.1136/jim-2016-000365.435

Purpose of Study *GNPAT* (chromosome 1q42.2) encodes the peroxisomal enzyme glyceronephosphate O-acyltransferase. In a previous study, DNA of men with hemochromatosis and *HFE* p.C282Y homozygosity and either markedly increased iron stores or normal or mildly increased iron stores were evaluated with exome sequencing. Positivity for the *GNPAT* polymorphism p.D519G (rs11558492) was significantly greater in men with markedly increased iron stores (McLaren CE et al., Hepatology 2015;62:429–39). To learn more, we examined associations of p.D519G, age, iron-related variables, and daily alcohol consumption with iron stores in p.C282Y homozygotes classified by extremes of iron overload phenotypes.
Methods Used We defined markedly increased iron stores as serum ferritin >1000 μg/L and either hepatic iron >236 μmol/g dry weight or mobilizable iron >10 g by induction phlebotomy (men and women). Normal or mildly elevated iron stores were defined as serum ferritin <300 μg/L and either age ≥40 y with ≤2.5 g iron removed by induction phlebotomy or age ≥50 y with ≤3.0 g iron removed (men only). We first compared general characteristics of participant subgroups using univariate methods. Then, using multivariable logistic regression, we evaluated associations of markedly increased iron stores with the following six variables: age; iron supplement use (dichotomous); number of whole blood units donated; number of erythrocyte units received as transfusion; daily alcohol consumption, g; and p.D519G positivity (heterozygosity or homozygosity).
Summary of Results There were 56 participants (53 men, 3 women), of whom 41 (38 men, 3 women) had markedly increased iron stores and 15 others had normal or mildly increased iron stores (all men). The mean age of the 56 participants was 55±10 (SD) y. Only participants with markedly increased iron stores had cirrhosis proven by biopsy. In the multivariable analysis of the six variables, p.D519G positivity was the only exposure variable significantly associated with markedly increased iron stores (odds ratio 9.9, 95% CI [1.6, 60.3], p=0.0126). Area under the curve for the multivariable logistic regression analysis was 0.82
Conclusions We conclude that *GNPAT* p.D519G is strongly associated with markedly increased iron stores in p.C282Y homozygotes after correction for age, iron-related variables, and daily alcohol consumption.

436 DNA DAMAGE RESPONSE HETEROGENEITY AND CHORDOMA PHENOCLUSTERS

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10.1136/jim-2016-000365.436

Purpose of Study Chordoma is a rare tumor of the skull base and spine that is radiation-resistant through unknown mechanisms, with a high local recurrence rate. The goal of this study was to determine the DNA damage response (DDR) of UCH-1 chordoma cells to ionizing radiation (IR) and if the DDR could be altered by an integrin ligand mimetic, HYD1.
Methods Used DDR was estimated by the time dependent detection of two indicators of DDR called γH2AX and Ku80 in human UCH-1 cells (ATCC, CRL-3217). The alteration of the proteins was determined by measuring the percentage of γH2AXand Ku80 positive cells at different time points (n>85) after IR (8 Gy) using immunofluorescence microscopy (IFM) and marker specific antibodies. Integrin function was blocked by HYD1. Statistical significance was assessed using unpaired proportion T-test. In addition, flow cytometry was used to determine the DDR of the cell population in the G1 phase of the cell cycle.
Summary of Results Using IFM, individual UCH-1 cells had a time dependent and reversible increase to approximately 75% of the cells being γH2AX positive at 2 hours after IR. In contrast, UCH-1 cell clusters had a muted response, with approximately 15% of the cells maximally positive. Using IFM, individual UCH-1 cells had constitutive expression of Ku80 that did not increase in a time dependent manner in response to IR (p=0.052). Flow cytometry analysis of the γH2AX response in UCH-1 cells revealed two populations consisting of responders and non-responder cells, while the Ku80 population response was relatively uniform, without an increase in response to IR. In addition, HYD1 prevents cluster formation (p<0.001) and sustains the γH2AX response to IR.
Conclusions A heterogeneity of the DDR to IR exists in a chordoma population. In particular, γH2AX non-responders exist within the chordoma population, also

characterized by the cluster phenotype. Integrins play an important role in the cells response to IR as shown by the sustained γH2AX response in the presence of HYD1. However, it remains to be determined if the chordoma clusters have a survival resistance to IR as compared to the single cells and whether the alteration of the clusters will sensitize them to IR.

437 COMPARISON OF BREAST CARCINOMA NOTTINGHAM GRADING BY GLASS SLIDES VERSUS DIGITAL WHOLE SLIDE IMAGES: VARIABILITY INCREASES USING DIGITAL FORMAT

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10.1136/jim-2016-000365.437

Purpose of Study While diagnostic variability in the clinically important histopathological Nottingham grading of breast cancers has been reported, little is known about how evaluation of tumor grade using digital images might affect concordance among pathologists (inter-observer agreement) or how it might affect reproducibility (intra-observer agreement).

Methods Used Test sets of breast biopsy cases were independently reviewed by 208 US pathologists in two phases separated by ≥9 months. In each phase, pathologists were randomly assigned to interpret cases using either glass microscopy slides or digital whole slide imaging. Included in this study were Nottingham Grade interpretations of 22 invasive carcinoma cases from those sets. Cases were independently interpreted by pathologists in each format and phase totaling 2045 interpretations for our analysis. Inter- and intra-observer percent agreement and kappa values were calculated.

Summary of Results The Nottingham Grade intra-observer agreement was highest when the glass format was used in both phases (73%, 95% CI: 68%, 77%), intermediate with digital in both phases (68%, 95% CI: 61%, 75%) and lowest when the format changed between phases from glass to digital (61%, 95% CI: 55%, 67%). In Phase I, Nottingham Grade inter-observer agreement was significantly higher ($p<0.001$) using glass format versus digital (68%, 95% CI: 66%, 70% vs. 60%, 95% CI: 57%,62%, respectively). Notably, within all phases and formats nuclear pleomorphism had the lowest percent agreement and mitotic count had the highest. However, in at least 2 cases, highly variable mitotic scores reflected a different mitotic appearance between formats. Mitotic count shifted towards under-diagnosis on digital due to difficulty identifying atypical mitotic figures. Nottingham Grade evaluated using the digital format trended towards more intermediate grade interpretations then reported on glass format.

Conclusions Digital format had significantly lower Nottingham Grade inter-observer agreement than glass slides.

438 RETROSPECTIVE REVIEW OF CLINICAL OUTCOMES ASSOICATED WITH NUTRITIONALLY COMPROMISED PATIENTS UNDERGOING HEMATOPOEITIC STEM CELL TRANSPLANTATION

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10.1136/jim-2016-000365.438

Purpose of Study The incidence of malnutrition in patients who have received hematopoietic stem cell transplantation (HSCT) is common. The severity of weight loss and poor nutritional status pre-transplant may impact clinical outcomes post-transplant including length of hospital stay during admission, length of time until engraftment, and infection and readmission rates. The purpose of this study is to determine whether there is a difference in clinical outcomes following HSCT between patients who were mild versus moderately nutritionally compromised prior to transplant. Primary outcomes evaluated included average length of stay during transplant admission and time until engraftment.

Methods Used Retrospective, descriptive, and quantitative review of electronic medical records. The study population (n=59) included adults aged ≥18 who received an allogeneic or autologous HSCT at Banner – University Medical Center Tucson between November 1, 2014–June 31, 2015. Patients were divided into two groups: mild or moderately nutritionally compromised as assessed by registered dieticians at time of pre-transplant evaluation. Data was collected at pre-transplant, admission for transplant, discharge, and days +7, +30, +90, +180, +365 post-transplant.

Summary of Results The average length of stay during transplant admission was statistically significant ($p<0.05$) between mild (x=16.8 days) and moderately (x=24.1 days) nutritionally comprised groups. Although the time until engraftment was not statistically significant between groups, the mild group did appear to engraft earlier (x=13 days) than the moderately nutritionally compromised group (x=15 days).

Conclusions In conclusion, we show that the average length of stay increases in the moderately nutritionally compromised group. However, the time until engraftment between groups was not different. This study has demonstrated the importance of patients' nutritional status as an independent risk factor for determining length of inpatient stay following HSCT. These findings could be used to develop an aggressive nutritional support method for managing nutritional status in stem cell transplant patients.

439 EXTRACTING MOLECULAR DIFFERENCES BETWEEN NORMAL B CELLS AND LYMPHOMA CELLS USING RAMAN SPECTROSCOPY

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10.1136/jim-2016-000365.439

Purpose of Study Raman Spectroscopy is a technique which measures chemical bond composition to determine a chemical through its unique vibrational modes. In this study, we demonstrate the use of Raman spectroscopy to identify spectral differences between normal B- cells and those in a B-cell lymphoma cell line using aluminum-coated-micro-cavity substrates. The use of the micro-cavity substrates enhances the Rama spectra differences between the two cell types.

Methods Used B cells were negatively selected from PBMC and resuspended at a concentration of 1.0×10^6 cells/ mL in a 0.8% NaCl solution with a purity of 99%. Burkitt's Lymphoma cells from the Ramos cell line were suspended at a final concentration of 1.0×10^6 cells /mL in a 0.8% NaCl solution. Both the normal cells and lymphoma cells were placed on pure aluminum mirror optical micro-cavity substrates and analyzed using micro-Raman system using 785 nm laser excitation (n=20). Raman spectra were obtained and compared.

Summary of Results Comparing the Ramos B cell lymphoma cell line and healthy B cells using the aluminum coated optical micro-cavity substates, we have been able to get a concise spectra and were able to find specific molecular differences between the two samples. The optical microcavity substrates enhanced the spectra, allowing us to find differences that were not present on a flat aluminum mirror substrate. We were able to find the loss in beta carotene on the Ramos B cell lymphoma cell line compared to the healthy B cells which still contained beta carotene.

Conclusions By knowing the molecular differences between normal human B cells and B cells with Burkitt Lymphoma, we can better understand how the disease affects the patient on a molecular level. With this knowledge, we can develop new methods of treatment and Raman spectroscopy can be used as a diagnosing technique.

440 KINOME PROFILING REVEALS RETINOBLASTOMA-ASSOCIATED PROTEIN DEPENDENT CELL CYCLE REGULATION IN A CLINICALLY AGGRESSIVE SUBSET OF HISTOLOGICALLY BENIGN MENINGIOMA

Adidharma W,[2] Parada C,[1] Ferreira M[1]. *[1]UW Medicine, Seattle, WA; [2]University of Washington School of Medicine, Seattle, WA.*

10.1136/jim-2016-000365.440

Purpose of Study A subset of WHO Grade I meningioma is clinically aggressive (Grade 1.5) but is histologically indistinguishable from their benign counterparts. They behave similarly to atypical (WHO Grade II) and anaplastic (WHO Grade III) lesions, with tendencies to become recurrent, invasive, and resistant to conventional therapies. Inability to correctly identify Grade 1.5 lesions presents a challenge in the clinical management of meningiomas. The goal of the present study is to characterize functional kinomic alterations in Grade 1.5 meningiomas driving aggressive behavior, which cannot be detected by cytogenetic and proteomic studies.

Methods Used The serine and threonine kinome of histologically benign meningioma (n=8) was analyzed by peptide chip microarray with PamStation®12. One significantly phosphorylated target was selected for validation by Western Blot assay, which quantified phosphorylation levels of the target as well as expression levels of proteins that regulate activation/inactivation of the target in Grade 1.5 vs. WHO Grade I meningioma (n=6).

Summary of Results Fold change analysis in the kinome profiling data of Grade 1.5 versus WHO Grade I meningioma showed significant hyperphosphorylation of Retinoblastoma-associated protein (Rb1) at the Serine 780 (S780) site in Grade 1.5 tumors (361.4 % fold change; p=0.0067). An increased level of phosphorylated Rb1 was validated in Western blot. Accordingly, increased expression of kinases CDK4, CyclinD2, and p38-MAPK, and decreased expression of p53 were detected.

Conclusions The present study identified hyperphosphorylation of Rb1 on S780 in Grade 1.5 meningioma. Rb1 is a tumor suppressor protein that regulates the G1/S cell cycle checkpoint. Our validation results showed overexpression of CDK4, CyclinD2, and p38-MAPK, suggesting that these kinases may be responsible for increased Rb1 S780 phosphorylation, leading to its inactivation and resulting in cell cycle progression. This altered kinomic profile may be involved in aberrant tumor proliferation, which could explain the clinically aggressive behavior of Grade 1.5 meningioma, and provides a potential chemotherapeutic target.

441 NOVEL MUTATION IN CD46 IN A CHILD WITH ATYPICAL HEMOLYTIC UREMIC SYNDROME (HUS)

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10.1136/jim-2016-000365.441

Case Report Introduction: Atypical HUS [aHUS] is a rare disease characterized by hemolytic anemia, thrombocytopenia and renal dysfunction due to genetic mutations that lead to uncontrolled activation of the alternative complement pathway. MCP [Membrane Co-Factor protein] is a complement factor 3b (C3b) binding molecule which is a cofactor for complement factor I dependent cleavage of C3b. We report the case of a pediatric patient with severe thrombocytopenia, anemia and renal dysfunction who was found to have a novel mutation in MCP (CD46).

Case report A previously healthy 9-year-old girl presented with a 2-day history of fever, abdominal pain, emesis (without diarrhea) and oliguria. Her labs showed the following: BUN 90 mg/dl, Cr 4.69 mg/dl, Hgb of 8.4 g/dl and platelets 4,000/uL. Her peripheral smear had schistocytes, and her LDH was 2511 units/L. A stool assay for Shiga

toxin was negative. Urinalysis showed hematuria and proteinuria, culture was negative. ADAMTS13 was normal.

Based on triad of hemolytic anemia, thrombocytopenia and renal dysfunction, microangiopathic hemolytic anemia (MAHA) was suspected. Plasmapheresis was performed daily (x4) without significant improvement. Eculizumab, a human anti-C5 monoclonal antibody was initiated: after the first 2 doses, there was significant improvement in renal function, her hemolysis stopped, and platelet counts began to recover.

Her genetic testing revealed a heterozygous variant in Exon 2 of the CD46 gene (c.132G>A, pMet44Ile) predicted pathogenic by 5/6 algorithms. Based on the patient presentation and response to eculizumab, this case of aHUS was most likely related to the novel CD46 mutation.

Conclusion Our patient had an unusual presentation of HUS characterized by severe thrombocytopenia and hemolytic anemia and renal failure without other organ involvement. Her genetic test revealed a novel mutation in the CD46 gene, a regulator of complement activation. She has had an excellent response to eculizumab therapy with complete recovery of renal function and resolution of all hematologic signs of thrombotic microangiopathy, suggesting that this gene variant can be causative of atypical HUS

Immunology and Rheumatology II Concurrent Session 10:15 AM – 12:00 PM Saturday, January 28, 2017

442 RECRUITING FOR A PHASE I CLINICAL TRIAL TESTING TURMERIC DIETARY SUPPLEMENTS IN RHEUMATOID ARTHRITIS PATIENTS: GENERALIZABILITY TO A RHEUMATOID ARTHRITIS POPULATION

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10.1136/jim-2016-000365.442

Purpose of Study The study reported here examines the proportion of rheumatoid arthritis (RA) patients identified primarily via community based recruitment strategies who meet study eligibility criteria for a complementary and alterative medicine (CAM) randomized clinical trial (RCT) examining turmeric dietary supplement use in RA.

Methods Used The IRB-approved study entry criteria were similar to those used in RA pharmaceutical RCTs, including a need for active disease, no current biologic use and restricted use of certain other medications. Individuals (n=188), who learned about the study via community based (85%) vs. rheumatology practice based recruitment (15%), were assessed for study eligibility via telephone prescreening (n=156), followed by in-person screening of those passing initial review (n=20). Specific reasons for disqualification during telephone pre-screen or follow up screening visit were assessed.

Summary of Results Of the total number of subjects responding to recruitment materials disseminated in the community (n=160) or in rheumatology offices (n=28), 17% were lost to follow up due to lack of response to pre-screening requests. Of the remaining participants (n=156), 24% were not diagnosed with RA and an additional 17% were not able to participate due to geographical constraints. Of the remaining individuals (n=93), only 3% (n=3) were eligible for participation in the study. The most common reasons for disqualification were: current biologic use (29%); other medication-related issues (21%), of which current anti-inflammatory medication use was the most common (68%); and insufficient RA disease activity (16%). Unwillingness to discontinue current use of turmeric was encountered infrequently but was a cause for disqualification in some individuals.

Conclusions Consistent with previously reported findings for RA biologic RCT (Vashisht P *et al.* Arth Care Res 68:1478–1488, 2016), when drawing from a general RA population, despite a high level of interest in participating in a CAM RA trial, a very low percentage of patients meet commonly used RA RCT eligibility criteria.

443 IDENTIFYING FACTORS INFLUENCING PARTICIPATION IN A RHEUMATOID ARTHRITIS (RA)-PREVENTION TRIAL: THE RESEARCH PARTICIPATIONS INFLUENCE (RPI) STUDY

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10.1136/jim-2016-000365.443

Purpose of Study To understand what influences people at high risk for developing RA to choose to participate or not in a clinical trial to prevent RA.

Methods Used Participants were screened for CCP, and those at twice the normal limit and without synovitis were asked to participate in the RA prevention trial, taking the drug hydroxychloroquine or placebo for 1 year, and then being monitored to determine efficacy on RA prevention or delay. After choosing whether or not they would like to participate in the trial, subjects were asked to fill out a survey with scaled (1–5; 1=strongly negatively influenced, 5=strongly positively influenced) and short answer questions describing their reasoning. The questionnaires were then compared for the two groups.

Summary of Results To date 13 subjects responded, with 7 participants agreeing to participate (GroupYes) and 6 declining (GroupNo). There were no significant differences in age, gender, income, or education between the groups. GroupYes reported that potential benefit to their family strongly influenced their decision to participate (GroupYes score 5 vs. GroupNo 2.5, p=0.022) . In their short answers, 2/6 (33%) of the GroupNo subjects stated that they did not want to take drugs. 3/7 (43%)of the GroupYes reported that a family member with RA influenced their decision. There was also a non-significant trend that more people in the GroupYes reported having a family member with RA (GroupYes 57% vs. GroupNo 17%, p=0.27).

Conclusions In this pilot study, individuals who agreed to participate in a clinical prevention trial for RA were more likely to be interested in helping their family; furthermore, there was a trend that participants had a higher rate of family members with RA and a suggestion that drug aversion may also influence participation. These findings could indicate that having a family member with RA may increase knowledge about the disease or affect perceived risk to additional family members, and that family members or RA may be especially important groups to involve in prevention. This as well as the role of symptoms, drug aversion and the potential for greater education about RA to improve participation will be explored in upcoming studies.

444 ULTRAVIOLET B STIMULATED INFLAMMATORY RESPONSE MEDIATED BY STING IN SYSTEMIC LUPUS ERYTHEMATOSUS

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10.1136/jim-2016-000365.444

Purpose of Study Ultraviolet B radiation (UVB) has been found to be the most prominent environmental factor stimulating the pathogenesis of Systemic lupus erythematosus (SLE), a debilitating autoimmune disease. UVB exposure leads to the process of keratinocyte apoptosis resulting in "sunburn cells" in the epidermis. Defects with the elimination of these apoptotic cells lead to release of Damage associated molecular patterns (DAMPs) such as nucleic acids (DNA or RNA) arising from self-material. Recognition by the innate immune system of these DAMPs through a diverse set of receptors called pattern recognition receptors (PRRs) triggers a response leading to a burst of pro-inflammatory cytokines and type I interferons (IFNs) which are important in SLE. The main PRR receptors include intracellular Toll-like receptors (TLRs), STING (for DNA) and MAVS (for RNA). How UVB leads to activation of the innate immune system, which stimulates the immune response, is unclear and has not been well studied. Elucidation of the inflammatory response pathway stimulated by UVB *in vivo* could lead to developing strategies to design inhibitors that attenuate the immune response seen in patients suffering from SLE, Sjogren's Syndrome, and other autoimmune diseases.

Methods Used To investigate the pathways required for the inflammatory response to UV light, either normal control B6 mice, mice deficient in the adaptor proteins STING (downstream of DNA activated cGAS) or MAVS (downstream of RNA receptors), or MDA5 (RNA receptor upstream of MAVS) were exposed to UVB light (100 mJ/cm^2 for five days). Skin biopsies were taken, RNA isolated, and the inflammatory cytokine response quantified by QPCR. The IFN response was measured by quantifying expression of IFN-I response genes (ISGs).

Summary of Results In response to UVB, we observed a marked decrease in the ISGs MX1, IRF7, and IFIT1 as well as a decrease in expression of pro-inflammatory cytokines IL-1β, TNF, and IL-6 in STING KO compared to control B6 mice suggesting that STING is required for IFN-I production. However, a limited response was seen in the expression of the same inflammatory profile in MAVS KO and MDA5 KO mice relative to control.

Conclusions Together, these results indicate that the adaptor protein, STING, plays an important role in sensing damage and mediating immune responses following UVB exposure.

445 AUTOANTIBODIES IN JUVENILE SYSTEMIC SCLEROSIS

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10.1136/jim-2016-000365.445

Purpose of Study There are no known biomarkers for organ involvement, response to therapy, or prognosis in juvenile systemic sclerosis (jSSc). Knowing the pattern of organ involvement associated with specific autoantibodies has implications for treatment and screening. The objective of this study is to measure serum levels of scleroderma-specific and scleroderma-associated autoantibodies in patients with jSSc, and to determine their frequency and clinical significance.

Methods Used Plasma samples from 28 patients with jSSc, 26 with localized scleroderma and 35 age-matched healthy controls were tested for ANA, as well as antibodies against Ro52, RNA-polymerase III, Platelet derived growth factor receptor, Ku, PMScl-75, PMScl-100, Th/To, hUF/NOR-90, Fibrillarin, RP155, RP11, Centromere Proteins A/B (CENP-A, CENP-B), and Scl-70 RNA. Line immunoassay was used for testing, with the exception of Th/To, which were assessed for by chemiluminescence. Autoantibodies were correlated with clinical disease manifestations.

Summary of Results The most common antibodies found were Anti-PMScl-100 (17.9%), Anti-Scl70 (14.3%), Anti-CENPB (10.7%) and Anti-CENPA (7.1%). No autoantibodies were detected in the plasma of healthy controls or localized scleroderma patients, except for ANA, which was seen in five of the localized scleroderma samples and in one control. Of patients with jSSc, 15 (53.6%) were ANA positive but negative for both Anti-Centromere and Ant-Scl70. Of these, 20% carried antibodies to PMScl-100. There were no significant differences in antibody profile between limited and diffuse systemic disease, and no significant associations between antibodies and specific clinical disease manifestations.

Conclusions In this cohort, the presence of antibodies targeting PMScl-100, CENPA/B, and Scl-70 were specific for systemic disease, compared to localized scleroderma or controls. Testing for PMScl-100 helped capture additional patients who were ANA positive but Anti-Centromere/Anti-Scl70 negative, although there remained jSSc patients with ANA of unknown antigen specificity. Antibodies to PMScl-100 and Scl-70 trended with increased clinical manifestations. The association of autoantibodies with systemic but not localized scleroderma reinforces the concept of two distinct disease processes.

446 OUTCOMES OF AIRWAY RESPONSE FOLLOWING DUST EXTRACT TREATMENT ADMINISTERED POST-ALLERGEN SENSITIZATION

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10.1136/jim-2016-000365.446

Purpose of Study Early exposure to farming environments has been associated with a decreased prevalence of allergic disorders, including asthma. Past research from the Vercelli Lab has shown that repeated administration of Amish farm dust extracts (FDE) before airway sensitization with allergens protects mice against airway hyperresponsiveness and lung eosinophilia. However, little is known about how exposure to Amish FDEs affects airway immunity when it occurs after allergen sensitization.

Methods Used Using a previously established murine asthma model, we studied how the timing of dust extract treatment affects immune response patterns. FDE administration began either before (day −10) or after (day +8) sensitization of Balb/c mice with an allergen (Ovalbumin–OVA). For sensitization, OVA was administered intraperitoneally on days 0 and +7. Following airway challenge (days 14, 15, and 16), bronchoalveolar lavage (BAL) fluid was collected, and cellularity was measured. Cytokines (IL-13 and IL-17) were assessed by ELISA. Lung tissue was collected and *il17* mRNA levels were assessed by qPCR. Blood was collected to measure total and OVA-specific serum IgE by ELISA.

Summary of Results Despite receiving fewer treatments (5 versus 14) beginning only after OVA sensitization, the post-sensitization group showed responses comparable to those of the pre-sensitization group. In both groups, FDE treatment decreased airway eosinophilia and IL-13 levels, whereas IL-17 expression was significantly increased. Total serum IgE was significantly increased in the pre-sensitization, but not in the post-sensitization group. However, the latter but not the former showed significant decreases in OVA-specific IgE.

Conclusions Using a previously validated murine asthma model, we show that exposing mice to Amish FDEs 5 and 14 times yielded similar changes in BAL eosinophilia, IL-13, and IL-17 levels, even when FDEs were administered only after sensitization. Interestingly, IL-17, a cytokine typically associated with mucosal immunity and inflammation in humans and in several experimental asthma models, was increased when protection was induced–warranting further dissection of the role of this molecule in asthma.

Neonatology General VI Concurrent Session 10:15 AM – 12:00 PM Saturday, January 28, 2017

447 IMPROVING NEWBORN CARE IN RESOURCE POOR SETTINGS: EVALUATION OF A COMBINED TRAINING AND QUALITY IMPROVEMENT APPROACH

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10.1136/jim-2016-000365.447

Purpose of Study Every year 2.8 million newborns die worldwide due to complications in the newborn period. Newborns with low birth weight <2500 g (LBW) are at greatest risk for death due to complications related to asphyxia, prematurity, and infections. Outcomes for newborns in resource poor countries have seen little improvement over the last decade. The objectives of this study are to measure changes in newborn care quality in a rural Indian hospital following a combined training and quality improvement intervention.

Methods Used This study took place at the Mota Fofalia Pediatric Center in Gujarat, India between February 2014 and July 2016. Assessments of 10 newborn care quality measures were completed at baseline and at 6 month intervals. We utilized previously validated quality measures for newborn care in resource poor settings and recorded compliance through direct observation of care using a standardized data collection tool. At training intervention, hospital staff received structured training in intrapartum, postpartum and LBW care according to best practice protocols and WHO guidelines. Training was based on the Helping Babies Breathe protocol for immediate newborn care and the Integrated Management of Maternal and Neonatal Care program. The QI intervention consisted of ongoing data review by local management and PDSA improvement cycles based on gap analyses on reported issues.

Summary of Results Since the implementation of staff training intervention, a total of 112 deliveries and 718 care encounters in 326 newborns were observed. The mean age was 2.75 days (range: 0 to 26 days) and mean birth weight was 2.549+0.49 kg (range: 1.0 to 3.68 kg). At baseline, provider performance for care quality in the immediate newborn period, postnatal care and LBW care was low (0%). Following the interventions, care quality improved in the majority of quality measures (Table 1). Ongoing challenges with bag and mask ventilation during resuscitation, equipment use, and discharge for LBW babies still exist.

Conclusions An approach utilizing a training and QI intervention improves care in most aspects for newborns in resource poor settings.

448 PRETERM BIRTH AFTER TREATMENT OF MATERNAL METASTATIC MELANOMA WITH IMMUNOTHERAPEUTICS

Niemi A,[1] Foeller ME,[2] Yeaton-Massey A,[2] Fan AC,[3] Winn VD,[2] Hintz SR[1]. *[1]Stanford Univ, Palo Alto, CA; [2]Stanford Univ, Palo Alto, CA; [3]Stanford Univ, Stanford, CA.*

10.1136/jim-2016-000365.448

Case Report We report on a preterm infant born to a mother treated with immunomodulators for metastatic melanoma: nivolumab (PD-1 antibody), ipilimumab (CTL-4 antibody). To our knowledge, there are no prior reports on the use of these during pregnancy.

Case Born at 24 wks of gestation to a 35 yo G2P0 mother diagnosed with metastatic melanoma at 23 wks: lesions in liver, lungs, chest wall, spleen, bone. US was concerning for placental metastases. After extensive counseling, given widespread disease, she elected to undergo immunotherapy. Given lack of data for the use of these agents during human pregnancy and animal models showing increased risk of stillbirth, the risks of fetal loss or preterm birth were discussed. After 2 doses of betamethasone, immunotherapy was started at 24+3 wks. Infant was born at 24+5 wks, placed on ventilator, and received an antibiotic course. Initial WBC count was 14 K (44% lymphs). CRP peaked at 3.2 mg/dL (day 2). At 2 wks there was a sudden haziness in lungs by CXR: WBC count was 33 K (37% bands), CRP<0.2, blood cultures stayed negative, WBC count normalized. Creatinine & transaminases are normal. Newborn screen was "incomplete" (Kwan et al 2013) for SCID, repeat sent. Skin exam is normal. Placental pathology did not show metastases.

Discussion PD-1 and CTLA4 pathways are thought to preserve pregnancy by maintaining maternal-fetal tolerance (Poulet et al 2016). Blocking these in animal models disrupts this tolerance and results in fetal loss. Thus, it is possible these agents induced a similar response in this case, which could have led to preterm delivery. However, preterm birth is a multifactorial process and further data are needed. In addition to prematurity, the effects of immunomodulators on the infant and the possibility of maternal-fetal metastases are of concern. Both agents are IgG antibodies and may cross the placenta. As the agents have been described to induce inflammatory reactions in lung, colon, liver, adrenals and pituitary, we have been monitoring for these. Melanoma is one of the few cancers that can have transplacental spread. Fetal risk of metastasis is 22% with placental involvement (Alexander et al 2003). Thus, the risk is likely lower in this case.

449 THE ASSOCIATION OF TRANSITION TO HOME AND DEPRESSION IN LOW-INCOME MOTHERS AFTER NICU DISCHARGE

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10.1136/jim-2016-000365.449

Abstract 449 Table 2 Mean (SD) scores for sample

	(+) PHQ-2 screen	(−) PHQ-2 screen	p-value
CTM-15 score	69 (9)	84 (6)	0.001

Purpose of Study The prevalence of maternal depression after preterm birth is widely recognized and the Patient Health Questionnaire 2 (PHQ-2) has been validated to screen for this condition. However, there is limited information about the association of the PHQ-2 with transition to home. In this study we describe the association of the PHQ-2 with a care-transition measure in a population of low-income mothers of preterm infants after NICU discharge.

Methods Used We administered a 120-item survey to mothers of preterm infants attending a high-risk infant follow up program. Our primary outcome was a positive screen for depression determined by a score >3 on the PHQ-2. T-tests were used to compare a positive depression screen with the Care Transition Measure (CTM-15). In multivariable logistic regression, we estimated the adjusted odds of depression in association with transition.

Summary of Results Of 153 participants (85% response rate): 74% of participants were Hispanic and 63% reported an annual household income <$20,000. 32% of mothers screened positive for depression based on the PHQ-2 and the mean (SD) CTM-15 score was 82 (8). A positive PHQ-2 screen was associated with a lower CTM-15 score (Table). Adjusting for socio-demographics, infant developmental score and co-morbidities including use of medications and technology, a score of <70 on the CTM-15 (AOR, 95%CI), 1.8 (1.2, 3) was significantly associated with an positive screen for depression on the PHQ-2.

Conclusions A positive PHQ-2 screen was associated with lower transition scores, which should be considered in follow up of these families.

450 UTILIZATION PATTERNS OF EXTRACORPOREAL MEMBRANE OXYGENATION BETWEEN INBORN AND OUTBORN NEONATES IN THE UNITED STATES

Contreras V,[1,2] Song A,[1,2] Fletcher K,[1] Chapman R,[1] Friedlich P,[1] Lakshmanan A[1]. *[1]Children's Hospital Los Angeles and LAC+USC Medical Center, Los Angeles, CA; [2]Keck School of Medicine, University of Southern California, Los Angeles, CA.*

10.1136/jim-2016-000365.450

Purpose of Study Extracorporeal membrane oxygenation (ECMO) continues to be a resource intensive life saving therapy for neonates in the United States. Due to limited information for inborn (patients cared for in their birth hospitals) and outborn (patients not cared for in their birth hospitals) patients placed on ECMO, the objectives of the study are: 1) To describe length of stay (LOS), cost and principal diagnoses for inborn and outborn patients placed on ECMO 2) To determine if mortality differs between inborn and outborn patients placed on ECMO.

Methods Used Retrospective data analysis was conducted on the Healthcare Cost and Utilization Project (HCUP)

Kids' Inpatient Database (KID) from 1997–2012. Weighted variables were applied in the analysis for national estimates. Patients placed on ECMO (ICD-9-CM code 39.65) were categorized into inborn and outborn. Bivariate tests were used to compare LOS, cost, and principal diagnoses: meconium aspiration syndrome (MAS) and congenital diaphragmatic hernia (CDH) between inborn and outborn cases. Bivariate testing was also used to compare mortality between inborn and outborn patients.

Summary of Results 800 inborn patients and 4,352 outborn patients were identified from 5,152 ECMO cases. Median LOS (IQR) for inborn patients was longer– 35 (47) days versus outborn patients 26 (32) days ($p<0.0001$). Median cost (IQR) was $226,821 (324,380) for inborn patients versus $152,812 (213,897) for outborn patients ($p<0.0001$). MAS was less frequent in inborn patients (5.8%) than outborn patients (9.7%) ($p=0.0004$); and CDH was more frequent in inborn patients (33.5%) compared to outborn patients (17.3%) ($p<0.0001$). Mortality was more frequent for inborn patients (50.5%) than outborn patients (35.6%) ($p<0.0001$).

Conclusions Inborn patients placed on ECMO were more commonly diagnosed with CDH, had longer LOS, higher cost and higher mortality. MAS diagnosis was more frequent in outborn patients placed on ECMO. These differences may be due to differences in patient characteristics and regionalization of care.

Abstract 451 Table 2 Results

	Cesarean Section n=399	Vaginal Delivery n=400	p-value
Meconium Aspiration Syndrome, %	29 (7.3)	17 (4.3)	0.0813
Persistent Pulmonary Hypertension, %	152 (38.1)	130 (32.5)	0.0962
Congenital Diaphragmatic Hernia, %	144 (36.1)	125 (31.3)	0.1462
Respiratory Failure, %	180 (45.1)	171 (42.8)	0.4938
Sepsis, %	114 (28.6)	103 (25.8)	0.3666
Median Length of Stay (days), IQR	37 (17, 76)	33 (18, 56)	0.1282
Total Cost (US Dollars), IQR	603129 (312312, 1038114)	455574 (253060, 835317)	0.0024

451 EXTRACORPOREAL MEMBRANE OXYGENATION UTILIZATION BY MODE OF DELIVERY FROM 1997–2012

Fletcher K,[1,2] Contreras V,[2] Song A,[2] Lakshmanan A,[2] Friedlich P,[2] Chapman R[2]. *[1]LAC+USC Medical Center, Los Angeles, CA; [2]Children's Hospital Los Angeles, Los Angeles, CA.*

10.1136/jim-2016-000365.451

Purpose of Study Extracorporeal Membrane Oxygenation (ECMO) is used for neonates as rescue therapy for respiratory and/or cardiac failure. Historically, infants born via Cesarean section have been overrepresented in populations needing ECMO when compared to neonates born via vaginal delivery; possibly due to increased incidence of respiratory failure and persistent pulmonary hypertension (PPHN) related to elective C-section. The objective of this study is to determine if mode of delivery is a predictor of differences between length of stay (LOS), total hospital charges and primary diagnoses associated with ECMO use in a modern epoch.

Methods Used Retrospective data analysis was conducted on the Kid's Inpatient Database from 1997–2012. Weighted variables were applied for national estimates. Patients who received ECMO were categorized into those having been delivered by C-section and vaginal delivery. Bivariate tests were used to compare LOS, total cost, and primary diagnosis.

Summary of Results 800 infants received ECMO from 1997–2012. These cases were compared by primary diagnosis, length of stay and total hospital charges (Table).

Conclusions From 1997 to 2012, there were a similar number of infants requiring ECMO born via C-section and vaginal delivery. Comparing these two groups, there was an increase in cost for patients born via C-section, but no difference in distribution of diagnoses or LOS. Improvement in adjuvant therapies for difficult transition from intrauterine to extrauterine life, complicated by respiratory failure and PPHN, including inhaled nitric oxide and surfactant therapy, and the shift in recommended timing of elective C-section to after 39 weeks' gestation may have contributed to the decrease in disproportionate need for ECMO therapy by infants delivered via C-section.

452 IMPACT OF PARENTS' PRIMARY LANGUAGE ON COMMUNICATION IN THE NEONATAL INTENSIVE CARE UNIT

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Purpose of Study Little is known about how well providers communicate with Spanish-speaking families with an infant hospitalized in the Neonatal Intensive Care Unit (NICU). We hypothesized that a parent's native language impacts effective communication between families and providers.

Methods Used To determine the impact of parents' primary language on effectiveness of provider-parent communication, we administered an IRB-approved survey to parents with an infant hospitalized in the NICU. Participants were categorized into two groups: English speakers and Spanish speakers. In order to assess how clearly the rationale for hospitalization had been communicated, we compared the two groups by their ability to correctly identify their infant's diagnosis. Using a Likert scale, we also assessed parental understanding of tests/procedures performed and medications administered. Lastly, we evaluated the frequency of medical updates to Spanish speakers and the language and method of interpretation used to educate them. Group comparisons were conducted with a Chi squared test, Cochran-Mantel-Haenszel or T-tests. We compared Likert scores with the Wilcoxon Rank Sum Test.

Summary of Results 132 parents ranging in age from 18 to 47 participated in the study. 66% were mothers and 40% were first time parents. The study included 88 English- and

44 Spanish-speaking parents. More Spanish speakers incorrectly identified the diagnosis than did English speakers (23 vs. 6%; $\chi^2=8.462$; $p=0.009$). Survey data suggested that blood test results were more clearly explained to the English speakers ($p<0.001$). Fewer Spanish speakers understood why their baby was on antibiotics ($p=0.023$). Spanish-speakers reported that medical updates were provided in Spanish only 42% of the time.

Conclusions Spanish-speaking parents in the NICU more commonly misunderstood aspects of their child's care than did English-speaking parents. We speculate that providers' failure to communicate with Spanish-speaking families in their native language underlies these findings.

453 RELATIONSHIP BETWEEN SELF-EFFICACY AND PERFORMANCE IN NEONATAL RESUSCITATIVE TASKS

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10.1136/jim-2016-000365.453

Purpose of Study Self-efficacy is the strength of one's belief in one's ability to complete tasks. Measures of self-efficacy are often used as outcomes after interventions to improve resuscitation skills. The goal of many educational simulation projects is to improve the care provided to real patients. Because this is difficult to measure, self-efficacy is often used as a surrogate measurement of clinical ability. The purpose of this study is to determine if self-efficacy in performing specific neonatal resuscitative tasks correlates with performance.

Methods Used All neonatal fellows, neonatal nurse practitioners, neonatologists and 50 neonatal nurses at our institution were asked to participate. A questionnaire was completed by participants in which they ranked their ability to perform bag-valve-mask ventilation and chest compressions on a Likert scale from 1 (strongly disagree) to 7 (strongly agree).

The participants performed 1 minute of chest compressions and 1 minute of ventilation with an oxygen source, mask, flow-inflating bag and manikin. Performance data was recorded using a program on a computer connected to the manikin. The performance of participants was compared with their rating of their ability to independently perform chest compressions and ventilations using Spearman's rank correlation coefficient.

Summary of Results There was no significant correlation between participants' self-assessment of their ability to perform chest compressions and the percentage of effective compressions. There was also no significant correlation between participants' self-assessment of their ability to perform bag-valve-mask ventilation and percentage of effective ventilations or percentage of appropriate volume of ventilation. There was a moderate correlation between demographic characteristics and the ratings of self-efficacy as well as between the number of mock codes and performance.

Conclusions Self-reported efficacy is not a valid predictor of resuscitative skills in the neonatal population; participants both over and under-estimated their clinical proficiency. Participation in mock codes in the NICU was the only factor in this study that correlated with improvement in performance of the two resuscitative tasks.

Neuroscience III
Concurrent Session
10:15 AM – 12:00 PM
Saturday, January 28, 2017

454 WHITE MATTER MICROSTRUCTURE ON DIFFUSION MAGNETIC RESONANCE IMAGING IN 6-YEAR-OLD CHILDREN BORN PRETERM

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Purpose of Study Cerebral white matter injury is a common complication of preterm birth that is associated with long-term, adverse neurodevelopmental outcomes. Diffusion MRI (dMRI) analyzed with tractography allows for detection and quantification of microstructural properties of white matter tracts within the brain. Fractional anisotropy (FA) is a measure of white matter coherence: higher FA is thought to indicate maturity or health. A dMRI tractography study in 9–17-year old preterm (PT) and full term (FT) children and adolescents found that FA was higher in some tracts and lower in others in the PT compared to the FT group (1). The objective of the current study was to determine whether this pattern of group differences in FA would be observed in younger PT and FT children.

Methods Used We obtained dMRI scans using two different protocols from 6-year-old children born PT ($GA\leq32$ weeks, $n=20$) and FT ($GA\geq37$ weeks, $n=38$). We analyzed FA along eight cerebral and one callosal white matter pathway found previously to demonstrate significant group differences[1].

Summary of Results The pattern of group differences was similar across the two dMRI acquisition protocols. Compared to FT, PT children showed significantly decreased FA in the uncinate fasciculi and forceps major, and they showed significantly increased FA in the right anterior thalamic radiation, inferior fronto-occipital fasciculi, and inferior longitudinal fasciculi. The pattern of group differences in FA closely resembled the findings in the sample of older children and adolescents.

Conclusions Results indicate that the underlying neurobiology driving group differences in FA between PT and FT children appears to be stable from age six years to adolescence. These findings emphasize the importance of understanding the underlying neuropathology that gives rise to this complex pattern of white matter differences after PT birth.

REFERENCE

1 Travis KE, Adams JN, Ben-Shachar M, Feldman HM. Decreased and Increased Anisotropy along Major Cerebral White Matter Tracts in Preterm Children and Adolescents. *PLoS ONE* 2015;10:e0142860.

455 AN OPEN LABEL STUDY OF ALLOPREGNANOLONE TREATMENT FOR FRAGILE X-ASSOCIATED TREMOR/ ATAXIA SYNDROME

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10.1136/jim-2016-000365.455

Purpose of Study Fragile X-associated Tremor/Ataxia Syndrome (FXTAS) is a neurodegenerative condition caused by a CGG expansion repeat in the 5' untranslated region of the FMR1 gene on the X chromosome. The disorder affects 1/4000 males and manifests clinically with neurological decline and psychiatric symptoms. The trinucleotide expansion leads to a gain of function toxicity of the FMR1 mRNA causing diffuse brain atrophy, white matter disease and intranuclear inclusions. Currently, there are no FDA approved targeted treatments for FXTAS. Allopregnanolone is an endogenous neurosteroid that is neuroprotective and can stimulate neurogenesis in the hippocampi of rats. Therefore, it may be effective against neurodegeneration, however its therapeutic effect has not been extensively studied.

Methods Used A 3-month open label study was conducted on six patients with FXTAS to monitor the effects of allopregnanolone on cognitive and psychiatric symptoms through baseline and post-treatment measures using recognized clinical assessments. Event-Related Potential (ERP) measures were utilized to assess changes in neurological function using word repetition paradigms. To evaluate changes in hippocampal, amygdala and white matter hyperintensity (WMH) volumes, MRI imaging was conducted and analyzed.

Summary of Results Preliminary results indicate improvements in executive function, memory and increases in brain volume. Three patients showed increased N400 repetition effect amplitude after treatment along with improved cue-recall memory scores for the experimental stimuli. Three of the five patients from whom both pre and post scans were obtained showed increased hippocampal and amygdala volumes after the trial. One of these patients showed reduced WMH volume as well.

Conclusions These results suggest allopregnanolone's efficacy in improving cognitive and neurological function. Thus, a larger, blinded, placebo controlled study is necessary to confirm its therapeutic effects in patients with FXTAS.

456 SEX DIFFERENCES IN THE HYPOTHALAMIC EXPRESSION OF DIACYLGLYCEROL LIPASE α: IMPLICATIONS FOR THE CANNABINOID REGULATION OF ENERGY HOMEOSTASIS

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10.1136/jim-2016-000365.456

Purpose of Study Cannabinoids induce changes in energy homeostasis in a sexually differentiated manner. For example, males are more sensitive to cannabinoid-induced hyperphagia, hypothermia, and presynaptic inhibition of excitatory transmission in anorexigenic proopiomelanocortin neurons from the hypothalamus, than females. We proposed that testosterone and estradiol can influence cannabinoid-induced changes in energy homeostasis by modulating the hypothalamic expression of diacylglycerol lipase (DAGL)α, the biosynthetic enzyme responsible for the production of the endocannabinoid 2-arachidonoyl glycerol.

Methods Used Castrated male and female Topeka guinea pigs received injections of testosterone proprionate (TP, 400 μg; sc) and estradiol benzoate (EB, 10 μg; sc), respectively, every other day for seven days. Final injections were given 2 hours before terminal harvest, during which animals were anesthetized and rapidly decapitated. Brains were removed, from which 1mm-thick coronal slices through the hypothalamic arcuate (ARC) and ventromedial (VMN) nuclei were prepared. The level of DAGLα in the ARC and the VMN, was quantified via Western blot using tissue microdissected from these two brain regions. GAPDH was used in this study as a loading control in order to equalize the loading of gel.

Summary of Results We found that testosterone significantly elevated DAGLα expression in the ARC compared to vehicle-treated control males (DAGLα/GAPDH ratio in vehicle: 1.00 ± 0.17, in TP-treated: 1.64 ± 0.26, $p < 0.05$). In contrast, estrogen significantly downregulated DAGLα expression compared to vehicle-treated control females (vehicle: 1.00 ± 0.08, EB-treated: 0.63 ± 0.09, $p < 0.05$). No such changes were found in the VMN (males–vehicle: 1.00 ± 0.21, TP-treated: 0.71 ± 0.10, $p > 0.05$; females–vehicle: 1.00 ± 0.11; EB-treated: 1.26 ± 0.12, $p > 0.05$).

Conclusions Testosterone upregulated the expression of DAGLα in the ARC but not the VMN of the hypothalamus. This is in contrast to estradiol, which downregulated the expression of DAGLα in the ARC. This data provides insight into the mechanism by which cannabinoids can induce sexually differentiated changes in energy homeostasis.

457 FORMULATION AND CHARACTERIZATION OF A CURCUMINOID LOADED SOLID LIPID NANOPARTICLES

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10.1136/jim-2016-000365.457

Purpose of Study Lack of early diagnosis is a major problem associated with Alzheimer's disease (AD), the most common cause of dementia characterized by progressive memory loss. Amyloid beta (Aβ) plays a substantial role in inducing inflammatory conditions. Curcumin, the active ingredient in the root of plant Curcuma longa, has been reported to stain Aß plaques in human postmortem brain sections. The goal of this project is to prepare a topical eye drop formulation constituted of solid lipid nanoparticles (SLN) to deliver curcuminoids to the retina. This study aims to characterize the physicochemical properties of a few prototype SLN

formulations in the effort to develop a proof of concept delivery system as a tool for early diagnosis of AD.

Methods Used Curcumin was dissolved in various ratios of lipids heated at 75°C. Hydrophilic stabilizers were added to the molten admixture and emulsified with 10 mL water that contained a co-surfactant. The emulsion system was homogenized by high sheer homogenizer and followed by probe sonication over ice to harden as emulsified nano-droplets. The SLN dispersion was then subjected to analyses of particle size, surface charge, polydispersity index and entrapment efficiency. We also assessed the effect of the number sonication cycles on some of the physicochemical characteristics of the formulation.

Summary of Results Of several formulations prepared, F43 showed significant improvement in droplet size, entrapment efficiency and size distribution compared to other prototypes. Average particle size after 20 sonication cycles was 88 nm. Particle size correlated linearly with the number of sonication cycles (R^2=0.85). The surface charge of −5.4 mV decreased compared to other formulations indicative of slight instability. Payload for F43 was 99.7% indicative of complete entrapment of curcumin in lipid core.

Conclusions The data is encouraging, warranting further optimization especially with respect to surface charge. An increase in surface charge would increase stability of suspended particles. Surface modification of SLN with chitosan would improve adherence to biological membranes. Additional steps would comprise testing drug release from these formulations using *in vitro* methodologies prior to *in vivo* experiments.

458 THE ROLE OF THE GENITOFEMORAL NERVE IN INNERVATING THE ANTERIOR ABDOMINAL WALL IN FEMALES: A CADAVERIC CASE STUDY

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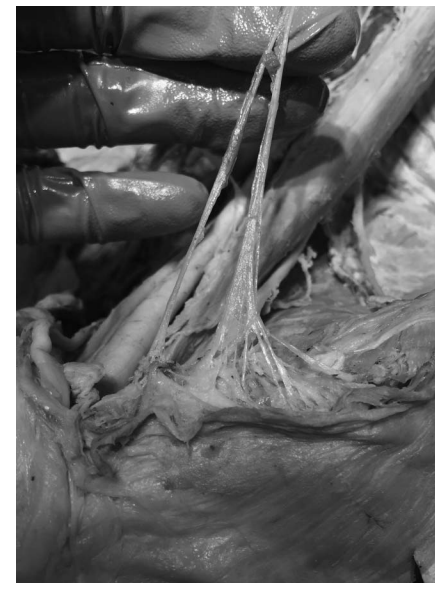
10.1136/jim-2016-000365.458

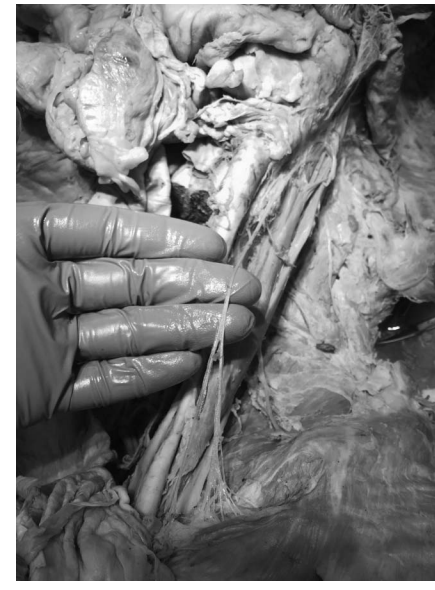
Purpose of Study This case study used a single female cadaver in order to investigate the nerve course of the genitofemoral nerve in females.

Methods Used A single cadaveric adult female was dissected in order to investigate the course of the genitofemoral nerve.

Summary of Results We found that the genital branch of the GF nerve sent off fibers that terminated within the anterior abdominal wall. It then continued along it's normal course to provide sensory innervation to the labia majora and mons pubis.



Abstract 458 Figure 1



Abstract 458 Figure 2

Conclusions We hypothesize that fibers originating from the genital branch may be responsible for providing minor motor innervation to the muscles of the anterior abdominal wall.

Correction

Patel J, Abukamleh H, Heidari A. "Killing him softly": a unique unveiling of Infective endocarditis. *J Investig Med* 2016;65:A171.

The co-author to be added to this abstract is: Thien Le, MS III.

J Investig Med 2017;**65**:688. doi:10.1136/jim-2016-000365.388corr1